Springer Proceedings in Business and Economics

Francisco J. Martínez-López *Editor*

Advances in Digital Marketing and eCommerce

Fourth International Conference, 2023

Springer

Springer Proceedings in Business and Economics

Springer Proceedings in Business and Economics brings the most current research presented at conferences and workshops to a global readership. The series features volumes (in electronic and print formats) of selected contributions from conferences in all areas of economics, business, management, and finance. In addition to an overall evaluation by the publisher of the topical interest, scientific quality, and timeliness of each volume, each contribution is refereed to standards comparable to those of leading journals, resulting in authoritative contributions to the respective fields. Springer's production and distribution infrastructure ensures rapid publication and wide circulation of the latest developments in the most compelling and promising areas of research today.

The editorial development of volumes may be managed using Springer Nature's innovative EquinOCS, a proven online conference proceedings submission, management and review system. This system is designed to ensure an efficient timeline for your publication, making Springer Proceedings in Business and Economics the premier series to publish your workshop or conference volume.

This book series is indexed in SCOPUS.

Francisco J. Martínez-López
Editor

Advances in Digital Marketing and eCommerce

Fourth International Conference, 2023

Springer

Editor
Francisco J. Martínez-López
Department of Business Administration 1, Business School
University of Granada
Granada, Spain

ISSN 2198-7246 ISSN 2198-7254 (electronic)
Springer Proceedings in Business and Economics
ISBN 978-3-031-31835-1 ISBN 978-3-031-31836-8 (eBook)
https://doi.org/10.1007/978-3-031-31836-8

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

Less for More: Does Consumers' Proneness to Join More Online Brand Communities Negatively Impact Consumers' Sharing Ability?

Zahy Ramadan(✉), Ibrahim Abosag, and Eman Gadalla

Adnan Kassar School of Business, Lebanese American University, Beirut, Lebanon
zahy.ramadan@lau.edu.lb

Abstract. Online consumer experience has been the focus of recent studies as an enabler to sharing commerce. Consumer experiences are key facilitators for consumers' social sharing of commerce. Nonetheless, as consumers have become prone to joining brands' conversations, risks of consumer oversaturation, undermining consumers' sharing ability should be expected to develop. The negative influence of customer relationship proneness (CRP) in joining and engaging with a high number of brand communities has not been examined. This study employs an online survey of members of a leading mobile phone company's online sharing community on Facebook to offer new insights on CRP's role in negatively affecting consumers' commitment to sharing within brand communities. This is the first study to examine the negative impact of CRP on online brand communities and brand relationship. It is also the first to examine the relationship between CRP in joining online communities and online community commitment in social networking sites.

Keywords: Social Commerce · Customer Relationship Proneness (CRP) · Brand Love

1 Introduction

Online brand communities foster the development of long-term relationships with the brand as continuing followers are more inclined to provide valuable insights for brands to enhance their products and services (Zhang et al 2018). Whilst the integration between the social capital of people and social media is becoming the main marketing value that firms are seeking to build upon (Zeeni et al. 2021; Shane-Simpson et al. 2020; Hamadeh et al. 2020) it is to be expected that, given a high consumer response and participation in brand initiatives, consumers would likely demonstrate high customer relationship proneness (CRP) toward online brand communities (Mahdi et al. 2022). CRP, which is defined by Fernandes and Proença (2008, p.158) as "a consumer's tendency to engage in relationships with providers of a particular product category" has been considered to exert a positive influence on marketing constructs, consumer relationships in online communities (Fernandes and Proença 2008). Despite the growing amount of research on consumer-brand relationships within online based communities

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 1–8, 2023.
https://doi.org/10.1007/978-3-031-31836-8_1

(Khobzi et al. 2019), there is no clear evidence on the negative impact of CRP within social media on consumers' relationship with brands, their brand love and commitment to brand communities.

The need to study the negative impact of CRP stems from three main facts. Firstly, despite the large body of studies on online brand communities (Meek et al. 2019), there has been very little empirical research that examines the negative impact of CRP on online brand communities. Prior studies have largely looked at variables that drive consumers' proneness only, neglecting the impact of such proneness on brand relationships. Secondly, recent findings show that, over time, consumers in online brand communities may feel overly connected and overloaded within a community (Ramadan 2017), leading them to contemplate joining what they consider as better online communities. Since brands can be considered as persons with which consumers can form relationships (Fournier et al. 1998) and following Dunbar's (2008) social networks constraints theory, relationships with online brand communities are likely to develop in a similar manner to relationships between people. Hence, consumers might be prone to either leave these communities or to significantly reduce their customer-to-customer as well as brand engagement, the consequences of which are not yet clear for customer-to-customer interaction or for brands. The extant literature lacks such direct examination of CRP, especially on consumers' commitment to sharing in online brand communities. Thirdly, once consumers are prone to leave existing brand relationships, it becomes crucial to understand the impact of this proneness on consumers' sharing within the online brand communities themselves, as well as the impact on brand love. This will help brands to efficiently manage their online communities taking into consideration neglected factors such as CRP.

To address the lack of understanding of the aforementioned factors, this paper examines the negative aspect of CRP in joining other online brand communities on Facebook on customers' commitment to sharing within the existing brand community, and the subsequent impact on brand love.

2 Theoretical Background

2.1 Information Quality and Commitment to Brand Community

Information quality is considered a key influencer of members' repeated visits and commitment to online-based communities (Lin et al. 2018; Islambouli et al. 2020). Furthermore, if the content's quality is deemed to be low, online community members may hesitate in using it and might decide to leave the community (Ramadan and Abosag 2016). A study by Zhang et al. (2018) concludes that information quality increase community commitment which affects participation. Accordingly, we hypothesize:

H1: Information quality positively increases consumers' sharing commitment within the online brand community.

2.2 Similarity with Members

The feeling of similarity can be developed between like-minded individuals who share the same interest in a given online brand community through companies' differentiation

strategies and based on members' brand ownership experiences (Engle-Warnick et al. 2020; Akoury 2020). In an online brand community, reciprocity characterizes similarity with members, based on the influence and relatedness between members in the same online community (Chan and Li 2010). As such, it is this sense of belonging that leads to repeat conversational encounters, driving the social usefulness of the interaction (Gupta and Kim 2007), which in turn will increase community commitment (Zhang et al. 2018). Therefore, we hypothesize that:

H2: A feeling of similarity with members in an online brand community leads to a higher interaction in that community.

The information quality perceived in online communities is closely related to the similarity of members' interests and is dependent on the contribution of the members themselves as well as that of the host company (Ramadan and Kanso 2023). The match between members' interest and the reciprocity behaviors found in online brand communities leads to higher credibility and relevance of the online shared information (Chan and Li 2010). As members are similar, they are expected to share information that is based on the common interest of the online community (Schembri and Latimer 2016). This makes the shared information more persuasive, relevant, and credible to the members (Brown et al. 2007; Ramadan et al. 2023). Through this, the perceived similarity amongst members increases the persuasiveness of the shared information. Accordingly, it is hypothesized that:

H3: The feeling of similarity with members in online brand communities leads to higher information quality.

Not only the sense of shared emotional connections between members of a brand community leads to the extension of their self-identity with the community, to which they become further attached, but it also leads to an overall commitment to the community, hence the sense of community (Schembri and Latimer 2016). In addition, the feeling of similarity and identification within online brand communities increases consumers' commitment to the online sharing community (Ramadan 2017). Hence, it is hypothesized that:

H4: A feeling of similarity with members in an online community increases consumers' sharing commitment to the online brand community.

2.3 Interaction

The term 'social interaction ties' is defined as the "*level of frequency and time investment of online community member interactions*" (Wang and Chen 2012 p. 571). The higher the time and frequency invested in interacting with other members, the higher the commitment to the sharing community (Gupta and Kim 2007). Through this, it is maintained that continued engagement leads to further involvement and commitment to the sharing community (Huang et al. 2014). With heightened interaction levels, members become embedded in the online community, as well as becoming committed to it, as empirically proven by Jang et al. (2008). In addition, through interaction, members develop emotional attachment and a sense of obligation to the community (Ma and Chan 2014). Therefore, it is hypothesized that:

H5: The higher the level of interaction between members in online brand communities, the stronger the consumer's sharing commitment within the online brand community.

2.4 Consumers' Sharing Commitment, CRP and Brand Love

2.4.1 Consumers' Sharing Commitment

Community sharing commitment defined as the *"member's helping behavior and active participation in the virtual community*" is viewed as being the main determinant of the success of the online community (Gupta and Kim 2007). Members' sharing commitment to the online community of a brand can precede their feelings towards the brand itself (Mrad and Cui 2020). Consumers are not necessarily fans of a brand to interact within a community and might have other reasons to engage and share in that community (Mrad and Cui 2018). Our argument is based on the logic that the more members of online brand communities commit to more sharing in brand communities the more they will develop more attachment and love for the brand. On this basis, it is hypothesized that:

H6: Consumers' sharing commitment to an online brand community positively increases those members' love of that brand.

2.4.2 Consumers' Relationship Proneness

Customers' commitment forms over recurrent interactions with others. For this reason, to ensure long-term survival and vitality of an online brand community, brands would greatly depend on the strength of members' commitment to and continued interaction and sharing in the community (Wirtz et al. 2013), alongside their cohesiveness and strong sense of belonging. However, customers' commitment to sharing on online brand community can be seriously undermined by a high degree of customer proneness to join other online brand community (Wirtz et al. 2013). Accordingly, it is hypothesized that:

H7: High proneness to joining online communities negatively and directly affects the consumer's sharing commitment to the current online brand community.

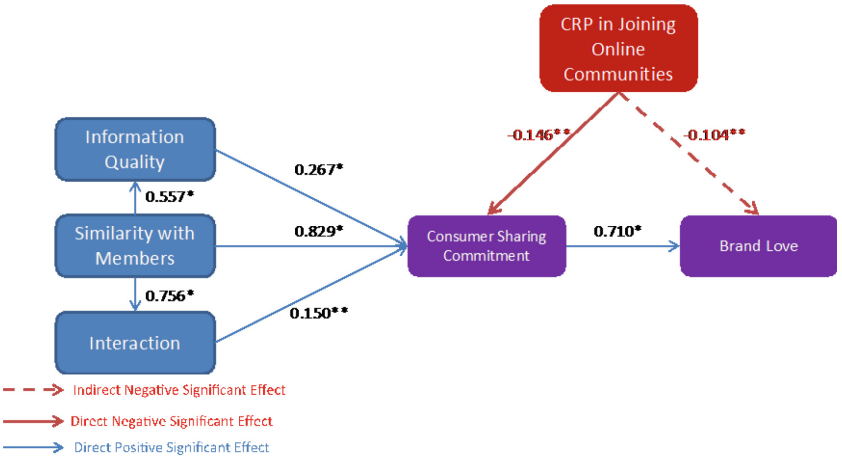
2.4.3 Brand Love

Brand love is defined by Carroll and Ahuvia (2006, p.81) as "*the degree of passionate emotional attachment a satisfied consumer has for a particular brand name*". Existing literature on brand love focuses on defining and measuring brand love and on the conceptualization of brand love in marketing, mainly on the antecedents and outcomes of brand love (Bairrada et al. 2018; Cui et al. 2018; Mrad et al. 2020). Nevertheless, there is little research on the negative impact of customer relationship proneness in joining and engaging with online brand community. As long as consumers are prone to attending multiple online brands' communities, the possibility of consumers being oversaturated increases as a result of brands' over-engagement attempts (Fournier et al. 1998). This study argues that there is a negative influence of high customer relationship proneness in joining other online brand community on brand love:

H8: Proneness to joining online communities negatively and indirectly affects the consumer's love for a brand.

3 Methodology, Hypotheses Testing and Findings

The conceptual model was tested on 175 respondents who are members of a selected mobile phone company's online sharing community on Facebook using an online survey. The company was selected based on its leading share in the market and due to its well-established status amongst consumers. The survey included three parts. Part one contained questions on the participants' overall background and usage of Facebook and online sharing communities. Part two contained the adopted scales statements on the constructs within the conceptual model. Part three included respondents' related questions such as age, gender, occupation, and education level. The data was tested for validity by LISREL 8.8. Confirmatory factor analysis was used to assess the correspondence of all items with their respective latent variables. The resulting indices were chi-square $\chi 2 = 199$ (104 degrees of freedom (d.f.)) and $P = 0.000$. The model also had superior fit indices: *NNFI = 0.978, IFI = 0.983, CFI = 0.983, GFI = 0.890, AGFI = 0.835, Standardized RMR = 0.040 and RMSEA = 0.067*. The incremental fit measures used were CFI, NNFI and IFI (greater than .90). For absolute fit measures, χ^2 statistic, RMSEA and GFI were used. All the hypotheses within the structural model were tested. The estimation of the model shows a good fit, with $\chi^2 = 242\ (111)$, *P-Value = 0.00, NNFI = 0.971, IFI = 0.977, CFI = 0.977, GFI = 0.866, AGFI = 0.814, RMSEA = 0.0782*. All linkages were significant as hypothesized (see Fig. 1).



*Note: *significant at $p < 0.001$ and **significant at $p < 0.05$*

Fig. 1. Model Estimation

The results from the estimation of the model clearly show good support for all hypotheses. As predicted, information quality has a direct impact on sharing commitment to the online community (H1: $\beta = .267$, $p < .001$). Similarity with members was also significant as expected on both interaction (H2: $\beta = .756$, $p < .001$) and information quality (H3: $\beta = .557$, $p < .001$) as well as having a direct positive impact on sharing commitment to the online community (H4: $\beta = .829$, $p < .001$). The coefficients from

similarities with members to interaction, information quality and sharing commitment to the online community are the highest in the model, confirming the importance of the perceived similarities with members to the online experience within the sharing community. Interaction also has a positive effect on sharing commitment to the online brand community (H5: $\beta = .150, p < .05$). Sharing commitment to the online community has a significant positive effect as expected on brand love (H6: $\beta = .710, p < .001$). Regarding the negative impacts of proneness, it is significant on sharing commitment to the online community via a direct effect (H7: $\beta = -.146, p < .05$), and significant on brand love via an indirect effect (H8: $\beta = -.104\ p < .05$).

4 Discussion and Implications

This study makes key theoretical contributions. It provides new insights into how specific signals affect consumers' sharing commitment with a specific focus on the negative impact of consumer relationship proneness. While signaling theory focuses on the two-way linear relationship between the sender (i.e. the brand) and the receiver (i.e. the consumer), we believe within the context of online communities, it is crucial to recognize the complex relationships between members and their effect on the community; it is a network of relationships that cannot be controlled by the brand and is affected by similarity with members and CRP.

Brands are using an increasing number of signals to entice customers to commit to their online brand community. This study makes several managerial contributions. First, within online brand communities, the relationship quality between members can be dynamic and evolving, brands need not only to regularly monitor users' interaction and expectations but also to examine how they are evolving, so that the communicated value is continually updated to ensure commitment. Second, from a CRP point of view, brands must focus on content marketing and management. Indeed, companies would need to provide relevant and interesting information that would keep members committed to the community which in turn would minimize the negative effect of CRP. Third, brands will have to create innovative online sharing communities that foster the engagement and sense of belonging around the followed brand. This will enable brands to heighten consumers' attachment to the community and hence limit members switching to other sharing communities.

Fourth, as the similarity with members is the core base for fruitful interaction and better quality of information, managers of online brand community must identify the key traits and similar characteristics that are likely to be shared between members and help members to notice them. Managers of online sharing communities should actively encourage members' interaction on events and news that are likely to resonate well with all members, provoking better exchange of information.

5 Conclusion and Future Research

The literature has long discussed CRP to joining online sharing communities not as a negative variable. In fact, research on this area of interest has rather studied CRP as an engagement motive in online communities to access information. This study's

contributions focus on addressing the channel overload effects from CRP to joining other online sharing communities and the implications for online brand communities and brand love. The key findings are two-fold; (1) information quality, similarity with members and interaction are crucial for a high commitment to sharing within the brand community, and (2) a high level of CRP can significantly and negatively impact consumers' commitment to sharing in the online brand community while also affecting brand love.

The study is not without limitations as it mostly focuses on consumer products (hereby mobile phones) and one social platform (Facebook). Future studies can be replicated on different platforms and for different product categories. In addition, future studies that aim at replicating this study could use bigger sample sizes across different markets.

References

Akoury, C.: Immersive experiences as the condition of possibility for affective spacing. Continuum **34**(6), 955–963 (2020)

Bairrada, C.M., Coelho, F., Coelho, A.: Antecedents and outcomes of brand love: utilitarian and symbolic brand qualities. Eur. J. Mark. **52**(3/4), 656–682 (2018)

Brown, J., Broderick, A.J., Lee, N.: Word of mouth communication within online communities: conceptualizing the online social network. J. Interact. Mark. **21**(3), 2–20 (2007)

Carroll, B.A., Ahuvia, A.C.: Some antecedents and outcomes of brand love. Mark. Lett. **17**(2), 79–89 (2006)

Chan, K.W., Li, S.Y.: Understanding consumer-to-consumer interactions in virtual communities: the salience of reciprocity. J. Bus. Res. **63**(9), 1033–1040 (2010)

Cui, C., Mrad, M., Hogg, M.K.: Brand addiction: exploring the concept and its definition through an experiential lens. J. Bus. Res. **87**, 118–127 (2018)

Dunbar, R.I.M.: Cognitive constraints on the structure and dynamics of social networks. Group Dyn. Theory Res. Pract. **12**(1), 7 (2008)

Engle-Warnick, J., Laszlo, S., Sayour, N.: Experimental evidence on personality traits and preferences. Bull. Econ. Res. **72**(3), 288–317 (2020)

Fournier, S., Dobscha, S., Mick, D.: Preventing the premature death of relationship marketing. Harvard Bus. Rev. **76**, 42–51 (1998)

Gupta, S., Kim, H.W.: Developing the commitment to virtual community. Inf. Resour. Manag. J. **20**(1), 28–45 (2007)

Hamadeh, W., Bahous, R., Diab, R., Nabhani, M.: Using social media to enhance second language learning. Comput.-Assist. Lang. Learn. Electron. J. **21**(2), 132–149 (2020)

Huang, C.C., Fang, S.C., Huang, S.M., Chang, S.C., Fang, S.R.: The impact of relational bonds on brand loyalty: the mediating effect of brand relationship quality. Manag. Serv. Qual. **24**(2), 184–204 (2014)

Islambouli, R., Sweidan, Z., Mourad, A., Abou-Rjeily, C.: Towards trust-aware IoT hashing offloading in mobile edge computing. In: 2020 International Wireless Communications and Mobile Computing (IWCMC), pp. 2216–2221. IEEE (2020)

Jang, H., Olfman, L., Ko, I., Koh, J., Kim, K.: The influence of on-line brand community characteristics on community commitment and brand loyalty. Int. J. Electron. Commer. **12**(3), 57–80 (2008)

Khobzi, H., Lau, R.Y., Cheung, T.C.: The outcome of online social interactions on Facebook pages: a study of user engagement behavior. Internet Res. **29**(1), 2–23 (2019)

Lin, J., Li, L., Yan, Y., Turel, O.: Understanding Chinese consumer engagement in social commerce: the roles of social support and swift guanxi. Internet Res. **28**(1), 2–22 (2018)

Ma, W.W., Chan, A.: Knowledge sharing and social media: altruism, perceived online attachment motivation, and perceived online relationship commitment. Comput. Hum. Behav. **39**, 51–58 (2014)

Mahdi, A., Farah, M.F., Ramadan, Z.: What to believe, whom to blame, and when to share: exploring the fake news experience in the marketing context. J. Consum. Mark. (2022)

Meek, S., Ryan, M., Lambert, C., Ogilvie, M.: A multidimensional scale for measuring online brand community social capital. J. Bus. Res. **100**, 234–244 (2019)

Mrad, M., Cui, C.C.: Consumer pleasure or guilt: luxury fashion brand addiction and social media marketing: an abstract. In: Rossi, P., Krey, N. (eds.) AMSWMC 2018. DMSPAMS, pp. 171–171. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-02568-7_49

Mrad, M., Cui, C.: Comorbidity of compulsive buying and brand addiction: an examination of two types of addictive consumption. J. Bus. Res. **113**, 399–408 (2020)

Mrad, M., Majdalani, J., Cui, C., El Khansa, Z.: Brand addiction in the contexts of luxury and fast-fashion brands. J. Retail. Consum. Serv. **55**, 102089 (2020)

Ramadan, Z., Abosag, I.: Saturated nation in social networking sites; an examination of the negative effect of facebook's brand communities on brand-consumer relationship. In: Obal, M., Krey, N., Bushardt, C. (eds.) Let's Get Engaged! Crossing the Threshold of Marketing's Engagement Era, pp. 491–494. Springer, Cham (2016). https://doi.org/10.1007/978-3-319-11815-4_144

Ramadan, Z.: Examining the dilution of the consumer-brand relationship on facebook: the saturation issue. J. Cetacean Res. Manag. **20**(3), 335–353 (2017)

Ramadan, Z., Farah, M.F., Abosag, I., Sleiman, A.: Typology of E-commerce Shoppers: The Case of Covid-19. Qualitative Market Research (2023, in press)

Ramadan, Z., Kanso, J.: Zomato: Shaping the future of food. Emerging Markets Case Studies (2023, in press)

Shane-Simpson, C., Schwartz, A.M., Abi-Habib, R., Tohme, P., Obeid, R.: I love my selfie! An investigation of overt and covert narcissism to understand selfie-posting behaviors within three geographic communities. Comput. Hum. Behav. **104**, 106158 (2020)

Schembri, S., Latimer, L.: Online brand communities: constructing and co-constructing brand culture. J. Mark. Manag. **32**(7/8), 628–651 (2016)

Wang, E.S.T., Chen, L.S.L.: Forming relationship commitments to online communities: the role of social motivations. Comput. Hum. Behav. **28**(2), 570–575 (2012)

Wirtz, J., et al.: Managing brands and customer engagement in online brand communities. J. Serv. Manag. **24**(3), 223–244 (2013)

Zeeni, N., Abi Kharma, J., Mattar, L.: Social media use impacts body image and eating behavior in pregnant women. Curr. Psychol. 1–8 (2021)

Zhang, K.Z.K., Barnes, S.J., Zhao, S.J., Zhang, H.: Can consumers be persuaded on brand microblogs? An empirical study. Inf. Manag. **55**, 1–15 (2018)

Who Buys When and Where? How Channel Design and Consumer Attributes Influence Customer Journey Outcomes

Nadine Ampler, Christian Koch(✉), and Rainer Olbrich

University of Hagen, Hagen, Germany
{nadine.ampler,christian.koch,
lehrstuhl.marketing}@fernuni-hagen.de

Abstract. We analyze the extent to which purchase decisions are predetermined by consumer behavior along the customer journey. In this manner, we identify influencing factors that can improve accuracy of customer journey analysis and revenue forecasting. Based on 54,967 customer journey contacts, collected between 2012 and 2020, we run moderator analyses to measure interaction effects on sales of seven consumer attributes and search behaviors. The study shows that channels, number of contacts, time of day, and channel design moderate the effect between customer journey contacts and sales significantly. While previous customer journey research has focused on which channels consumers use, and how many sales were made through those channels, we broaden this perspective by identifying additional variables that must be considered in customer journey analysis. By doing so, we explain differences in customer journey effectiveness better, and help practitioners to improve media budget allocation and create customer-centric marketing strategies.

Keywords: Customer Journey · Customer Journey Analysis · Paid Search

1 Introduction

Technological progress has led to the emergence of numerous touchpoints, offering consumers new opportunities to better inform themselves through different channels and to meet their individual needs in a more targeted way. This evolution is leading to richer, more diverse, and more complex customer journeys, as consumers and advertisers now interact across multiple channels (Verhoef et al. 2015; Grewal et al. 2016; Lemon and Verhoef 2016; Schweidel et al. 2022). This complexity makes it necessary for companies to map and examine critical components of the customer journey to identify key satisfying and dissatisfying elements in the buying process (Richardson 2010; Rawson et al. 2013; Patti et al. 2020).

Understanding what factors influence customer journeys and their dynamics is a key for companies to deliver a strong and holistic customer experience (Åkesson et al. 2014; Koch et al. 2023). In this context, previous research on customer journeys has largely

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 9–19, 2023.
https://doi.org/10.1007/978-3-031-31836-8_2

focused on the distinction of buying phases as well as the documentation of customer movements and decision-making behaviors in these phases (Schweidel et al. 2022).

Customer journey analysis measures the advertising impact of using attribution models that primarily consider which channels consumers use during their buying process and how many sales were generated from the used channels (e.g., Klapdor et al. 2015; Anderl et al. 2016).

Few studies consider large sets of real transaction data that include information about consumers, their search behavior, or channel design. Especially considering the increasing importance of customer-centric business strategies (Crosier and Handford 2012), this consumer information can influence the results of customer journey analysis. Recent studies based on questionnaire data show that the perceived quality of the channel influences consumers' purchase intention in the customer journey (Koch and Hartmann 2022). This suggests that the promotional effectiveness of a channel can only be assessed by considering its design.

To address this research gap, with this paper we aim to identify further variables with an influence on the outcome of the customer journey, to improve the accuracy of the customer journey analysis. The focus of the study will be the question how channel design and consumer attributes influence customer journey outcomes. For the empirical studies, we evaluate data from 54,967 customer journey contacts using moderator analyses, which were determined over a period of 9 years. The influence of the channel design on the outcome of the customer journey is examined in this context using the example of 33,664 contacts via the paid search channel.

This study helps researchers to better explain differences in customer journey effectiveness by identifying factors that influence customer behavior in the context of the customer journey. We also deepen the current perspective on customer journey analysis by analyzing whether channel design influences consumer purchase behavior. Researchers can use our results to further develop previous attribution models that also consider the actual channel design to measure advertising effectiveness more accurately.

Finally, our analysis can help advertisers address several explicit management problems that they commonly face. We enable advertisers to develop customer-centric marketing strategies by revealing when and how best to reach which consumers to drive sales. Our study also enables advertisers to improve conversion rates by revealing which design is most effective for paid search ads. Finally, we help advertisers improve media budget allocation and revenue forecasting by developing a holistic approach to customer journey analysis.

2 Theoretical Background

2.1 Influencing Factors in Customer Journeys

The phrase customer journey refers to the various stages and touchpoints that customers go through before making a purchase or consuming a product and that influence their customer experience (Lemon and Verhoef 2016; Følstad and Kvale 2018). The goal of customer journey analysis is to show which touchpoint alternatives are offered to consumers during the various purchase phases, which ones they choose, and how the choice effects the purchase result (Lemon and Verhoef 2016; Verhoef et al. 2016). In this

line, customer touchpoints are places of contact or communication between companies and customers that influence brand perception (Jenkinson 2007; Kuehnl et al. 2019).

Along the customer journey, the channels with which consumers come into contact with a company represent possible touchpoints. Consumers prefer distinct channels that impact their purchasing behavior directly or indirectly and play diverse roles in persuading customers to buy (Li and Kannan 2014; Lemon and Verhoef 2016; Koch et al. 2023). This is due to differences in channels' capacity to develop communication between customers and businesses (van der Veen and van Ossenbruggen 2015). To allow integrated and profitable management of customer contacts, it is vital to understand which variables drive channel selection and how channel selection influences sales performance (Melero et al. 2016).

The impact of the channels employed, the number of channels, and the position of the channels on the result of the customer journey has previously been demonstrated in numerous studies, including regression-based models (e.g., Klapdor et al. 2015). Furthermore, there are studies that use attribution models, such as those based on Markov chains, to determine the advertising impact of channels, considering used channels and their position in the customer journey, and showing that channels contribute differently to business success (e.g., Anderl et al. 2016). Other elements that can influence purchase behavior, in addition to channels and their position in the customer journey, have only been irregularly investigated. Regarding consumer attributes, Li et al. (2018) demonstrate that prognosis models that consider the age and gender of consumers predict conversion probabilities better. However, there are affecting elements related to the consumer's journey. For example, Li and Kannan (2014) demonstrate that transfer effects and spillover effects of channels influence the result of a customer journey. Variables such as promotional offers, checkout sessions, and days of the week, as demonstrated by De Haan et al. (2016), can help to explain sales revenues. According to Li et al. (2018), the registration date can also assist forecast the conclusion of a customer journey.

Other elements along the customer journey can potentially influence consumer purchasing behavior in addition to the ones outlined. Furthermore, previous research has not considered the fact that the influence of channels on the outcome of the customer journey can vary depending on how they are designed. As a result, we will analyze how much the design of paid search, as one of the most extensively utilized advertising channels (IAB 2021), influences purchase behavior and should thus be included as part of the customer journey analysis.

2.2 Paid Search

Paid search is a text-based form of personal online advertising generated by the search engine user entering keywords (Burns 2005). In this form of paid search, advertisers decide beforehand on which keywords should display their ads to search engine users (Olbrich et al. 2015; Li and Yang 2022). In this way, advertisers try to select keywords that are either entered exactly by search engine users or at least match the intended search content (Jansen and Mullen 2008).

For more specific ad placement, advertisers can choose between different match types (Li and Yang, 2022). This allows ads to be placed for a more or less broad target

group. With the Google search engine, advertisers have 3 different match types at their disposal.

While the use of an exact match limits the display of the ad to very similar search terms, the ads of keywords that are provided with phrase match are also displayed for similar variants of the search term. Keywords of the broad match type are the most widely used. The keywords do not have to be contained directly in the search query of the search engine user in order to be displayed. Broad matches are most successful at the beginning of the customer journey, as search engine users start their search with generic keywords and gradually focus their search (Blankenbaker and Mishra 2009; Li and Yang 2022).

In addition to the match types, the keyword category is a fundamental factor influencing the number of sales. Studies showed that brand keywords lead to a higher number of sales than generic keywords (Yang et al. 2020). Likewise, more specific keywords improved the number of sales compared to generic keywords (Lu and Zhao 2014). In the customer journey, generic keywords are often used at the beginning of the product search. Brand keywords, on the other hand, are often used by consumers who are closer to the purchase (Dhar and Ghose 2010; Kim et al. 2021).

3 Research Design and Statistical Analysis

3.1 Research Design

The study contains customer journey data of a service provider. The offered services are characterized by high psychological and financial risks that induce high involvement and rational choice behavior by most of the target group. On the company website, the company offers the possibility to request further information material on the services offered. These information requests (contacts) and resulting sales are central variables of this study.

The data of the dataset were collected via an automated database in the period from 01.01.2012 to 31.12.2020. The dataset was aggregated on a monthly basis in order to obtain a result over the past 9 years as decisively as possible. The sample size of $N = 54{,}967$ is derived from the individual data lines. Each data line contains one information request from a customer to the company.

The data set contains various information on how the contact between the customer and the company came about. The dataset includes information on the consumer's gender as well as the time of day. Due to the long survey period, gender was coded exclusively in binary form, 0 standing for male. On the other hand, the time of day was scaled nominally. A 24-h day was divided into 4-time intervals (morning, noon, evening, night) of 6 h each, beginning with the morning at 6 A.M. The data set also contains information on the day of the week when the contact was made. This variable is therefore nominally scaled with values from 1–7 beginning on Monday. Also, the number of the contact is presented in the data set. This indicates how many times the customer has previously contacted the company, including the most recent contact. The number of contacts varies between 1–3 and is ratio scaled. Another variable in the data set is the channel through which contact was established between the customer and the company. Additionally, consumers specify how they became aware of the company when contacting it. This

value is used if no channel is identified by tracking. The six channels investigated are paid search, organic search, affiliate marketing, telemarketing, referral marketing, and recommendations by acquaintances. Thus, the variable channel is nominally scaled.

In the dataset, 33,679 contacts (2,456 sales) were generated via paid search, corresponding to 61.24% (48.70%) of the total dataset. To determine the extent to which the design of this channel influences consumer buying behavior, the dataset also contains the keyword match type and keyword category of the underlying search query.

Regarding the paid search channel, the variables keyword match type and keyword category were also integrated into the data set. The keyword match type is ordinally scaled and indicates the proximity of the ad to the consumer's search term on a scale of 1–3. While keyword match type 1 corresponds exactly to the entered search term, keyword match type 2 moves the ad further away from the consumer's actual search term. With the third keyword match type, the ad merely corresponds to the search term in the meaning of the search query.

The keyword category, like the keyword match type, refers only to queries and purchases made through the paid search channel. The keyword category structures the keywords according to their content. While category 1 contains the brand or company name, those keywords that exclusively contain a product fall under category 2. Keywords that contain both a brand or company name and a product are assigned to keyword category 3.

Moderation analyses were run to determine whether the interaction between contacts and each of the seven investigated variables significantly predicts sales. For each analysis, two regression models are calculated. Model 1 independently determines the influence of the moderator and the predictor (contacts) on sales. In model 2, the interaction term of the predictor and moderator variable is included in the analysis. The difference between the R2 values (R2 change) of the two models can be used to assess whether the interaction term (and thus the moderation effect) is large enough to be considered a significant effect. In case of a significant result, we additionally calculated Cohen's f^2 as a measure of effect size. Cohen (1988) suggested that f^2 effect sizes of .02 are considered small, .15 medium, and .35 large.

We used the PROCESS macro by Hayes (2018) to conduct the moderator analy-ses. The macro uses ordinary least squares regression, yielding unstandardized coefficients for all effects. In addition, all analyses were recalculated using a hierarchical regression model with mPlus to validate the results. Bootstrapping with 5,000 samples together with heteroscedasticity consistent standard errors (HC3; Davidson and MacKinnon 1993) were employed to compute the confidence intervals.

3.2 Statistical Analysis

In the following, we present the results for each of the moderator variables. Table 1 summarizes the results of the moderator analyses, including information on the R^2 of the models without interaction term (Model 1) and with interaction term (Model 2).

The first moderator studied was the channel. The moderation analysis showed that the channel significantly moderated the effect between contacts and sales, $\Delta R^2 = 1.43\%$, $F(1, 700) = 37.940$, $p < .001$, 95% CI[−.014, .027]. The effect size is $f^2 = .053$. Accordingly, the variable channel moderates the influence of contacts on sales

Table 1. Results moderator analyses

	R^2 Model 1	R^2 Model 2	R^2 Change	df 1; df 2	F	LLCI; ULCI	Cohen's f^2
Channel	.721	.735	.014	1; 700	37.940*	−.014; .027	.053
Contact Number	.797	.814	.017	1; 350	32.603*	.066; .135	.091
Gender	.388	.397	.009	1; 232	3.276	−.002; .042	-
Day	.415	.415	.000	1; 822	.396	−.003; .005	-
Day Time	.669	.683	.014	1; 468	21.276*	−.024; −.009	.044
Keyword Category	.700	.720	.020	1; 349	25.422*	.009 .021	.071
Keyword Match Type	.830	.830	.000	1; 244	.004	−.010 .011	-

$p < .001$

with a low to medium effect size. In interpreting these effect sizes, however, it should be noted that Aguinis, Beaty, Boik, and Pierce (2005) found that the average effect size for moderation tests is only .009. In this context, Cohen also points out that even effect sizes classified as small can have considerable practical and theoretical significance (Cohen 1988; Cohen et al. 2003). Finally, to derive specific implications, we compared conversion rates (contact to sale) of the individual channels. The comparison leads to the conclusion that contacts via passive telemarketing (16.88%), recommendations from acquaintances (15.53%) and organic search results (15.04%) have the highest conversion rates. Interestingly, there is a big difference between organic search results and paid searches (7.30%), showing that consumers are less likely to buy if they consciously perceive results as advertising. This is also matched by the result of affiliate marketing, which has the lowest conversion rate of the compared channels (1.58%). Conversion probabilities are summarized in Table 2.

The further variables were examined using the same procedure, followed by the variable contact number. Moderation analysis showed that contact number moderated the effect between contacts and sales significantly, $\Delta R^2 = 1.73\%, F(1, 350) = 32.603, p < .001, 95\%$ CI[.066, .135]. The effect size is $f^2 = .091$, which also corresponds to a small to medium effect, but larger than for the channel variable. The conversion probability for customer journeys with one contact is 7.30%, while customer journeys with two contacts have a conversion probability of 21.16% and with three contacts the conversion probability is 25.76%. In conclusion the results show that with an increased number of contacts the probability of buying increases as well.

The third variable was gender. Moderation analysis showed that gender did not significantly moderate the effect between contacts and sales, $\Delta R^2 = .85\%, F(1, 232)$

= 3.276, p = .072, 95% CI[−.002, .042]. No significant influence could be detected for the moderator variable day either, ΔR^2 = .00%, $F(1, 822)$ = .396, p = .529, 95% CI[−.003, .005].

The fifth variable was time of day. The moderation analysis showed that the time of day significantly moderated the effect between contacts and sales, ΔR^2 = 1.44%, $F(1, 468)$ = 21.276, p < .001, 95% CI[−.024, −.009]. The effect size was determined to be f^2 = .044, which corresponds to a rather small effect compared to the other effect sizes. The results indicates that the conversion probability reduces the later it gets. Thus, the conversion probability is 9.97% in the morning, 9.92% at noon, 7.74% in the evening, and 4.99% at night.

Finally, the moderator variables that relate specifically to paid search ads were examined, starting with the keyword category. Keyword category significantly moderated the effect between contacts and sales for the paid search channel, ΔR^2 = 2.04%, $F(1, 349)$ = 25.422, p < .001, 95% CI[.009, .021]. The effect size was determined to be f^2 = .071, which is the second highest effect size after contact number. A look at the conversion probabilities demonstrates that the combined use of brand and product related keywords (9.56%) are more successful than only using brand (6.72%) or product (6.33%) related keywords.

The last variable, keyword match type, did not significantly moderate the effect between contacts and sales, according to moderation analysis, ΔR^2 = .00%, $F(1, 244)$ = .004, p = .953, 95% CI[−.010, .011].

Table 2. Results conversion probabilities

	Conversion Probabilities (%)					
Channel	PS	OS	AM	TM	RA	RM
	7.30	15.04	1.58	16.88	11.59	15.53
Contact Number	1	2	3			
	7.30	21.16	25.76			
DayTime	Morning	Noon	Evening	Night		
	9.97	9.92	7.74	4.99		
Keyword Category	B&P	Brand	Product			
	9.56	6.72	6.33			

PS = paid search; OS = organic search; AM = affiliate marketing; TM = telemarketing; RA = recommendations from acquaintances; RM = referral marketing; B & P = brand and product

4 Discussion and Implications

In the following, the empirical results are discussed against the background of current research contributions. First, the study confirms the influence of channels and the number of contacts on the outcome of the customer journey (e.g., Anderl et al. 2016). In addition

to the already known influencing factors, with the time of day of the contact, another previously unknown variable of the search behavior with influence on the purchase probability was discovered. No influence was found regarding consumer gender, in contrast to the study by Li et al. (2018).

It should be noted, however, that the authors measure the influence of gender on the probability of conversion, but the event of conversion is not further defined and therefore, unlike our study, may not measure an actual purchase. Also, the advertised offer is not known and may differ. In addition, our study did not demonstrate an influence of the day of the week and keyword option, suggesting that not all factors within the customer journey are suitable as predictors of sales. Under certain circumstances, the result for the influence of keyword options may be different if the specific content of the keywords is considered (Du et al. 2017). A particular focus is the finding that the keyword category within a paid search has an impact on the likelihood of purchase. In the study, the combination of brand and product keywords resulted in the highest probability of conversion. This result extends previous research showing that brand keywords (Yang et al. 2020) and more specific keywords (Lu and Zhao 2014) lead to a higher number of sales than generic keywords. In this context, we show that the effectiveness of brand keywords can be increased by adding product keywords.

The findings of our analysis provide a basis to derive implications for research and practice regarding customer journey analysis and channel management. From a scientific point of view, the results suggests that deep knowledge about attributes and the search behavior of consumers is useful, but often not considered in empirical studies on customer journey analysis. Therefore, we suggest that investigated attribution and forecasting models must consider further and deeper details about search behaviors of consumers (such as time of contact) and the specific channel design. To further consider channel specific factors in customer journey analysis, such as the channel design, there is need for cross-disciplinary-research including studies that combine attribution modelling with research on customer journey and user experience design. In this context, data is the new currency in online marketing. Therefore, there is a further research need to attract users to share data to enable in-depth customer journey analysis and to create customer-centric marketing strategies.

From a practical perspective, the findings suggest that advertisers should evaluate manifold data about their consumers to increase the accuracy of customer journey analysis. This, in turn, will allow them to improve budget allocation and revenue forecasting by better targeting consumers with their advertising. When allocating media budget between channels, companies must analyze if it is more useful to promote channels that are performing well at the time of analysis or if it is more profitable to invest in the design of underperforming channels to increase conversion rates. In this vein, our study illustrates that for example conversion rates of the paid search channel can increase up to 51.03% when using a combination of brand and product related keywords (9.56%) instead of only product related keywords (6.33%). Also, the time of day of advertising can be helpful to improve budget allocation, if ads are just placed in predefined time slots. For example, our results show that the conversion rates of ads in the morning (9.97%) are 99.80% higher than in the night (4.99%). Finally, advertisers should offer different channels within a coherent customer journey to increase multiple channel usage. Here,

our results imply that consumers prefer channels that are not marked as advertisements. For example, the conversion rate of organic search results (15.04%) is 106.03% higher than for paid search (7.30%). Companies should not only invest their marketing budget in paid advertising but increase the use of content-based channels to build a strong company brand and increase conversion rates.

5 Limitations of the Study and Future Research Direction

We acknowledge several limitations of our research that point to worthwhile future research avenues. First, the study did not consider interactions between moderators, e.g., in the sense of whether the influence of channels on purchase probability varies by gender. Second, regarding the design of keywords and their influence on purchase behavior, only one channel, paid search, was studied in detail. Future studies should investigate other channels and design approaches, such as organic search results, whose design can be influenced by a web page's meta description, among other factors. Third, by looking at customer journey data over a 9-year period, we did not perform a dynamic customer journey analysis, although the impact of moderators may have changed over time. Finally, there are other factors along the customer journey that may influence consumer behavior. Thus, our research provides a foundation for further studies to better understand consumer behavior in the customer journey and improve the marketing effectiveness of advertisers.

References

Åkesson, M., Edvardsson, B., Tronvoll, B.: Customer experience from a self-service system perspective. J. Serv. Manag. **25**(5), 677–698 (2014)

Aguinis, H., Beaty, J.C., Boik, R.J., Pierce, C.A.: Effect size and power in assessing moderating effects of categorical variables using multiple regression: a 30-year review. J. Appl Psychol. **90**, 94–107 (2005)

Anderl, E., Becker, I., von Wangenheim, F., Schumann, J.H.: Mapping the customer journey: lessons learned from graph-based online attribution modelling. Int. J. Res. Mark. **33**(3), 457–474 (2016)

Blankenbaker, J., Mishra, S.: Paid search for online travel agencies: exploring strategies for search keywords. J. RPM **8**(2–3), 155–165 (2009)

Burns, K.: New technology briefing: ten golden rules to search advertising. J. Interact. Mark. **6**(3), 248–252 (2005)

Cohen, J.: Statistical Power Analysis for the Behavioral Sciences. Erlbaum, Hillsdale (1988)

Cohen, J., Cohen, P., West, S.G., Aiken, L.S.: Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, 3rd edn. Erlbaum, Mahwah (2003)

Crosier, A., Handford, A.: Customer journey mapping as an advocacy tool for disabled people: a case study. Soc. Market. Q. **18**(1), 67–76 (2012)

Davidson, R., MacKinnon, J.G.: Estimation and Inference in Econometrics. Oxford University Press, Oxford (1993)

De Haan, E., Wiesel, T., Pauwels, K.: The effectiveness of different forms of online advertising for purchase conversion in a multiple-channel attribution framework. Int. J. Res. Mark. **33**(3), 491–507 (2016)

Dhar, V., Ghose, A.: Research commentary – sponsored search and market efficiency. Inf. Syst. Res. **21**(4), 760–772 (2010)
Du, X., Su, M., Zhang, X., Zheng, X.: Bidding for multiple keywords in sponsored search advertising: keyword categories and match types. ISR **28**(4), 711–722 (2017)
Følstad, A., Kvale, K.: Customer journeys: a systematic literature review. J. Serv. Theory Pract. **28**(2), 196–227 (2018)
Grewal, D., Roggeveen, A.L., Nordfält, J.: Roles of retailer tactics and customer-specific factors in shopper marketing: Substantive, methodological, and conceptual issues. J. Bus. Res. **69**, 1009–1013 (2016)
Hayes, A.F.: Introduction to Mediation, Moderation, and Conditional Process Analysis, Second Edition (Methodology in the Social Sciences), 2nd edn. Guilford Press (2018)
IAB. Internet Advertising Revenue Report – Full-year 2021 results (2021). https://www.iab.com/wp-content/uploads/2022/04/IAB_Internet_Advertising_Revenue_Report_Full_Year_2021.pdf. Accessed 06 Sept 2022
Jansen, B.J., Mullen, T.: Sponsored search: an overview of the concept, history, and technology. Int. J. Electron. Bus. **6**(2), 114–131 (2008)
Jenkinson, A.: Evolutionary implications for touchpoint planning as a result of neuroscience: a practical fusion of database marketing and advertising. J. Database Mark. Cust. Strategy Manag. **14**(3), 164–185 (2007)
Kim, A.J., Jang, S., Shin, H.S.: How should retail advertisers manage multiple keywords in paid search? J. Bus. Res. **130**(3), 539–551 (2021)
Klapdor, S., Anderl, E., Schumann, J.H., von Wangenheim, F.: How to use multichannel behavior to predict online conversions: behavior patterns across online channels inform strategies for turning users into paying customers. J. Advert. Res. **55**(4), 433–442 (2015)
Koch, C., Hartmann, M.: The impact of a company website and its perceived quality on the buying intention in B2B-settings. In: Martínez-López, F.J., Martinez, L.F. (eds.) Advances in Digital Marketing and eCommerce, pp. 9–18. Springer, Cham (2022)
Koch, C., Lindenbeck, B., Olbrich, R.: Dynamic customer journey analysis and its advertising impact. J. Strateg. Mark. (2023)
Kuehnl, C., Jozic, D., Homburg, C.: Effective customer journey design: consumers' conception, measurement, and consequences. J. Acad. Mark. Sci. **47**(3), 551–568 (2019). https://doi.org/10.1007/s11747-018-00625-7
Lemon, K., Verhoef, P.: Understanding customer experience throughout the customer journey. J. Mark. **80**(6), 69–96 (2016)
Li, H., Yang, Y.: Keyword targeting optimization in sponsored search advertising: combining selection and matching. Electron. Commer. Res. Appl. **56**, 101209 (2022)
Li, H.A., Kannan, P.K.: Attributing conversions in a multichannel online marketing environment: an empirical model and a field experiment. J. Mark. Res. **51**(1), 40–56 (2014)
Li, N., Arava, S.K., Dong, C., Yan, Z., Pani, A.: Deep neural net with attention for multi-channel multi-touch attribution. In: Proceedings of the AdKDD 2018 Workshop as part of 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 19–23 August 2018, London, pp. 1–6 (2018)
Lu, X., Zhao, X.: Differential effects of keyword selection in search engine advertising on direct and indirect sales. J. Manag. Inf. Syst. **30**(4), 299–326 (2014)
Melero, I., Sese, F., Verhoef, P.: Recasting the customer experience in today's omni channel environment. Universia Bus. Rev. **50**(13), 18–37 (2016)
Olbrich, R., Schultz, D.C., Holsing, D.: Electronic Commerce und Online-Marketing, Heidelberg (2015)
Patti, C.H., van Dessel, M.M., Hartley, S.W.: Reimagining customer service through journey mapping and measurement. Eur. J. Mark. **54**(10), 2387–2417 (2020)

Rawson, A., Duncan, E., Jones, C.: The truth about customer experience. Harv. Bus. Rev. **91**(9), 90–98 (2013)

Richardson, A.: Using customer journey maps to improve customer experience. Harv. Bus. Rev. **15**(1), 2–5 (2010)

Schweidel, D.A., et al.: How consumer digital signals are reshaping the customer journey. J. Acad. Mark. Sci. (2022)

Van der Veen, G., van Ossenbruggen, R.: Mapping out the customer's journey: customer search strategy as a basis for channel management. J. Mark. **22**(3), 202–213 (2015)

Verhoef, P.C., Kooge, E., Walk, N.: Creating Value with Big Data Analytics: Making Smarter Marketing Decisions, New York (USA) (2016)

Verhoef, P.C., Pallassana, K., Kannan, J., Inman, J.: From multi-channel retailing to omni-channel retailing: introduction to the special issue on multi-channel retailing. J. Retail. **91**, 174–181 (2015)

Yang, Z., Wu, Y., Lu, C., Tu, Y.: Effects of paid search advertising on product sales: a Chinese semantic perspective. J. Mark. Manag. **36**(15–16), 1481–1504 (2020)

Descending Beats Ascending: Effects of Order on the Likert Scale on Consumer Ratings

Takumi Kato(✉)

School of Commerce, Meiji University, Tokyo, Japan
takumi_kato@meiji.ac.jp

Abstract. In marketing surveys, the question order bias and response order bias are known from the viewpoint of order, while the response scale bias and central tendency bias are known from the viewpoint of the Likert scale, and a large amount of literature exists to support this. However, there is no evidence of bias due to the ascending or descending order of the Likert scale. This study filled this gap. An online survey of loyalty at Japanese universities was collected from 338 individuals. The result showed that since respondents prefer the first option, the descending order with the highest score on the upper side obtained a higher score. When determining the loyalty indices on the Likert scale in measuring marketing effectiveness, the true effectiveness cannot be known unless the order of options is consistent. In addition, since less serious respondents prefer higher options, the ascending order should be adopted to improve the quality of answers with good scores. This makes it possible to improve the accuracy of identifying customers with high loyalty. Thus, ascending options in the loyalty index question eliminate spurious loyalty due to insincere answers. Research design that understands the mechanisms of bias and limits uncertainty is essential in both business and academic research. This study provides useful suggestions for effect measurement, which is indispensable in digital marketing.

Keywords: Likert scale · Question order bias · Response order bias · Response scale bias · Central tendency bias

1 Introduction

Accurate measurement of consumer opinions and attitudes is essential for developing better practical strategies and advancing science (Yüksel 2017). However, the human cognitive structure is highly uncertain and difficult to fully understand. Hence, it is important to understand the mechanisms of bias and develop quantification processes that deter uncertainty (Kundu et al. 2022). Addressing bias is fundamental to scientific contexts that demand reproducible findings (Kent et al. 2018).

There are three main types of bias in marketing survey. The first is sampling bias, which is caused by the bias of the sample population compared to the population. The second is investigator bias, in which the investigator's characteristics and unique hypotheses

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 20–28, 2023.
https://doi.org/10.1007/978-3-031-31836-8_3

consciously or unconsciously distort the results. The third is response bias, in which participants are unable to express their true memories and attitudes under the influence of the environment and conditions (Walters 2021).

This study focuses on the response bias. The existing literature has identified various types of response bias: non-response bias, acquiescence bias, self-efficacy bias, and social desirability bias. From another point of view, order is an important factor in the mechanism that produces bias, known as question order bias and response order bias. However, the effect of an ascending or descending Likert scale has not been clarified. This study targets Japanese universities and examines the effects of ascending and descending Likert scales on consumer evaluation.

2 Related Work and Hypothesis

There are two main types of response bias related to order.

Question Order Bias: People's responses change according to the order in which questions are presented. Survey participants, who are asked about their subjective opinions and attitudes, make decisions under uncertainty and adjust until they arrive at plausible estimates based on the information that comes to their minds. At that time, if some kind of stimulus influences perception as an anchor, judgment will be biased (Epley and Gilovich 2006). Anchoring is unconscious in that it is difficult for people to avoid even if they have been forewarned. For example, asking for overall satisfaction before evaluating a particular service results in lower overall user satisfaction compared to the reverse order (Thau et al. 2021).

Response Order Bias: A drawback of studies that assign rankings from multiple product or feature options is that the order in which they are presented influences respondents' choice preferences, regardless of the content being measured (Vriens et al. 2017). This is because consumers tend to prefer the first option (Holzknecht et al. 2021). Even an evaluation of journals for researchers working on the premise of objectivity scores higher for journals at the top of the list (Serenko and Bontis 2013). Accordingly, it is essential to randomize response options (Ashton et al. 2017).

There are two main types of response bias related to the Likert scale.

Response Scale Bias: When people are asked about their subjective attitudes on a scale, they perceive the scale differently (Rossi et al. 2001). For example, subjective measures such as happiness (León et al. 2013) and perceptions of corruption (Lau et al. 2013) are judged at different levels by different people. Simple multinational comparisons are misleading because of cultural differences in response trends (Kato et al. 2022).

Central Tendency Bias: This is a bias that avoids the endpoints of the response scale and favors responses closer to the midpoint (Douven 2018). Due to the country's cultural characteristics, this tendency is more pronounced among Asians (Harzing et al. 2012),

especially the Japanese (Kato et al. 2022). For example, the net promoter score is a loyalty index that shows adverse effects due to its bias. This index is calculated by subtracting the percentage of detractors (respondents 0–6) from the percentage of promoters (respondents 9–10) based on an 11-point scale (0–10) of recommendation intention (Reichheld 2003). Japanese individuals who dislike both ends have an extremely low percentage of promoters, negative NPS scores, and poor function (Seth et al. 2016).

In this way, there is a large body of literature on choice order and Likert scale bias. However, the bias due to the order of the scale, that is, ascending versus descending order, is not clear. Given that respondents prefer the top of the options (Holzknecht et al. 2021), it is assumed that the top of the Likert scale is more likely to be selected. Hence, there is a possibility that the descending order with higher scores on the upper side will work more favorably. From the above, the following hypothesis was derived.

Hypothesis: On the Likert scale in consumer surveys, the descending order yields higher scores than the ascending order.

3 Method

From October 1 to 5, 2022, an online survey of 338 university students in the Tokyo metropolitan area was conducted (Age: mean = 21.012, standard deviation = 1.460, min = 19, max = 25). The subjects were randomly divided into two groups and sorted by ascending group (167 subjects) or descending group (171 subjects) on the Likert scale. In other words, the randomized controlled trial verified the causal effect with high reliability. The questions were about loyalty to the university they attend and satisfaction with five categories: lectures, seminars, administrative services, campuses, and study facilities, as shown in Table 1. All choices are on a five-point Likert scale (Table 2). The descending order group was converted to the same numerical value as the ascending order (Definitely do not agree = 1; Definitely agree = 5) after the survey collection.

There are two verification methods. First, the chi-square test was adopted to examine the relationship between the three loyalty indicators (preference, repurchase intention, and recommendation intention) and the order of the Likert scale. Effect sizes for scale order were evaluated, including other factors for college loyalty. Multiple regression analysis was applied using factors extracted by applying factor analysis to the variables in Table 1. The objective variable was the loyalty factor, and the explanatory variables were the categorical factors and descending order dummy of the scale.

Table 1. Question list

No	Category	Variable	Question
1	Loyalty	LOY_Preference	I love this university
2		LOY_Repurchase	If I was faced with the same choice again, I would still choose the same university
3		LOY_Recommendation	I will recommend this university to my friends and family
4	Lectures	LEC_Large	The university runs quality face-to-face lectures for large classrooms
5		LEC_Small	The university runs quality face-to-face lectures for small classrooms
6		LEC_Online_RT	The university runs quality online lectures (real-time format)
7		LEC_Online_OD	The university runs quality online lectures (on-demand format)
8		LEC_English	The university has a lot of lectures in English
9	Seminars	SEM_Discussion	The university is rich in opportunities for group discussions
10		SEM_Fieldwork	The university is rich in fieldwork and research activities
11		SEM_Presentation	The university is rich in opportunities for presentations
12		SEM_Paper	The university has an excellent guidance system for paper writing
13		SEM_Camp	The university is rich in opportunities for training camps
14	Administrative services	SER_Staff	The administrative staff at the university treat students with courtesy
15		SER_Scholarship	The university has a good scholarship system
16		SER_Counseling	The university has good counseling services
17		SER_Overseas	The university has good support for studying abroad
18		SER_Job	The university has good job-hunting support
19	Campuses	CAM_Location	The university has good access to the campus
20		CAM_Size	The university has a large campus
21		CAM_Nature	The university has a lot of nature on its campus
22		CAM_Urban	The university has an urban campus
23		CAM_Shops	The university has many shops and restaurants on and near the campus

(*continued*)

Table 1. (*continued*)

No	Category	Variable	Question
24	Facilities	FAC_Library	The university has a well-equipped library
25		FAC_Study	The university is well equipped for study and research
26		FAC_IT	The university is well-equipped with IT facilities (PCs, Wi-Fi)
27		FAC_Field	The university has a lot of space and places for club activities
28		FAC_Rest	The university has a lot of rest areas where students can gather

Table 2. Presentation of scales in surveys

Ascending		Descending	
1	Definitely do not agree	1	Definitely agree
2	Do not agree	2	Agree
3	Neutral	3	Neutral
4	Agree	4	Do not agree
5	Definitely agree	5	Definitely do not agree

4 Results

First, the relationship between the loyalty index and the order of the scale was confirmed. As shown in Fig. 1, all three loyalty indices scored higher in descending order than in ascending order. As a result of applying the chi-square test to the matrix of Likert scale and order (ascending/descending order), significant differences were detected in preference and repurchase intention. As shown in Fig. 2, when looking at the differences (descending-ascending) in the 28 questions in Table 2, the scores in descending order were higher in 24 questions. Next, verification results based on university factors were confirmed. Table 3 shows the result of factor analysis by setting the number of factors to 7, which is the number of factors with eigen values exceeding 1.0. The factors are mainly grouped according to the originally set factors. A distinctive feature is that while the seminars and lectures are integrated, the online lectures are independent. In other words, from the student's point of view, they have different properties. Also, the campuses are separated into urban campuses and vast campuses filled with nature. Cronbach's alpha generally met the criteria of 0.8, confirming its validity.

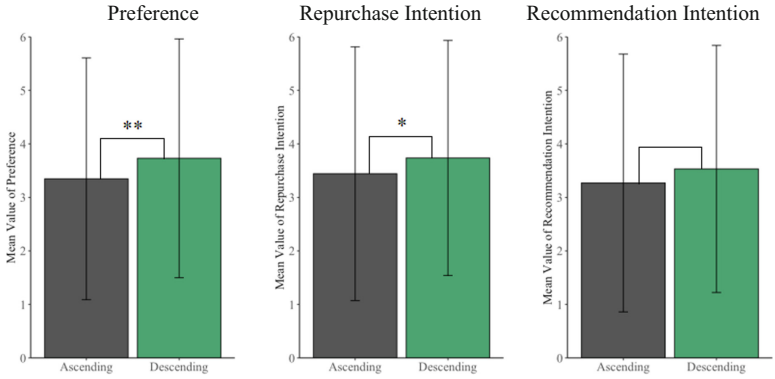


Fig. 1. Loyalty index results by order of scale (***p < 0.001; **p < 0.01; *p < 0.05.)

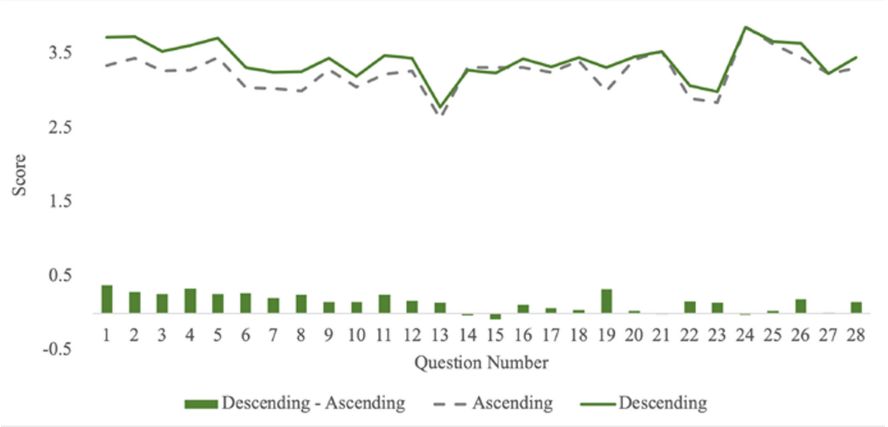


Fig. 2. Difference between ascending and descending scores for each question

As shown in Table 4, the results of multiple regression analysis showed that the descending dummy had a significant positive effect at the 5% level. A model with standardized variables was also built to compare effect sizes with other factors. The most effective factor is study facilities. Next, online lectures, seminars and lectures, and administrative services are highly effective. The descending dummy has a smaller effect size than those factors. Adjusted R-squared values showed good results, confirming the validity of the model. From the above, the hypothesis of this study is supported.

Table 3. Result of factor analysis

Factor	Variable	Loading	Cronbach's alpha
Loyalty	LOY_Repurchase	0.884	0.879
	LOY_Recommendation	0.817	
	LOY_Preference	0.789	
Seminars and lectures	SEM_Discussion	0.909	0.855
	SEM_Presentation	0.878	
	SEM_Fieldwork	0.826	
	SEM_Paper	0.544	
	SEM_Camp	0.523	
	LEC_Small	0.416	
	LEC_English	0.410	
Online lectures	LEC_OnlineRT	0.994	0.783
	LEC_OnlineOD	0.729	
Administrative services	SER_Scholarship	0.892	0.867
	SER_Counseling	0.843	
	SER_Office	0.730	
	SER_Job	0.661	
	SER_Overseas	0.659	
Urban campuses	CAM_Shops	1.082	0.742
	CAM_Location	0.636	
	CAM_Fashion	0.447	
Vast campuses	CAM_Nature	0.766	0.802
	CAM_Size	0.730	
	FAC_Field	0.527	
	FAC_Chill	0.319	
Study facilities	FAC_Library	0.699	0.813
	FAC_Study	0.566	
	FAC_IT	0.500	
	LEC_Large	0.370	

5 Implications and Future Work

In marketing surveys, the question order bias and response order bias are known from the viewpoint of order, while the response scale bias and central tendency bias are known from the viewpoint of the Likert scale, and a large amount of literature exist to support this. However, there is no evidence of bias due to the ascending or descending order of

Table 4. Results of multiple regression analysis

Variable	Model			Standardized Model		
	Estimate	p-value		Estimate	p-value	
Intercept	−0.071	0.137		0.000	1.000	
Seminars and lectures	0.160	0.003	**	0.161	0.003	**
Online lectures	0.268	0.000	***	0.265	0.000	***
Administrative services	0.148	0.024	*	0.148	0.024	*
Urban campuses	−0.015	0.801		−0.014	0.801	
Vast campuses	0.072	0.136		0.068	0.136	
Study facilities	0.316	0.000	***	0.301	0.000	***
Descending	0.140	0.038	*	0.074	0.038	*
R-squared	0.597			0.597		
Adjusted R-squared	0.588			0.588		

Note: SE means standard error; *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

the Likert scale. This study filled that gap. Order bias can be removed by randomization of choices, but this process is not possible with the Likert scale. Therefore, as shown in this study, when measuring marketing effectiveness by asking the loyalty indices using the Likert scale, the true effectiveness cannot be known unless the order of choices is consistent. In addition, since less serious respondents are more likely to select the first choice, the ascending order should be adopted to improve the response quality of loyal customers. Thus, ascending options in the loyalty index question can eliminate spurious loyalty due to insincere answers.

Since this study is limited to the evaluation of universities in Japan, it should be extended to other countries and products/services for the generalization of conclusions. Also, looking at Fig. 2, the positive effect of descending order on the score becomes smaller in the latter half of the question. It is not yet possible to say whether this trend is universal. Since questionnaire length is an important factor influencing survey response quality (Bowling et al. 2022; Kato and Miura 2021), the interaction between this factor and scale order should be carefully examined in the future. These can be future research topics.

References

Ashton, L.M., Hutchesson, M.J., Rollo, M.E., Morgan, P.J., Collins, C.E.: Motivators and barriers to engaging in healthy eating and physical activity: a cross-sectional survey in young adult men. Am. J. Men's Health **11**(2), 330–343 (2017)

Bowling, N.A., Gibson, A.M., DeSimone, J.A.: Stop with the questions already! Does data quality suffer for scales positioned near the end of a lengthy questionnaire? J. Bus. Psychol. **37**(5), 1099–1116 (2022)

Douven, I.: A Bayesian perspective on Likert scales and central tendency. Psychon. Bull. Rev. **25**(3), 1203–1211 (2018). https://doi.org/10.3758/s13423-017-1344-2

Epley, N., Gilovich, T.: The anchoring-and-adjustment heuristic: why the ad-justments are insufficient. Psychol. Sci. **17**(4), 311–318 (2006)
Harzing, A.W., Brown, M., Köster, K., Zhao, S.: Response style differences in cross-national research. Manag. Int. Rev. **52**(3), 341–363 (2012)
Holzknecht, F., et al.: The effect of response order on candidate viewing behaviour and item difficulty in a multiple-choice listening test. Lang. Test. **38**(1), 41–61 (2021)
Kato, T., Miura, T.: The impact of questionnaire length on the accuracy rate of online surveys. J. Mark. Anal. **9**(2), 83–98 (2021)
Kato, T., Takenaka, N., Ito, R., Nishiguchi, K.: Selection versus scale: Loyalty indices for brand management. J. Mark. Anal. 1–18 (2022)
Kent, M.G., Cheung, T., Altomonte, S., Schiavon, S., Lipczyńska, A.: A Bayesian method of evaluating discomfort due to glare: the effect of order bias from a large glare source. Build. Environ. **146**, 258–267 (2018)
Kundu, A., Bej, T., Adhikari, S.: Response bias in decision making: an application of intuitionistic fuzzy targeting decision uncertainties. Int. J. Fuzzy Comput. Model. **4**(1), 16–33 (2022)
Lau, C.K.M., Demir, E., Bilgin, M.H.: Experience-based corporate corruption and stock market volatility: evidence from emerging markets. Emerg. Mark. Rev. **17**, 1–13 (2013)
León, C.J., Arana, J.E., De León, J.: Valuing the social cost of corruption using subjective well being data and the technique of vignettes. Appl. Econ. **45**(27), 3863–3870 (2013)
Reichheld, F.F.: The one number you need to grow. Harv. Bus. Rev. **81**(12), 46–54 (2003)
Rossi, P.E., Gilula, Z., Allenby, G.M.: Overcoming scale usage heterogeneity: a Bayesian hierarchical approach. J. Am. Stat. Assoc. **96**(453), 20–31 (2001)
Serenko, A., Bontis, N.: First in, best dressed: the presence of order-effect bi-as in journal ranking surveys. J. Informet. **7**(1), 138–144 (2013)
Seth, S., Scott, D., Svihel, C.: Solving the mystery of consistent negative/low net promoter score (NPS) in cross-cultural marketing research. Asia Mark. J. **17**(4), 3, 43–61 (2016)
Thau, M., Mikkelsen, M.F., Hjortskov, M., Pedersen, M.J.: Question order bi-as revisited: a split-ballot experiment on satisfaction with public services among experienced and professional users. Public Adm. **99**(1), 189–204 (2021)
Vriens, I., Moors, G., Gelissen, J., Vermunt, J.K.: Controlling for response order effects in ranking items using latent choice factor modeling. Sociol. Methods Res. **46**(2), 218–241 (2017)
Walters, W.H.: Survey design, sampling, and significance testing: key issues. J. Acad. Librariansh. **47**(3), 102344 (2021)
Yüksel, A.: A critique of "Response Bias" in the tourism, travel and hospitality research. Tour. Manag. **59**, 376–384 (2017)

Recommendation by Multiscale Semantic-Visual Analysis of User Reviews and Product Images

Zhu Zhan and Bugao Xu(✉)

Department of Merchandising and Digital Retailing, University of North Texas, Denton, USA
{Zhu.Zhan,bugao.xu}@unt.edu

Abstract. Recommendation for items that users have not interacted with is often based on the predicted ratings. However, predicting an item rating can be challenging due to a fact that the user-item paired data are not easily. Many studies addressed this problem by modeling latent factors of users (and/or items) using semantic reviews, as they are available on most ecommerce websites. However, this approach ignored the visual features of items, or product images, which reflect users' personal preference. In this paper, we present a novel method that exploits multiscale semantic-visual representations (MSVR) to perform rating predictions with two paralleled submodules. The first submodule identifies the review features with respect to various aspects through word-aware and scale-aware attention mechanisms. The second submodule extracts block-level visual features at multi-scales with a pre-trained deep net, and then embeds the features with visual word vocabularies followed by a projection layer to reduce dimensions and an attention layer to re-weight multiscale blocks. Extensive experiments performed on 22 Amazon datasets demonstrates that our model significantly outperforms several state-of-the-art recommendation methods.

Keywords: Semantic analysis · visual analysis · aspect-sentiment · scale-aware attention

1 Introduction

The ratings on purchased items reflect users' satisfaction with the shopping experience and the products, and therefore can be used to train personalized recommendation models. A recommendation includes learning the unique representations of users and items from existing data (e.g., reviews, ratings), estimating a user's rating for unrated items by calculating the similarity between user-item pairs, and recommending items that have high predicted ratings to specific users. For example, in collaborative filtering, a rating matrix is constructed with user indices, item indices and corresponding ratings to show interactions between users and items. The ratings of non-interacted cells in the matrix are then estimated with a well-known algorithm, Matrix Factorization (MF). However, MF may suffer from low interpretability and cold start problems due to insufficient rating data in the matrix (Koren et al. 2009).

To tackle these limitations, recent studies incorporated various forms of side information, such as semantic information of user reviews (Li and Xu 2020) and visual features of

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 29–36, 2023.
https://doi.org/10.1007/978-3-031-31836-8_4

product images (Zhan and Xu 2023), into the MF model. User reviews contain rich sentiment information expressing more fine-grained opinions on products in perspectives. The aspect-sentiment approach with attention mechanism, e.g., aspect-based neural recommender (ANR) (Chin et al. 2018), was widely adopted. Deep neural recommenders, e.g., Dynamic Review-based Recommenders (DRR) (Cvejoski et al. 2021), demonstrated more powerful representation abilities for extracting aspect-sentiment features.

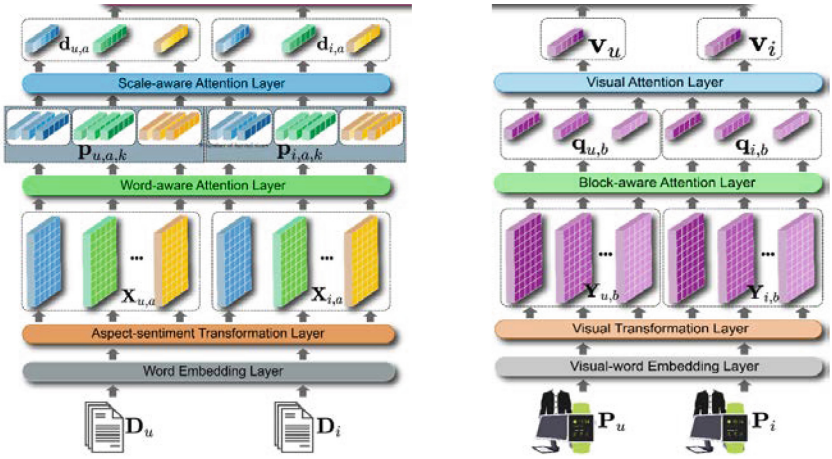
On the other hand, user preferences can be reflected from the visual appearance of purchased products. Many methods, e.g., *P*ersonalized *C*ompatibility *M*odeling (GP-BPR) (Song et al. 2019), were designed to explore visual features to improve recommendation performance. Tang et al. (Tang et al. 2020) introduced an adversarial training procedure to their recommender for enhance robustness. Anelli et al. (Anelli et al. 2021) designed a visual adversarial recommender (VAR) with adversarial training strategies to improve recommendation performance. But these models separately learned the latent factors of users (without items) and items (without users) from user-item interactions.

In this paper, we present a model that performs multiscale semantic and visual analyses (MSVA) on both user reviews and item images for more precise rating predictions to improve the relevance of recommendations to users based on previous experience and personal preferences. The MSVA model extracts the semantic and visual representations of user-item pairs in two parallel paths (or models) with the inputs of review texts and product images, and then combine them to infer a rating for a non-interacted item essential for making personalized recommendation.

2 Multiscale Semantic-Visual Representations

Multiscale semantic-visual representations refer to a set of representative features in user reviews and item images to be extracted through natural-language-processing (semantic analysis) and image-processing (visual analysis) techniques.

Let $\mathcal{D}$ be textual review corpus from a set of users $\mathcal{U}$ for a set of items $\mathcal{I}$, and $\mathcal{P}$ be a collection of images retrieved from the metadata of all items in $\mathcal{I}$. Each user-item interaction is denoted as a tuple, $(u, i, d_{u,i}, p_i, r_{u,i})$, where u and i are the indices of users and items, $d_{u,i} \in \mathcal{D}$ is one review text from user u on item i, $p_i \in \mathcal{P}$ is the image set for item i, and $r_{u,i}$ is a numerical rating of user u towards item i. The main task of the MSVA model is to predict rating $\hat{r}_{u,i}$ for any non-interacted user-item pair. We denote scalars with italic lower-cases (e.g., x), vectors with bold lower-cases (e.g., $\mathbf{x}$), and matrices or high dimensional tensors with bold upper-cases (e.g., $\mathbf{P}$). Besides, we use the Python-like array indexing, e.g., $\mathbf{x}[i]$ to denote the i-th element of vector $\mathbf{x}$, and $\mathbf{W}[i, :]$ to denote all i-th row elements of matrix $\mathbf{W}$. MSVA consists of two modules, namely the review and visual representation modules (see Fig. 1). The review representation module has two inputs: (1) the user document, $\mathbf{D}_u$, which is a set of tokenized reviews written by user u for all the items she/he reviewed, and (2) the item document, $\mathbf{D}_i$, which is a set of tokenized reviews written for item i by all users who reviewed it. Similarly, two inputs, $\mathbf{P}_u$ (the product image set of all items reviewed by user u) and $\mathbf{P}_i$ (the product image set of a reviewed item) are fed to the visual representation module. Within each module, the network structures for processing $\mathbf{D}_u$ and $\mathbf{D}_i$ (or $\mathbf{P}_u$ and $\mathbf{P}_i$) are identical (Fig. 1). Thus, the network process for $\mathbf{D}_u$ and $\mathbf{P}_u$ of user u is elaborated below.



(a) (b)

Fig. 1. Review (a) and Visual (b) Representation Modules

2.1 Review Representation Module

The aspect-sentiment transformation layer is designed to capture associated sentimental polarities with different aspects of the same word in a review document. In $\mathbf{X}_u$, each row is a d_w-dim vector representing one word. A specific transformation matrix, $\mathbf{W}_a \in \mathbb{R}^{d_w \times h_1}$, and a specific bias vector, $\mathbf{b}_a \in \mathbb{R}^m$, can be used to capture the fine-grained implicit feedback for a given aspect $a \in \mathcal{A}$. Here, h_1 is the hidden dimension of a review representation and $|\mathcal{A}|$ is the number of aspects. $\mathbf{W}_a$ is initialized randomly with a uniform distribution $\mathcal{U}(-0.01, 0.01)$, and $\mathbf{b}_a$ is initialized simply with zero. We have:

$$\mathbf{X}_{u,a} = f(\mathbf{X}_u \mathbf{W}_a + \mathbf{b}_a), \forall a \in \mathcal{A} \tag{1}$$

here, $f(\cdot)$ denotes a nonlinear activation function (ReLU used in our model), and $\mathbf{X}_{u,a} \in \mathbb{R}^{m \times h_1}$ is the specific aspect-sentiment transformation of $\mathbf{X}_u$. Note that $\mathbf{W}_a$ is shared by all words in both $\mathbf{D}_u$ and $\mathbf{D}_i$ to reduce the number of parameters to be learned. As a result, the output of this layer is a three-dimensional tensor in $\mathbb{R}^{|\mathcal{A}| \times m \times h_1}$ after the concatenation of all $|\mathcal{A}|$ aspect-sentiment transformations.

The word-aware attention layer is to take the output of the aspect-sentiment transformation ($\mathbf{X}_{u,a}, a \in \mathcal{A}$) as the input. A convolutional-like operation is performed to extract n-gram features from word sequences for mining multiscale context information (Wang et al. 2018). For each $\mathbf{X}_{u,a}$, variable n-gram features are produced with multiple kernel sizes, and an attention weight is calculated for each word, i.e., each row of the matrix. Specifically, we estimate the word attention weight of the i th word with a fixed kernel size $k \in \mathcal{K}$ based on the word itself as well as the $(k-1)/2$ words before and after it. The zero padding is applied to both ends of the input matrix to ensure the resulting implicit features have the same size among $|\mathcal{K}|$ kernel sizes. In more details, we pad $0 \in \mathbb{R}^{1 \times h_1}$ after $\mathbf{X}_{u,a}[m, :]$ when $k = 2$; and pad 0 before $\mathbf{X}_{u,a}[1, :]$ and after $\mathbf{X}_{u,a}[m, :]$ when $k = 3$, and so on. Then, we concatenate the k rows of the matrix $\mathbf{X}_{u,a}$ to form a bigger row

vector $\mathbf{x}_{u,a,k}[i] \in \mathbb{R}^{1\times(k\times h_1)}$ with $(k \times h_1)$ length, which in turn is used to execute the inner product operation with a word-aware embedding vector $\mathbf{w}_{a,k}^{word} \in \mathbb{R}^{(k\times h_1)}$. Moreover, the informativeness of the ith word, i.e., the word attention weight $\mathbf{attn}_{u,a,k}^{word}[i]$, can be calculated with the *softmax* function. $\mathbf{w}_{a,k}^{word}$ is initialized randomly with a uniform distribution $\mathcal{U}(-0.01, 0.01)$.

$$\mathbf{x}_{u,a,k}[i] = \mathbf{X}_{u,a}\left[i - \frac{k-1}{2}, :\right] \oplus \cdots \oplus \mathbf{X}_{u,a}[i, :] \oplus \cdots \oplus \mathbf{X}_{u,a}\left[i + \frac{k-1}{2}, :\right], \quad \forall k \in \mathcal{K}, a \in \mathcal{A} \tag{2}$$

$$\mathbf{attn}_{u,a,k}^{word}[i] = softmax(\mathbf{x}_{u,a,k}[i]\mathbf{w}_{a,k}^{word}), \ \ \forall k \in \mathcal{K}, a \in \mathcal{A} \tag{3}$$

where $\oplus$ is the concatenating operation; $softmax(\omega_i) = exp(\omega_i)/\sum_i exp(\omega_i)$.

In terms of semantic review with word-aware attentions, the implicit vector $\mathbf{p}_{u,a,k} \in \mathbb{R}^{1\times h_1}$ can be derived from the following weighted sum:

$$\mathbf{p}_{u,a,k} = \sum\nolimits_{i=1}^{m} (\mathbf{attn}_{u,a,k}^{word}[i]\mathbf{X}_{u,a}[i, :]), \ \ \forall k \in \mathcal{K}, a \in \mathcal{A} \tag{4}$$

The scale-aware attention layer is designed for re-weighting the multiscale implicit feature vector $\mathbf{p}_{u,a,k}, k \in \mathcal{K}$. For each aspect $a \in \mathcal{A}$, $|\mathcal{K}|$ row vectors, $\mathbf{p}_{u,a,k}, k \in \mathcal{K}$, are concatenated in the column direction to form matrix $\mathbf{P}_{u,a} \in \mathbb{R}^{|\mathcal{K}|\times h_1}$:

$$\mathbf{P}_{u,a} = (\mathbf{p}_{u,a,k_1}^T \oplus \mathbf{p}_{u,a,k_2}^T \oplus \cdots \oplus \mathbf{p}_{u,a,k_{|\mathcal{K}|}}^T)^T, \qquad \forall a \in \mathcal{A} \tag{5}$$

Similar to the word-aware attention weights, the scale-aware attention weights $\mathbf{attn}_{u,a}^{scale} \in \mathbb{R}^{|\mathcal{K}|\times 1}$ can be calculated with the *softmax* function on the inner product of $\mathbf{P}_{u,a}$ and a scale-aware embedding vector $\mathbf{w}_a^{scale} \in \mathbb{R}^{h_1}$, which is randomly initialized with the same distribution of $\mathbf{w}_{a,k}^{word}$, as follows:

$$\mathbf{attn}_{u,a}^{scale} = softmax(\mathbf{P}_{u,a}\mathbf{w}_a^{scale}), \ \ \forall a \in \mathcal{A} \tag{6}$$

Subsequently, the semantic review representation $\mathbf{d}_{u,a} \in \mathbb{R}^{1\times h_1}$ of aspect a, which is a h_1-long row vector, can be inferred with the following formula:

$$\mathbf{d}_{u,a} = \sum\nolimits_{k=1}^{|\mathcal{K}|} (\mathbf{attn}_{u,a}^{scale}[k]\mathbf{p}_{u,a,k}), \ \ \forall a \in \mathcal{A} \tag{7}$$

where $\mathbf{attn}_{u,a}^{scale}[k]$ is the scale-aware attention weights of $\mathbf{p}_{u,a,k}$ at the size of k.

2.2 Visual Representation Module

An image can be regarded as a sequence of blocks or visual words. a visual-word embedding layer is used to (1) divide a product image from $\mathcal{P}$ into a number of blocks with a fixed size of $b \in \mathcal{B}$ (height $\times$ width); (2) feed the blocks into a pre-trained network, ResNet-152 (He et al. 2016), to extract d_v-dim visual features; (3) build a visual vocabulary with the K-means clustering so that each visual word corresponds to a cluster

center; (4) divide each image in $\mathbf{P}_u$ into blocks with the same size b so that the image is treated as a sequence of concatenated blocks; and (5) replace the block features in the embedding with their corresponding nearest cluster center among visual vocabularies. To this end, the embedding output for a fixed block size $b \in \mathcal{B}$ is $\mathbf{V}_{u,b} \in \mathbb{R}^{n \times d_v}$, where n is the number of the blocks.

Originally, the dimension (2,048) of a visual-word output used in this study from the upstream layer is too big, causing a high computational cost. Therefore, we introduce a transformation matrix $\mathbf{W}_b \in \mathbb{R}^{d_v \times h_2}$ to reduce dimension as follows:

$$\mathbf{Y}_{u,b} = \mathbf{V}_{u,b}\mathbf{W}_b, \forall b \in \mathcal{B} \tag{8}$$

here, $\mathbf{Y}_{u,b} \in \mathbb{R}^{n \times h_2}$ is the visual transformation output and h_2 is the hidden dimension of visual representation. Because it is difficult to assess the associations between adjacent blocks of a product image when concatenating the blocks into a visual-word sequence, the block-aware attention weight $\mathbf{attn}_{u,b}^{block}$ is only learned based on the block itself:

$$\mathbf{attn}_{u,b}^{block} = softmax(\mathbf{Y}_{u,b}[j,:]\mathbf{w}_b^{block}), \quad \forall b \in \mathcal{B} \tag{9}$$

$$\mathbf{q}_{u,b} = \sum\nolimits_{j=1}^{n} (\mathbf{attn}_{u,b}^{block}[j]\mathbf{Y}_{u,b}[j,:]), \quad \forall b \in \mathcal{B} \tag{10}$$

where $\mathbf{w}_b^{block} \in \mathbb{R}^{h_2}$ is a block-aware embedding vector initialized with $\mathcal{U}(-0.01, 0.01)$, and $\mathbf{q}_{u,b} \in \mathbb{R}^{1 \times h_2}$ is an implicit visual vector at the block size b. Similar to the review representation module, a multiscale visual attention mechanism is added to the implicit visual feature vectors $\mathbf{q}_{u,b} \in \mathbb{R}^{1 \times h_2}$, $b \in \mathcal{B}$. This is done by learning a vector $\mathbf{w}^{visual} \in \mathbb{R}^{h_2}$ when calculating multiscale visual attention weights $\mathbf{attn}_u^{visual}$:

$$\mathbf{Q}_u = (\mathbf{q}_{u,b_1}^T \oplus \mathbf{q}_{u,b_2}^T \oplus \cdots \oplus \mathbf{q}_{u,b_{|\mathcal{B}|}}^T)^T \tag{11}$$

$$\mathbf{attn}_u^{visual} = softmax\Big(\mathbf{Q}_u \mathbf{w}^{visual}\Big) \tag{12}$$

The visual representation $\mathbf{v}_u \in \mathbb{R}^{1 \times h_2}$ can be derived with the following formula:

$$\mathbf{v}_u = \sum_{b=1}^{|\mathcal{B}|} (\mathbf{attn}_u^{visual}[b]\mathbf{q}_{u,b}) \tag{13}$$

2.3 Rating Inference

Given the review and visual representations for user u and item i, the predicted rating, $\hat{r}_{u,i}$, can be inferred as follows:

$$\hat{r}_{u,i} = \sum\nolimits_{a \in \mathcal{A}} (\mathbf{d}_{u,a}(\mathbf{d}_{i,a})^T) + \mathbf{v}_u(\mathbf{v}_i)^T + b_u + b_i + b_0 \tag{14}$$

where b_u, b_i, and b_0 are the user, item, and global bias, (Chin et al. 2018). In order to optimize $\hat{r}_{u,i}$ with the backpropagation and stochastic gradient descent (SGD) techniques,

the following loss function is designed based on the standard mean squared error (MSE) form:

$$\mathcal{L} = \frac{1}{|\mathcal{U}| \cdot |\mathcal{I}|} \sum\nolimits_{u \in \mathcal{U}, i \in \mathcal{I}} + \frac{\lambda_\Theta}{2} \|\Theta\|_2^2 \tag{15}$$

$$\Theta = \left\{ \mathbf{W}_a, \mathbf{b}_a, \mathbf{w}_{a,k}^{word}, \mathbf{w}_a^{scale}, \mathbf{W}_b, \mathbf{w}_b^{block}, \mathbf{w}^{visual} | a \in \mathcal{A}, k \in \mathcal{K}, b \in \mathcal{B} \right\} \tag{16}$$

where $\| \cdot \|_2$ denotes the l_2 norm regularization for preventing model overfitting, and Θ is the set of model parameters to be updated. Besides, the dropout technique is adopted to improve generalization performance.

3 Experiments

The performance of the MSVA model was compared with three baselines implemented on the PyTorch framework. The datasets used to train the models are the *Amazon Product Data* (He and McAuley 2016), which contain over 142.8 million real-world reviews and 9.4 million metadata (e.g., product descriptions, prices, and image URLs) in 22 various domains from 1996 to 2014 (Amazon 2021). The product images were downloaded by a crawler with the feeds of the URLs in the metadata. The users who did not write reviews and the items that were not reviewed by any user or did not have any product image were filtered out. For the domain datasets whose user-item interactions exceed 1,000,000, only1,000,000 records were randomly sampled. Each of these 22 datasets was divided into a training, validation and testing set in a ratio of 80:10:10.

Three baselines, ANR, DRR and VAR, were used to evaluate the performance of MSVA. ANR is a recommender based on the aspect-aware analysis of review texts, and its parameters were set as $|\mathcal{A}| = 5, c = 3, h_1 = 10$ and $h_2 = 50$, and $\rho = 0.5$(Chin et al. 2018). DRR uses two independent RNNs to analyze review texts in a chronical order for rating prediction, and its parameters were set as $\boldsymbol{h}_t^e = 32, E = 100$, and $A = 64$ (Cvejoski et al. 2021). VAR extracts the visual features of item images with an adversarial training procedure, and its parameters were set as the same in (Anelli et al. 2021)**.** As for the word embedding, the three models used 300-*dim* word vectors (*word2vec*). In MSVA, we embedded each review word into a 300-*dim* vector using *word2vec* as done in ANR, and set $|\mathcal{A}| = 5$ and $\rho = 0.5$. Its additional parameters, such as the set of kernel size $\mathcal{K}$, the set of block size $\mathcal{B}$, aspect-sentiment and visual transformation dimensions h_1, h_2 were set as {2, 3}, {10, 20}, 50 and 50, respectively. We followed the guideline in (Anelli et al. 2021; Chin et al. 2018) for the experimental setup. The baselines were trained with Adam optimizer, a learning rate of 2e-3, a batch size of 128 and the loss function of MSE. Additionally, 5-time experiments were conducted with different random seeds.

Table 2 presents the MSE performance comparisons between MSVA and the three baselines. MSVA outperforms ANR, DRR and VAR with the lowest MSEs on almost all the datasets (bolded numbers), except the CDs & Vinyl and Digital Music datasets. MSVA lowers the MSEs by 6.00%, 3.14% and 3.25% as opposed to ANR, DRR and VAR. As for the performances on the two virtual-based or content-based datasets, *CDs & Vinyl* and *Digital Music*, MSVA is the second best, or slightly lower than DRR although it achieves the best on other content-based datasets. For performances on12 out the

22 datasets, such as *Automotive, Baby, Beaty* and so on, the two review-based models (ANR and DRR) are inferior to the image-based model (VAR). However, if both the product images and user reviews in a model, such as in MSVA, the performances are all improved. Thus, visual features are compensatory to semantic features for better prediction accuracy in most cases.

Table 2. MSE comparisons between MSVA and baselines

Dataset	ANR	DRR	VAR	MSVA	Improvement (%)		
	(a)	(b)	(c)	(d)	(d) ~ (a)	(d) ~ (b)	(d) ~ (c)
Automotive	1.249	1.187	1.175	**1.163**	6.89	2.02	1.02
Baby	1.315	1.306	1.286	**1.241**	5.63	4.98	3.50
Beauty	1.407	1.392	1.385	**1.358**	3.48	2.44	1.95
Books	0.967	0.955	0.966	**0.952**	1.55	0.31	1.45
CDs & Vinyl	0.954	**0.946**	0.972	0.959	−0.52	−1.37	1.34
Cell Phones & Acce	1.847	1.637	1.654	**1.608**	12.94	1.77	2.78
Clothing, Shoes &Jew	1.316	1.267	1.256	**1.208**	8.21	4.66	3.82
Digital Music	0.695	**0.693**	1.698	0.696	−0.14	−0.43	0.29
Electronics	1.565	1.468	1.499	**1.406**	10.16	4.22	6.20
Grocery & Gourmet	1.235	1.239	1.248	**1.196**	3.16	3.47	4.17
Health & Personal Care	1.437	1.395	1.385	**1.320**	8.14	5.38	4.69
Home & Kitchen	1.435	1.374	1.369	**1.296**	9.69	5.68	5.33
Kindle Store	0.807	0.804	0.802	**0.799**	0.99	0.62	0.37
Movies & TV	1.152	1.141	1.144	**1.132**	1.74	0.79	1.05
Musical Instruments	1.075	1.062	1.071	**1.023**	4.84	3.67	4.48
Office Products	1.404	1.421	1.439	**1.318**	6.13	7.25	8.41
Patio, Lawn & Garden	1.456	1.406	1.406	**1.383**	5.01	1.64	1.64
Pet Supplies	1.437	1.394	1.387	**1.362**	5.22	2.30	1.80
Sports & Outdoors	1.207	1.125	1.114	**1.080**	10.52	4.00	3.05
Tools & Home Impr	1.293	1.256	1.243	**1.199**	7.27	4.54	3.54
Toys & Games	1.107	1.071	1.076	**1.038**	6.23	3.08	3.53
Video Games	1.304	1.307	1.302	**1.266**	2.91	3.14	2.76
Average	1.257	1.220	1.222	**1.182**	6.00	3.14	3.25

4 Conclusions

This paper presented an end-to end personalized recommendation model based on multi-scale semantic-visual representation analysis (MSVA) of user reviews and item images.

In the review module, the multiscale semantic representations are extracted from review texts in various aspects with word-aware and scale-aware attention mechanisms. In the visual module, the multiscale visual representations are learned from item images with the block-aware and visual-aware attention mechanisms at different block sizes. By combining the semantic and visual representations, MSVA can improve the generalization of rating inference. MSVA was trained with real-world user reviews and product images from the *Amazon Product Data* in 22 different domains, and its performance was evaluated against the three state-of-the art baselines. MSVA reduced the average MSE of predicted ratings by 6.00%, 3.14% and 3.25% for ANR, DRR and VAR, respectively.

References

Amazon, Amazon Product Data. http://jmcauley.ucsd.edu/data/amazon. Accessed 1 Aug 2021

Anelli, V.W., Deldjoo, Y., Di Noia, T., et al.: A study of defensive methods to protect visual recommendation against adversarial manipulation of images. In: Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval, vol. 1, no. 1 (2021)

Chin, J.Y., Joty, S., Zhao, K., Cong, G.: ANR: Aspect-based Neural Recommender. International Conference on Information and Knowledge Management, Proceedings, pp. 147–156 (2018)

Cvejoski, K., Sanchez, R.J., Bauckhage, C., Ojeda, C.: Dynamic Review-based Recommenders, International Data Science Conference 2021 (iDSC21), arXiv:2110.14747 (2021)

He, K., Zhang, X., Ren, S., Sun, J.: Deep residual learning for image recognition. In: Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2016-December, pp. 770–778 (2016)

He, R., McAuley, J.: Ups and downs: modeling the visual evolution of fashion trends with one-class collaborative filtering. In: 25th International World Wide Web Conference, WWW 2016, pp. 507–517 (2016)

Koren, Y., Bell, R., Volinsky, C.: Matrix factorization techniques for recommender systems. Computer **42**(8), 30–37 (2009)

Li, W., Xu, B.: Aspect-based fashion recommendation with attention mechanism. IEEE Access **8**, 141814–141823 (2020)

Song, X., Chen, J., Han, X., et al.: GP-BPR: personalized compatibility modeling for clothing matching. In: MM 2019 - Proceedings of the 27th ACM International Conference on Multimedia, pp. 320–328 (2019)

Tang, J., Du, X., He, X., et al.: Adversarial training towards robust multimedia recommender system. IEEE Trans. Knowl. Data Eng. **32**(5), 855–867 (2020)

Wang, S., Huang, M., Deng, Z.: Densely connected CNN with multi-scale feature attention for text classification. In: IJCAI International Joint Conference on Artificial Intelligence, 2018-July, pp. 4468–4474 (2018)

Zhan, Z., Xu, B.: Analyzing review sentiments and product images by parallel deep nets for personalized recommendation. Inf. Process. Manag. **60**(1), Article 103166 (2023)

Deepening Branding Opportunities in VR-Based Metaverses. A Qualitative Study

Maria Vernuccio(✉), Sara Boccalini, Michela Patrizi, and Alberto Pastore

Sapienza University of Rome, Rome, Italy
{maria.vernuccio,sara.boccalini,michela.patrizi,
alberto.pastore}@uniroma1.it

Abstract. Virtual reality-based metaverses are enabling brands to develop engaging approaches to consumers. Despite the growing interest in this innovative technology, the strand of studies about branding opportunities in VR-based metaverses is still in its infancy. Accordingly, our research aims to analyse three key aspects of branding strategies in VR-based metaverses: technical factors, perceptual dimensions, and branding outcomes. Through a qualitative exploratory approach based on in-depth interviews, our study contributes to the academic literature by providing the first holistic view of branding strategies in VR-based metaverses (high-immersive and low-immersive) from a managerial perspective.

Keywords: Metaverse · virtual reality · branding opportunities · in-depth interview · thematic content analysis

1 Introduction

The term "metaverse" generally refers to any perpetual and interconnected "three-dimensional virtual world where avatars engage in political, economic, social, and cultural activities" (Park and Kim 2022, p. 4211). In concrete terms, metaverses can be based on a specific XR-technology solution, which is an umbrella term that includes augmented reality (AR), virtual reality (VR) and mixed reality (MR) (Chuah 2018). In terms of VR-based contexts, a user experience is defined as either low-immersive (LIVR), i.e., available through smartphones and desktops, or high-immersive (HIVR), i.e., only attainable through head-mounted devices (Kaplan-Rakowski and Gruber 2019). The relevance of VR-based metaverses is worthy of attention, considering both the impact on various sectors, e.g., marketing, education, and healthcare (Dwivedi et al. 2022) and the increasing economic significance of the phenomenon (Alsop 2022; Clement 2022).

While academic knowledge in the field of VR-based metaverses is still in its early stage (e.g., Shen et al. 2021; Bian et al. 2022; Dwivedi et al. 2022; Jo 2022; Kang 2022), there is an extant research thread that has focused on virtual reality user experience (LIVR or HIVR) and investigated how VR affects branding outcomes, such as brand attitude (Kerrebroeck et al. 2017; Park and Inou 2018; Roettl and Terlutter 2018; Song et al. 2021), purchase intention (Gabisch and Gwebu 2011; Hooker et al. 2019; Martínez-Navarro et al. 2019; Lee et al. 2021), brand equity (Nah et al. 2011) and brand

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 37–45, 2023.
https://doi.org/10.1007/978-3-031-31836-8_5

loyalty (Piyathasanan et al. 2015; Palomba 2020). More recent studies have explored the influence of VR on brand recall (e.g., Martínez-Navarro et al. 2019), brand personality impressions (De Gauquier et al. 2019), customer satisfaction (Kim and Ko 2019; Xiaojing and Hsiao 2022), involvement (Cowan and Ketron 2019), brand perceptions (Cowan et al. 2021), and customer advocacy (de Regt et al. 2021). The studies concerning the impact of VR on consumer brand engagement are noteworthy (e.g., Violante et al. 2019; Hollebeek et al. 2020; Pizzi et al. 2020; Brengman et al. 2022).

Research that relates to the influence of VR on consumers' brand responses has also deepened the main perceptual dimensions that are emerging in virtual reality experiences, such as *presence* (e.g., Cowan et al. 2021), i.e., the "illusion of non-mediation towards the virtual experience" (Violante et al. 2019, p. 246); *interactivity* (e.g., Schlosser 2003; Cowan and Ketron 2019), i.e., the degree to which users perceive active control, reciprocity and responsiveness in communication with and through the medium (e.g., Liu 2003); and *immersion* (e.g., Kim and Ko 2019), i.e., the extent to which displays reproduce sensory fidelity (McMahan 2011).

Moreover, in the strand of studies on marketing and human-computer interaction (HCI), scholars have analysed the technical factors of designing VR experiences in virtual environments and proposed frameworks for certain specific managerial purposes, such as supporting virtual teamwork (Davis et al. 2009) or designing virtual stores (e.g., Papagiannidis et al. 2013). Furthermore, a few studies have recently summarised the technological architecture of VR platforms from a technical-informatics perspective (e.g., Park and Kim 2022), identifying three levels of components: hardware devices, software applications, and multimedia content.

Despite the well-established interest in the VR user experience and the potential of VR-based metaverses for branding, which may offer brands the opportunity to extend their real-world positioning or to completely reposition themselves (Dwivedi et al. 2022, p. 18), the academic literature on VR-based metaverses is still in its infancy and focused purely on a consumer perspective (Shen et al. 2021). Consequently, our study aims to provide the first holistic managerial perspective on branding strategies and opportunities in VR-based metaverses (LIVR or HIVR) by jointly exploring the technical factors and perceptual dimensions that need to be designed to achieve specific branding outcomes.

2 Methodology

Considering the paucity of the extant literature, to address our research aim, we followed a qualitative exploratory approach based on in-depth interviews (Creswell 1998). In selecting the respondents, we used the key informant technique (Robson and Foster 1989) and reached theoretical saturation (Glaser and Strauss 2017) after interviewing 17 participants (all consultants focused on the metaverse and/or a VR field). The choice of this professional figure made it possible to adopt a transverse perspective, which is necessary for investigating different aspects of branding strategies in VR-based metaverse contexts, i.e., technical factors, perceptual dimensions, and branding outcomes. The final sample included VR experts, such as CEOs, company founders, senior R&D managers, and XR/VR developers, with a professional experience of five to more than 25 years in Europe (i.e., Italy and the UK). Broad open-ended questions were proposed

to elicit participants' accounts of their spontaneous perspectives and experiences and understand the subjective articulations of our three key concepts of branding strategies. The interviews, which lasted approximately 40 min on average, were recorded, transcribed and finally analysed via the thematic content analysis technique. To identify the macro and subthemes, the methodological guidelines proposed by King and Horrocks (2010) were followed.

3 Findings

The thematic content analysis allowed us to investigate three key aspects of branding strategies in VR-based metaverses: (1) technical factors, (2) perceptual dimensions, and (3) branding outcomes. Then, these three macro-themes were articulated into more specific subthemes.

(1) Technical factors

There is consistency among respondents in identifying the two fundamental technical factors that need to be designed: hardware, i.e., the devices that provide the experience, and software, i.e., the set of applications supported by the hardware features.

The interviewers described two main hardware typologies distinguished based on the degree of immersion enabled: full-immersive hardware and low-immersive hardware. Full-immersive hardware refers to the VR headset display (3D), its controllers, haptic gloves, and entire suits capable of simulating motion between the real and virtual body (avatar).

"The user is fully sensory immersed in a computer-generated three-dimensional environment through enclosed headsets called Head Mounted Displays". (Interviewee 8, psychologist specialised in VR).

"Currently, there is the visor, which immerses you in 360°, with controllers with which you can simulate gripping an object. In addition, various haptic sensors are being experimented with, which are adept at stimulating the muscles of the hand to recreate contact with the object. There are also suits, which can exactly reproduce your movements in the virtual avatar" (Interviewee 11, VR developer).

Regarding low-immersive hardware, its technical factors are related mainly to any 2D screen, such as a PC, television, or smartphone screen, that displays the 3D environment.

"*These are computer-generated environments that exist in 3D but are shown on a 2D display on, for example, a PC, television, or smartphone*" (Interviewee 8, psychologist specialized in VR).

Moreover, respondents identified five characteristics of the hardware that affect the degree of immersion: vividness, extensiveness, inclusivity, matching and surroundings. Vividness is the variety and richness of the sensory information in the displays. Extensiveness is the range of sensory modalities presented. Inclusivity is the degree to which external sensory elements are excluded. Matching is the correspondence between user motion and displayed motion. Finally, surrounding is the extent to which sensory information reaches the sense organs from any virtual direction.

Regarding the software factor, two main themes are identified: Artificial Intelligence Applications (AIA) and User Experience Design (UXD). The interviewees further discern two tools for AIA: the gesture recognition system, i.e., a system that recognises and interprets human gestures in VR, and virtual agents, i.e., virtual elements that can autonomously interact with the user through algorithms. Concerning the latter, a CEO said the following:

"*Brand activity in VR also means after-sales support based on Artificial Intelligence Applications. You could recast customer service based on virtual salespeople, which can also be evolved chatbots that acquire a human or fantasy form, useful in telling you about a brand or helping you in your buying process*" (Interviewee 1, CEO and VR marketing expert).

In terms of UXD, four subthemes emerged: 3D graphic design, spatial sound, usability and physical comfort (i.e., the adaptation of the virtual perspective to the user physical characteristics).

"*The three-dimensional graphic elements of the setting are modelled and realised by 3D software. The more similar they are in style and realism, the more immersive the environment will be*" (Interviewee 14, VR developer).

"*To create an immersive user experience, it is essential to include supporting user content, such as the interface, that is clear, easy to use and, above all, contextualised. Additionally, the audio must be spatialised, so that if I drop an object, I can hear and realise which virtual area the sound is coming from*" (Interviewee 15, XR developer).

"*When implementing a scenario involving a variety of users, it is critical to think about how the physical differences of those users may reflect positively or negatively towards the virtual reality experience, making it necessary, for example, to adapt the virtual visual perspective to the user actual height*" (Interviewee 2, Software Engineer and CEO).

(2) Perceptual dimensions

Respondents agreed on the four main perceptual dimensions that should be realised in the virtual environment from a branding perspective. These perceptions characterise the experience of VR technology (with increasing levels of intensity from LHVR to HIVR) in the metaverses: interactivity, immersion, embodiment and sense of presence.

Interactivity is described as the user's ability to deal with the virtual environment. In this regard, an XR developer has specified that:

"*Interactivity consists of the user's ability to modify the virtual environment, such as moving an object, to see immediate feedback of their actions, such as clicking a button from the real environment and finding that they clicked it in VR, and immediate feedback from the virtual environment as well, such as picking up an object and throwing it and finding that the object moves and falls*" (Interviewee 15, XR developer).

Immersion is outlined as the sensory fidelity that is reproduced by the virtual environment and is regarded as one of the core concepts of the VR experience.

"*Immersion refers to the perception of how sensory totalising the virtual experience is for the user*" (Interviewee 15, XR developer).

Participants agreed in defining embodiment as the perception of personification in the avatar. For example, a neuroscience researcher affirmed the following:

"*Embodiment consists of being able to see one's virtual body and feel a sense of belonging, of control, of truly being the author of the virtual body's motions*" (Interviewee 16, Neuroscience Researcher and VR Developer).

Finally, the sense of presence is conceptualised as the sense of being - psychologically and physically - in the virtual environment. As a VR developer explained,

"*Presence is the perception of not simply being a spectator of the world you are immersed in, but of being present, of not sitting in your office chair and with your head in the virtual world but being with mind and body present in the virtual environment totally*" (Interviewee 15, VR developer).

(3) Branding outcomes

According to respondents, VR can support branding strategies in achieving three primary results in metaverses, such as *brand anthropomorphism*, *consumer brand engagement* and *brand image*, as well as one final goal, namely, brand loyalty.

Interviewees argued that the experience in VR-based metaverses (LIVR and HIVR) can enhance brand anthropomorphism, as the attribution of human characteristics, both physical and psychological, to the brand.

"*Consumers can live many different brand experiences in virtual-branded worlds with virtual-branded agents … I mean that in metaverses, virtual-branded worlds and virtual-branded agents, such as avatars, interact with consumers in a human-like way, remembering what they did before, imaging what he could do now, embracing him as a member of the brand community. I think the brand acquires a physicality and an ability to express its personality like never before. For this, it can be perceived as more human*" (Interviewee 6, Marketing Consultant).

In addition, according to the experts interviewed, it is evident that the brand experience in VR-based metaverses (especially HIVR) has an influential role in stimulating i) cognitive brand engagement, or increasing interest and attention due to the high degree of immersion, presence and interactivity that the technology enables; ii) emotional brand engagement, which is due to the realism of the experience that provokes seemingly real emotions, such as joy, awe, adrenaline, excitement; iii) behavioural brand engagement, that includes encouraging interactions, explorations and motivating the user to pursue goals during the brand experience; and iv) social engagement, enabled by the immersion and the presence of multiple users to socialize with. Considering cognitive engagement, a CEO said:

"*The concept is that the moment the user is there, he is there. (…) There is no way to get distracted because you are exactly there. (…) This implies several considerations about the attention threshold, so you can't avoid a VR experience, you live it. In this context, levels of attention towards the brand can only increase, as well as the interest"* (Interviewee 1, CEO and VR marketing expert).

Regarding emotional consumer brand engagement, a psychologist consultant specialised in VR said:

"*Emotional responses to brand content or stimuli in VR-based metaverses have an intensity almost comparable to what we perceive in real life: that is, joy, desire, awe and so on, all experienced with higher levels of arousal than any other digital experiential context (…)"* (Interviewee 8, psychologist consultant specialised in VR).

For behavioural engagement, an interviewee outlined the following:

"*The freedom people have within the virtual brand environment allows them to explore it, motivating them to discover different aspects of it. They are fully engaged with the brand, interacting with it and participating in the activities promoted by the brand*" (Interviewee 9, Client Services Director).

Concerning social engagement, another respondent emphasised the role of interactivity, immersion and presence:

"*Within the virtual environment, consumers can play games, work out, meet other people, and have powerful brand social experiences, all through an immersive context where a sense of presence is crucial*" (Interviewee 1, CEO and VR marketing expert).

Moreover, it emerged among the respondents that virtual reality can support the enhancement of brand image through specific associations to key meanings, such as innovative, professional and technological, due to the brand experience in the metaverse.

"*The virtual brand experience increases the awareness of the essence of a brand that is shown to be innovative and technological. The consumer empathises more, as well as having a different impression, a different perception of the brand's professionalism*" (Interviewee 6, Marketing Consultant).

Finally, respondents discussed these three primary goals, saying that in achieving them, VR-based metaverses can become useful tools for developing brand loyalty, which was identified as the final strategic outcome.

"*The relationship with the consumer is extremely fragile these days, and VR-based metaverses can strengthen loyalty over time, starting from the novelty of this experience, the immersion in VR, which is potentially the ultimate expression of immersion within a brand, all makes the brand stay connected to its consumers and attract new ones*" (Interviewee 6, Marketing Consultant).

4 Conclusion

This study provides the first holistic view of branding strategies and opportunities in VR-based metaverses (high-immersive and low-immersive) from a managerial perspective. By investigating technical factors, our research identifies two key essential elements: hardware with either high or low immersive features (e.g., head-mounted devices or 2D desktop displays) and software, both adept at supporting consistent and realistic enjoyment of the virtual brand experience through AIA and UXD. Regarding perceptual dimensions, sensorial immersion, interaction with the virtual environment, avatar embodiment, and sense of presence were shown to be relevant to engaging users in the experience. Therefore, the virtual brand experience was identified as supporting the brand in achieving significant branding outcomes, such as brand anthropomorphism (Vernuccio et al. 2022), consumer brand engagement (cognitive, emotional, behavioural, and social) and brand image. All these dimensions are aimed at strengthening brand loyalty. Consequently, our study makes three main theoretical contributions. First, we provide an integrated comprehensive understanding of the three key aspects of branding strategies in VR-based metaverses (i.e., technical factors, perceptual dimensions, and branding outcomes.), enriching research that often only partially analyses them (e.g., Park and Kim 2022). Second, our study shifts the focus from the predominant consumer

perspective (e.g., Patrizi et al. 2021; Shen et al. 2021) to the managerial approach, providing new guidelines for developing brand experience. Third, unlike previous studies that only consider HIVR metaverses (e.g., Mystakidis 2022), our results include LIVR environments, which are currently more accessible to consumers due to the widespread use of low-immersive hardware. From the managerial perspective, our study provides a guideline for designing branding strategies in VR-based metaverses. Managers should focus on reproducing sensory fidelity in the virtual environment (HIVR or LIVR). Subsequently, software should be designed to support consistent sensory experience (UXD) and contextual interaction (AIA). Within the virtual environment, it is crucial to stimulate a sense of immersion, interaction, embodiment and presence to make the brand experience engaging. In this way, brands can create experiences that bring them closer to the consumer (through brand anthropomorphism) (Vernuccio et al. 2021) and engage him or her cognitively, emotionally, behaviourally, and socially. In addition, managers can enhance an innovative brand image and pursue the final branding goal, namely, brand loyalty. Since our study represents an early contribution based on a transverse managerial perspective in this innovative experiential context, branding opportunities in VR-based metaverses remain underinvestigated. Therefore, future research should delve into brand strategy pillars in specific high-immersive or low-immersive VR contexts, even by comparing them. Further studies should focus on sectors like fashion, luxury, and automotive, also considering specific brand experiences (e.g., Nike, Hugo Boss, BMW). Finally, among branding outcomes, we have identified brand anthropomorphism as one of the goals pursued by companies in this environment. Future lines of research should explore key pillars of brand anthropomorphisation strategies that can be developed in VR-based metaverses.

References

Alsop, T.: Consumer and enterprise VR market size worldwide 2021–2026 . Statista (2022). https://www.statista.com/statistics/1221522/virtual-reality-market-size-worldwide/

Bian, Y., Leng, J., Zhao, J.L.: Demystifying metaverse as a new paradigm of enterprise digitization. In: Wei, J., Zhang, L.J. (eds.) Big Data, vol. 12988, pp. 109–119. Springer, Cham (2022). https://doi.org/10.1007/978-3-030-96282-1_8

Brengman, M., Willems, K., De Gauquier, L.: Customer engagement in multi-sensory virtual reality advertising: the effect of sound and scent congruence. Front. Psychol. **13**, 1–20 (2022)

Chuah, S.H.W.: Why and who will adopt extended reality technology? Literature review, synthesis, and future research agenda. Literature Review, Synthesis, and Future Research Agenda (2018)

Clement, J.: Topic: Metaverse. Statista (2022). https://www.statista.com/topics/8652/metaverse/#topicHeader_wrapper

Cowan, K., Ketron, S.: A dual model of product involvement for effective virtual reality: the roles of imagination, co-creation, telepresence, and interactivity. J. Bus. Res. **100**, 483–492 (2019)

Cowan, K., Spielmann, N., Horn, E., Griffart, C.: Perception is reality… how digital retail environments influence brand perceptions through presence. J. Bus. Res. **123**, 86–96 (2021)

Creswell, J.W.: Qualitative Inquiry and Research Design: Choosing Among Five Traditions. Sage, Thousand Oaks (1998)

Davis, A., Murphy, J., Owens, D., Khazanchi, D., Zigurs, I.: Avatars, people, and virtual worlds: foundations for research in metaverses. J. Assoc. Inf. Syst. **10**(2), 90–117 (2009)

De Gauquier, L., Brengman, M., Willems, K., Van Kerrebroeck, H.: Leveraging advertising to a higher dimension: experimental research on the impact of virtual reality on brand personality impressions. Virtual Reality **23**(3), 235–253 (2019). https://doi.org/10.1007/s10055-018-0344-5

de Regt, A., Plangger, K., Barnes, S.J.: Virtual reality marketing and customer advocacy: transforming experiences from story-telling to story-doing. J. Bus. Res. **136**, 513–522 (2021)

Dwivedi, Y.K., et al.: Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. Int. J. Inf. Manag. **66**, 102542 (2022)

Gabisch, J.A., Gwebu, K.L.: Impact of virtual brand experience on purchase intentions: the role of multichannel congruence. J. Electron. Commerce Res. **12**(4) (2011)

Glaser, B.G., Strauss, A.L.: The Discovery of Grounded Theory: Strategies for Qualitative Research. Routledge (2017)

Hollebeek, L.D., Clark, M.K., Andreassen, T.W., Sigurdsson, V., Smith, D.: Virtual reality through the customer journey: framework and propositions. J. Retai. Consum. Serv. **55**, 102056 (2020)

Hooker, R., Wasko, M., Paradice, D., Teigland, R., Hofacker, C.: Beyond gaming: linking flow, brand attitudes, and purchase intent in realistic and emergent three-dimensional virtual environments. Inf. Technol. People **32**(6), 1397–1422 (2019)

Jo, J.W.: A study on deriving success factors and activating methods through metaverse marketing cases. J. Digit. Converg. **20**(4), 791–797 (2022)

Kang, H.R.: A case study on metaverse marketing of jewelry brand. J. Digit. Converg. **20**(1), 285–291 (2022)

Kaplan-Rakowski, R., Gruber, A.: Low-immersion versus high-immersion virtual reality: definitions, classification, and examples with a foreign language focus. In: Proceedings of the Innovation in Language Learning International Conference 2019, pp. 552–555 (2019)

Van Kerrebroeck, H., Brengman, M., Willems, K.: When brands come to life: experimental research on the vividness effect of Virtual Reality in transformational marketing communications. Virtual Reality **21**(4), 177–191 (2017). https://doi.org/10.1007/s10055-017-0306-3

Kim, D., Ko, Y.J.: The impact of virtual reality (VR) technology on sport spectators' flow experience and satisfaction. Comput. Hum. Behav. **93**, 346–356 (2019)

King, N., Horrocks, C.: Interviews in Qualitative Research. Sage, London (2010)

Lee, L.H., et al.: All one needs to know about metaverse: a complete survey on technological singularity, virtual ecosystem, and research agenda. arXiv preprint arXiv:2110.05352 (2021)

Liu, Y.: Developing a scale to measure the interactivity of websites. J. Advert. Res. **43**(2), 207–216 (2003)

Martínez-Navarro, J., Bigné, E., Guixeres, J., Alcañiz, M., Torrecilla, C.: The influence of virtual reality in e-commerce. J. Bus. Res. **100**, 475–482 (2019)

McMahan, R.P.: Exploring the effects of higher-fidelity display and interaction for virtual reality games. Doctoral dissertation, Virginia Tech (2011)

Mystakidis, S.: Metaverse. Encyclopedia **2**(1), 486–497 (2022)

Nah, F.F.-H., Eschenbrenner, B., DeWester, D.: Enhancing brand equity through flow and telepresence: a comparison of 2D and 3D virtual worlds. MIS Q. **35**(3), 731-A19 (2011)

Palomba, A.: How high brand loyalty consumers achieve relationships with virtual worlds and its elements through presence. J. Media Bus. Stud. **17**(3/4), 243–260 (2020)

Papagiannidis, S., Pantano, E., See-To, E.W.K., Bourlakis, M.: Modelling the determinants of a simulated experience in a virtual retail store and users' product purchasing intentions. J. Mark. Manag. **29**(13–14), 1462–1492 (2013)

Park, S., Inou, Y.: The impact of brand-event fit in virtual advertising on sport television viewers' brand attitudes. Sport Mark. Q. **27**(4), 250–263 (2018)

Park, S., Kim, Y.: A metaverse: taxonomy, components, applications, and open challenges. IEEE Access **10**, 4209–4251 (2022)

Patrizi, M., Vernuccio, M., Pastore, A.: "Hey, voice assistant!" How do users perceive you? An exploratory study. Sinergie Italian J. Manag. **39**(1), 173–192 (2021)

Pizzi, G., Vannucci, V., Aiello, G.: Branding in the time of virtual reality: are virtual store brand perceptions real? J. Bus. Res. **119**, 502–510 (2020)

Piyathasanan, B., Mathies, C., Wetzels, M., Patterson, P.G., de Ruyter, K.: A hierarchical model of virtual experience and its influences on the perceived value and loyalty of customers. Int. J. Electron. Commer. **19**(2), 126–158 (2015)

Roettl, J., Terlutter, R.: The same video game in 2D, 3D or virtual reality–How does technology impact game evaluation and brand placements? PLoS ONE **13**(7), e0200724 (2018)

Robson, S., Foster, A.: Qualitative Research in Action Edward Arnold (1989)

Schlosser, A.E., Mick, D.G., Deighton, J.: Experiencing products in the virtual world: the role of goal and imagery in influencing attitudes versus purchase intentions. J. Consum. Res. **30**(2), 184–198 (2003)

Shen, B., Tan, W., Guo, J., Zhao, L., Qin, P.: How to promote user purchase in metaverse? A systematic literature review on consumer behavior research and virtual commerce application design. Appl. Sci. **11**(23), 11087 (2021)

Song, H., Kim, J., Nguyen, T.P.H., Lee, K.M., Park, N.: Virtual reality advertising with brand experiences: the effects of media devices, virtual representation of the self, and self-presence. Int. J. Advert. **40**(7), 1096–1114 (2021)

Vernuccio, M., Patrizi, M., Pastore, A.: Delving into brand anthropomorphisation strategies in the experiential context of name-brand voice assistants. J. Consum. Behav. (2021)

Vernuccio, M., Patrizi, M., Šerić, M., Pastore, A.: The perceptual antecedents of brand anthropomorphism in the name-brand voice assistant context. J. Brand Manag. 1–16 (2022)

Violante, M.G., Vezzetti, E., Piazzolla, P.: How to design a virtual reality experience that impacts the consumer engagement: the case of the virtual supermarket. Int. J. Interact. Des. Manuf. (IJIDeM) **13**(1), 243–262 (2019). https://doi.org/10.1007/s12008-018-00528-5

Xiaojing, L., Hsiao, K.-L.: Effects of diffusion of innovations, spatial presence, and flow on virtual reality shopping. Front. Psychol. **13**, 1–10 (2022)

An Exploratory Study of Audiobook Discount Pricing

Li Chen(✉)

Broadwell College of Business and Economics, Fayetteville State University, Fayetteville, USA
lchen@uncfsu.edu

Abstract. Recently, audiobook has become one of the fastest growing e-commerce markets. In practice, retailers of audiobooks often use discount prices to attract consumers. Nevertheless, little research has paid attention to the critical factors of discount pricing decisions. Drawing from literature of consumers' perceived value and uncertainty, we aim to investigate the impact of the New York Times Bestseller status of an audiobook and the length of audiobook on discount size. Based on a unique dataset of 323 audiobooks, we conduct an empirical analysis to test our hypotheses. Our results reflect that retailers tend to provide a smaller discount for audiobooks on the New York Times Bestseller list. We also find that the length of audiobook has a positive and significant impact on discount size. In addition, our results show that the New York Times Bestseller status has a moderating role on the impact of length of audiobook. Our research provides useful managerial insights that can help retailers make discount pricing decisions.

Keywords: Discount pricing · audiobook · digital marketing · digital goods · regression analysis

1 Introduction

Recently, Audiobook has become one of the fastest growing e-commerce markets. According to an industry report by Grandview research, the revenue of the global audiobook market reached USD $2.6 billion in 2019 and is expected to grow at 24.4% annually from 2020 to 2027. The revenue is estimated to reach USD $15 billion in 2027 (Tiech 2021). There are several (possible) reasons for the rapid development of audiobook market. First, audiobooks provide a higher level of reading convenience than physical books and e-books, especially in the multitask setting (Bussel 2021). Second, development of information technology enables quick and wide distribution of audiobooks through Internet. Lastly, the working-at-home style during the COVID-19 pandemic allows people to spend more time on reading/listening audiobooks.

While there is an increasing demand of audiobooks, many current and potential audiobook consumers are concerned of the high prices. This is mainly because of the cost paid to the narrator (Mclloy 2019). It takes eight hours on average to finish an audiobook. For a well-known narrator, the cost is $1,000 or higher per finished hour for an audiobook. The total cost climbs even more with post-production added in a studio,

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 46–52, 2023.
https://doi.org/10.1007/978-3-031-31836-8_6

leading to much higher prices for audiobooks (Mclloy 2019). It is natural for consumers to seek the audiobooks with discount. Not surprisingly, retailers began to use discount prices to promote their audiobooks.

While discount pricing has become an essential part of audiobook retailers' marketing strategy, there is a lack of rigorous research on this promotion tool. In particular, little research has paid attention to the following question: What are the key factors of discount size decisions of audiobooks? This paper is an exploratory effort to answer the research question raised above.

Based on marketing literature of consumers' perceived value and uncertainty, we have identified two understudied factors in current search: (1) the status of New York Times Bestseller list and (2) the length of an audiobook. Using a unique dataset of 323 audiobooks, we carry out an empirical analysis to test our hypotheses. Our results show that retailers offer smaller discounts for audiobooks on the New York Times Bestseller list. Also, the length of audiobook reflects a positive and significant impact on discount size. In addition, our results show that the New York Times Bestseller status has a moderating role on the impact of length of audiobooks. Our study provides useful insights for audiobook retailers in this fast-growing market.

The rest of the paper is organized as follows. Section 2 provides a comprehensive literature review of relevant research. In Sect. 3, we develop a set of hypotheses related to the important factors influencing discount size. In Sect. 4, we describe the data collection and the regression model to test the proposed hypotheses. Then we present the results of our regression analysis and discuss the managerial insights. Section 5 concludes the paper with future research directions.

2 Literature Review

Our paper is related to the literature of discount pricing. Some researchers focus on finding optimal discount prices. Cachon and Feldman (2015) designed the optimal pricing policy in the presence of strategic consumers. They found that offering discount more frequently can be a better strategy. Pal and Adhikari (2020) aimed to maximize profit in a two time-period setting by offering a price discount in the second period.

Some other researchers examined the impact of discount pricing on sales. These studies in general showed that discount pricing has a positive effect of incremental sales of products and services including used automobiles (Busse et al. 2010), digital movie (Gong et al. 2015), and online games (Choi and Chen 2019). While the studies mentioned above provide knowledge of discount pricing, they haven't discussed critical factors which influence retailers' discount pricing, especially in the context of digital goods.

Our research is also related to the literature of promotion of digital content. Extant research mainly focuses on two promotion tools: free trial and sampling. For the free trial promotion, many researchers are interested to examine when to offer free trial of digital goods such as free version of software (Cheng and Tang 2010; Arora et al. 2017). In addition, prior research found that free trial can reduce consumers' uncertainty on the quality of products (Sriram et al. 2015).

For the sampling promotion, Halbheer et al. (2014)'s analytical model found that publishers of digital content should consider advertising effectiveness when designing

their sampling strategies. Chen (2017) used simulation to illustrate that optimizing sampling helps increase firms' revenue of e-books by around 8%. Using data of online newspaper, Lambrecht and Misra (2017) showed that retailers of digital content can be better off by providing free content from time to time. Different from prior studies in this research stream, our study explores the promotion of digital goods such as audiobooks using discount pricing.

3 Hypothesis Development

Prior studies of consumers' perceived value suggest that when consumers have higher perceived value with a product, they will expect a lower discount of that product (Darke and Chung 2005; Yoon et al. 2014). New York Times Bestseller list serves as reference of consumers' perceived value. Since audiobooks on that list are usually considered with high quality/value, consumers will not expect to see a large discount size. As a result, retailers might promote the audiobooks on the Bestseller list with a smaller discount.

In addition, one key purpose of retailers' offering discounts is to attract awareness of consumers in the crowded market (Maughan 2015). When a book is on New York Times Bestseller list, it might have already drawn consumers' attention and has influenced sales (Bao and Chang 2014). Consequently, retailers do not need to offer a discount as large as those who are not on the Bestseller list. Therefore, we develop the following hypothesis:

Hypothesis 1: Retailers provide smaller discount size when an audiobook is on the New York Times Bestseller list.

Prior research also found that discount size is positively related to consumers' perceived uncertainty of quality (Zheng et al. 2022). The higher the uncertainty is, the larger the discount size will be. Since audiobooks belong to experience goods, consumers can only tell the quality of a book after reading it. Thus, it is logical to assume that consumers' uncertainty increases with the length of audiobook because it needs more time to read/listen it. To provide enough incentive to offset consumers' uncertainty, retailers need to provide a large discount for long audiobooks. Therefore, we develop the following hypothesis:

Hypothesis 2: Discount size is positively associated with the length of an audiobook.

In addition, consumers' perceived value and corresponding decisions might be influenced by multiple moderators (Yoon et al. 2014; Carlson and Kukar-Kinney 2018). Therefore, we also examine whether there is any interaction effect between Bestseller status and length of audiobook on discount size. In practice, audiobooks on the New York Times Bestseller list are popular among readers. Hence, we assume that consumers have more information on those audiobooks. Even when an audiobook on the Bestseller list is relatively long, consumers have less uncertainty towards the quality of the book. It is thus expected that the interaction between Bestseller status and length of audiobooks is negative. Ahmetoglu et al. (2014) also reported that consumers' knowledge of products might influence the effect of reference-price-based discount. Therefore, we develop the following hypothesis:

Hypothesis 3: The effect of length of audiobook on discount size is smaller when the audiobook is on New York Times Bestseller list.

4 Empirical Analysis

4.1 Data

We collected data from an audiobook retailer Chirpbooks which offers discounts on its audiobooks. Our dataset includes information from 323 audiobooks which was collected from February 2021 to April 2021. For each audiobook with a discount on the website of Chirpbooks, we collect the following information: the regular price, the price after discount, book age (the number of years after the book is released), the length of audiobook (in minutes), the category of the audiobook, and the publisher of the audiobook. We use the log transformation of length of audiobook because it allows us to normalize the distribution.

In addition, we use three dummy variables to capture features of an audiobook. BestsellerDummy equals to one when an audiobook is on the list of New York Times Bestseller and zero otherwise. BigPubDummy equals to one when an audiobook is published by Big five publishers (Penguin Random House, Hachette Livre, Harper Collins, Simon & Schuster, and MacMillan Publishers) and zero otherwise. NonfictionDummy equals to one for a Nonfiction audiobook and zero otherwise. The table below provides summary statistics of the dataset (Table 1).

Table 1. Summary statistics

	Average	Max	Min	Standard deviation
DiscountSize	0.829	0.956	0.501	0.065
BestsellerDummy	0.347	1	0	0.477
Ln_Length	6.302	8.151	4.190	0.538
Book_Age	5.464	26	1	4.557
NonfictionDummy	0.214	1	0	0.410
BigPubDummy	0.344	1	0	0.476

We also check the correlation among the independent variables in our dataset. The table below present the correlation matrix. We can see that there is no obvious strong correlation between two independent variables (the correlation values are all less than 0.35) (Table 2).

4.2 Model

We develop the model below to test our hypotheses.

$$\begin{aligned}\text{DiscountSize} =& \beta 0 + \beta 1 * \text{BestsellerDummy} + \beta 2 * \text{Ln\_Length} \\ &+ \beta 3 * \text{BestsellerDummy} * \text{Ln\_Length} + \beta 4 * \text{Book\_Age} \\ &+ \beta 5 * \text{NonfictionDummy} + \beta 6 * \text{BigPubDummy} + \varepsilon\end{aligned}$$

Table 2. Correlation matrix

	Variable	1	2	3	4	5
1	BestsellerDummy	1.000				
2	Ln_Length	0.096	1.000			
3	Book_Age	0.170	0.031	1.000		
4	NonfictionDummy	−0.062	−0.096	−0.057	1.000	
5	BigPubDummy	0.332	0.114	0.058	0.148	1.000

The dependent variable is discount size which is measured as the percentage of regular price used as discount. For example, if an audiobook used to sell at $9.99 and is currently sold at $3.99, the discount size is 60%. The independent variables include the BestsellerDummy, log of the length of audiobook, and the interaction of them.

To check the robustness of our model, we used two different sets of independence and control variables. In model 1, we just include the three independent variables mentioned in the paragraph above. In model 2, we also include the book age, the NonfictionDummy and the BigPubDummy variable as control variables to control the impact of attributes of audiobooks and publishers. The table below presents the regression results (Table 3).

Table 3. Results of regression analysis (standard errors in the parentheses)

	Model 1	Model 2
Intercept	0.907 (0.469)***	0.699 (0.467)***
BestsellerDummy	−0.168 (0.087)*	−0.165 (0.086)*
Ln_Length	0.023 (0.008)**	0.023 (0.007)**
BestsellerDummy* Ln_Length	0.024 (0.011)*	0.025 (0.012)*
Book_Age		−0.001 (0.001)
NonfictionDummy		−0.010 (0.008)
BigPubDummy		−0.021 (0.008)**

Notes: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

We first check the impact of Bestseller. Based on the results, both model 1 and model 2 reflect a negative and significant impact. Therefore, H1 is supported. This finding shows that retailers of audiobooks can take advantage of the popularity of audiobooks

by offering a smaller discount. Then we look at the effect of the length of audiobook. We can see that both models show positive and significant impact. Therefore, H2 is supported. This finding implies that retailers need to offset the uncertainty of longer audiobooks with a larger discount. One recommendation is that retailers might consider separating a long audiobook into a series of shorter audiobooks if they want to avoid large discount.

For the interaction of BestsellerDummy and length of audiobook, there is a negative and significant effect in both models. Therefore, H3 is supported. Our results show that the factor of Bestseller has a moderating role on the impact of length of audiobooks to discount size. This finding suggests that retailers need to consider the discount size corresponding to the popularity of audiobooks. Overall, the regression results are consistent with our proposed hypotheses.

5 Conclusion

With the growing popularity of audiobooks, retailers often use large discounts to attract consumers. Previous literature suggests that consumers' perceived value and uncertainty can be critical factors for retailers to set discount price. Nevertheless, these factors are understudied in the extant research of discount pricing of digital goods including audiobooks. Our research is an exploratory study to identify key determinants of discount size. Using a unique dataset of 323 audiobooks, we carry out a regression analysis to test our hypotheses. Our results show that whether an audiobook is on New York Times Bestseller list and the length of an audiobook have significantly impact on the discount size. We also find that the status of Bestseller has a moderating role in the impact of audiobook length on discount size. Our findings provide retailers with useful insights when determining discount size of audiobooks.

Our study can be extended for future research in the following aspects: First, we only collected data from one audiobook website. Future research might consider investigating publishers' discount pricing using data from other audiobook websites. Second, our analysis focuses on audiobooks. Researchers might explore discount pricing of other types of information goods such as online newspaper, e-books, and digital movies. Third, future research might consider studying whether the discount sizes of audiobooks change over time. Lastly, researchers can examine the impact of the consumers' response toward publishers' discount price in a controlled experiment. It will be interesting to see what will happen in that setting.

References

Ahmetoglu, G., Furnham, A., Fagan, P.: Pricing practices: a critical review on their efforts on consumer perceptions and behavior. J. Retail. Consum. Serv. **21**, 696–707 (2014)

Arora, S., Hofstede, F., Mahajan, V.: The implications of offering free versions for the performance of paid mobile apps. J. Mark. Res. **81**(6), 62–78 (2017)

Bao, T., Chang, T.: Why Amazon uses both the New York Times Bestseller List and customer reviews: an empirical study of multiplier effects on product sales from multiple earned media. Decis. Support Syst. **67**, 1–8 (2014)

Busse, M., Simester, D., Zettelmeyer, F.: The best price you will ever get: the 2005 employee discount pricing promotions in the U.S. automobile industry. Manag. Sci. **29**(2), 199–215 (2010)

Bussel, R.: Audiobooks - 2021 Book Trends Show the Power of Booktok and the Rise of Audiobooks, 31 December 2021. Forbes. https://www.forbes.com/sites/rachelkramerbussel/2021/12/31/2021-book-trends-show-the-power-of-booktok-and-rise-of-audiobooks/?sh=3a100beb7f70

Cachon, G., Feldman, P.: Price commitments with strategic consumers: why it can be optimal to discount more frequently than optimal. Manuf. Serv. Oper. Manag. **17**(3), 399–410 (2015)

Carlson, J., Kukar-Kinney, M.: Investigating discounting of discounts in an online context: the mediating effect of discount credibility and moderating efforts of online daily deal promotions. J. Retail. Consum. Serv. **41**, 153–160 (2018)

Chen, L.: A quantitative analysis of E-books sampling optimization. J. Theor. Appl. Electron. Commer. Res. **12**(1), 68–76 (2017)

Cheng, H.K., Tang, Q.: Free trial or no free trial: optimal software product design with network effects. Eur. J. Oper. Res. **205**(2), 437–447 (2010)

Choi, H., Chen, C.: The effects of discount pricing and bundling on the sales of game as a service: an empirical investigation. J. Electron. Commer. Res. **20**(1), 21–34 (2019)

Darke, P., Chung, C.: Effects of pricing and promotion on consumer perceptions: it depends on how you frame it. J. Retail. **81**(1), 35–47 (2005)

Gong, J., Smith, M., Telang, R.: Substitution or promotion? The impact of price discounts on cross-channel sales of digital movie. J. Retail. **91**(2), 343–357 (2015)

Halbheer, D., Stahl, F., Koenigsberg, O., Lehmann, D.R.: Choosing a digital content strategy: how much should be free? Int. J. Res. Mark. **31**(2), 192–206 (2014)

Lambrecht, A., Misra, K.: Fee or free: when should firms charge for online content? Manag. Sci. **63**(4), 1150–1165 (2017)

Maughan, S.: How Publishers Marketing Digital Audiobooks. Publisher Weekly (2015)

Mclloy, T.: AI Comes to Audiobooks. Publisher Weekly (2019)

Pal, B., Adhikari, S.: Two phases inventory model with variable cycle length under discount policy. RAIRO-Oper. Res. **54**(1), 1–18 (2020)

Sriram, S., Chintagunta, P., Manchanda, P.: Service quality variability and termination behavior. Manag. Sci. **61**(11), 2739–2759 (2015)

Tiech, D.: Audiobooks - An Under-served Market for Artificial Intelligence Voice Text and Voice Solutions, 14 December 2021. Forbes. https://www.forbes.com/sites/davidteich/2021/12/14/audiobooks--an-under-served-market-for-artificial-intelligence-voice-text-and-voice-solutions/?sh=39fd6702c8d9

Yoon, S., Oh, S., Song, S., Kim, K., Kim, Y.: Higher quality or lower price? How value-increasing promotion affect retailer reputation via perceived value. J. Bus. Res. **67**(10), 2088–2096 (2014)

Zheng, D., Chen, Y., Zhang, Z., Che, H.: Retail price discount depth and perceived quality uncertainty. J. Retail. **98**(3), 542–557 (2022)

Assessing Streamer Attributes: The Role of Trust in Purchase Intention for Live E-Commerce

Monica Law(✉), Mark Ng, Lubanski Lam, and Xiling Cui

Department of Business Administration, Hong Kong Shue Yan University, Hong Kong, China
{cclaw,chng,cflam,xlcui}@hksyu.edu

Abstract. This study aims to examine which streamer attributes enhance consumer trust and thus increase purchase intention. Regarding signalling theory, each attribute conveys specific signals to consumers. Results obtained from a survey of 453 respondents for live e-commerce in Hong Kong and analysed with a structural equation model indicate that attractiveness, parasocial interaction and responsiveness have significant positive relationships and are fully mediated by trust, whereas trust has a significant positive relationship with purchase intention. However, creativity is neither related nor mediated with trust but has a positive direct relationship with purchase intention. This research contributes to live-streaming e-commerce literature to provide further understanding of the impacts of different streamer attributes on trust and purchase intention. It also provides significant implications for marketers to review current live e-commerce strategies and adopt improved strategies for selecting and cooperating with streamers.

Keywords: Attractiveness · Creativity · Parasocial interaction · Responsiveness · Trust · Purchase intention

1 Introduction

Live streaming has recently become popular globally. A streamer can be a celebrity, key opinion leader, key opinion customer or someone who uses live streaming to showcase products in real time through online official websites and/or social media platforms. Specifically, as more than half of Chinese netizens regularly view real-time streaming, live e-commerce is built around this follower economy. With nearly 45% of Chinese Internet users watching live e-commerce by 2021, it is expected to reach new heights in Asian countries in the coming years; the gross merchandise value of live e-commerce in China is also predicted to account for nearly a quarter of the total online shopping by 2023 (Pasquali 2022). In Hong Kong, despite the shrinking of the overall retail market amid the pandemic, a rapid expansion of online retail was recorded in 2021 with approximately HK$23 billion and is expected to further grow to over HK$42 billion in 2026 (Ma 2021). With these promising figures in China, many Hong Kong companies have expected that they would be as successful as working in China. Live e-commerce is similar to an

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 53–61, 2023.
https://doi.org/10.1007/978-3-031-31836-8_7

undeveloped market in Hong Kong. However, the popularity of live streaming in Hong Kong is still not high.

Live e-commerce is unique in that consumers can interact with streamers in real time, resulting in engaging shopping experiences and virtual human connections (Wohn et al. 2018). Therefore, selecting a good and proper streamer is critical to the success and sustainability of live e-commerce, as streamers can attract, manage and sustain customer participation and purchase intention (Lin et al. 2021). Many scholars point out that live streaming commerce is a new but unexplored field (Lu and Chen 2021). Specifically, existing studies mainly identify purchase intention predictors from information technology and consumer perspectives (Sun et al. 2019). Although streamers play an important role in the live streaming business, factors related to streamers have received relatively little attention compared with other factors (Lu and Chen 2021). Finding studies for investigating streamer attributes to build trust towards streamers is difficult. To fill in this research gap, this study aims to examine streamer attributes for enhancing trust and purchase intention in live streaming commerce. We adopt signalling theory and treat each attribute as a particular signal to build customer trust, which is well documented as a major inhibitor of purchase intention (e.g. Lu and Chen 2021). Hence, the research questions are: What live streamer types do Hong Kong online consumers trust more? Does trust mediate the relationship between streamer attributes and purchase intention for live e-commerce? The findings may help researchers and practitioners further understand how to build strong trust with live e-commerce consumers and develop various strategies for selecting streamers.

2 Theoretical Background and Hypothesis Development

Signalling theory has been widely used in different disciplines, such as management and marketing, explaining that information asymmetry effects and different object features are considered as signals, that is, another information type (Lu and Chen 2021). For live e-commerce, consumers do not have full product information and cannot assess product quality, and thus signalling theory has been used to understand various signals streamers provided to consumers for reducing information asymmetries, building trust and helping make purchase decisions (Lu and Chen 2021). In this study, four streamer attributes are examined: (1) Attractiveness is primarily about first and ongoing impressions; (2) Creativity is a streamer's approach to present, promote and conduct a live broadcast; (3) Parasocial interaction relates to information exchange and mutual communication; and (4) Responsiveness correlates with during-and-post-sale beliefs. These four attributes represent various streamer signal types that trigger trust and purchase intention in the live commerce context.

Attractiveness is a viewer's perception of a streamer's personality, appearance and talent during a live broadcast (Ha and Lam 2017). Mostly, when the streamer's appearance is attractive, viewers may think that he/she has a talent for persuading people to buy products or believe that product information is useful when making recommendations, thereby cultivating strong trust (Xu et al. 2020). More attractive streamers may then provide better impressions to online customers, especially for forming first impressions. Hence, we hypothesise the following:

H1: Attractiveness positively relates to trust.

Creativity relates to divergence and relevance in which divergence means novel, different or unusual, whereas relevance means meaningful, appropriate, useful or valuable to an audience (Smith et al. 2007). Smith et al. (2007) found that creative advertising brings positive effects and then transfers to brands. Thus, creative messages attract further attention and lead to positive responses and evaluations (Lee and Hong 2016). In live e-commerce, streamers must come up with different ways to conduct live broadcasts to make them interesting, different, useful and meaningful, thus enhancing trust. Hence, we propose the following:

H2: Creativity positively relates to trust.

Parasocial interaction is defined as a viewer's subjective feelings of relationship and closeness to a streamer (Schramm and Hartmann 2008). The uniqueness of live streaming is that consumers can interact directly and indirectly with a streamer in real time, create a sense of being there, enrich shopping experience and build an intimate personal connection (Wohn et al. 2018; Hu et al. 2017). Therefore, high-degree interactions generated by two-way simultaneous communications can increase customer trust towards streamers (Zhong et al 2022). Parasocial relationships can serve as key behavioural facilitators in live e-commerce (Hu et al. 2017). Hence, we propose the following:

H3: Parasocial interaction positively relates to trust.

Responsiveness refers to the ability and willingness to respond quickly to a customer request and provide a timely service (Zeithaml et al. 2000). Unlike shopping in a physical store, online shopping has no actual product and the end customer may not obtain the product at all or end up with a counterfeit product that does not exist, is in poor condition or is of low quality. The role of a streamer is to demonstrate a product, explain it clearly and provide a good after-sales service, thereby increasing consumer trust towards the streamer (Wongkitrungrueng and Assarut 2020). Hence, we hypothesise the following:

H4: Responsiveness positively relates to trust.

Trust has been studied extensively over the years, as it is considered a key factor in building relationships. It particularly leads buyers to think of positive seller behaviours, thereby helping reduce their discomfort and vulnerability in e-commerce (Gefen et al. 2003). Meanwhile, many scholars support that customer trust in online sellers is a key predictor of purchase intention (e.g. Hong and Cho 2011) and that trust always acts as an important mediator for purchase intention. For example, Xu et al. (2022) pointed out that trust acts as an intermediary between streamer attributes and willingness to buy. Park and Yang (2010) illustrated that a strong parasocial interaction brings consumers a positive impact on trust, thus leading to a strong willingness to purchase. Hence, we hypothesise the following:

H5: Trust positively relates to purchase intention.

H6: Trust mediates between (a) attractiveness, (b) creativity, (c) parasocial interaction and (d) responsiveness and purchase intention.

3 Methodology

3.1 Sampling and Procedure

The Enterprise and Social Development Research Centre and Proactive Think Tank Limited invited different companies (e.g. online business companies) to forward an online questionnaire to their customers and followers[1]. The researchers prepared Chinese and English versions of the questionnaire (Google Form), which consisted of three parts: online purchase experience, live e-commerce and demographic information. This study yielded 1,006 valid responses. A total of 453 participants had watched live streaming in the past three months that was used as the dataset for the analysis in this study. The demographics were 21–60 years old (92%), female (73%), married (55%), secondary/university education (39% and 25%, respectively) and online purchasers after live streaming (65%).

3.2 Measures

The measurement items of the eight constructs were based on prior studies. They were with a five-point Likert scale: "strongly disagree" (= 1) and "strongly agree" (= 5). Some wordings were amended from the original ones for studying live e-commerce streamers. In detail, three items for attractiveness were adopted from Xu et al. (2020); for example, "My favourite streamer has an appealing appearance." Four items for creativity were taken from Lee and Hong (2016); for example, "My favourite streamer's live stream is unique." Four items for parasocial interaction were taken from Xu et al. (2020), such as: "In the live stream, I feel as though the streamer and I are friends." Three items for responsiveness were referenced to Zhang et al. (2020); for example, "My favourite streamer is always willing to help me." Three items for trust were adopted from Wongkitrungrueng and Assarut (2020); for example: "I believe that the streamer is trustworthy." Three items for purchase intention were taken from Ki and Kim (2019); for example, "I will likely buy the product endorsed by my favourite streamer the next time I need it."

4 Data Analysis and Results

The proposed model and research hypotheses were assessed by the partial least squares structural equation modelling (PLS–SEM) with the software package SmartPLS 3.3.9. A two-stage process involves an outer model for examining the relationships between latent and observed variables, and an inner model with a 5,000-random-bootstrap setting is used for investigating the hypothesised relationships among latent variables (Chin 1998; Hair et al. 2014).

[1] The authors would like to acknowledge the research fund provided by Proactive Think Tank Limited and the support from the Enterprise and Social Development Research Centre (BA/RS/2020/003).

4.1 Measurement Model (Outer Model) Evaluation

In the measurement model, the factor loading, reliability, convergent and discriminant validity of each construct used in this study were assessed (Hair et al 2014). Firstly, the factor loading of each item was examined. No cross-loading item was observed. The factor loadings of related items were 0.7 or above. Secondly, Cronbach's alpha and composite reliability with principal component analysis (Chin 1998) were adopted for assessing reliability. As shown in Table 1, all reliability measures exceeded 0.70 and fulfilled the recommended criteria (i.e. > 0.7) (Nunnally 1978). Furthermore, all factor loading measures were above 0.7 and the average variance extracted (AVE) of each construct was greater than 0.5 (Hair et al. 2011). Lastly, the Fornell–Larcker criterion assessment was used (Fornell and Larcker 1981). In Table 2, the square roots of the AVEs of the reflected constructs were higher than their inter-construct correlations. Hence, the measurement model used in this study possessed good internal consistency reliability, sufficient convergent validity and acceptable discriminant validity.

Table 1. Quality criteria of the constructs

Latent Variable	Item	Mean	Standard Deviation	Standardized Outer loading	Cronbach's alpha	Composite reliability	AVE
Attractiveness	ATTR1	3.99	0.56	0.896	0.787	0.868	0.689
	ATTR2	3.73	0.71	0.880			
	ATTR3	3.53	0.85	0.701			
Creativity	CR1	3.73	0.85	0.841	0.886	0.920	0.743
	CR2	3.86	0.58	0.902			
	CR3	3.75	0.59	0.852			
	CR4	3.64	0.85	0.851			
Parasocial interaction	PAR1	3.21	0.84	0.841	0.862	0.916	0.784
	PAR2	3.48	0.76	0.880			
	PAR3	3.53	0.73	0.933			
Responsiveness	RES1	3.53	0.83	0.949	0.932	0.956	0.880
	RES2	3.59	0.76	0.948			
	RES3	3.43	0.78	0.916			
Trust	TRU1	3.68	0.67	0.925	0.907	0.941	0.843
	TRU2	3.70	0.72	0.934			
	TRU3	3.50	0.71	0.894			
Purchase intention	PI1	3.74	0.63	0.877	0.901	0.938	0.835
	PI2	3.79	0.63	0.956			
	PI3	3.78	0.66	0.906			

Table 2. Square root of AVE (diagonal elements) and inter-construct correlations

	ATTR	CR	PAR	RES	TRU	PI
ATTR	0.830					
CR	0.613	0.862				
PAR	0.434	0.442	0.885			
RES	0.449	0.415	0.452	0.938		
TRU	0.593	0.564	0.625	0.609	0.918	
PI	0.490	0.629	0.347	0.484	0.640	0.914

4.2 Structural Model (Inner Model) Evaluation

Three processes were used to examine the research model and hypotheses (Hair et al. 2014). Firstly, collinearity assessment was performed, and the variance inflation factor (VIF) for each construct was evaluated. The VIFs ranged from 1 to 1.771 and were below the threshold of 5, which indicated no collinearity among the predictors in this model (Hair et al. 2011). Secondly, the relationships among different constructs were examined using the bootstrapping procedure (5,000 samples, no sign changes option). Table 3 presents that four out of five structural relationships were significant. The last evaluation was to assess the predictive power of the model with R^2, f^2 and Q^2 (by blindfolding procedure). The coefficients of determination (R^2) of the two endogenous variables—TRU and PI—were respectively 0.605 and 0.409, thereby demonstrating high-to-medium predictive power (Henseler et al. 2009). As the average explained variance R^2 was 0.507, the structural model had strong predictive power. For the effect size (f^2), the scores ranged from 0.038 to 0.692, indicating that the effect sizes of different endogenous constructs on exogenous constructs were from low to high (Hair et al, 2014). The predictive accuracy Q^2 for the two endogenous constructs (TRU: 0.487; PI: 0.332) were above strong-and-medium thresholds (0.35 and 0.15, respectively), supporting the model's predictive relevance.

Table 3. Significance testing results of the structural model path coefficients

	Path	Estimate	SE	t-value	sign	f^2	Remark
H1	ATTR→TRU	0.221	0.078	2.843	**	0.070	Supported
H2	CR→TRU	0.162	0.099	1.642	n.s	0.038	Unsupported
H3	PAR→TRU	0.323	0.091	3.533	***	0.184	Supported
H4	RES→TRU	0.296	0.106	2.808	**	0.157	Supported
H5	TRU→PI	0.640	0.071	9.043	***	0.692	Supported

Note: SE = Standard Error; Sign. = Significance (** $p < .01$; *** $p < .001$); n.s. = not significant

4.3 Mediation Analysis

TRU, the key mediator in this study, was tested with bootstrapping to assess path coefficients among different constructs for direct and indirect effects. In Table 4, with the Sobel test, three paths with significant full mediation effects (i.e. H6a, H6c and H6d) were observed. One path had no mediation effect (i.e. H6b).

Table 4. Significance testing results of the mediation effect

	Path	Direct effect	Indirect effect	Sobel Z	Remark
H6a	ATTR→TRU→PI	0.005	0.141**	2.728	Full mediation
H6b	CR→TRU→PI	0.405**	0.104	1.485	No effect
H6c	PAR→TRU→PI	0.158	0.206***	3.151	Full mediation
H6d	RES→TRU→PI	0.122	0.190**	2.627	Full mediation

Note: ** $p < .01$; *** $p < .001$

5 Discussion and Conclusion

This study provides several theoretical and practical contributions. Firstly, it contributes to live-streaming e-commerce literature by developing a theoretical model to reveal how different streamer attributes affect consumer trust and purchase intention. Secondly, among the four attributes, parasocial interaction has the most significant effect on trust. Parasocial interaction is suggested as a key ambient attribute in the live e-commerce context, and this finding is similar to prior studies (e.g. Xu et al. 2020). Thirdly, trust is the key factor affecting consumer purchase intention (e.g. Lu and Chen 2021). It is also an important mediator for streamer attributes (Park and Yang 2010; Xu et al. 2022). The current research illustrates that attractiveness, parasocial interaction and responsiveness are mediated by trust. Each attribute acts as a particular signal to cultivate trust and finally has a significant positive effect on purchase intention. Lastly, in this study, creativity is not the key attribute related to and mediated by trust but has a direct positive relationship with purchase intention. Consumers may not find creative streaming approaches to be trustworthy, but these attributes arouse their attentions to and interests in purchasing specific products.

For practical implications, this study highlights that live e-commerce success works closely with streamers. These streamers create such "live images" (Zhong et al. 2022). Specifically, attractive streamers assist building trustworthy images. The ways to communicate and interact with customers are also important. Some streamers adopt compressive streaming approaches, such as selling multiple products during short live shows. This approach prevents streamers from communicating and interacting with customers. However, streamers should use more time to interact and communicate with customers, rather than simply selling products. Furthermore, many companies invite and change different streamers for live shows, and doing so may affect responsiveness. Some streamers are

even prevented from being involved in after-sale services. This definitely affects customer trust towards certain streamers. By following up customer orders made during live shows, streamers can enhance parasocial interaction and responsiveness, cultivating higher trust and purchase intention. In addition, creative approaches may be adopted to make live shows further interesting, thus increasing customer purchase intention.

However, this study has several limitations. Firstly, only four streamer attributes have been investigated; more streamer attributes, mediators and control variables should be examined in the future. Secondly, this study only focuses on live e-commerce in Hong Kong. Future research may explore and compare live e-commerce in different cities and regions. More comparisons are likely to provide a more comprehensive understanding of various live streaming practices.

References

Chin, W.W.: The partial least squares approach to structural equation modeling. In: Marcoulides, G.A. (ed.) Modern Methods for Business Research, pp. 295–358. Lawrence Erlbaum Associates, Mahwah (1998)

Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. **18**(1), 39–50 (1981)

Gefen, D., Karahanna, E., Straub, D.W.: Trust and TAM in online shopping: an integrated model. MIS Q. 51–90 (2003)

Ha, N.M., Lam, N.H.: The effects of celebrity endorsement on customer's attitude toward brand and purchase intention. Int. J. Econ. Financ. **9**(1), 64–77 (2017)

Hair, J.F., Ringle, C.M., Sarstedt, M.: PLS-SEM: indeed a silver bullet. J. Mark. Theory Pract. **19**, 139–151 (2011)

Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M.: A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage Publications, Thousand Oaks (2014)

Henseler, J., Ringle, C.M., Sinkovics, R.R.: The use of partial least squares path modeling in international marketing. Adv. Int. Mark. **20**, 277–319 (2009)

Hong, I.B., Cho, H.: The impact of consumer trust on attitudinal loyalty and purchase intentions in B2C e-marketplaces: intermediary trust vs. seller trust. Int. J. Inf. Manag. **31**(5), 469–479 (2011)

Hu, M., Zhang, M., Wang, Y.: Why do audiences choose to keep watching on live video streaming platforms? An explanation of dual identification framework. Comput. Hum. Behav. **75**, 594–606 (2017)

Ki, C.W.C., Kim, Y.K.: The mechanism by which social media influencers persuade consumers: the role of consumers' desire to mimic. Psychol. Mark. **36**(10), 905–922 (2019)

Lee, J., Hong, I.B.: Predicting positive user responses to social media advertising: the roles of emotional appeal, informativeness, and creativity. Int. J. Inf. Manag. **36**(3), 360–373 (2016)

Lin, G.Y., Wang, Y.S., Wang, Y.M., Lee, M.H.: What drives people's intention toward live stream broadcasting. Online Inf. Rev. **45**(7), 1268–1289 (2021)

livestream-online-platforms-awareness-worldwide/. Accessed 1 Aug 2022

Lu, B., Chen, Z.: Live streaming commerce and consumers' purchase intention: an uncertainty reduction perspective. Inf. Manag. **58**(7), 103509 (2021)

Ma, Y.: Online Retail Value in Hong Kong FY 2016-FY 2026 (2021). https://www-statista-com.hksyu.idm.oclc.org/statistics/1271614/hong-kong-online-retail-sales/. Accessed 1 Aug 2022

Nunnally, J.C.: Psychometric Theory. McGraw-Hill, New York (1978)

Park, S.Y., Yang, Y.: The effect of celebrity conformity on the purchase intention of celebrity sponsorship brand: the moderating effects of symbolic consumption and face-saving. J. Glob. Fash. Market. **1**(4), 215–229 (2010)

Pasquali, M.: Livestream e-commerce Platforms Awareness Worldwide 2021, by Country or Region (2022). www-statista-com.hksyu.idm.oclc.org/statistics/1272759/

Schramm, H., Hartmann, T.: The PSI-process scales. A new measure to assess the intensity and breadth of parasocial processes. Eur. J. Commun. Res. **33**(4), 385–401 (2008)

Smith, R.E., MacKenzie, S.B., Yang, X., Buchholz, L.M., Darley, W.K.: Modeling the determinants and effects of creativity in advertising. Mark. Sci. **26**(6), 819–833 (2007)

Sun, Y., Shao, X., Li, X., Guo, Y., Nie, K.: How live streaming influences purchase intentions in social commerce: an IT affordance perspective. Electron. Commer. Res. Appl. **37**, 100886 (2019)

Wohn, D.Y., Freeman, G., McLaughlin, C.: Explaining viewers' emotional, instrumental, and financial support provision for live streamers. In: Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, pp. 1–13 (2018)

Wongkitrungrueng, A., Assarut, N.: The role of live streaming in building consumer trust and engagement with social commerce sellers. J. Bus. Res. **117**, 543–556 (2020)

Xu, P., Cui, B.J., Lyu, B.: Influence of streamer's social capital on purchase intention in live streaming e-commerce. Front. Psychol. **12**, 6194 (2022)

Xu, X., Wu, J.H., Li, Q.: What drives consumer shopping behavior in live streaming commerce? J. Electron. Commer. Res. **21**(3), 144–167 (2020)

Zeithaml, V.A., Parasuraman, A., Malhotra, A.: A Conceptual Framework for Understanding e-service Quality: Implications for Future Research and Managerial Practice. Marketing Science Institute, Cambridge (2000)

Zhang, M., Sun, L., Qin, F., Wang, G.A.: E-service quality on live streaming platforms: swift guanxi perspective. J. Serv. Mark. **35**(3), 312–324 (2020)

Zhong, Y., et al.: I give discounts, I share information, I interact with viewers: a predictive analysis on factors enhancing college students' purchase intention in a live-streaming shopping environment. Young Consum. **23**(3), 449–467 (2022)

Advertising Value of Podcast Advertising

Carsten D. Schultz(✉)

Faculty of Business Administration and Economics, University of Hagen, Hagen, Germany
carsten.schultz@fernuni-hagen.de

Abstract. Podcast advertising is emerging as an impactful advertising channel. Based on Ducoffe's advertising model, the present study analyzes the advertising value of podcast advertising and the effect of podcast advertising on consumers' attitudes towards the advertised brand and their purchase intention. 672 responses on an experimental design including real podcast ads yield significant positive effects of podcast advertising on both outcome variables. Advertising value is established on its dimensions of entertainment, informativeness, credibility, and relevance. The total effect for podcast advertising value was higher than the brand effect from the podcast and advertised brand. A congruent ad, that is, an ad with a good fit between ad and podcast, has a higher positive effect on brand attitude towards the advertised product, and subsequently a higher total effect on consumers' purchase intention. For advertisers, the empirical results reveal an overall positive effect of podcast advertising and the importance of carefully selecting target podcasts aligning podcast audiences with target consumer groups.

Keywords: Advertising · Advertising Value · Brand Attitude · Influencer Marketing · Podcast · Purchase Intention

1 Introduction

Podcasts are emerging as an additional communication channel. For example, Spotify claims to offer more than 4 million podcasts. In industrialized countries, 34% (ranging from 25% to 46%) of people consume at least one podcast per month (Newman et al. 2022). In 2021, US podcast advertising revenues surpassed $1 billion. With a 72% increase from 2020, podcast advertising grew twice as fast as the total internet advertising market and revenues are forecasted to reach $4.2 billion in 2024 (IAB 2022). Podcasts and their speakers have become popular, and even perform in front of live audiences and sell out large venues. Due to this development, brands are increasingly considering podcasts for their communication. Brands can create own podcasts as well as sponsor and advertise on established podcasts aligned with their target audiences.

The present study addresses podcast advertising. We contribute to the existing literature by analyzing the dimensions of podcast advertising value. Moreover, we study whether podcast advertising can positively influence brand attitude and purchase intention. In doing so, we also compare the effectiveness of podcast advertising on the transfer of effects from consumers' attitudes towards the podcasts and advertised brand effects.

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 62–69, 2023.
https://doi.org/10.1007/978-3-031-31836-8_8

2 Theoretical Background

2.1 Podcast Advertising

Podcasts refer to audio media that are downloadable or streamable from the internet and users can listen to them everywhere and anytime. Often, a podcast episode consists of two people, called podcast speakers, who talk and interact with each other regarding a general or specific topic (Lundström and Poletti 2021). Companies can place advertisements within such podcasts that can be considered a form of audio advertising due to their acoustic perception. At the same time, podcasts and their speakers can also be classified as influencers because of their great reach and popularity (Hudders et al. 2021; Vrontis et al. 2020). Consequently, podcast advertising is considered a form of influencer marketing based on the resulting influence that such media have on their listeners.

Compared to radio live broadcasting, podcasts are recorded and, if necessary, edited before being available online. Radio content is still regarded as being produced more professionally than podcasts – thus involving more planning and higher production costs (Berry 2016; Marcu 2019). Whereas radio content should be suitable for the masses, podcasts can address a very specific target audience (Berry 2016). Radio advertising is generally regionalized and produced by advertising brands, whereas podcast advertising can be voiced by podcast speakers. Podcast ads voiced by actors and producers are found to be effective in connecting with engaged listeners and supporting advertising goals (Standish 2021). Such sponsored activities create relational engagement between podcasts and their audience that is more similar to influencer marketing than radio advertising (Ye et al. 2021).

2.2 Advertising Value Model

The advertising value model by Ducoffe (1996) provides the theoretical foundation for the present study. Ducoffe's theoretical framework has been applied in various contexts, most notably mobile advertising (Martins et al. 2019; Tsang et al. 2004), online video advertising (Yang et al. 2017), vlog advertising (Abbasi et al. 2022), and gaming influencer marketing (Schultz 2022). However, Ducoffe's model has not been used in the context of podcast advertising, which this study addresses.

The original advertising value model incorporates entertainment, informativeness, and irritation as central elements of the advertising value. Entertainment in an advertisement refers to its ability to hold and retain customers' attention and interest by adding hedonic values, such as delight and pleasure (Ducoffe 1996). Informativeness draws customers' attention towards product details and functionalities and, hence, communicates product and service value (Martins et al. 2019). Advertisement related irritation represents the extent to which individuals perceive an advertisement as intrusive (Abbasi et al. 2022).

This study also includes credibility as another factor of advertising value (Brackett and Carr 2001; Martins et al. 2019; Tsang et al. 2004). This is particularly in line with the importance of credibility in influencer marketing (Wiedmann and von Mettenheim 2020). An advertisement's credibility refers to perceived truthfulness and believability

(Abbasi et al. 2022). In the context of podcasts, credibility is formed and enhanced through the connectivity between the podcast and its followers.

The subjective relevance of the advertisement is another relevant factor in determining the perceived advertising value. Relevance has been found to be particularly important in the context of mobile advertising (Barwise and Strong 2002; Scharl et al. 2005). The advancements in digitalization create users' expectations for more and more (personalized) consistent advertising. Thus, consumers become to expect a high level of personal relevance from digital advertising (Fig. 1).

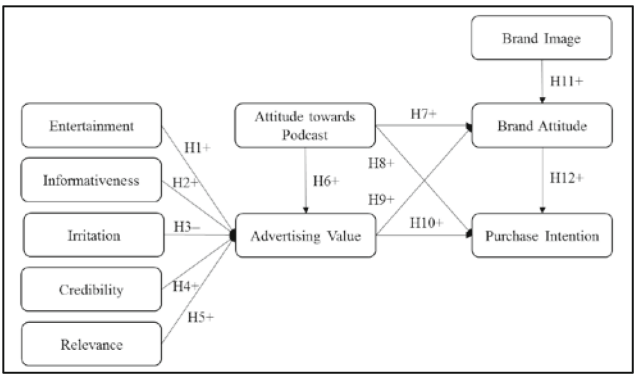


Fig. 1. Research Model

2.3 Research Model and Hypotheses

The advertising value model (Ducoffe 1996) serves as the framework for determining podcasts' advertising value. This study extends the advertising value model with credibility and relevance. In order to compare the effect of podcast advertising with the underlying brand traits, this study also includes brand image as a relevant antecedent from strategic brand management literature (Yoo and Donthu 2001). Following findings from the emerging influencer literature, the attitude towards podcasts impacts the outcome variables (Hudders et al. 2021; Vrontis et al. 2020). As the outcome of podcast advertising, the study considers branding effects, such as an increase in brand attitude, and purchase intention towards the advertised products.

3 Methodology

3.1 Experimental Setup

The present study employed an experimental scenario technique using 3 podcasts in combination with congruent and non-congruent advertisements. The podcasts are of the categories (a) Business & Technology, (b) Relationships, and (c) True crime. Additionally, four real audio advertisements were selected as either congruent or not congruent

with the three podcasts. The finance podcast (a) used a tax app (taxfix) as a congruent ad, and a dating ad (bumble) as a noncongruent ad. The taxfix ad was used in the other cases as a noncongruent stimulus. The air up bottle ad was the congruent ad in the case of the relationship and entertainment podcast for young adults. Lastly, the true crime podcast used an ad for the audiobook platform BookBeat. Table 1 displays the experimental setup. For the survey, interviewees were randomly assigned to one of these six scenarios (3 podcasts x 2 ads).

Table 1. Experimental Set-Up

Podcast	congruent Ad	non-congruent Ad
Business & Technology	taxfix	bumble
Relationships	air up	taxfix
True crime	BookBeat	taxfix

3.2 Data Measurement

Data measurement was based on previous research using multi-item measurement scales. All items were measured on 7-point semantic differential scales (-3 for negative and + 3 for positive poles) and randomly rotated within their construct measurement. Ducoffe (1996) provides the measurement scales for the elements of the original advertising value model. Consequently, entertainment, informativeness, irritation, and advertising value are measured on 3, 5, 4, and 3 item scales adapted to the present research context. Following the credibility extension of the advertising value model (Brackett et al. 2001; Liu et al. 2019; Martins et al. 2019), credibility is measured by 3 items from Martins et al. (2019). Ad relevance is measured by a 3-item scale.

Beyond the advertising value model, the study captures the attitude towards podcasts based on the 6-item influencer scale by De Veirman et al. (2017). Following the brand literature, brand image (measured by 4 items by Yoo and Donthu 2001) affects brand attitude (5 items by Spears and Singh 2004). Purchase intention was registered on a 3-item scale (Hsu and Lin 2015). Lastly, the congruence between podcasts and advertisements was measured by the 3-item scale for the advertising match-up hypothesis (Till and Busler 2000).

3.3 Data Sample and Data Overview

We deployed a cross-sectional survey research design to explore the modeled associations in the context of podcast advertising. A pretest suggested minor changes in question formulation. Using the input parameters ($f^2 = 0.15$, $\alpha = 0.05$, power = 0.95, and predictors = 6), we applied G*power analysis to determine the minimum required sample size to explore our modeled associations at a 0.05 significance level and effect size = 0.15,

which suggested a minimum n = 146 to perform our structural equation modeling-based analyses. The online survey ran from September through November 2022. The survey yielded 688 usable questionnaires from the research panel. The answering behavior was also controlled by the relative speed index below 2 (Leiner 2019), leading to the exclusion of 16 questionnaires. Thus, the final sample includes 672 questionnaires. Even after data cleaning, the responses are similarly distributed across the six scenarios [110, 112, 114, 111, 119, 106]. Participants were 58.6% (394) female and the average participant was 36.4 (sd = 12.5) years. Only 7.9% (53) participants had never listened to podcasts before, whereas 20.0% (114) consume podcasts daily.

4 Empirical Results

As the data are collected from a single source, the research instrument may induce data variance. Thus, we tested for potential common method bias. Herman's single factor explained 38.8% of the observed variance remaining below the threshold of 50%. Additionally, the full collinearity variance inflation factors (FVIFs) are calculated, which is a conservative approach for assessing common method bias. All FVIFs are below the threshold of 3.3.

A variance-based structural equation modeling was performed to test the research model using the R package pls-pm. All calculations are based on an α-level of .05 and 5,000 bootstrap samples. Before inspecting the results of the structural model, we first confirm the validity and reliability of the measurement model by individual item reliability, composite reliability, and discriminant validity.

Individual item reliability is generally accepted when the item loading exceeds 0.7. All other individual item loadings exceed the 0.7 value, ranging from 0.721 to 0.956. Following individual item reliability, we can also assume composite reliability, as all Cronbach's alpha [0.814, 0.942] and Dillon-Goldstein's rho [0.878, 0.962] for all constructs exceed the 0.7 thresholds. Also, all latent variables exhibit good convergence validity, as the average variance extracted (AVE) for all variables [0.636, 0.895] exceeds the 0.5 level. The heterotrait-monotrait (HTMT) ratios are all below 0.85. HTMT criteria thus establishes discriminant validity.

After establishing the reliability and validity of the measurement models, we evaluate the structural model. Three relationships are not supported. Perceived irritation (H3: $\beta = 0.060$, $p = 0.108$) and attitude towards podcasts (H6: $\beta = -0.058$, $p = 0.055$) do not significantly impact advertising value. Additionally, the relationship between attitude towards podcasts and purchase intention (H8: $\beta = 0.026$, $p = 0.433$) was not statistically supported. All postulated hypotheses are supported on $p < 0.001$. Table 2 summarizes the standardized path estimates and the hypotheses results.

R^2 value is 0.548 for advertising value, 0.465 for brand attitude, and 0.404 for purchase intention. Consequently, the research model explains substantial parts of the dependent constructs' variances.

Finally, we compare the empirical results for the perceived congruence between podcasts and advertisements. The model comparison reveals that the relationship between brand attitude and purchase intention depends on the perceived fit between podcast and ad ($\beta_{\text{no-fit}} = 0.269$, $\beta_{\text{fit}} = 0.533$, $p = 0.433$). Thus, brand attitude is more relevant in the case where podcasts and ads are congruent.

Table 2. Standardized Path Estimates and Hypotheses Summary

Independent	Dependent	Hypothesis	Std. Path β	*p*-value
Entertainment	Advertising Value	H1 (+)	0.282	<0.001
Informativeness	Advertising Value	H2 (+)	0.106	<0.001
Irritation	Advertising Value	H3 (–)	0.060	0.108
Credibility	Advertising Value	H4 (+)	0.109	0.004
Relevance	Advertising Value	H5 (+)	0.404	<0.001
Attitude	Advertising Value	H6 (+)	-0.058	0.055
Attitude	Brand Attitude	H7 (+)	0.288	<0.001
Attitude	Purchase Intention	H8 (+)	0.026	0.433
Advertising Value	Brand Attitude	H9 (+)	0.304	<0.001
Advertising Value	Purchase Intention	H10 (+)	0.365	<0.001
Brand Image	Brand Attitude	H11 (+)	0.325	<0.001
Brand Attitude	Purchase Intention	H12 (+)	0.349	<0.001

5 Discussion

The present study is the first to analyze the advertising value of podcasts. The empirical results reveal the positive effect of podcast advertising on brand attitude and purchase intention. Three hypotheses were, however, not statistically supported. Irritation and attitude towards podcasts showed no impact on advertising value, and the attitude toward podcasts did not influence the purchase intention. Irritation may not arise in the experimental setup because participants were introduced to the topic at the beginning of the survey. Similarly, attitudes towards podcasts may be podcast specific. Therefore, a subsequent study may utilize followers of specific podcasts as the target population.

Based on the advertising value model, the empirical results yield the highest effect by ad relevance ($\beta = 0.404$) followed by entertainment ($\beta = 0.282$) and lastly by credibility ($\beta = 0.109$) and informativeness ($\beta = 0.106$) as components of advertising value. Podcast advertising thus needs to be relevant in the ears of the audience. Further, target groups also prefer entertaining ads that fit the entertainment character of podcasts. The congruence between podcasts and advertisements further enhances the impact of brand attitude and purchase intention.

When comparing the effects of podcast advertising with brand effects from the advertised brand and the podcast brand, the total effect of podcast advertising (0.471) is the highest, followed by brand attitude (0.349) and podcast attitude (0.099). As a whole, the study indicates an overall positive effect on branding and, subsequently, on purchase intention. When a relevant group is considered, brands should therefore integrate podcasts into their communication mix. The variety in podcast genres can further contribute to their attractiveness as an advertising channel. Beyond identifying the appropriate podcast, previous results also suggest that incorporating podcast speakers further enhances credibility and engagement with the advertised brand. As such, brands are well advised

to carefully select appropriate podcasts that align well with the advertised offers, are relevant for the podcasts' audiences, and they should also integrate podcast speakers in their communication strategy.

References

Abbasi, A.Z., Schultz, C.D., Ting, D.H., Ali, F.: Advertising value of vlogs on destination visit and revisit intention: the mediating role of place attachment among Pakistani tourists. J. Hosp. Tour. Technol. **13**(5), 816–834 (2022)

Barwise, P., Strong, C.: Permission-based mobile advertising. J. Interact. Mark. **16**(1), 14–24 (2002)

Berry, R.: Podcasting: considering the evolution of the medium and its association with the word 'radio.' Radio J. Int. Stud. Broadcast Audio Media **14**(1), 7–22 (2016)

Brackett, L.K., Carr, B.N.: Cyberspace advertising vs. other media: consumer vs. mature student attitudes. J. Advert. Res. **41**(5), 23–32 (2001)

De Veirman, M., Cauberghe, V., Hudders, L.: Marketing through Instagram influencers: the impact of number of followers and product divergence on brand attitude. Int. J. Advert. **36**(5), 798–828 (2017)

Ducoffe, R.H.: Advertising value and advertising on the web-Blog@ management. J. Advert. Res. **36**(5), 21–32 (1996)

Hsu, C.-L., Lin, J.C.-C.: What drives purchase intention for paid mobile apps? – an expectation confirmation model with perceived value. Electron. Commer. Res. Appl. **14**(1), 46–57 (2015)

Hudders, L., De Jans, S., De Veirman, M.: The commercialization of social media stars: a literature review and conceptual framework on the strategic use of social media influencers. Int. J. Advert. **40**(3), 327–375 (2021)

IAB: U.S. Podcast Advertising Revenue Study – Full-Year 2021 Results & 2022–2024 Growth Projections (2022). https://www.iab.com/wp-content/uploads/2022/05/IAB-FY-2021-Podcast-Ad-Revenue-and-2022-2024-Growth-Projections_FINAL.pdf

Leiner, D.J.: Too fast, too straight, too weird: non-reactive indicators for meaningless data in internet surveys. Survey Res. Methods **13**(3), 229–248 (2019)

Lundström, M., Poletti, T.: Podcast ethnography. Int. J. Soc. Res. Methodol. **24**(3), 289–299 (2021)

Marcu, M.: The podcast as a form for the distribution of the radio product. Int. J. Commun. Res. **9**(1), 80–84 (2019)

Martins, J., Costa, C., Oliveira, T., Gonçalves, R., Branco, F.: How smartphone advertising influences consumers' purchase intention. J. Bus. Res. **94**, 378–387 (2019)

Newman, N., Fletcher, R., Robertson, C.T., Eddy, K., Nielsen, R.K.: Reuters Institute Digital News Report 2022 (2022). https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2022-06/Digital_News-Report_2022.pdf. Accessed 07 Dec 2022

Scharl, A., Dickinger, A., Murphy, J.: Diffusion and success factors of mobile marketing. Electron. Commer. Res. Appl. **4**(2), 159–173 (2005)

Schultz, C.D.: Advertising value of gaming influencers. In: 23rd International Conference on Electronic Commerce (ICEC 2022), Daegu, Korea, June 22–23, 2022 (2022)

Spears, N., Singh, S.N.: Measuring attitude toward the brand and purchase intentions. J. Curr. Issues Res. Advert. **26**(2), 53–66 (2004)

Standish, W.: Host or voice actor? Who to cast for your podcast ad voiceover (2021). https://ads.spotify.com/en-US/news-and-insights/who-should-voice-your-podcast-ads/

Till, B.D., Busler, M.: The match-up hypothesis: physical attractiveness, expertise, and the role of fit on brand attitude, purchase intent and brand beliefs. J. Advert. **29**(3), 1–13 (2000)

Tsang, M.M., Ho, S.-C., Liang, T.-P.: Consumer attitudes toward mobile advertising: an empirical study. Int. J. Electron. Commer. **8**(3), 65–78 (2004)

Vrontis, D., Makrides, A., Christofi, M., Thrassou, A.: Social media influencer marketing: a systematic review, integrative framework and future research agenda. Int. J. Consum. Stud. **45**, 617–644 (2021)

Wiedmann, K.P., von Mettenheim, W.: Attractiveness, trustworthiness and expertise – social influencers' winning formula? J. Prod. Brand Manag. **30**(5), 707–725 (2020)

Yang, K.-C., Huang, C.-H., Yang, C., Yang, S.Y.: Consumer attitudes toward online video advertisement: YouTube as a platform. Kybernetes **46**(5), 840–853 (2017)

Ye, G., Hudders, L., de Jans, S., de Veirman, M.: The value of influencer marketing for business: a bibliometric analysis and managerial implications. J. Advert. **50**(2), 160–178 (2021)

Yoo, B., Donthu, N.: Developing and validating a multidimensional consumer-based brand equity scale. J. Bus. Res. **52**(1), 1–14 (2001)

They Don't Do What They Say – The Attitude-Behavior Gap in Online and Offline Grocery Shopping for Organic Products

Kevin Ermecke, Rainer Olbrich, and Philipp Brüggemann(✉)

FernUniversität in Hagen, Hagen, Germany
{kevin.ermecke,lehrstuhl.marketing,
philipp.brueggemann}@fernuni-hagen.de

Abstract. As previous research stated, customers frequently behave differently than they claim to. This phenomenon, called the attitude-behavior gap (ABG), can lead to significant discrepancies between purchase decisions and actual attitudes. Therefore, considering the ABG is crucial for retailers and brand managers. Even though an increasing relevance of both online grocery shopping (OGS) and organic products, there is still no research on how the ABG differs between also-online and offline-only consumers. Addressing this research gap, we compare average ABGs of customers who purchase exclusively offline with that of customers who purchase both online and offline. We use extensive data that includes both purchases and attitudes from an average of 25,620 households from 2016 to 2020. We find that also-online consumers have wider discrepancies between their attitudes and purchases compared to offline-only consumers. We conclude that these new insights of the ABG for organic products are highly relevant for brand managers and retailers both online and offline.

Keywords: attitude-behavior gap · consumer behavior · online grocery shopping · organic products · channel · retail

1 Introduction

According to recent studies, online grocery shopping (OGS) will increasingly establish itself as a new (complementary) sales channel for manufacturers and retailers (Prabowo and Hindarwati 2020; Yelamanchili et al. 2021; Brüggemann and Pauwels 2022). While OGS growth was slow before the COVID-19 pandemic (Pauzi et al. 2017), the impact of the pandemic has, at least in the short term, increased OGS sales significantly (e.g., Grashuis et al. 2020; Pantano et al. 2020; Al-Hawari et al. 2021; Guthrie et al. 2021; Brüggemann and Olbrich 2022).

With this research we aim to elevate the state of the art of OGS literature with new insights. We use the well-known attitude-behavior gap (ABG) (Boulstridge and Carrigan 2000), provide an improved operationalization, and comparatively apply it to also-online and offline-only consumers. Even though a number of publications analyzed the ABG in retailing (e.g., Van Doorn and Verhoef 2015; Moser 2016; Schäufele and Janssen 2021),

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 70–77, 2023.
https://doi.org/10.1007/978-3-031-31836-8_9

there is surprisingly no research comparing the ABG between consumers who purchase also-online and those who purchase offline-only. This is why we empirically analyze attitudes and behavior for also-online and offline-only grocery shoppers by using the example of organic food.

For brand managers and retailers, it is highly relevant whether the ABG differs between also-online and offline-only shoppers. If they know that the ABG is similar for both channels, they can use data from existing market research to exploit synergies between online and offline channels to gain competitive advantages. However, if the ABG is noticeably different, brand managers and retailers need to know what differences exist and how they need to act online and offline.

For this research, we use empirical data on organic purchases and data from a survey on consumers' attitudes towards organic products to investigate differences and similarities between also-online and offline-only shoppers. We choose organic products as our study subject for two reasons. First, the market for organic food has grown recently, with sales rising from $59.1 billion in 2010 to more than $106 billion in 2021 (Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements 2012, 2021). Second, Brüggemann and Pauwels show that consumers who buy also-online and those who buy offline-only have significantly different attitudes toward organic products and toward the sales of organic products. However, they did not analyze whether the ABG also differs between also-online and offline-only purchasing consumers. To fill this research gap, we formulate the following research question:

(How) does the attitude-behavior gap (ABG) differ between also-online and offline-only grocery shoppers for organic products?

2 Attitude-Behavior Gap

The ABG refers to the discrepancy between a consumer's attitude and behavior (Boulstridge and Carrigan 2000). The existence of an ABG has been demonstrated by several publications, especially for sustainable consumption in offline retailing (Moser 2016; Govind et al. 2019; Jung et al. 2020; Schäufele and Janssen 2021). Compared to previous approaches, we provide an approach that is superior in two aspects in particular. First, we calculate the ABG based on purchase data. Second, we demonstrate how attitude values can be normalized so that they can be used along with purchase data to calculate the ABG. In addition, Schäufele and Janssen (2021) identified differences in the ABG for different product categories. Despite this present research body, there is no comparative analysis of the ABG of also-online and offline-only shoppers.

To calculate the ABG, we first operationalize normalized attitude towards organic products (I). Secondly, we measure the actual consumer behavior using the share of organic purchases (II). Figure 1 shows these two components as well as the resulting ABG (III). The procedure is explained in detail below. At this point, it should be noted that in this study we do not distinguish between a positive and negative divergence of attitude and behavior. As stated in Fig. 1, the ABG represents the constant positive difference between attitude and behavior. We purposefully use this simplified approach to compare the ABG with respect to also-online and offline-only shoppers.

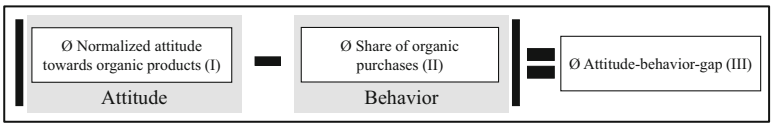


Fig. 1. Operationalization of the ABG

In a first step, we normalize the responses to the survey questions about attitudes toward organic products to values between 0 and 1.[1] This is necessary to compare the (normalized) attitudes with the share of organic purchases in a useful way. We then calculate the mean of the three normalized survey questions to determine the attitude towards organic products per household. In a next step, we calculate the mean of the normalized average attitude toward organic products per month for each product category. We differentiate the ABG by product category to avoid bias caused by different price levels. Formula (1) illustrates the calculation of the average normalized attitude towards organic products.

$$\text{Ø Normalized attitude towards organic products}_{t,c} = \left(\frac{1}{H} \sum_{h=1}^{H} \left(\frac{1}{3} \sum_{i=1}^{3} (\textit{Normalized attitude towards oranic products})_i \right)_h \right)_{t,c} \quad (1)$$

with

i = items (i = 1, 2, 3),
h = household with at least one purchase in period t,
t = month, and
c = product category.

The share of organic purchases is the quantity of organic products sold in relation to the total quantity sold for each product category per month. To compare the share of organic purchases with household attitudes, we calculate the average share of organic purchases while considering only households that made organic purchases in the given month. Formula (2) details this procedure.

$$\text{Ø Share of organic purchases}_{t,c} = \left(\frac{1}{H} \sum_{h=1}^{H} \left(\frac{\textit{Quantity sold of organic products}}{\textit{Quantity sold}} \right)_h \right)_{t,c} \quad (2)$$

with

h = household with at least one purchase in period t,

[1] The attitude towards organic products was measured using a Likert scale from 1 to 5. Normalization to values between 0 and 1 resulted in the following values: 0.00, 0.25, 0.50, 0.75, and 1.00.

t = month, and
c = product category.

Formula (3) details the calculation of the average ABG for organic products for each product category per month. This operationalization results in ABG values ranging from 0 to 1 for each product category per month. The lower the ABG, the more closely the actual average purchasing behavior matches the self-assessed average attitude of households. The higher the ABG value, the greater the discrepancy between attitude and actual purchasing behavior.

$$\begin{aligned} &\varnothing \text{ ABG for organic products}_{t,c} \\ &= \left|\varnothing \text{ Normalized attitude towards organic products}_{t,c} - \varnothing \text{ Share of organic purchases}_{t,c}\right| \end{aligned} \quad (3)$$

with

t = month and
c = product category.

3 Empirical Analysis

3.1 Data, Descriptive Statistics and Methodological Details

For our empirical analysis, we use household panel data provided by the GfK.[2] The data covers purchases from an average of 25,620 households per year from 2016 to 2020. The records include the product categories coffee, chocolate, hair shampoo, and laundry detergent. The purchase data includes information about the price, the date of purchase, the quantity purchased, whether the product is organic, and whether the product was purchased online or offline.

For the empirical analysis, households are classified as either offline-only or online-only shoppers. Households that have purchased at least one product online in the last year are included in the group of also-online shoppers. All households that purchased exclusively offline in the previous year are included in the group of offline-only shoppers. Table 1 provide descriptive statistics for the average number of households per year, total product volume in kg, total value in euros, and value per kg. Furthermore, to detect any potential bias in the results, we compared the distribution of the purchase data on the four product categories for the two groups of also-online and offline-only purchasing households. Both the sales and revenues of also-online and offline-only purchasing households are distributed very similarly in the two groups, so there is hardly any risk of bias due to distribution differences.

Table 1 shows that the majority of households purchased offline-only during the observation period. There are 1,000 households on average per year in the group of also-online purchasing households. In the offline-only group there are 24,620 households on average per year. In line with this, the volume and value is much higher for offline-only

[2] The source of the data is *GfK Consumer Panels & Services.*

shoppers. Interestingly, the households that also purchased online paid a higher average price for both online and offline purchases.

To operationalize the ABG for organic products, we first differentiate between the two groups of also-online and for the offline-only shoppers. The cross-sectional analysis to compare the two groups is performed on a monthly aggregated level. Thus, we obtain average ABGs for 60 months for each of the four product categories. Based on this data structure, we use the method of cross-sectional analysis, analogous to Brüggemann and Pauwels (2022). After testing for variance equality between groups we apply a students t-test or in case of variance inequality a Welch's Test. Furthermore, we report Cohen's D. We compare our ABG results with cross-sectional results of several common variables to better understand its meaningfulness. These variables are stated in Table 2.

Table 1. Descriptive Statistics

Key metrics	Offline-only	Also-online
Observation period	2016 to 2020	2016 to 2020
Ø Households per year	24,620	1,000
Volume in kg	1,732,027	86,748
Value in Euro	11,154,358	690,342
Value per kg	6.44	7.96

3.2 Empirical Results

Table 2 provides an overview of our empirical results. It displays mean values, standard deviations, results of the Levene's test, results of the independent samples test and Cohen's D values. We find that the ABG differs significantly between the two groups. Households that purchase also-online have on average a larger ABG (.5537) than households that purchase offline-only (.5197). The value for Cohen's D (1.382) indicates a strong effect size.

Our further results show that also-online grocery shoppers pay significantly higher average prices. Cohen's D indicates a moderate effect size here. Interestingly, there is no significant difference between also-online and offline-only grocery shoppers with regard to the share of purchased promotional products. Also-online shoppers show on average a stronger tendency to variety seeking, since they buy more different products. With regard to the variables on the attitude of the households, we find that the also-online grocery shoppers are less price-conscious, attach more importance to quality, have a higher level of education and a higher income. Interestingly, the also-online shoppers are nevertheless younger.

Table 2. Empirical Results

	Group (n)	Mean	Std. deviation	Levene's test for equality of variances			Independent samples test		Cohen's D
				F	Sig	Sig. (2-tailed)	Mean difference	Std. Error difference	
Ø ABG for organic products	Offline-only (240)	.5197	.0196	38.928	<.001	**<.001**	−.0339	.0022	1.382
	Also-online (240)	.5537	.0286						
Ø Price paid (per 100 g)	Offline-only (240)	.7845	.2774	23.179	<.001	**<.001**	−.4355	.1063	.373
	Also-online (240)	1.220	1.623						
Ø Share of purchased promotional products	Offline-only (240)	.3271	.0953	.449	= .503	**=.266**	.0095	.0085	.102
	Also-online (240)	.3176	.0912						
Ø Variety seeking	Offline-only (240)	1.713	.5431	11.765	<.001	**<.001**	−.1962	.0539	.332
	Also-online (240)	1.909	.6348						
Ø Price consciousness	Offline-only (240)	3.533	.0391	63.399	<.001	**<.001**	.1581	.0053	2.725
	Also-online (240)	3.375	.0721						
Ø Attitude towards quality	Offline-only (240)	3.137	.0200	141.706	<.001	**<.001**	−.1523	.0039	3.535
	Also-online (240)	3.289	.0572						
Ø Educational level	Offline-only (240)	.4906	.0571	125.748	<.001	**<.001**	−.1607	.0097	1.512
	Also-online (240)	.5067	.1390						
Ø Household income	Offline-only (240)	7.364	.2929	5.151	=.024	**<.001**	−.4687	.0256	1.670
	Also-online (240)	7.833	.2680						

(*continued*)

Table 2. (*continued*)

	Group (n)	Mean	Std. deviation	Levene's test for equality of variances			Independent samples test		Cohen's D
				F	Sig	Sig. (2-tailed)	Mean difference	Std. Error difference	
Ø Age	Offline-only (240)	8.486	.3531	.031	=.861	<**.001**	.3341	.0319	.957
	Also-online (240)	8.152	.3450						

Note: Ø Paid price, Ø share of promotional products, and Ø variety seeking are calculated based on the purchase data; Ø price consciousness and Ø attitude towards quality are measured based on attitude-related questions of the questionnaire; Ø education level, Ø household income, and Ø age are measured based on demographic information from the survey.Online retailers and brand managers should pay closer attention to the ABG, especially in light of the rising OGS. Furthermore, consumer surveys must be scrutinized even more closely. According to our findings, online grocery shoppers pay higher prices, buy more different products, are less price-conscious, and have a more positive attitude toward product quality. The also-online households are younger but have higher levels of education and income. These results of the additional variables are in line with previous research (e.g., Goyal 2014; Pant 2014; Gan et al. 2007; Brüggemann and Pauwels 2022). The fact that these households tend to have a higher ABG is relevant for all brand managers and retailers targeting also-online shoppers. Taken together, we investigate that all consumers partly do not act as they claim. This disparity, however, is more pronounced among also-online than offline-only shoppers

4 Conclusion

With this research, we compare the ABG of online and offline grocery shoppers for the first time using a new approach. The empirical findings clearly show that the ABG differs between also-online and offline-only shoppers. Also-online grocery shoppers have a significantly larger ABGs than offline-only grocery shoppers.

Nevertheless, there are some limitations. First, we use household panel data from four product categories from 2016 to 2020. Other product categories, as well as more recent data, should be considered in future research. Second, additional analysis at the household level may provide incremental insight into the ABG of both online and offline-only purchasing consumers. Third, we do not provide a differentiated view for different brands. Future research should investigate, for example, whether the ABG differs for national brands and private labels. Fourth, our results are limited to the ABG for organic products. The generalizability of our results needs to be verified by further analyses. For example, future research should analyze the ABGs for fair trade, local, or branded products. Fifth, we do not differentiate between positive and negative discrepancies between attitudes and purchases.

References

Al-Hawari, A.R.R.S., Balasa, A.P., Slimi, Z.: COVID-19 impact on online purchasing behaviour in Oman and the future of online groceries. Eur. J. Bus. Manag. Res. **6**(4), 74–83 (2021)

Brüggemann, P., Olbrich, R.: The Impact of COVID-19 Pandemic Restrictions on Offline and Online Grocery Shopping – New Normal or Old Habits? Electronic Commerce Research (2022, forthcoming)

Brüggemann, P., Pauwels, K.: Consumers' attitudes and purchases in online versus offline grocery shopping. In: Martinez-Lopez, F.J., Gázquez-Abad, J.C., Ieva, M. (eds.) Advances in National Brand and Private Label Marketing. Springer, Cham (2022). https://doi.org/10.1007/978-3-031-06581-1_5

Boulstridge, E., Carrigan, M.: Do consumers really care about corporate responsibility? Highlighting the attitude-behaviour gap. J. Commun. Manag. **4**(4), 355–368 (2000)

Gan, L., He, S., Huang, T., Tan, J.: A comparative analysis of online grocery pricing in Singapore. Electron. Commer. Res. Appl. **6**(4), 474–483 (2007)

Govind, R., Singh, J.J., Garg, N., D'Silva, S.: Not walking the walk: how dual attitudes influence behavioral outcomes in ethical consumption. J. Bus. Ethics **155**(4), 1195–1214 (2019). https://doi.org/10.1007/s10551-017-3545-z

Goyal, M.M.: Online shopping: a survey on consumer's perception. Int. J. Bus. Manag. **2**(11), 73–79 (2014)

Grashuis, J., Skevas, T., Segovia, M.S.: Grocery shopping preferences during the COVID-19 pandemic. Sustainability **12**, 1–10 (2020)

Guthrie, C., Fosso-Wamba, S., Arnaud, J.B.: Online consumer resilience during a pandemic: an exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. J. Retail. Consum. Serv. **61**, 102570 (2021)

Jung, H.J., Choi, Y.J., Oh, K.W.: Influencing factors of chinese consumers' purchase intention to sustainable apparel products: exploring consumer "attitude-behavioral intention" gap. Sustainability **12**(5) (2020)

Moser, A.K.: Consumers' purchasing decisions regarding environmentally friendly products: an empirical analysis of German consumers. J. Retail. Consum. Serv. **31**, 389–397 (2016)

Pant, A.: An online shopping change the traditional path of consumer purchasing. Int. J. Bus. Manag. Invention **3**(3), 39–42 (2014)

Pantano, E., Pizzi, G., Scarpi, D., Dennis, C.: Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. J. Bus. Res. **116**, 209–213 (2020)

Pauzi, S.F.F.B., Chin, T.A., Choon, T.L., Sulaiman, Z.: Motivational factors for online grocery shopping. Adv. Sci. Lett. **23**(9), 9140–9144 (2017)

Prabowo, H., Hindarwati, E.N.: Online grocery shopping adoption: a systematic literature review. In: 2020 International Conference on Information Management and Technology (ICIMTech), pp. 40–45 (2020)

Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements: The World of Organic Agriculture – Statistics and Emerging Trends 2012 (2012). https://www.fibl.org/fileadmin/documents/shop/1581-organic-world-2012.pdf

Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements: The World of Organic Agriculture – Statistics and Emerging Trends 2021 (2021). https://www.fibl.org/fileadmin/documents/shop/1150-organic-world-2021.pdf

Schäufele, I., Janssen, M.: How and why does the attitude-behavior-gap differ between products categories of sustainable food? analysis of organic food purchases based on household panel data. Front. Psychol. **10**, 595636 (2021)

Van Doorn, J., Verhoef, P.C.: Drivers of and barriers to organic purchase behavior. J. Retail. **91**(3), 436–450 (2015)

Yelamanchili, R., Wukadada, B., Jain, A., Pathak, P.: A study on consumers attitude towards online grocery shopping in Covid19 pandemic. Acad. Mark. Stud. J. **25**, 1–9 (2021)

How the Quick Commerce Business Model Delivers Convenience in Online Grocery Retailing

Johanna Rau[1(✉)], Lina Altenburg[2], and Alessandro Iuffmann Ghezzi[3]

[1] Department of Business Administration, University of Gothenburg, Gothenburg, Sweden
johanna.rau@gu.se
[2] Faculty of Economics and Business, KU Leuven, Antwerp, Belgium
lina.altenburg@kuleuven.be
[3] Faculty of Economics and Law, Catholic University of the Sacred Hearth, Piacenza, Italy
alessandro.iuffmannghezzi@unicatt.it

Abstract. How does the quick commerce business model deliver convenience in online grocery retailing, and how does the convenience provided disrupt the (online) grocery retail market? Taking Haas' work on a generic retail business model as a departure point, in this book chapter we answer these questions by exploring the quick commerce business model, which is so far bypassed by research. We show how consumer convenience presents the central element of quick commerce operators' service, being reflected in various ways in their business model dimensions and going beyond the *quickness*-factor of their deliveries. As a result, in contrast to the suggested framework by McNair (1958), it becomes apparent how the wheel of retailing spins differently in this context as, instead of leveraging price competitiveness, convenience becomes the competitive advantage.

Keywords: Wheel of retailing · Service convenience · Quick commerce · Retail business model

1 Introduction

With the accelerating pace of life, convenience is increasingly becoming a guiding principle in the contemporary economy and one of the main drivers of retail innovations (Gielens 2022; Seiders et al. 2000). The underlying idea of convenience is to reduce consumers' time and effort investments (Berry et al. 2002). Consumers' continuous need for convenience challenges retailers to constantly develop more convenient offerings to stay competitive (Seiders et al. 2000). In the past, consumers' need for convenience already brought supermarkets and department stores into life (Seider et al. 2000). Furthermore, the Internet intensified consumers' convenience expectations about accessibility of offerings (Berry 2016; Seiders et al. 2000). More recently, Amazon has set new standards for assortment sizes and product deliveries in e-commerce (Gielens 2022). This trend of convenient offerings has also led to the development of convenience preference as

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 78–85, 2023.
https://doi.org/10.1007/978-3-031-31836-8_10

a distinct consumption strategy or even lifestyle choice that significantly impacts consumers' buying behaviors (Anderson 1971). Hence, it is unlikely that the need for more convenient services will diminish in the near future.

A new convenience-driven solution in retailing is *quick commerce*. Still being a new phenomenon in the urban retail landscape, it describes a new generation of (e-)commerce promising consumers immediacy and instant gratification by providing ultrafast (under one hour) delivery services. For this new generation of retail players, reducing the time and effort needed for consumers to receive the ordered goods is crucial. Recently, more and more quick commerce operators that focus on the sales and delivery of grocery products are emerging. They can provide the ultrafast delivery by utilizing store-like distribution centers (dark stores) near the catered neighborhoods. There are multiple types of these quick commerce operators which range from pure dark store operators (e.g., Gorillas and Getir), hyperlocal food delivery platforms that usually started with restaurant food deliveries and added groceries from their own dark stores (e.g., Foodora and Wolt), and third-party delivery providers for grocery chains (e.g., picsmart). Apart from the shorter delivery times, the main differences to e-commerce are a smaller product assortment and a last-mile delivery service mostly consisting of bikes and scooters. This also impacts consumers' purchase behavior in the way that the average shopping basket is smaller than for e-commerce purchases. Lastly, whereas commerce and e-commerce are driven by "discounts matter", q-commerce is mainly time-driven (Nierynck 2020).

The emergence of quick commerce operators indicates that the retailing environment is constantly changing. In the past, the way in which new players enter a market and force existing players to transform or even leave the market has been following a cyclical, recurring pattern. McNair (1958) has called this pattern the "wheel of retailing", which now is one of the fundamental theories in the marketing literature. The theory also suggests that the pricing strategy of a company strongly depends on its lifecycle stage: new entrances tend to compete on lower prices to establish a foothold in the market and to challenge existing players that usually have a higher pricing strategy. However, quick commerce operators who have recently disrupted the retailing market do not tend to follow a low-pricing strategy. Hollander (1969) already criticized the *wheel of retailing* for not being suitable for every retail setting and Brown (1990) also suggests that the price-quality focus of the wheel of retailing is one of the major limitations of this theory which disregards other relevant dimensions in retailing. This calls for the investigation of other dimensions that drive the emergence and cessation of players in the retailing market.

With this analysis, we want to focus on the context of online grocery retailers and how the emergence of quick commerce players disrupts this market. More specifically, since convenience is key to quick commerce providers, we want to investigate the following research questions: How does the quick commerce business model deliver convenience in online grocery retailing? And how does the convenience provided by quick commerce operators disrupt the (online) grocery retail market? These questions will be answered by first discussing the business model of quick commerce using the retail business model framework developed by Haas (2019). Then, we will analyze the underlying role of convenience for consumers. Finally, we link the emergence of the quick commerce players to the cyclical market changes suggested in the wheel of retailing theory and

contrast the discussed convenience dimension to the price dimension, which is up until now the core driver in the theory.

2 The Quick Commerce Business Model

Haas (2019) has developed a generic business model to typify businesses in the complex, digital retail industry. The generic business model consists of six core dimensions, which are applied to discuss the characteristics of quick commerce.

Value Proposition: According to Haas (2019), this dimension includes the offering, shopping experience (e.g., scents, augmented reality application and events), and shopping convenience in terms of product availability, effort-less amenities and store locations (Haas, 2019). As the name suggests, quick commerce operators offer the online delivery of convenience goods (food and non-food items) to the end-customer within a very short time frame (10 to 30 min) from early in the morning to late at night (Rinaldi et al. 2022; Shapiro 2022). Hence, consumers can place orders quickly and spontaneously. Furthermore, the variety of the service set-up differs among the operator types (e.g., dark store operators vs. hyperlocal food delivery platforms), but they all offer consumers the delivery of essential, daily products. In general, the assortment of quick commerce operators is much smaller than the large assortments of physical grocery stores. Also, as the minimum order volume is very low or non-existent in comparison to big online grocery deliverers, flexibility in the order sizes is ensured, which means that even one or very few products can be ordered (Rinaldi et al. 2022). In addition, some of the platforms that also deliver restaurant food, extended their services by offering consumers to order goods from not only their own dark stores but also other retail stores (e.g., flower shops or pharmacies) through their own app or website and deliver them in the same, short time frame.

Client Relations: The second element "client relations" showcases the crucial role of choosing target clients and shaping one's relations with them. This also includes other governance mechanisms, such as the management of clients' data (Haas 2019). Since the majority of interactions related to quick commerce takes place online, quick commerce operators can easily target different customer groups with different messages. For example, they could differently address families with small children who appreciate placing small orders spontaneously when something is missing at home and young customers who are in need for drinks and snacks. Hence, quick commerce operators can easily adjust their customer relations and communications according to the target group. Furthermore, the digital nature of the service comes along with the possibility to collect rich data on the consumers and use this data in their customer relationship management (e.g., personalized offers, order tracking and remembered last purchases). However, it should be stated that the extent to which quick commerce operators make use of this rich data is very limited due to the lack of financial resources of the start-ups.

Horizontal Integration: This dimension addresses how value is delivered to the customers. For instance, with the rise in multi-, cross- and omnichannel retailing, the communication and sales channels become more complex and have to be carefully decided

on to provide a seamless customer experience (Haas 2019). At the moment, quick commerce operators operate mostly via an online channel, usually an app. Those physical grocery stores that are offering a quick delivery service usually collaborate with a partner who takes care of the digital interface and takes the customer's order. For the operator, the digital nature of the service provides flexibility as it is relatively easy to change the products and promotions offered to consumers (Shapiro 2022). Furthermore, since the product selection and ordering mainly takes place on an app or website, the majority of the communication with the customers is digital. Hence, compared to physical grocery stores, quick grocery delivery services involve very limited social interactions of consumers with employees or other consumers (Shapiro 2022). However, some quick commerce operators try to establish a personal connection by adding personal notes to customers' orders (e.g., Vembla). Also, the delivery riders are trained with regards to customer relationship management to bring a "personal touch" to each delivery as they are the intersection point between the operator and the customer. Finally, some quick commerce operators are expanding their offline communications by taking part with their own food stands at festivals and sports events to increase the local consumers' awareness (e.g., Foodora).

Value Appropriation: The way the value for the company is generated is a crucial element which ensures market growth and has become more complex given the increasing diversification of retailers (Haas 2019). Relevant aspects to consider are retail margins, franchise agreements, leasing options and property rents (Haas 2019). Quick commerce operators make profit by adding margins to the products they are selling. This can lead to products being up to 20% more expensive than at physical supermarkets (Rinaldi et al. 2022)which is similar to the strategy of physical convenience stores, who also charge higher prices for selling products in locations conveniently available to customers. In addition, revenue can be generated by adding delivery fees and/or charging service fees in addition to the regular product/food price and delivery cost. However, this strategy might exclude some customers with lower income who cannot afford the higher prices (Rinaldi et al. 2022; Shapiro 2022). Another aspect of quick commerce operators' value appropriation are the agreements with retail partners selling on the quick commerce platform. These businesses have to pay a fee for using the platform and are charged extra when they want their products to be pushed, such as having them placed on the app/website top banner. Also, entire sections of the dark stores may be "subleased" to third-party suppliers to generate extra revenues and create strategic partnerships to enrich the assortment accordingly (e.g., Gorillas partnering with Sushi Daily to prepare and deliver fresh sushi from the dark store). However, until now, quick commerce operators have mostly focused on expanding their business and less on establishing a stable source of income. This is the reason why many of them are struggling now, in face of the inflation, to stay in business (Reul 2022b). Yet, the operators have recognized this limitation and the focus is increasingly shifting from expanding towards becoming profitable in existing markets.

Vertical Integration: This dimension raises the question of whether and how retailers vertically integrate, which includes make or buy decisions. In other words, retailers have to decide on which stages of the value chain they want to operate (Haas 2019).

The quick commerce operators mainly focus on service provision (i.e., providing the platform to order groceries online and delivering the products within minutes). Hence, they are reselling products from national brands and local manufacturers. Yet, the first companies start offering their own private label and therewith start to vertically integrate (Reul, 2022a). Also, another decision regarding their vertical integration concerns the delivery riders. One can see that they are either employed by the operator or are self-employed and might have another side-business. Therefore, there are also differences regarding the integration or outsourcing of the delivery riders.

Partner Relations: Retailers have to identify reliable partners and networks and manage their relations with them for creating an efficient value chain. Therefore, "partner relations" with suppliers, delivery providers and/or retail buying groups form another core business model dimension (Haas 2019). As quick commerce operators, like any retailer, function as a reseller of products, they are strongly dependent on partners. As their partners are a few big national grocery suppliers, quick commerce operators are heavily reliant on them. Hence, the relationship with a big national grocery supplier can be a make-or-break factor for relevance of the offerings of quick commerce operators. As mentioned above, hyperlocal platforms also collaborate with local retailers (Rinaldi et al. 2022; Shapiro 2022) to expand their offered local product range for consumers. Another (potential) partner are municipalities, as the dark stores and delivery riders could (negatively) impact the urban landscape and neighborhoods with growing expansions in the future (Shapiro 2022). For instance, the noise level and environmental hazards coming along with a rising number of dark stores has already caused issues in metropolises like Paris (O'Brien and Haeck 2022).

3 The Role of Convenience in Quick Commerce

The business model description has shown how quick commerce is unique in various dimensions. It becomes evident how quick commerce operators are setting new milestones with regard to providing convenient access to grocery products. Thus, in the following section, the underlying role of convenience for consumers as a driving force in quick commerce will be analyzed and substantiated.

When looking at the consumer-directed aspects of the business model of quick commerce operators, it becomes clear that the overarching goal is to reduce consumers' time and effort, which are the two central elements of convenience (Berry et al. 2002). Thus, it becomes apparent that convenience is the key component of the value proposition of quick commerce operators. For instance, an interviewed quick commerce manager highlighted how the driving force for pure dark store operators are time saving and simplicity in purchasing and delivery. This is achieved through fulfilling deliveries from their unique dark stores that are quick, flexible, and easy to operate.

Quick commerce operators are not the first retailers to focus on convenience in their offerings. Traditional brick-and-mortar convenience stores allow consumers to save time and effort by offering core product assortments at accessible store locations (e.g., in shopping streets, gas stations, airports…). However, in contrast to physical convenience stores, quick commerce operators not only bring the proximity advantage and resulting

short delivery times online but also add new convenience services to their customers. Those new convenience-oriented value propositions would be the new flexibility in their deliveries as the basket size and time can be changed by the customer according to their perceived highest possible convenience.

Similar to other online grocery stores, customized app/website designs including personalized offerings and discounts as well as remembered last purchase information facilitate easy shopping and enhance the customer experience and convenience. For those quick grocery delivery services, convenience does not stop here, but additional features such as real-live delivery tracking, daytime-dependent offers and discounts are integrated. Furthermore, large assortments are often associated with difficult choices, hence the overall smaller product assortment might facilitate easier decision-making (Broniarczyk and Hoyer 2006). These points showcase how convenience goes beyond the delivery provided by regular online grocers'. Aside from the very short delivery times, quick commerce riders' training to provide the best customer experience and the personal rider information accessible to the customer are important additional aspects. Thus, the delivery riders can make the just-placed orders more personal and thus enhance consumers' perceived convenience.

In addition, despite the very limited personal interactions, personalized notes attached to each order and numerous offline marketing strategies present an innovative way of bridging the gap to missing personal connection with the consumers (Kim et al. 2022). As a result, such relational proximity enhances consumers' convenience perceptions as the perceived waiting time is reduced. Furthermore, as another difference to online grocery deliverers, the local aspect plays a crucial role: with a network of dark stores capillary covering the need of specific neighborhoods, it is easier to leverage a sense of belonging and localism. The choice of key category suppliers often derives from strategic partnerships with well-known local retailers i.e., bakeries, delis, greengrocers to "premiumize" the assortment and emphasize a closer bond to the community. This new type of commerce therefore presents the ultimate consumer convenience-driven business model enabled through store locations close to the catered neighborhoods (Mukhopadhyay 2022).

Summing up, it is shown how consumer convenience in quick commerce goes way beyond the bold promise of short delivery times, touching aspects that are also being recognized by some operators. Such as the assortment, the service, rider behavior, etc.. The need for improved consumer and employee health, as well as the number of people adopting "domestic lifestyles", has led retailers to adopt more store, warehouse, and delivery automation technologies (Shankar et al. 2021).

4 Conclusion for the Wheel of Retailing

Quick commerce shifts competition in online grocery retailing from price to convenience, a key dimension that is crucial for today's society. Despite being newcomers in a well-established competitive scenario, they do not leverage price competitiveness as the wheel of retailing framework would suggest but, on the contrary, they benefit from delivering high level of convenience at higher prices, both monetary (i.e., higher price index) and non-monetary (i.e., reduced assortment size). Given the drastic development of

technology and its endless opportunities, the need for convenience is not likely to go away, so it might be a relevant addition and reinterpretation to the wheel of retailing, putting convenience front and center as the key enabler of a frictionless and enhanced shopping experience. Thus, this case supports the Gielens' (2022) suggested wheel of retailing 2.0 driven by the "amazonification" of consumer demands. The innovative quick commerce business model aims at significantly improving customer efficiency by cutting-edge mobile-only shopping experiences. Effectiveness relies heavily upon short delivery times; enduring engagement is provided by defiant advertising and a range that is constantly renewed of identity items. Achieving a strong service effectiveness, thus enhancing customer lock-in effects is crucial for quick commerce operators to create value and achieve profitability.

As they mature, quick commerce operators can focus on generating profits and building solid margins. In terms of operational efficiency, managing a widespread number of dark stores and deliverers generates high operating costs that risk jeopardizing the achievement of the financial break-even point within an acceptable deadline. Simultaneously, the public awareness is increasing but since the service availability is limited to larger cities and the price index, compared to conventional grocery deliverers, is systematically higher, quick commerce is excluding low-income consumers from benefiting from their convenient services. As quick commerce is still in an early stage in the European market, these issues may not be of high relevance right now, but with the rising success of this business model, they warrant further attention for the future.

References

Anderson, W.T.: Identifying the convenience-oriented consumer. J. Mark. Res. **8**(2), 179–183 (1971)

Berry, L.L.: Revisiting "big ideas in services marketing" 30 years later. J. Serv. Mark. **30**(1), 3–6 (2016)

Berry, L.L., Seiders, K., Grewal, D.: Understanding service convenience. J. Mark. **66**(3), 1–17 (2002)

Broniarczyk, S.M., Hoyer, W.D.: Retail assortment: more ≠ better. In: Krafft, M., Mantrala, M.K. (eds.) Retailing in the 21st Century, pp. 271–284. Springer, Heidelberg (2010). https://doi.org/10.1007/978-3-540-72003-4_17

Brown, S.: The wheel of retailing: Past and future. J. Retail. **66**(2), 143 (1990)

Gielens, K.: From one disruption to the next: How to navigate chaos? J. Retail. **98**(3), 373–377 (2022)

Haas, Y.: Developing a generic retail business model–a qualitative comparative study. Int. J. Retail Distrib. Manage. (2019)

Hollander, S.C.: The wheel of retailing. J. Mark. **25**(1), 37–42 (1960)

Kim, S., Choi, J., Kim, S.H.: Do handwritten notes benefit online retailers? a field experiment. J. Interact. Mark. **57**(4), 651–664 (2022)

McNair, M.P.: Significant trends and developments in the postwar period. In: Smith, A.B., (ed.) Competitive Distribution in a Free High-Level Economy and its IMplications for the University, Pittsburgh, University of Pittsburgh Press (1958)

Mukhopadhyay, M.: Who moved my grocery, in 10 minutes?-A light on Indian dark stores. A light on Indian dark stores (February 18, 2022)

Nierynck, R.:Quick commerce: pioneering the next generation of delivery. Delivery Hero (2020). https://www.deliveryhero.com/blog/quick-commerce/. Accessed 19 Dec 2022

O'Brien, P., Haeck, P.: Dark commerce' backlash grows in cities across Europe, Politico (2022). https://www.politico.eu/article/dark-commerce-rules-ramp-up-as-stores-shut-down/. Accessed 14 Dec 2022

Reul, M.: Gorillas to launch own private label brands (2022). https://www.retaildetail.eu/news/food/gorillas-to-launch-own-private-label-brands/. Accessed 12 Dec 2022

Reul, M.: Quick commerce badly hit: two more companies announce cuts (2022). https://www.retaildetail.eu/news/food/quick-commerce-krijgt-klappen-nog-twee-flitsbezorgers-moeten-inkrimpen/. Accessed 12 Dec 2022

Rinaldi, C., D'Aguilar, M., Egan, M.: Understanding the online environment for the delivery of food, alcohol and tobacco: an exploratory analysis of 'dark kitchens' and rapid grocery delivery services. Int. J. Environ. Res. Public Health **19**(9), 5523 (2022)

Seiders, K.B., Berry, L., Gresham, L.: Attention, retailers! How convenient is your convenience strategy? Sloan Manage. Rev. **41**, 79–89 (2000)

Shankar, V., et al.: How technology is changing retail. J. Retail. **97**(1), 13–27 (2021)

Shapiro, A.: Platform urbanism in a pandemic: dark stores, ghost kitchens, and the logistical-urban frontier. J. Consum. Cult. **23**(1), 168–187 (2022)

Influencer Marketing Strategies in Foreign Marketplaces

Nuo Wang(✉)

Business, Law, Economics and Consumer Behavior, IULM University, Milan, Italy
nuo.wang1@studenti.iulm.it

Abstract. Social media influencers have an increasing effect on the contemporary international marketing field. When entering foreign markets, companies that already gained experience of influencer marketing in their domestic markets or that are offering services or non-physical goods may want to leverage this marketing approach to occupy a lager foreign market share and greater visualisation by applying efficient influencer marketing strategies. However, they may face immediate difficulties in matching their products with appropriate influencers and agencies or the accuracy of content to effectively delivery their business value, also due to the language and culture barrier. This study reviews the development status of influencer marketing, and its linkage with companies' digital commerce in international markets. To this end, this exploratory research adopts a qualitative method based on focus groups and in-depth interviews. We interviewed 20 companies who are actively applying influencer marketing as a dynamic marketing strategy to improve their business performance in overseas markets. It also provides managerial implications from the perspective of companies' internationalisation and digitisation facilitated by digital techniques.

Keywords: Influencer Marketing · E-commerce · Foreign Marketplaces · Internationalisation · Digitalisation

1 Introduction

In the first part of the 21st century, two events have helped give birth to this new form of communication for commercial purposes. One is represented by the global economic recession that has hit the markets since 2007; the second can be the widespread use of broadband which has allowed companies to take advantage of the web as a potential market instead of being just visitors (Vogel 2007). The ability of the network to integrate marketing systems is constantly increasing, and distribution costs are lower in online commerce than in traditional ones (Brown and Hayes 2008).

Digital marketing is one that bases on virtual space and could not exist without it (Peltier et al. 2003). Today's digital marketing considers "new media" as a highly interactive instrument and its main feature lies in "decentralization" (Guidi 2018). In 2006, Gladwell introduced to the mainstream the concepts of "maven", "connector" and "salesmen" and described them as the types of individuals who communicate ideas and points

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 86–90, 2023.
https://doi.org/10.1007/978-3-031-31836-8_11

of view in a certain communicative system. Here we can already see the embryonic form of the "influencer". Then, Keller and Berry (2003) proposed formally the role of the "influencer", explaining how one person in ten can influence the other nine on how to think and what to buy. Reichheld (2003) explained the *Net Promoter Score*, an indicator of the company's growth potential that emerges by asking its customers a simple question: Would you recommend my company to others? We can not neglect the study of Cialdini (2009), *Influence: Science and Practice*, which clearly explained to what extent we can be influenced. He provided the basis for measuring our persuasiveness degree through the *Cialdini test*.

Influencer marketing's global market size has more than doubled since 2019. It is expected to further grow to 202 million dollars in 2022 and surpass 337 million dollars in 2027. In 2022, this market is valued at 16.4 billion dollars. 39% of respondents stated they invested 10% to 20% of their marketing budget into influencer marketing meanwhile 5% of them devoted more than 40% to this type of digital marketing activities (Statista 2022a). When we focus on Europe, content creator marketing reached 1.32 billion euros and the share of B2C brands are planning to increase influencer marketing by 44% of their budget. The main challenge of B2C influencer marketing in Europe is how to measure its effect (Statista 2022b). Then we have a special look at China whose digital commerce ecosystem is quite distinctive for its "combination" of social media applications and e-commerce platforms, reinforced by the multi-channel network companies and payment methods supported by financial technology. Key figures we need to notice are that the share of micro-influencers is high, reaching 76%. The female group is previledged. And the share of fake influencer followers is 45% (Statista 2022c).

Companies have opportunities to develop their internationalisation process and sustained the success of cross-border business thanks the equipment of advanced technology (Elia et al. 2021). Digital technologies can facilitate the firm's foreign market choices and marketing programs in order to implement and control the firm's international marketing strategy (Katsikeas et al. 2019). Marketing is a context-driven discipline and practice (Zinkhan and Hirschheim 1992). Context matters in marketing. It matters even more in international marketing due to the increasing contextual factors that moderate and mediate marketing efforts and plans in international markets (Sheth 2020). To tickle the cultural barriers and trust issues brought by commercialised content and sponsorship disclosure, Zhou et al. (2021) pointed out that social media influencers can leverage relevant narrative strategies in order to boost e-Word-Of-Mouth (eWOM) and cultivate better marketing performance. A certain linkage between influencers and companies they support need to be monitored in a dynamic way, especially in overseas marketplaces. To broaden this view, the following studies confirm that influencer marketing can be leveraged as resources to enhance a firm's marketing communicative effectiveness and to build brand recognition in overseas markets (Jin et al. 2019) if marketers of the companies have an adequate understanding of the scope, the effectiveness, and the potential threats (Leung et al. 2022). To understand the blurred international digital environment, a study shows that significant differences in the impact of influencers between different consumer generations on consumer behaviour exist, leading to different marketing opportunities (Kadekova and Holienčinova 2018). Effective transmissions of information about a product or service do have differences (Wielki 2020).

2 Method

In order to understand the factors of foreign social media influencers that can increase or damage business performance, this exploratory research adopts a qualitative method based on focus groups and in-depth interviews. We interviewed 20 companies who are actively applying influencer marketing as a dynamic marketing strategy in their overseas markets. This research design is deemed to be particularly suitable for the exploratory purpose of this study. Indeed, focus group discussions are widely used in research (Bloor et al. 2001) as they can help to mark distinct phenomenological dimensions and tend to be more confrontational than in-depth interviews (Cataldi 2018). Therefore, they are suitable for providing insights into the participants' perceptions of complex issues through active interactions. In terms of the amount of collected information, however, the focus groups analysed results less efficiently than the in-depth interviews (Cataldi 2018) which allow the interviewers to delve deeply into social and personal matters. In this situation, an individual in-depth interview can help to offer a superior ability to inform marketing strategy by uncovering important underlying issues (Stokes and Bergin 2006) thanks to its five key features: a combination of structure with flexibility; interactive in nature; researchers' probes and techniques to achieve penetration, exploration and explanation answers (Ritchie et al. 2013). Overall, such a two-phase research method is suitable at the early stages of investigation to understand the complexities of the phenomena under observation and to gain initial insights (Hanson and Grimmer 2007).

The purposeful sampling technique for identification and selection of information-rich cases relate to the phenomenon of interests (Palinkas et al. 2015). We identify key informants who are professionals operating in influencer marketing. We adopt a multi-actor perspective by discussing with social media influencers who have a multicultural background and are also actively getting involved in social media campaigns, and companies' marketing representatives with international social media influencers managing experience. We expect to propose a conceptual framework that identifies factors that are critical in international social media influencer choice. We conducted semi-structured interviews following a protocol generated from the insights that emerged from the analysis of the literature. For the data analysis, we adopt an analytical strategy (Schmidt 2004) and coding approach (Gioia et al. 2013) we label the first coding round, and then the second themes and final dimensions emerge to demonstrate the data structure.

3 Value of Study

Unlike Western influencers who rely on the traditional monetization model through sponsored posts (Childers et al., 2018), the Chinese industry "trains" new "key opinion leaders" (KOLs) or more precisely, in the Chinese context, "Wanghong" (the equivalent of internet celebrities), through incubators. The "Wanghong economy" represents a commercial ecosystem that seeks to exploit the influence of "Wanghong" on its followers. This ecosystem consists of various industries, including social media platforms, e-commerce platforms, "Wanghong" incubators and agencies, online retail chains, content production, marketing services and professional data analysis. Furthermore, "Wanghong economy" has become an umbrella term that refers to a wide range of

"Wanghong-centric" monetization models across different platforms. For players in the entire "Wanghong economic ecosystem", the key is not what types of content are being produced, but their ability to convert followers into consumers. The value chain integrates advertising and e-commerce, further linking the two powerful platforms that have invested in this direction, namely "Weibo" and "Alibaba", facilitating a trans-platform business ecosystem that benefits both companies (Hollebeek et al. 2021).

Through the analysis of influencer marketing strategies, we aim to achieve further results in certain research areas. From the information dissemination strategy on the internet, as one of the most vital modes of communication today, the internet is bound to have a continuous impact on human social activities and life over a long period of time. As a new medium of marketing communication, its characteristics and related functions have yet to be fully explored and understood. From the digital commerce perspective, in particular, the new marketing model, the organic combination of social media and digital commerce platforms, has given social media more economic value. Making good use of its interactive features will certainly become a new direction for economic development. And the last view, in the expansion and development of international business, this research focuses on the comparison between Chinese and European influencers and consumers. It will also explore and compare from many socioeconomic perspectives such as the network environment, social life and values of youth and their consumer behaviour. Therefore, it proposes new findings and conclusions from economic and cultural perspectives.

References

Bloor, M.: (Ed.).: Focus Groups in Social Research. Sage, New York (2001)

Brown, D., Hayes, N.: Influencer Marketing. Routledge, New York (2008)

Cataldi, S.: A proposal for the analysis of the relational dimension in the interview techniques: a pilot study on in-depth interviews and focus groups. Qual. Quant. **52**(1), 295–312 (2017). https://doi.org/10.1007/s11135-017-0468-9

Childers, C.C., Lemon, L.L., Hoy, M.G.: # Sponsored# Ad: agency perspective on influencer marketing campaigns. J. Curr. Issues Res. Advertising **40**(3), 258–274 (2019)

Cialdini, R.B., James, L.: Influence: Science and Practice, vol. 4. Pearson education, Boston (2009)

Elia, S., Giuffrida, M., Mariani, M.M., Bresciani, S.: Resources and digital export: an RBV perspective on the role of digital technologies and capabilities in cross-border e-commerce. J. Bus. Res. **132**, 158–169 (2021)

Gioia, D.A., Corley, K.G., Hamilton, A.L.: Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. Organ. Res. Methods **16**(1), 15–31 (2013)

Guidi, B., Conti, M., Passarella, A., Ricci, L.: Managing social contents in decentralized online social networks: a survey. Online Soc. Netw. Media **7**, 12–29 (2018)

Hanson, D., Grimmer, M.: The mix of qualitative and quantitative research in major marketing journals, 1993–2002. Eur. J. Mark. **41**(1/2), 58–70 (2007)

Hollebeek, L.D., Clark, M.K., Macky, K.: Demystifying consumer digital cocreated value: Social presence theory-informed framework and propositions. Rech. Appl. Mark. (English Edition) **36**(4), 24–42 (2021)

Jin, S.V., Muqaddam, A., Ryu, E.: Instafamous and social media influencer marketing. Mark. Intell. Plann. **37**(5), 567–579 (2019)

Kadekova, Z., Holienčinova, M.: Influencer marketing as a modern phenomenon creating a new frontier of virtual opportunities. Commun. Today **9**(2) (2018)

Katsikeas, C., Leonidou, L., Zeriti, A.: Revisiting international marketing strategy in a digital era: opportunities, challenges, and research directions. Int. Mark. Rev. **37**(3), 405–424 (2019)
Keller, E., Berry, J.: The influentials: One American in Ten Tells the Other Nine How to Vote, Where to Eat, and What to Buy. Simon and Schuster, New York (2003)
Leung, F.F., Gu, F.F., Palmatier, R.W.: Online influencer marketing. J. Acad. Mark. Sci. **50**(2), 226–251 (2022). https://doi.org/10.1007/s11747-021-00829-4
Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N., Hoagwood, K.: Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm. Policy Ment. Health Ment. Health Serv. Res. **42**(5), 533–544 (2015)
Peltier, J.W., Drago, W., Schibrowsky, J.A.: Virtual communities and the assessment of online marketing education. J. Mark. Educ. **25**(3), 260–276 (2003)
Reichheld, F.F.: The one number you need to grow. Harv. Bus. Rev. **81**(12), 46–55 (2003)
Ritchie, J., Lewis, J., Nicholls, C.M., Ormston, R. (Eds.).: Qualitative Research Practice: A Guide for Social Science Students and Researchers. Sage, New York (2013)
Schmidt, C.: The analysis of semi-structured interviews. A companion to qualitative research **253**(41), 258 (2004)
Sheth, J.N.: Borderless media: rethinking international marketing. J. Int. Mark. **28**(1), 3–12 (2020)
Statista Influencer share of marketing budgets 2022 (2022). From https://www.statista.com/statistics/268641/share-of-marketing-budgets-spent-on-digital-worldwide/. Accessed 15 Dec 2022
Statista Influencer marketing in Europe - statistics & facts (2022).https://www-statista-com.iulm.clas.cineca.it/topics/3304/influencers-in-europe/#topicHeader__wrapper. Accessed 17 Dec 2022
Statista Influencer/KOL marketing in China - statistics & facts (2022). https://www-statista-com.iulm.clas.cineca.it/topics/9579/influencer-marketing-in-china/#topicHeader__wrapper. Accessed 18 Dec 2022
Stokes, D., Bergin, R.: Methodology or "methodolatry"? An evaluation of focus groups and depth interviews. Qual. Market Res.: Int. J. **9**(1), 26–37 (2006)
Vogel, D.: The Market for Virtue: The Potential and Limits of Corporate Social Responsibility Brookings Institution Press, Washington (2007)
Wielki, J.: Analysis of the role of digital influencers and their impact on the functioning of the contemporary on-line promotional system and its sustainable development. Sustainability **12**(17), 7138 (2020)
Zinkhan, G.M., Hirschheim, R.: Truth in marketing theory and research: an alternative perspective. J. Mark. **56**(2), 80–88 (1992)
Zhou, S., Blazquez, M., McCormick, H., Barnes, L.: How social media influencers' narrative strategies benefit cultivating influencer marketing: tackling issues of cultural barriers, commercialised content, and sponsorship disclosure. J. Bus. Res. **134**, 122–142 (2021)

Analysis of the Possibilities of Implementing Bitcoin and Other Cryptocurrency Payments at the University

Juraj Fabus[1(✉)], Miriam Garbarova[1], Iveta Kremenova[1], and Lukas Vartiak[2]

[1] Department of Communications, Faculty of Operation and Economics of Transport and Communications, University of Zilina, Univerzitna 8251/1, 010 26 Zilina, Slovakia
{fabus,miriam.garbarova,iveta.kremenova}@uniza.sk
[2] Faculty of Social and Economic Sciences, Institute of Mediamatics, Comenius University, Mlynske Luhy 4, 821 05 Bratislava, Slovakia
lukas.vartiak@uniba.sk

Abstract. The study aims to analyze the possibility of introducing payment gateways for payments at universities and the introduction of bitcoin as a means of payment at universities. The study describes the differences between the most used virtual currencies regarding payment options. The most widely used virtual currencies are Bitcoin, Litecoin, and Ethereum. Subsequently, we compare the advantages and disadvantages of introducing cryptocurrency as a payment option and the general advantages and disadvantages of e-payments. The study's outcome is the selection of a payment gateway for making payments by cryptocurrencies. To achieve the set goals, we needed to examine the theoretical foundations of the issue, evaluate the current situation around payment and cryptocurrency payments, and compare the most used cryptocurrencies. Subsequently, we analyzed the payment options available in Slovakia and used cryptocurrency payments.

Keywords: Bitcoin · e-commerce · cryptocurrency · payment gateway · payment options · the payment processor

1 Introduction

E-commerce has become an inherent part of life. Companies use a combination of stone stores and online stores, which can bring a substantial competitive advantage compared to others. When purchasing goods and services, potential customers compare such products according to several criteria, and e-commerce represents one of them (Garbarova, Bachanova and Vartiak 2017).

The business environment is rapidly changing nowadays. Growing demands of companies for a highly trained and skilled workforce put pressure on universities to educate students in the newest technologies based on the latest methods in each field of the economy (Stofkova and Stricek 2014). The situation of young people entering the labour market is too complicated nowadays (Nemček, Kremeňová, and Fabuš 2015). The Industry 4.0. And the Single Digital Market require the re-qualification of citizens

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 91–96, 2023.
https://doi.org/10.1007/978-3-031-31836-8_12

to be further applied to the labour market. Nowadays, the rapid changes in society also require the ability to adapt quickly to these trends by educational institutions (Misik, Stofkova, and Stalmasekova 2018). Mobile apps with advanced payment options are used in the labour market and tourism (Genzorova, Corejova, and Stalmasekova 2018).

Payment options represent a method of payment by which the buyer chooses to reimburse the seller for the cost of a good or service that is also acceptable to the seller. Typical payment methods used in modern e-commerce include cash, cheques, credit or debit cards, money orders, bank transfers, and online payment services such as PayPal (Segmentify 2022).

Online payments form an essential means of developing e-commerce and e-business. They have emerged as a reaction to the cash-on-delivery system, which may not seem entirely appropriate at certain times (time characteristics, different distribution channels, etc.) and as a reaction to transaction fees and payment time delays in interbank transfers (Vaculik and Benech 2007).

Individuals and businesses make numerous payments every day. They sometimes have choices about what forms of payment to make or accept, and at other times are forced to use a particular form (Angel and McCabe 2015). The ten most used e-commerce payment options in Europe are amazon.de, amazon.co.uk, ebay.de, ebay.co.uk, amazon.fr, and amazon.it, allegro.pl, amazon.es, eBay.it, mobile.de (Yang 2017).

The card account is the most popular in Europe, and the second most popular is the digital wallet. Around four in ten online transactions are paid for in the UK with a credit card. A debit card is used in up to 35% of online payments as a payment option. PayPal is the third most popular payment method, and Germany prefers payments via invoice. In France, customers use debit cards from CarteBlue, MasterCard, American Express, and PayPal (Yang 2017).

Bitcoin is neither a centralized nor a decentralized payment mechanism; instead, it is a distributed payment mechanism (Luther and Smith 2020). Bitcoin payments are peer-to-peer and do not involve an intermediary institution (bank or banking scheme). The so-called Blockchain records all transactions in a distributed ledger (Stripe 2019). However, slow confirmation times of transactions hamper their wide adoption for micro-payments (IEEE et al. 2020).

Bitcoin payments are irrevocable: the payer sends a specified amount to the recipient's address without possibly disputing the payment later. Hundreds of thousands of companies accept bitcoin as a payment method on their sites. This payment option is desirable to anyone interested in digital payments. Bitcoin can be an exciting payment method for businesses that want to target a tech-savvy audience worldwide. The instant confirmation of payment and its irrevocability also provides a solid guarantee to businesses with a risky business model. The immediacy of a company's bitcoin payment confirmation and its irrevocability also offer solid guarantees for businesses that don't want to take risks (Stripe 2019).

Also, Central Bank Digital Currencies (CBDC) have far-reaching implications for monetary and payment systems, and their development could pave the way for a global common currency (Bhaskar et al. 2022). Newer blockchains promise transaction speeds comparable to traditional payment systems, enabling the use of cryptocurrencies as a medium of exchange for everyday transactions (Froehlich et al. 2022). If a government

replaces cash with a CBDC, the convenience of digital currency would not affect consumer choices. The higher the government's interest rate on CBDCs, the more consumers will use CBDCs than deposits (Son, Bilgin and Ryu 2022).

2 Payment Gateways Available in Slovakia

We have used information about payment options available on individual websites and inquiries via email for this analysis. We then applied a pairwise comparison when choosing a third-party payment option.

It is important to note that individual payment options differ not only from the geographical location but also from the demographic group. Therefore, some payment options are used internationally, and some are only available in certain countries (Louie 2022).

The most severe problem with gates is that they are known for their inadequate freeze of accounts. They can withhold money if there is suspicion that a particular transaction is fraudulent, and it may take some time for the problem to be resolved and the money released (Stripe 2019). FinancesOnline organization analyzed the possibility of paying with virtual currencies. The study describes the analysis of the payment gateway CoinGate, Bitpay, CoinBase, and GoCoin, which allow payments using the virtual currency Bitcoin. The portal podnikajte.sk dealt with the analysis of comparison of payment gateways that e-shops can use in Slovakia. Besteron, GoPay, 24pay, and TrustPay are used in Slovakia (Vojtyla 2018).

Besteron payment gateway

Besteron is one of the fastest payment gateways in Slovakia and the Czech Republic. The money the merchant receives from the customer is sent to the customer's account within a few minutes of payment, no later than in the evening of the same day. The Besteron payment gateway sends the money directly to the bank where the e-commerce merchant has an account. The payment gateway provides free modules to the content management systems.

GoPay payment gateway

GoPay is one of the popular gateways in the Czech Republic. It allows payment by card on the merchant's website (so-called inline payment). In Slovakia, it provides up to 25 payment methods and the possibility of a payment in bitcoins. The payment gateway also allows recurring payments and supports up to 9 currencies and 11 languages. The disadvantage is the absence of ready-made modules directly from the service provider. A programmer is required to configure the system or purchase a paid solution.

24-Pay Payment Gateway

The provider offers various payment options, such as via Viamo and a Diners Club card. Some companies have had a negative experience with a free module of the WordPress content management system that was buggy. This was only solved by purchasing an expensive paid module worth 400€. The other option is to program the module.

TrustPay payment gateway

TrustPay payment gateway is one of the lesser-known gateways operating in Slovakia and the Czech Republic. It offers 11 payment options and automatic recurring payments.

They do not provide free ready-made modules for content management systems, and thus the purchase of this module is required.

Electronic payment allows individuals, businesses, governments, and non-profit organizations to make non-cash payments for goods and services using cards, mobile phones, or the Internet. It presents some benefits, including cost and time savings, increased sales, and reduced transaction costs. However, it is susceptible to Internet fraud and can potentially increase business expenses.

There are several options that a university can use to introduce a cryptocurrency payment. The university's most important and initial decision is whether it wants to create its payment processor (Synala, BTC pay) or use a payment gateway provider (Gopay, Bitcoinpay, Bitpay, CoinBase).

3 Payment Gateway Selection

Determining which option is the most suitable for implementation in the university information system is crucial, and specific criteria must be defined in the evaluation. We determined the criteria based on existing analyses and selected the most suitable for payments in the university environment. Transaction costs are an essential criterion because traditional payment methods, such as card payments, represent higher costs for students.

Established criteria:

- K1 Transaction costs,
- K2 Support for predefined plugins,
- K3 Availability of implementation via API,
- K4 Bitcoin,
- K5 Litecoin.

In the analysis, it is necessary to determine the importance of each criterion (weights). Here we used the method of pairwise comparison.

The university must decide which cryptocurrency wants to introduce. After analyzing the options, we have chosen the option of paying by the Bitcoin and Litecoin cryptocurrencies as a further evaluation criterion. We have chosen these cryptocurrencies because of their popularity and potential in the payment area. Bitcoin is suitable for higher payments over 100 EUR because it is more stable and costs more elevated than the Litecoin cryptocurrency, which we recommend for small payments due to fees. The last criteria used in deciding the appropriate payment gateway is support for predefined plugins and implementation availability via API.

Payment gateway	*GoPay*	*BitcoinPay*	*BitPay*	*Coinbase*
Result	7,5	15	10,25	14,25

Fig. 1. The final table of evaluation of payment gateways providing cryptocurrency payments

4 Conclusion

It is necessary to determine the importance of individual criteria (weights) in the analysis. We have used the paired comparison method. Based on the analysis, we can say that the clear winner, according to Fig. 1, is the domestic company BitcoinPay, which gained 15 points out of 20 possible.

This is because it supports Litecoin and Bitcoin, and its transaction costs are the lowest compared to the other rated payment gateways. All selected payment gateways except GoPay support predefined plugins that can be downloaded directly from each payment gateway website. Universities who are technically proficient in programming can use API implementation for all payment gateways. Bitcoinpay is one of the largest providers of payment options for cryptocurrencies in the Slovak and Czech Republic.

Subsequently, we have analyzed in detail the various procedures for introducing payment gateways and have created a general method for accepting a virtual currency as a payment option at a university. However, this is not the subject of this paper. When choosing payment options through cryptocurrencies, deciding which currency the payment gateway will support is essential, or the university may create its virtual currency. From the analysis, we found that creating their own virtual currency is unsuitable for universities.

Acknowledgment. This contribution was undertaken as parts of the research project VEGA 1/0460/22. This research was also funded by the Ministry of Education, science, research, and sport of the Slovak Republic, grant number 07711134.

References

Stripe: "A Guide to Payment Methods" (2019). https://stripe.com/files/payments/guide/Payment-methods-guide.pdf. Accessed 31 Dec 2022

Angel, J.J., McCabe, D.: The ethics of payments: paper, plastic, or bitcoin? J. Bus. Ethics **132**(3), 603–611 (2014). https://doi.org/10.1007/s10551-014-2354-x

Bhaskar, R., Hunjra, A.I., Bansal, S., Pandey, D.K.: Central bank digital currencies: agendas for future research. Res. Int. Bus. Financ. **62**, 101737 (2022). https://doi.org/10.1016/j.ribaf.2022.101737

Froehlich, M., Vermehren, J.A.V., Alt, F., Schmidt, A.: Implementation and Evaluation of a Point-Of-Sale Payment System Using Bitcoin Lightning. Aarhus University; DIREC; IT-Vest; Stibo Fond. Association for Computing Machinery, Translated by Department of Computer Science (2022)

Garbarova, M., Bachanova, P., Vartiak, L.: "Purchaising Behaviour of E-commerce Customers." Global Scientific Conference on Management and Economics in Manufacturing (2017).https://www.webofscience.com/wos/wosccc/full-record/WOS:000759277000001

Genzorova, T., Corejova, T., Stalmasekova, N.: Comparing the use of digital platforms in tourism. In: CBU International Conference Proceedings 2018: Innovations in Science and Education, vol. 6, pp. 152–55 (2018)

Louie, A.: "Authorize.net Review." Financesonline.com (2022). https://reviews.financesonline.com/p/authorize-net. Accessed 31 Dec 2022

Mercan, S., Erdin, E., Akkaya, K.: Improving transaction success rate via smart gateway selection in cryptocurrency payment channel networks. In: 2020 IEEE International Conference on Blokchain and Cryptocurrency (IEEE ICBC) (2020).https://www.webofscience.com/wos/woscc/full-record/WOS:000848725400060

Luther, W.J., Smith, S.S.: Is bitcoin a decentralized payment mechanism? J. Inst. Econ. **16**(4), 433–444 (2020)

Misik, T., Stofkova, J., Stalmasekova, N.: Survey of increasing digital skills of university students. In: 11TH International Conference of Education, Research and Innovation (ICERI2018), pp. 3949–56 (2018)

Nemček, B., Kremeňová, I., Fabuš, J.: An analysis of unemployment due to number of university graduates in the slovak republic. In: Procedia-Social and Behavioral (2015). https://www.sciencedirect.com/science/article/pii/S1877042815009593

Segmentify: "Best Payment Methods of All Time for Your ECommerce Store - Segmentify" (2022). https://www.segmentify.com/blog/best-payment-methods-for-ecommerce. Accessed 31 Dec 2022

Son, J., Bilgin, M.H., Ryu, D.: Consumer choices under new payment methods. Financ. Innov. **8**(1), 1–22 (2022). https://doi.org/10.1186/s40854-022-00387-w

Stofkova, K., Stricek, I.: Why are ICT skills necessary for university and how to keep abreast with new technologies. In: ICERI2014: 7TH International Conference of Education, Research and Innovation, pp. 1969–74 (2014).

Vaculik, J., Benech, P.: Online Platby a Mikroplatby. Transp. Commun. **3**(1), 105–112 (2007)

Vojtyla, M.: Porovnanie Platobných Brán Na Slovensku (2018). https://www.podnikajte.sk/technologie/porovnanie-platobnych-bran. Accessed 31 Dec 2022

Yang, W.: Analysis on Online Payment Systems of E-Commerce (2017). Bachelor Thesis. https://core.ac.uk/download/pdf/161421228.pdf. Accessed 31 Dec 2022

How Digital Channels Enhance Firm Internationalization: An Explorative Study on Space Tech Startups

Mirko Olivieri(✉), Lala Hu, and Chiara Cantù

Catholic University of the Sacred Heart, Milan, Italy
{mirko.olivieri,lala.hu,chiara.cantu}@unicatt.it

Abstract. The aim of this paper is to investigate the role of digital channels in the internationalization strategies of startups operating in the space tech industry. To achieve this research aim, we conducted 9 semi-structured interviews with Italian space tech startups and other actors involved in theses firms' internationalization process. The preliminary findings of this study reveal that digital channels enhance the internationalization of space tech startups by supporting the building of business relationships, which are key to access international markets. Moreover, digital channels play a crucial role in acquiring new customers abroad and increasing the brand awareness of startups.

Keywords: Internationalization · digital channels · space tech · startups

1 Introduction

In recent years, the number of startups has increased in several countries. For instance, in Italy, startups increased from 10,6 to 12,6 thousand units between the third quarter of 2019 and the first quarter of 2021 (Statista, 2021). One of the sectors where Italian startups have spread most significantly is space technology, which consists of the development of high-throughput, breakthrough technologies to be explored beyond low-Earth orbit (Nasa, 2014). In general terms, the field of the space economy has attracted huge resources, so much so that in 2018 the Italian government has foreseen an investment of about 4,7 billion euros, of which about 50 percent covered with additional public resources compared to those ordinarily intended for space policies (MISE, 2018), also to allow these companies to participate in internationalization accelerator programs. Indeed, in today's context, the processes of globalization and the digital revolution make the transition to becoming international increasingly important for the growth of startups (Troisi et al., 2021; Vecchi and Brennan, 2022).

This topic of startups' internationalization has been widely addressed in the academic literature (Monaghan et al., 2020; Neubert, 2018); nevertheless, no study has focused on the role played by digital channels in the internationalization strategies of space tech startups. In addition, considering that the highest number of startups fail because they

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 97–104, 2023.
https://doi.org/10.1007/978-3-031-31836-8_13

misread the current market demand,[1] it is relevant to understand how digital channels can improve the relation between startups and the international markets where they operate.

Thus, the aim of this ongoing research is to understand how digital channels enhance the internationalization of space tech startups. To achieve this research aim, we conducted a multiple case study analysis by involving both space tech startups and other actors – such as incubators –, that are involved in the internationalization process of these firms. The remainder of this chapter is structured as follows. In the next paragraph, we review the recent literature about startups and firm internationalization, with a focus on the digital channels' usage. Research questions and methodology are then presented. Subsequently, we provide the preliminary findings of this research. Discussion, conclusion and future research directions conclude the chapter.

2 Literature Review

Startups' internationalization process

The foundation of a startup is strictly related to the identification of entrepreneurial opportunities that is traced back to the discovery theory and the opportunity creation theory. On the one hand, in the discovery theory "the opportunities, like mountains, exist as a real and objective phenomenon, independent of the actions or perceptions of the entrepreneurs, just waiting to be discovered and exploited" (Alvarez and Barney, 2007, p. 13). On the other hand, the opportunity creation theory assumes opportunities to be created, endogenously by the actions and reactions of entrepreneurs, exploring ways to produce new goods or services (Olugbola, 2017). Either way, the entrepreneurial ability to recognize opportunities is critical for firms such as startups to achieving the growth stage and establishing sustainable market leadership.

Among the various ways to identify growth opportunities, according to the relational perspective, the startup evolution depends on the interconnected business relationships (Cantù et al., 2018). In this vein, many scholars (e.g., Ciabuschi et al., 2012) argue startups that manage to position themselves effectively in business networks acquire market advantages with less difficulty than others and they can access new markets, including international ones, which favor their business expansion. The internationalization process plays a key role for startups looking to expand (Oliva et al., 2022).

In particular, scholars identified some drivers that influence the startups' internationalization processes. Specifically, Masili and Curina (2018) identify critical success factors, including the entrepreneurs' capabilities, the flexibility of the product processes, the high level of research and technological development, strong relationships with multinational companies and previous professional relationships. In addition, Debrulle and Maes (2015) found a link between business owner's experience, professional networks, and the startup propensity to export. Finally, according to a recent study by Naldi et al. (2020), the technological knowledge owned by the entrepreneur and the employees is crucial for the effectiveness of the internationalization strategy.

Digital channels usage for internationalization purposes

Digital channels represent an alternative way that companies can exploit to access international markets (Cassetta et al., 2020). In particular, scholars identify a series of

[1] https://www.failory.com/blog/startup-failure-rate (accessed 7 January 2023).

advantages that firms can obtain from the implementation of digital channels in their internationalization strategies: for example, according to a study by Bianchi and Mathews (2016), digital channels positively contribute to the reduction of the distance and costs of entering an international market, as well as representing a new channel for establishing business relationships. In this regard, Marchi et al. (2018) argue that digital channels also perform a facilitating function to connect with customers, suppliers, business partners, and local distribution networks. Indeed, on the one hand, digital channels allow customers to acquire knowledge on the offerings' variety and characteristics; on the other hand, they allow companies to improve their knowledge of geographically distant markets (Bianchi and Mathews, 2016).

Specifically, with reference to international marketing strategies, scholars highlight that digital channels have the potential to support marketing campaigns in foreign markets, representing, for example, a key tool for advertising strategies (Lohrke, 2006). Furthermore, Deng et al. (2022) have recently shown that the speed of internationalization of firms on digital channels reduces exit risks. In this regard, digital channels such as social media impact the internationalization strategies of startups – as a matter of fact, a recent study by Almeida and Santos (2020) has shown that LinkedIn helps to accelerate the internationalization of these companies by reducing their costs, especially in the initial stages of the process. In particular, social media are digital channels capable of favoring the birth and development of international relations, increasing the initial credibility of the company (Zain and Ng, 2006). Indeed, social media makes it possible to locate foreign individuals and organizations and to interact effectively with foreign customers and partners, thus seizing new business opportunities (Arnone and Deprince (2016; Chandra et al., 2009).

Furthermore, digital channels play a key role in benchmarking as they facilitate the acquisition of information on competitors (Borges et al., 2009; Petersen et al., 2002). Finally, regarding the role of digital channels in global value chains, several scholars (e.g., Wu et al., 2006) argue that they increase flexibility in producers' supply chains and reduce cycle times and product delivery.

In recent years, this scenario is changed more rapidly, so much so that several scholars argue that international entrepreneurship is increasingly linked to the diffusion of "ibusiness platforms", i.e., digital networks in which users interact and actively participate in co-creation processes as firms expand internationally (Brouthers et al., 2016; Chen et al., 2019).

3 Research Questions and Methodology

This study investigates the role of digital channels in the internationalization strategies of space tech startups. We seek to answer the following research questions:

RQ1. How do digital channels enhance the internationalization of space tech startups?

RQ2. How can digital channels improve the relationships between startups and international markets?

Because of the explorative nature of the study, we opted for a qualitative analysis. Specifically, following previous studies on startups' internationalization that adopted

this methodology (e.g., Robles, 2021; Schepis, 2020), we conducted a multiple case study analysis (Yin, 2009) which involves 6 space tech Italian startups. In addition, to broaden our investigation perspective, we interviewed 2 incubators and the Italian Trade Agency (Table 1). Indeed, according to Eisenhardt and Graebner (2007), multiple case studies provide a stronger basis for theory building than single case studies.

Based on secondary data, we compiled a list of Italian space tech startups which were contacted by e-mail or LinkedIn to present the research aim and ask for availability to participate to this research. A total of 9 semi-structured interviews were collected in July-November 2022 by videocalls. All interviews lasted about 60 min each and, upon interviewees' consent, they were recorded and transcribed. Primary data from interviews were triangulated with secondary data and reports from various sources (e.g., reports, governmental sources, and websites specialized in space tech information).

Table 1. Key informants involved in the study

Key informant	Key informant role	Organization	Products/Services	Foundation year
1	Co-Founder and CFO	Company A	Additive manufacturing service solutions	2017
2	CEO	Company B	Space logistics and orbital transportation services	2011
3	Co-Founder and CEO	Company C	Drones	2015
4	Business Development Manager	Company D	Satellites	2014
5	Founder and CEO	Company E	Artificial Intelligence softwares	2017
6	Co-Founder	Company F	Spacecraft on-orbit services	2021
7	Head of Incubation and Open Innovation	Incubator A	Incubation services	2010
8	Innovation and Startup Department Officer	Italian Trade Agency	Support services	-
9	Head of Incubation	Incubator B	Incubation services	2010

4 Results

Space tech startups involved in this study are currently at different stages of their internationalization. However, they show commonalities in how digital channels can facilitate this process. In particular, from the preliminary results of this study, it emerged that digital channels are fundamental (1) to build business relationships for accessing international markets; and (2) to increase the brand awareness of space tech startups.

Face-to-face relationships are relevant in business markets also considering the relationships developed by startups with heterogeneous stakeholders. However, recently, following the Covid-19 pandemic, digital channels have taken on a main role for approaching international markets. Specifically, our analysis shows that startups achieve better results in terms of internationalization when they use digital channels to identify key stakeholders with whom to build and maintain strong relationships such relationships with business partners, institutional organizations, trade agencies, incubators and accelerators.

Digital channels, including social media, are used by startups to identify interlocutors, who need to be contacted with personalized communications. For this purpose, LinkedIn is considered the more appropriate platform. For instance, the Co-founder of Company F has declared that he used his personal profile to contact key stakeholders. Hence, digital channels represent a tool used to establish direct communications with stakeholders, which will translate into business relationships. As a matter of fact, the CEO of company B declared that relationships based on trust are at the basis of the business.

Space tech startups also adopt social media for recruitment purposes. Among the various channels, LinkedIn is the most effective one for this aim as it enables companies to identify professionals to devote to the development of internationalization strategies.

Moreover, startups operating in the space tech sector consider digital channels as a tool to make themselves better known and, with reference to their internationalization strategy, to reach a wider target, i.e., for brand awareness aims. In particular, both LinkedIn and the corporate website represent a tool used by firms for these aims, as declared by the Business Development Manager of Company D:*"Most customers reach us via the website, simply by searching for some keywords. In fact, it would seem that we are indexed quite well. They come directly from LinkedIn profiles, and this usually happens as a result of trade shows we attend."*

According to the Company A Co-founder and CFO, Instagram is a social media that allows the company to generate brand awareness and reach customers in international markets. In this regard, this key informant revealed that they were contacted by potential clients from the USA and Denmark through Instagram direct messages.

5 Discussion and Conclusion

As emerged from the review of the academic literature, and specifically according to the relational perspective (Cantù, 2017; Ciabuschi et al., 2012), business relationships affect the startups' evolution, also in terms of internationalization strategies (Oliva et al., 2022). In this regard, our research corroborates recent studies (Hu and Olivieri, 2022; Varadarajan et al., 2022) as it demonstrates that in today's context digital channels represent a

necessary tool to build and maintain business relationships. In particular, we found that digital channels are key for space tech startups to effectively reach international markets. As a matter of fact, scholars (e.g., Schepis, 2020) reveal that relationships allow startups to gain access to specific knowledge, as well as to acquire legitimacy for approaching new markets. In this vein, according to our results, digital channels are nowadays primary tools to establish connections with key stakeholders who allow startups to effectively implement their internationalization strategies.

Furthermore, this study highlights that digital channels, and LinkedIn and the corporate website in particular, support space tech startups in increasing brand awareness and reaching new customers, who learn about company products and services on these digital platforms. Our findings confirm previous studies according to which social media represent an important low-cost channel for the global technology startup market, which can be used to develop mutual dependencies with customers and partners (Maltby, 2012; Martin et al., 2020). Furthermore, digital channels allow startups to be identified not only by potential customers but also by key business partners that could support their internationalizations process, such as incubators, accelerators, and institutional actors. The interaction with heterogeneous stakeholders supports the relationship between the startup and the international market. We also found that space tech startups rely on social media for recruitment purposes. Indeed, the issue of entrepreneurial team competences is key for approaching international markets (Buccieri et al., 2022).

In conclusion, this ongoing study investigates the role of digital channels as facilitators of internationalization strategies of space tech startups and, specifically, it identifies different purposes for which these channels are used. However, our research suffers from limitations related to generalizability of findings because of the limited sample of the involved startups from only single country, i.e., Italy. Future research should consider the internationalization of startups from other countries and integrate the perspective of customers. Finally, quantitative methodologies could be implemented to measure the effectiveness of the internationalization strategies of these startups.

References

Almeida, F., Santos, J.D.: The role of social networks in the internationalisation of startups: LinkedIn in Portuguese context. Manage. Mark. Challenges Knowl. Soc. **15**(3), 345–363 (2020)

Alvarez, S.A., Barney, J.B.: Discovery and creation: alternative theories of entrepreneurial action. Strateg. Entrep. J. **1**(1–2), 11–26 (2007)

Arnone, L., Deprince, E.: Small firms internationalisation: reducing the psychic distance using social networks. Glob. J. Bus. Res. **10**(1), 55–63 (2016)

Bianchi, C., Mathews, S.: Internet Marketing and export market growth in Chile. J. Bus. Res. **69**(2), 426–434 (2016)

Borges, M., Hoppen, N., Luce, F.B.: Information technology impact on market orientation in e-business. J. Bus. Res. **62**(9), 883–890 (2009)

Brouthers, K.D., Geisser, K.D., Rothlauf, F.: Explaining the internationalization of ibusiness firms. J. Int. Bus. Stud. **47**(5), 513–534 (2016)

Buccieri, D., Javalgi, R.G., Gross, A.: Examining the formation of entrepreneurial resources in emerging market international new ventures. Ind. Mark. Manage. **103**, 1–12 (2022)

Cantù, C.: Entrepreneurial knowledge spillovers: discovering opportunities through understanding mediated spatial relationships. Ind. Mark. Manage. **61**, 30–42 (2017)

Cantù, C., Sepe, G., Tzannis, A.: Exploring the role of business relationships in start-ups' life cycles: evidences from the Italian context. IMP J. **12**(3), 519–543 (2018)
Cassetta, E., Monarca, U., Dileo, I., Di Berardino, C., Pini, M.: The relationship between digital technologies and internationalisation. evidence from Italian SMEs. Ind. Innov. **27**(4), 311–339 (2020)
Chandra, Y., Styles, C., Wilkinson, I.: The recognition of first time international entrepreneurial opportunities: evidence from firms in knowledge-based industries. Int. Mark. Rev. **26**(1), 30–61 (2009)
Chen, L., Shaheer, N., Yi, J.: The international penetration of ibusiness firms: network effects, liabilities of outsidership and country clout. J. Int. Bus. Stud. **50**(2), 172–192 (2019)
Ciabuschi, F., Perna, A., Snehota, I.: Assembling resources in the formation of a new business. J. Bus. Res. **65**(2), 220–229 (2012)
Debrulle, J., Maes, J.: Start-ups' internationalization: the impact of business owner's management experience, start-up experience and professional network on export intensity. Eur. Manag. Rev. **12**, 171–187 (2015)
Deng, Z., Zhu, Z., Johanson, M., Hilmersson, M.: Rapid internationalization and exit of exporters: the role of digital platforms. Int. Bus. Rev. **31**(1), 1–15 (2022)
Eisenhardt, K.M., Graebner, M.E.: Theory building from cases: opportunities and challenges. Acad. Manag. J. **50**(1), 25–32 (2007)
Lohrke, F.T.: The internet as an information conduit: a transaction cost analysis model of US SME internet use. Int. Small Bus. J. **24**(2), 159–178 (2006)
Hu, L., Olivieri, M.: "The acceleration of digital communications in the durable goods industry. A study on white goods firms after COVID-19", Journal of Business & Industrial Marketing, ahead-of-print (2022)
Maltby, T.: Using social media to accelerate the internationalization of startups from inception. Technol. Innov. Manag. Rev. **2**(10), 22–26 (2012)
Marchi, V.D., Maria, E.D., Gereffi, G.: Local Clusters in Global Value Chains: Linking Actors and Territories through Manufacturing and Innovation. Routledge, London (2018)
Martin, S.L., Rajshekhar, G.J., Ciravegna, L.: Marketing capabilities and international new ventures performance: the effect of mediation role of marketing communication and the moderation effect of technological turbulence. J. Bus. Res. **107**, 25–37 (2020)
Masili, G., Curina, I.: Global Start-ups and born global spin-offs: a multiple case study. J. Econ. Behav. **8**, 61–80 (2018)
MISE: Space economy (2018). https://www.mise.gov.it/it/impresa/competitivita-e-nuove-imprese/space-economy. Accessed 22 Dec 2022
Monaghan, S., Tippmann, E., Coviello, N.: Born digitals: thoughts on their internationalization and a research agenda. J. Int. Bus. Stud. **51**(1), 11–22 (2020)
Naldi, L., Criaco, G., Patel, P.: Related and unrelated industry variety and the internationalization of start-ups. Res. Policy **49**(10), 1–18 (2020)
Nasa: What is Space Technology? (2014). https://www.nasa.gov/content/what-is-space-technology-0/#.Y6SdouzMJbV. Accessed 22 Dec 2022
Neubert, M.: The impact of digitalization on the speed of internationalization of lean global startups. Technol. Innov. Manag. Rev. **8**(5), 44–54 (2018)
Oliva, F.L., et al.: Risks and critical success factors in the internationalization of born global startups of industry 4.0: A social, environmental, economic, and institutional analysis. Technol. Forecast. Soc. Chang. **175**, 1–22 (2022)
Olugbola, S.: Exploring entrepreneurial readiness of youth and start-up success components: entrepreneurship training as a moderator. J. Innov. Knowl. **2**(3), 155–171 (2017)
Petersen, B., Welch, L.S., Liesch, P.W.: The internet and foreign market expansion by firms. Manag. Int. Rev. **42**(2), 207–221 (2002)

Robles, M.A.G.: Internationalisation of start-ups: an institutional entrepreneurship perspective. In: Jafari-Sadeghi, V., Amoozad Mahdiraji, H., Dana, L.-P. (eds.) Empirical International Entrepreneurship. CMS, pp. 183–198. Springer, Cham (2021). https://doi.org/10.1007/978-3-030-68972-8_10

Schepis, D.: How innovation intermediaries support start-up internationalization: a relational proximity perspective. J. Bus. Indust. Mark. **36**(11), 2062–2073 (2020)

Statista; Number of startups in Italy 2019–2021 (2021). https://www.statista.com/statistics/633517/italy-number-of-start-ups/. Accessed 22 Dec 2022

Troisi, O., Visvizi, A., Grimaldi, M.: The different shades of innovation emergence in smart service systems: the case of Italian cluster for aerospace technology. Journal of Business & Industrial Marketing, pp. 1–25 (2021). Ahead-of-print

Varadarajan, R., Welden, R.B., Arunachalam, S., Haenlein, M., Gupta, S.: Digital product innovations for the greater good and digital marketing innovations in communications and channels: Evolution, emerging issues, and future research directions. Int. J. Res. Mark. **39**(2), 482–501 (2022)

Vecchi, A., Brennan, L.: Two tales of internationalization–Chinese internet firms' expansion into the European market. J. Bus. Res. **152**, 106–127 (2022)

Wu, F., Yeniyurt, S., Kim, D., Tamer Cavusgil, S.: The impact of information technology on supply chain capabilities and firm performance: a resource-based view. Ind. Mark. Manage. **35**(4), 493–504 (2006)

Yin, R.K.: Case Study Research: Design and Methods. Sage, Thousand Oaks (2009)

Zain, M., Ng, S.I.: The impacts of network relationships on SMEs' internationalisation process. Thunderbird Int. Bus. Rev. **48**(2), 183–205 (2006)

An Empirical Study on the Role of CRM and Big Data in the Automotive Industry

Lala Hu(✉) and Angela Basiglio

Catholic University of the Sacred Heart, Milan, Italy
lala.hu@unicatt.it, angela.basiglio01@icatt.it

Abstract. The present study analyzes the recent digital transformation that affected the automotive industry, characterized by an increasing use of big data and customer relationship management (CRM) systems. To understand how automotive firms integrate CRM tools and big data in their marketing strategies, we conducted a multiple-case study by collecting 13 interviews with key informants operating in eight leading automotive firms. Findings suggest new relational approaches and opportunities deriving from the use of big data analytics and CRM under an overall customer-oriented approach, leading to the development of a digital culture.

Keywords: Automotive · big data · CRM · digital marketing · digital transformation

1 Introduction

Technological innovations, sustainability, and the recent Covid-19 pandemic are challenges that have strongly affected the automotive industry at the global level (Ishida 2020; Lin et al. 2021). Nowadays, automotive firms can rely on big data and analytics to improve customer experience and performance (Deloitte 2015). In this context, the automotive industry has increased the adoption of Customer Relationship Management (CRM) systems (Steel et al. 2013). Indeed, CRM enhances value for shareholders (Payne and Frow 2005), providing several benefits such as customer engagement, innovation, and customer loyalty (Perez-Vega et al. 2022).

The aim of this paper is to understand how automotive firms integrate CRM tools within their marketing strategies. To reach this objective, we conducted an empirical study by collecting qualitative data in the form of 13 interviews with eight leading international automotive firms.

The remaining of this paper is structured as follows. The next section provides a literature review of the studies focused on the topic of digital transformation and CRM. In Sect. 3, the research question and the method adopted for this study are presented. The findings of the research follow in Sect. 4. Finally, the discussion of the results and conclusions of the study conclude.

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 105–112, 2023.
https://doi.org/10.1007/978-3-031-31836-8_14

2 Literature Review

Payne and Frow (2005, p. 168) define CRM as 'a strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments.'

Potential benefits of CRM include achieving customer loyalty and effectiveness of marketing activities by building strong relationships with those customers that are most profitable for the company (Moser 2021). Kumar and Reinartz (2018) stated that higher customer satisfaction results in stronger customer loyalty, which in turn fosters profitability growth thanks to repeat customers' purchases over time. Through CRM activities, firms collect customers' data in order to identify sales opportunities and increase revenues (Suoniemi et al. 2022). The exponential growth of big data generation during the digital era allows firms to target the right customers, at the right time, and with appropriate touchpoints; indeed, firms can analyze data to improve the relationships with their customers (Kumar et al. 2020) and provide rational reference discount (Bergers et al. 2023).

The companies that integrate CRM with other business systems and technologies such as social media applications can enhance customer relationship performance (Trainor et al. 2014). A combination of internal coordination and use of technology tools facilitates the achievement of CRM benefits, including improving financial and marketing performance. In this context, big data allow to predict future market demand (Kumar and Reinartz 2018) and communicate with customers by developing useful insights for segmentation as well as product customization (Del Vecchio et al. 2021).

In the digital era, technology CRM and tools for big data analytics represent strategic assets for companies. However, CRM requires significant efforts in terms of intraorganizational and interorganizational coordination among the different entities involved in CRM implementation (Bohling et al. 2006). Moreover, to enhance customer loyalty and achieve a sustainable competitive advantage, an overall customer-oriented approach is required. The latter ensures a uniform view of the company on their customers by a deep coordination between different company departments (Moser 2021; Nicolescu and Nicolescu 2022).

According to Nasir (2015), firms have to adopt more flexible new business models and more sophisticated analytics systems in order to respond to the shifting customer needs as well as effectively support CRM activities. The large volume and variety of data led to the development of new technology solutions which firms can implement within their CRM operating systems. As a result of the increasing use of CRM by companies, CRM software functionalities that apply Artificial Intelligence (AI) have been integrated. AI will have a disruptive influence on marketing strategies thanks to the opportunities it offers to gather large amount of valuable data to create a more personalized customer experience contributing to innovate business models (Ledro et al. 2022). Zhang et al. (2020) argued that the big data analytical intelligence improves CRM performance. However, how this is implemented within firms' overall marketing strategies is not clear.

3 Research Question and Method

We identified a research gap related to the role of CRM and big data in the marketing strategies of automotive firms. Therefore, we pose the following research question:

RQ: How do automotive firms integrate CRM tools and big data in their marketing strategies?

As the objective was exploratory and following previous studies on CRM (e.g., Alshawi et al. 2011), we adopted a qualitative methodology based on a multiple-case study (Eisenhardt and Graebner 2007; Yin 2009). Through a purposive sampling (Corbin and Strauss 2008), we recruited practitioners from international car manufacturers who held marketing roles and could provide an overview of CRM activities. Potential interviewees were identified and contacted through LinkedIn. In total, we carried out 13 semi-structured interviews with key informants from eight leading automotive firms (Table 1) stopping sampling once arrived at a theoretical saturation.

Table 1. Descriptive data of the companies' key-informants

Company	Headquarter country	Key informant
Company A	The Netherlands	1. Head of Communication 2. CRM Specialist 3. Head of CRM & Customer Journey Management 4. Media Manager 5. Head of Customer Knowledge, Frameworks & Synergies
Company B	Italy	6. Head of Customer Experience
Company C	France	7. Digital Marketing & CRM Specialist 8. CRM Project Manager
Company D	Germany	9. Marketing Communication Director
Company E	Japan	10. CRM & Loyalty Manager
Company F	Germany	11. Digital Marketing & Retail CRM Coordinator
Company G	Italy	12. Customer Journey & Retail Marketing Manager
Company H	Germany	13. Digital Customer Journey Manager

The semi-structured interviews were conducted in the period June-July 2022, with an average duration of one hour each. Upon key informants' consents, all interviews were recorded and transcribed. Data were analyzed using the software NVivo.

The analytical process was based on an abductive approach that continuously compares data and theory. The theoretical framework was modified over the course of the analysis, taking into consideration findings from the interviews and secondary data (Gioia et al. 2012). Data was coded in two stages. In the first stage, the case description was built by analyzing interviews and secondary data. To identify first-order concepts, researchers initially conducted open coding separately and later compared the analysis through a discussion. In the second stage, by using an open coding approach (Strauss and Corbin

1998), themes were developed emerging from the data. By iterating between emerging themes and the relevant theories from the literature, first-order codes, second-order themes, and aggregate dimensions emerged. This process resulted in the identification of a data structure that underlined the connection between the data and the final aggregate dimensions (Gioia et al. 2012).

4 Findings

The data analysis allowed to identify three aggregate dimensions, namely: 1. Customer-oriented approach based on a digital culture; 2. Digital tools to build customer relationships; and 3. CRM and big data to support business performance.

With regard to the first aggregate dimension, key informants reported that after the Covid-19 outbreak, automotive firms strengthened their digital culture in response to changing consumer buying behavior. During the lockdown, customers switched to digital touchpoints to interact with automotive brands because of dealership closures. This was stressed by several interviewees.

> Digital touchpoints are becoming a growing share of our budget precisely because customers are increasingly shifting towards this [digital] direction. In wider terms, a few years ago digital touchpoints accounted for about 25% of total automotive advertising spending, while now they account for more than 40%. (Key informant 4).

The increased adoption of digital channels favored the acceleration of the digital transformation within the automotive industry. Since its origins, the automotive industry has been characterized by a distribution model based on physical sales through dealership. After the Covid-19 outbreak, companies were forced to adopt online sales channels. Secondary data reported that at the end of 2020, despite the dealerships' reopening, online has globally emerged as cars' preferred purchase channel for most age groups (McKinsey 2021).

However, few automotive players currently use e-commerce platforms providing an end-to-end user experience. Key informants reported that most firms permit car pre-orders on the website, but they still do not allow to make a sale transaction online. This is essentially because buying a car involves a well-thought-out decision, given the investment it requires; indeed, the automotive product itself represents a barrier for companies to digitalize the distribution model. Several professionals stated that automotive firms need to provide a 'phygital' customer journey since the physical experience will remain to view the car or make a test-drive before purchase. At the same time, digital touchpoints are seen as increasing priority to meet customer needs. Indeed, automotive firms have built an overall customer-oriented approach based on a digital culture led by the top management. Interviewed firms increased investments on digital projects in order to face the drop in sales and physical visits at the dealership store during the lockdown. Furthermore, our results show that the internal organization restructuring and coordination between departments seem to represent two effective responses to the changes within the external environment. In this regard, the key informant 5 stated: "A successful CRM system relies on changed management processes." Automotive firms created new

specific departments and intensified cooperation between sales and marketing functions with IT departments to better manage the digital transformation as well as foster internal sharing of customer data.

The second aggregate dimension highlights that automotive firms prefer using digital marketing tools rather than traditional ones since they allow to better study customer needs by collecting a very large number of data and tracking their behavior in real time. Several interviewed firms expected to exploit increasing volume of data from various sources such as connected cars, which is one of the current automotive trends; hardware and software installed inside connected cars are also useful tools to gather data on driver behaviors. Moreover, all key informants stressed the relevance of the role of dealership. Since dealers work closer to local customers than car manufacturers, they provide an in-depth understanding of customer preferences at international level by sharing information with headquarters through digital platforms. Key informants reported that automotive firms use outputs produced by analyzing all these data on CRM platforms to customize products and aftersales services as well as develop one-to-one communication to strengthen and personalize their customer relationships.

Regarding the last aggregate dimension, our research suggests that CRM and big data not only support the marketing strategy but also the overall business strategy. Key informants reported that CRM KPIs (e.g., click-to-rate, lead conversion rate, loyalty rate) are necessary to develop corrective actions in a proactive approach. Several companies reported that they standardize CRM processes in each market by implementing a single global cloud system to collect customer data. This means that headquarters align CRM processes by using easily comparable data. Interviewed managers added that standardized CRM processes are extremely efficient since they reduce global operating costs and hence increase profit margin. Our results show that big data collected from digital tools and CRM KPIs' analysis represent key resources to develop successful business strategies. Specifically, CRM allows firms to drive business strategy more accurately and improve the overall business performance, by also reducing costs.

5 Discussion and Conclusion

This study confirms that following Covid-19, the durable goods industry, which includes the automotive one, experienced an acceleration in digital tools' adoption (Hu and Olivieri 2022). The analyzed automotive companies have developed a digital culture strongly focused on new consumer needs emerged with the Covid-19 pandemic. As in the results of Hoeft's (2021) study focused on Asian firms, also the automotive companies we analyzed – mainly from Europe – suffered a drastic drop in sales during the initial lockdown. Meanwhile, firms saw a considerable increase in the user visits to the websites and online showrooms; therefore, they reinforced the use of digital touchpoints and innovate their business models to adapt to the acceleration of digital transformation.

Car manufacturers had already reacted to the technological advances in the 2000s, preparing for the latest trends, e.g., autonomous driving, e-mobility, connected cars, and the adoption of shared mobility platforms (Llopis-Albert et al. 2021). Over the last decade, they have developed new marketing strategies based on innovative tools with their customers that could facilitate the transmission of information about products

and services (Candelo 2019) in a more direct way. However, while companies previously considered their websites mainly as a communication platform, our results show that, after the Covid-19 outbreak, firms have extended their functionalities turning them into e-commerce platforms for car sales. Our study points out that digitization enables marketing innovation by enhancing new distribution channels (Hu and Olivieri 2022). This represents a revolution for the automotive distribution model (Lempp and Siegfried 2022), which used to rely on more traditional channels based on physical touchpoints.

The Covid-19 pandemic led automotive firms to leverage their collaboration with dealers by intensifying customer data sharing that allow to better understand customer needs and behaviors. In this process, firms have extended the digitization to the dealership by providing digital training as well as access to shared digital systems. Although leading firms had already launched Marketing & Sales Automation platforms (Buttle 2009; Nasir 2015), most automotive firms have fully understood their advantages only after Covid-19. By leveraging collaboration with dealers, companies can improve CRM processes and performances, which relies on intraorganizational and interorganizational efforts (Bohling et al. 2006).

Moser (2021) stressed that a deep customer knowledge represents a relevant prerequisite for successful CRM systems. Indeed, as emerged in our empirical study, automotive firms still need insights developed by dealers thanks to their direct interactions with customers in physical channels. On the other hand, given the effects of the pandemic and the acceleration of digital transformation, firms have adopted an omnichannel approach that allows to collect data from multiple channels and improve customer experience. Secondary data confirm that firms should engage customers through a combination of digital and traditional touchpoints to boost sales and maintain customer relationships in the long term (Accenture 2021).

In the digital era, the automotive industry considers data an asset to be used better than in the past (Candelo 2019); indeed, our study reveals that organizations develop CRM strategies based on a data-driven approach to maximize value both for customers and companies. Specifically, the overall business strategies rely on data analytics systems to quantify CRM results in terms of profits. In other words, firms are becoming more granular in their CRM metrics and link business performance to the quality of CRM initiatives. In this regard, according to most interviewees, customer centricity means understanding customer changing needs to develop highly customized products and services that increase customer satisfaction. Furthermore, the use of big data analytics within CRM processes can lead to positive impacts on international marketing strategies (Bertello et al. 2020; Kumar and Reinartz 2018) as the data collected from diversified countries help to predict customer expectations at global, regional, and national levels.

Today, automotive firms benefit from implementing CRM within their marketing strategy. In details, companies increasingly adopt a customer-oriented omnichannel approach and big data analytics as key resources to improve their business performance. Based on this study's findings, in the next few years customer relationships in the automotive industry will be mainly based on digital touchpoints that offer a more fluid and disintermediate customer decision journey.

In the future research, to generalize the findings of this explorative study on the automotive industry, quantitative analyses should be carried out to measure automotive

firms' marketing performances based on the implementation of CRM and big data. Moreover, the points of view of dealers and customers could be considered to obtain a holistic view of the phenomenon.

References

Accenture. A customer experience reboot: Pivoting toward the automotive's industry future success (2021). https://accenture.com/us-en/insights/automotive/reinventing-the-automotive-customer-experience. Accessed 5 Jan 2023

Alshawi, S., Missi, F., Irani, Z.: Organisational, technical and data quality factors in CRM adoption—SMEs perspective. Ind. Mark. Manage. **40**(3), 376–383 (2011)

Bergers, D., Ghaffari, M., Viglia, G., Filieri, R.: Choosing the discount size in the software industry: how to incentivise the salesforce. Ind. Mark. Manage. **109**, 232–244 (2023)

Bertello, A., Ferraris, A., Bresciani, S., De Bernardi, P.: Big data analytics (BDA) and degree of internationalization: the interplay between governance of BDA infrastructure and BDA capabilities. J. Manage. Governance **25**(4), 1035–1055 (2020). https://doi.org/10.1007/s10997-020-09542-w

Buttle, F.: Customer Relationship Management: Concepts and technology. Elsevier, Oxford (2009)

Bohling, T., et al.: CRM implementation: effectiveness issues and insights. J. Serv. Res. **9**(2), 184–194 (2006)

Candelo, E.: Marketing Innovations in the Automotive Industry: Meeting the Challenges of the Digital Age. Springer, Cham (2019)

Corbin, J., Strauss, A.: Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, 3rd edn. Sage, Thousand Oaks (2008)

Del Vecchio, P., Mele, G., Siachou, E., Schito, G.: A Structured literature review on Big Data for customer relationship management (CRM): toward a future agenda in international marketing. Int. Mark. Rev. **38**, 1069–1092 (2021)

Deloitte. Big data and analytics in the automotive industry (2015). https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/manufacturing/deloitte-uk-automotive-analytics.pdf. Accessed 27 Dec 2022

Eisenhardt, K.M., Graebner, M.E.: Theory building from cases: opportunities and challenges. Acad. Manag. J. **50**(1), 25–32 (2007)

Gioia, D.A., Corley, K.G., Hamilton, A.L.: Seeking qualitative rigor in inductive research: notes on the Gioia methodology. Organ. Res. Methods **16**, 15–31 (2012)

Hoeft, F.: The case of sales in the automotive industry during the COVID-19 pandemic. Strateg. Chang. **30**(2), 117–125 (2021)

Hu, L., Olivieri, M.: The acceleration of digital communications in the durable goods industry. A study on white goods firms after COVID-19. J. Bus. Indust. Market. ahead of print (2022)

Ishida, S.: Perspectives on supply chain management in a pandemic and the post-COVID-19 era. IEEE Eng. Manage. Rev. **48**(3), 146–152 (2020)

Kumar, A., Shankar, R., Aljohani, N.R.: A big data driven framework for demand-driven forecasting with effects of marketing-mix variables. Ind. Mark. Manage. **90**, 493–507 (2020)

Kumar, V., Reinartz, W.: Customer Relationship Management: Concept, Strategy, and Tools, 3rd edn. Springer, Berlin (2018)

Ledro, C., Nosella, A., Vinelli, A.: Artificial intelligence in customer relationship management: literature review and future research directions. J. Bus. Indust. Market. **37**(13), 48–63 (2022)

Lempp, M., Siegfried, P.: Automotive Disruption and the Urban Mobility Revolution. Springer, Cham (2022)

Lin, W.L., Ho, J.A., Sambasivan, M., Yip, N., Mohamed, A.B.: Influence of green innovation strategy on brand value: the role of marketing capability and R&D intensity. Technol. Forecast. Soc. Change**171**, 120946 (2021)

Llopis-Albert, C., Rubio, F., Valero, F.: Impact of digital transformation on the automotive industry. Technol. Forecast. Soc. Chang. **162**, 1–9 (2021)

McKinsey. Digitization in automotive retail in 2021 and beyond (2021). https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/digitization-in-automotive-retail-in-2021-and-beyond. Accessed 30 Dec 2022

Moser, M.A.: Impacts of Customer Relationship Management on Development of Corporations, Springer Gabler, Wiesbaden (2021)

Nasir, S.: Customer Relationship Management Strategies in the Digital Era. IGI Global, Hershey (2015)

Nicolescu, C., Nicolescu, O.: Stakeholder Management and Social Responsibility: Concepts, Approaches, and Tools in the Covid Context. Routledge, New York (2022)

Payne, A., Frow, P.: A strategic framework for customer relationship management. J. Mark. **69**(4), 167–176 (2005)

Perez-Vega, R., Hopkinson, P., Singhal, A., Mariani, M.M.: From CRM to social CRM: a bibliometric review and research agenda for consumer research. J. Bus. Res. **151**, 1–16 (2022)

Steel, M., Dubelaar, C., Ewing, M.T.: Developing customised CRM projects: the role of industry norms, organisational context and customer expectations on CRM implementation. Ind. Mark. Manage. **42**(8), 1328–1344 (2013)

Strauss, A., Corbin, J.: Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, 2nd edn. Sage, Thousand Oaks (1998)

Suoniemi, S., Zablah, A., Terho, H., Olkkonen, R., Straub, D., Makkonen, H.: CRM system implementation and firm performance: the role of consultant facilitation and user involvement. J. Bus. Indust. Mark. **37**(13), 19–32 (2022)

Trainor, K.J., Andzulis, J.M., Rapp, A., Agnihotri, R.: Social media technology usage and customer relationship performance: a capabilities-based examination of social CRM. J. Bus. Res. **67**(6), 1201–1208 (2014)

Yin, R.K.: Case Study Research: Design and Methods. Sage, New York (2009)

Zhang, C., Wang, X., Cui, A.P., Han, S.: Linking big data analytical intelligence to customer relationship management performance. Ind. Mark. Manage. **91**, 483–494 (2020)

Antecedents and Effects of Influencer Marketing Strategies: A Systematic Literature Review and Directions for Future Research

Surej P. John[1](✉) and Sivakumari Supramaniam[2]

[1] School of Business, Eastern Institute of Technology, Napier City, New Zealand
spjohn@eit.ac.nz
[2] Sunway University, Subang Jaya, Malaysia
sivakumaris@sunway.edu.my

Abstract. Over the last decade, the adoption and use of Influencer marketing strategies have grown exponentially, resulting in the growing concerns of both academics and practitioners. Researchers have investigated the characteristics of the influencers, the nature of online interactions that occur over social media, and the effects of various antecedents of influencer adoption in the past. Based on a systematic assessment of more than 20 years of social media Influencer marketing research, the current study identifies and reviews the major themes present in the influencer marketing literature. Based on the analysis, an integrative multi-dimensional framework that considers theoretical frameworks, antecedents, mediators, and moderators of potential outcomes is presented. Besides integrating and synthesising the current body of knowledge about social media influencer marketing, the study provides valuable directions for future research that have impacts on digital marketing theory and practice.

Keywords: Influencer marketing · systematic literature review · social media

1 Introduction

Today, a large number of customers are spending their time on digital media for a variety of reasons varying from information searches to post-purchase evaluations (Faruk et al. 2021). The omnipresence of content created, shared and communicated and consumed by online users generates new communication dynamics in digital marketing (Vrontis et al. 2021). Some internet users are quite successful in attracting a mass audience, building a fan base, and becoming a source of advice for other users by providing informative and attractive content. These digital content creators with mass follower counts are generally known as social media influencers due to their potential influence on their followers. The increased adoption and use of social media platforms by consumers motivated marketers to focus on digital media-based promotions, particularly via social media influencers; a practice generally referred to as Influencer marketing. Influencer marketing refers to various influencers' endorsement and promotion practices of various branded products on their social media channels in return for free products or payments. Despite the growing

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 113–119, 2023.
https://doi.org/10.1007/978-3-031-31836-8_15

interest from practitioners, and academics in the field of Influencer marketing, literature in this subject area remains fragmented. Considering the growing importance of Influencer marketing strategies in a post-pandemic digital marketing world, a comprehensive and critical overview of current literature in this field is sorely needed. Toward this objective, the current study aims to identify and systematically review the relevant articles published in peer-reviewed academic journals in diverse fields over the last two decades. Based on the identification of key themes, concepts and theoretical foundations of influencer marketing, the current study provides valuable guidelines and strategies for future digital marketing practices. We address two research questions in line with this aim:

RQ1: How can we conceptualize Influencer marketing behaviours?
RQ2: What are the antecedents and effects of Influencer marketing strategies?
RQ3: What are the implications of Influencer marketing strategies to marketing theory and practice.

2 Background

Influencer marketing practices over digital media, particularly over social media channels like Instagram, TikTok, and YouTube are growing exponentially. Despite the impacts of the COVID-19 global pandemic, the influencer marketing industry grew from USD 9.7 Billion in 2020 to USD 13.8 Billion in 2021 and is predicted to reach USD 16.4 Billion in 2022 (Santora 2022). This growth is primarily attributed to the growing popularity of short videos and attractive content created by diverse influential personae on their social media channels. With repeated exposure to these contents, and via constant interactions, social media users develop intimate relationships with influencer personae. Celebrities like Cristiano Ronaldo (549 million followers in Instagram), Lionel Messi (431 million followers in Instagram), and Selena Gomez (379 million followers in Instagram) are just examples of some social media influencers with a global fanbase. Influencers engage in two-way interactions with their followers through social media channels which in turn results in strong relationships between the two (Yuan and Lou 2020). The increased trustworthiness of content posted by social media influencers as well as the tremendous trust followers place on Influencers attract brands and advertisers to embrace influencer marketing strategies. The number of firms offering influencer marketing services has grown by 26% in 2021 to 18,900 worldwide (Santora 2022).

The increased usage of influencers in digital marketing practices has motivated a growing body of academic literature in this field (Feng et al. 2021; Pop et al. 2022). These works have contributed towards the understanding of how online consumers perceive, accept and trust marketing messages from social media influencers compared to brand-promoted ads, traditional celebrities, and opinion leaders. For example, current literature identified that digital consumers who are exposed to Instagram celebrities' brand-endorsed posts perceive the source to be more trustworthy, show a more positive attitude toward the endorsed brand, and feel a stronger social presence than those consumers who are exposed to traditional celebrity's brand posts (Jin et al. 2019). The influential power of social media influencers comes from the emotional bond they could

build with their followers. The stronger the emotional bond the social media influencers build with their followers, the more effectively they influence them to accept their brand or product endorsements (Ki et al. 2020). The current literature also examined the characteristics of influencer-generated posts that enhance customer engagement on social media platforms (Darmawan and Huh 2022; Lou et al. 2019). For example, Darmawan and Huh (2022) found that unbranded social media influencer posts compared to branded influencer posts generate a more favourable attitude toward the ad and higher behavioural intentions in the context of marketing prescription drugs. Narratives of the posts shared by the influencers play an important role in helping consumers to identify and relate themselves with influencers resulting in increased engagement (Feng et al. 2021). Current literature suggests that not only just narratives, but other content characteristics including originality, quality, quantity, underlying emotions such as humour, etc. are found to be increasing the effectiveness of social media influencer-generated messages and resulting in customer engagement (Barta et al. 2023).

Even though, the current literature investigates a wide range of influencer variables such as trust (Pop et al. 2022), narratives (Feng et al. 2021), content quality, credibility, storytelling etc. (Al-Emadi and Ben Yahia 2020), any academic research aimed to systematically assess and to provide an integrative analysis of influencer marketing practices is still in its early stages. Also, findings from a comprehensive analysis of the extant influencer marketing literature are expected to provide strategic and practical insight into how practitioners can capitalise on this digital marketing strategy.

3 Methodology

The relevant literature for this study is collected from three major business databases: ProQuest, ABI/INFORM Collection and ScienceDirect. These databases were chosen because of the great coverage of business literature they provide (Christofi et al. 2017; Vrontis et al. 2021). To be consistent with the prior literature within the fields of business and marketing as well as to ensure the quality, the current study analysed only those peers reviewed, ABDC ranked journal articles published in the English language thus omitting book chapters, books, case studies, editorials and other non-refereed articles. The articles published during the last two decades (2000–2022) were considered for this analysis. To begin with, keywords such as "*Influencer marketing*", "*social media influencer marketing*", "*Nano influencers*", and "*Opinion leadership*" were used. The initial search resulted in the identification of 28647 articles for the study. Once the study excluded the non-academic peer-reviewed articles (6875), non-ABDC journal articles (15,023), non-English articles (602), duplicate records (204) and other irrelevant articles (5767), a sample of 176 articles was identified for further analysis. Along with this selection, an additional 8 articles published recently and/or have been cited by the selected works were added leaving us with a final sample of 182 journal articles. Once the literature selection is completed, an Excel-based data extraction sheet is developed. This helped the researchers to eliminate any human errors as well as document the results in a transparent and replicable manner. Each article was numbered and coded according to 1) author/s, 2) year of publication, 3) the Journal name, 4) Type of the article (theoretical or empirical), 5) research methods, 6) social media platforms, 7) Titles, 8) keywords, 9) key findings, and 10) future research agenda provided by the authors.

4 Key Findings

Our analysis indicates that Instagram has been the most examined social media platform by the researchers (48%, n = 46) followed by YouTube (19%, n = 18). Refer to Fig. 1 for the most popular social media platforms examined in the influential marketing literature. These results are not surprising as Instagram and YouTube are regarded as the most important platform for influencer marketing (Ki et al. 2020). In terms of the geographical coverage of the studies, The United States (20%), India (6.5%), China (5.7%), France (4.7%) and the United Kingdom (4.41%) accounted for the top 5 countries for the influencer marketing literature.

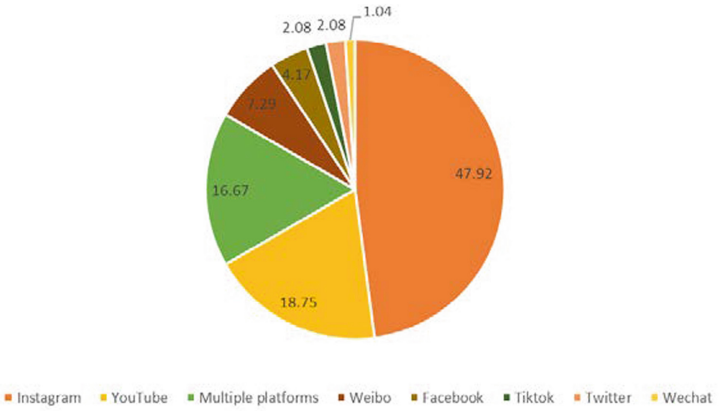


Fig. 1. Most studied social media platforms for Influencer marketing

Influencer marketing strategies have been examined and explained based on multiple theoretical backgrounds. Theories of para-social interaction (17%) followed by the persuasion knowledge model (13%) and meaning transfer models (6%) are found to be the three most popular theoretical frameworks for explaining the conceptual foundations of Influencer marketing strategies. The study identified 52 antecedents of influencer marketing adoption among online audiences. We have classified these antecedents into three categories: 1) Influencer characteristics, 2) Content characteristics, and 3) Audience characteristics. Influencer characteristics such as perceived homophily, commitment, levels of interaction, control mutuality, perceived goodwill and credibility, trustworthiness, attractiveness, and social presence are found to be strongly influencing online consumers. The success of influencer marketing depends on consumers' adoption of the Influencer's recommendations regarding a brand or product. This happens only when social media users become emotionally attached to online influencers. The personal characteristics of the influencers help the social media users to develop a human brand image on influencers who fulfil their needs for ideality, relatedness and competence which in turn leads to acquiring the products or brands they endorse or recommend (Ki et al. 2020).

Not only the personality, trustworthiness, and charisma of the influencers but also, the way the messages are communicated in social media channels are important in influencer marketing. Content characteristics such as informativeness, content quality, fitness with the platform, message valence, product novelty, disclosures, storytelling, entertainment value, visual elements etc. are found to be significant predictors of follower engagement and influencer admiration. Storytelling is found to be a very effective form of sharing content on social media platforms. If a story has sufficient appeal and interest, it can spread beyond people's networks and the reach can influence millions of people without geographical boundaries (Al-Emadi and Ben Yahia 2020). As most social media users are seeking information and recommendations from the influencers they follow, the content quality, particularly, the usefulness of the information received, the attractiveness of the content as well as the diversity of the information/posts shared by the influencers are significant for its followers to develop a pleasant, rewarding, and hedonic experience.

The success of Influencer marketing strategies also depends on the characteristics of the social media followers. Audience characteristics including citizenship behaviour, participation behaviour, desire to mimic, envy, parasocial interaction, perceived congruence etc. were found to be the predictors of followers' behavioural intention in social media. The influence of parasocial interaction on the follower's intention to follow the advice is evident in the influencer marketing literature. Parasocial interaction occurs when social media followers develop an emotional relationship with the influencers with the illusion of intimacy as for the "real" interpersonal relationships between two parties. The physical and social attractiveness of the influencers, as well as the perceived similarities between the influencer and followers in terms of attitude/ethical values are found to be stimulating the parasocial interaction between social media users and influencers. Further, individual circumstances and personality characteristics such as empathy, loneliness, low self-esteem etc. are found to have a positive impact on social media users' parasocial relationships with online influencers (Hwang and Zhang 2018).

Further, our review identifies several mediating variables affecting the adoption of influencer marketing recommendations. Variables such as parasocial interaction, manipulative intention, influencer's credibility, goodwill, expertise, sponsorship transparency etc. were found to mediate the relationship between follower characteristics (e.g., empathy, loneliness, self-esteem, and persuasion knowledge) and follower behavioural intentions (purchase intention, message liking, information search, and engagement with brand posts).

In terms of the consequences or outcomes of influencer marketing strategies, most studies were focused on the behavioural intentions of the followers. The most popular outcomes include followers' engagement with ads, purchase intentions, brand congruence, influencer admiration, influencer trust and expertise, and eWOM intentions. Future influencer marketing strategies should address three areas of concern: 1) the influencer's congruity with the brands, 2) the Influencer's relationship-building attributes such as homophily and commitment to innovative ways of engagement practices, 3) the brands' commitment towards influencer selection and collaboration, content management practices such as content design, training of influencers in photo editing tools, sponsorship disclosures, as well as their efficiency in implementing performance measurement indicators.

5 Directions for Future Research

The study identified two major themes for setting the future research agenda. These include 1) content management practices, and 2) customer relationship management. Content management practices particularly Influencer selection, content design, sponsorship disclosures, and their performance measurement mechanisms are essential for the successful implementation of influencer marketing practices. Future studies are expected to shed more light towards improving content management practices. Developing and maintaining successful online customer relationships are also paramount. Followers develop various levels of parasocial relationships with influencers which in turn leads to favourable purchase behaviours and positive word of mouth. However, the intensity of the para-social relationships with influencers depends on various factors including design quality and creativity of the influencers, type of influencers, their disclosures, and so on. Moreover, diverse influencer characteristics such as physical attractiveness, social attractiveness, and subject expertise of the influencers determine their overall identification and credibility among their potential audience. Therefore, marketers should find those influencers who could relate easily to the characteristics of the target audience to facilitate more positive engagement. Future research towards understanding and enhancing customer relationships through influencers is expected to have wider implications in enhancing brand management strategies. Influencer technology adoption and technology quality is another significant subject area for future researchers. The availability of reliable and convenient visual enhancement tools (e.g., photo-taking, and editing tools) is found to be a prevalent requirement for social media influencers. Further, the advancements in Information and communication technologies such as Artificial Intelligence, virtual reality, extended reality, and metaverse as well as advancements in web technologies such as web3 are expected to play a significant role in influencing social media users 'attitudes and behaviours. Further research towards investigating how online users accept and engage with influencers via these technologies in novel social media platforms is highly encouraged.

References

Al-Emadi, F.A., Ben Yahia, I.: Ordinary celebrities-related criteria to harvest fame and influence on social media. J. Res. Interact. Mark. **14**(2), 195–213 (2020)

Barta, S., Belanche, D., Fernández, A., Flavián, M.: Influencer marketing on TikTok: the effectiveness of humor and followers' hedonic experience. J. Retail. Consum. Serv. **70**(September 2022) (2023)

Christofi, M., Leonidou, E., Vrontis, D.: Marketing research on mergers and acquisitions: a systematic review and future directions. Int. Mark. Rev. **34**(5), 629–651 (2017)

Darmawan, I., Huh, J.: The effects of message type and sponsorship disclosure in influencer marketing of prescription drugs. J. Glob. Mark. **35**(1), 21–36 (2022)

Faruk, M., Rahman, M., Hasan, S.: How digital marketing evolved over time: A bibliometric analysis on scopus database. Heliyon **7**(12), e08603 (2021)

Feng, Y., Chen, H., Kong, Q.: An expert with whom i can identify: the role of narratives in influencer marketing. Int. J. Advert. **40**(7), 972–993 (2021)

Hwang, K., Zhang, Q.: Influence of parasocial relationship between digital celebrities and their followers on followers' purchase and electronic word-of-mouth intentions, and persuasion knowledge. Comput. Hum. Behav. **87**(January), 155–173 (2018)

Jin, S.V., Muqaddam, A., Ryu, E.: Instafamous and social media influencer marketing. Mark. Intell. Plan. **37**(5), 567–579 (2019)

Ki, C.W. 'Chloe,' Cuevas, L.M., Chong, S.M., Lim, H.: Influencer marketing: Social media influencers as human brands attaching to followers and yielding positive marketing results by fulfilling needs. J. Retail. Consum. Serv. **55**(January), 102133 (2020)

Lou, C., Tan, S.S., Chen, X.: Investigating consumer engagement with influencer- vs. brand-promoted ads: the roles of source and disclosure. J. Interact. Advert. **19**(3), 169–186 (2019)

Pop, R.A., Săplăcan, Z., Dabija, D.C., Alt, M.A.: The impact of social media influencers on travel decisions: the role of trust in consumer decision journey. Curr. Issue Tour. **25**(5), 823–843 (2022)

Santora, J.: Key influencer marketing statistics you need to know for 2022. https://influencermarketinghub.com/influencer-marketing-statistics/#:~:text=Influencer%20Marketing%20Industry%20to%20Reach,billion%2C%20indicating%20a%20steady%20growth. Accessed 18 June 2022

Vrontis, D., Makrides, A., Christofi, M., Thrassou, A.: Social media influencer marketing: a systematic review, integrative framework and future research agenda. Int. J. Consum. Stud. **45**(August 2020), 617–644 (2021)

Yuan, S., Lou, C.: How social media influencers foster relationships with followers: the roles of source credibility and fairness in parasocial relationship and product interest. J. Interact. Advert. **20**(2), 1–15 (2020)

How Technology Helps Farmers to Cater to Consumers – Channel Formats and Consumer Motives

Johanna Muggenhuber[1], Tanja Doppler[1], Cordula Cerha[2], and Robert Zniva[2(✉)]

[1] Department of Business and Tourism, Salzburg University of Applied Sciences, Salzburg, Austria

[2] Institute of Retailing and Data Science, Vienna, WU, Austria

cordula.cerha@wu.ac.at, robert.zniva@fh-salzburg.ac.at

Abstract. Societal stakeholders have started to rethink agricultural supply chains and discuss strategies to improve its resilience to be better prepared for future disruptions. One of the main pillars of such a resilient system is regional farming and distribution. Short food supply chains (SFSCs) refer to systems of food production, distribution, and consumption that involve few intermediaries between the producer and the consumer. However, research on the structure and impact of SFSCs is scarce. The study at hand identifies and categorizes farmers direct-to-consumer activities, investigates the role of technology in this context and explores the motivation of users of such concepts.

Keywords: Short food supply chains (SFSCs) · farmer to consumer · direct marketing channels · locavorism · technology

1 Introduction

The current agricultural system with its dominance of mass-production, multinational corporations, global integration and long-distance transportation is highly efficient but not without drawbacks. Negative social, economic and environmental externalities of the system have been discussed for some years now (Michel-Villarreal et al. 2019; Paciarotti and Torregiani 2021). As a result, producers, academics, politicians and consumers have started to rethink agricultural supply chains and discuss strategies to improve its resilience to be better prepared for future disruptions (Cappelli and Cini 2020; Chenarides et al. 2021; Thilmany et al. 2021; Baptista et al. 2022). One of the main pillars of such a resilient system is regional farming and distribution. The term short food supply chain (SFSC) refers to a system of food production, distribution, and consumption that involves few intermediaries between the producer and the consumer (Renting et al. 2003). The European Commission (2020) presents SFSCs as an alternative to established food chains in its "Farm to Fork Strategy" and stresses its importance in order to enhance resilience of regional and local supply systems. Short food supply chains not only empower small and medium-sized farm businesses but also meet the growing demand for locally farmed and produced products.

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 120–128, 2023.
https://doi.org/10.1007/978-3-031-31836-8_16

Interest in buying produce directly from the farmer has seen an uptake in recent years (Feldmann and Hamm 2015; Aprile et al. 2016). Reich et al. (2018) go as far as calling the trend of locavorism (i.e. the reorientation towards local food consumption) a new consumer ideology. This interest in local food is driven by several factors: assumed higher quality, better taste and freshness, potential health benefits, concerns about transparency and food safety, environmental protection and sustainability, animal welfare, community support and civic engagement, as well as nostalgia (Byker et al. 2010; Birch et al. 2018; Huddart Kennedy et al. 2018; Balzano and Vianelli 2022). Locavores are less price-sensitive and willing to pay extra for locally farmed products (Stanton et al. 2012; Printezis et al. 2019), which makes them an attractive target group for direct marketing activities by farmers.

The call for SFSCs is also welcomed by small and middle-sized famers, as most of them look for alternative marketing opportunities as a diversification strategy (Benedek et al. 2021; Kirner et al. 2020). Typically, when marketing their products via traditional retail outlets cost pressure is high because undercutting prices is a key strategy in saturated markets. Therefore, if farmers would rely solely on traditional retail systems, they would be doomed to grow and would lose their individuality, authenticity, and resilience. For Renting et al. (2003) SFSCs represent "active attempts by producers to recapture value in the supply chain in ways which can hopefully ameliorate the conventional problems of the price squeeze."

However, farmer-to-consumer direct marketing activities involve cost and complexity (for customer acquisition, packaging, sanitation, storage and transportation) and are therefore a strong challenge (Kirner et al. 2020). The integration of digital elements into direct marketing concepts can support some of these activities and improve flexibility, collaboration, visibility and agility (Michel-Villarreal et al. 2021). The challenge thereby is to combine the core competencies of farmer-to-consumer marketing, like authenticity and directness, with digital technology that facilitates the handling of direct channels and lowers the workload for the individual farmer. Lioutas and Charatsari (2020) analyse the compatibility of the use of technology and short food supply chains but the focus is mainly on smart farming technologies. The question of smart distribution technology in the context of farmer-to-consumer direct marketing has so far received little attention.

To put it into a nutshell, farmer-to-consumer direct marketing is currently seeing a revival. While all sides welcome this development as part of a re-localisation of the food supply system, it remains an underdeveloped research topic. While the SFSCs in general have attracted growing research interest in recent years, the implementation of the concept remains vague in several aspects (Evola et al. 2022). The term short food supply chain refers to many different types of distribution channels and is often used as an umbrella concept (Jarzębowski et al. 2020). In most European countries, there is insufficient data on direct marketing activities by farmers. Existing statistics, if available, are deemed unreliable (Böhm and Krämer 2020; Capt and Wavresky 2014). Also, little is known on consumer motives regarding different formats of farmer-to-consumer direct marketing channels. The study at hand attempts to fill this research gap. The aim of this paper is to structure farmers direct-to-consumer activities, identify the role of technology in this context and investigate the motivation of users of such concepts.

2 Consumer Motives in SFSCs

Locavorism constitutes a trend that promotes locally grown or produced food. It has gained traction in many industrialized countries in the past two decades. The trend is also reflected in a growing number of academic publications. In order to structure the phenomenon, we analyzed scientific contributions of the last 20 years dealing with consumer motivation of customers of local agricultural businesses. Investigated studies were assigned to the three primary dimensions of the L-O-C framework developed by Reich et al (2018). In the framework "L" refers to the lionization of local food, "O" to the opposition to long-distanced food systems and "C" to the communalization of food economies. One or more of these dimensions were found in all investigated journal contributions.

Several studies address the category "L", lionization, i.e. the belief that locally grown or produced food is in itself superior: Quality and freshness were identified as major motivators to shop at local farmers' markets by La Trobe (2001). In line with this, Khan and Prior (2010) name freshness, quality and taste as priorities for both rural and urban shoppers who shop for local produce. Grebitus et al. (2013) show that shorter transportation is associated with freshness, which results in a higher willingness to pay for locally produced food. According to Bavorova et al. (2016) consumers believe that food that they buy directly from farmers is fresher and tastes better than food bought in stores. Zepeda and Deal (2009) show that lionization of local products is based on values and norms, as consumers not only believe that these products are fresher and superior but also that local farmers treat their workers and livestock better. In a study by Stanton et al. (2012) locavores consider themselves more knowledgeable when it comes to food quality and show more concerns about food safety. Attributes like taste, ripeness and quality are most important for them.

The "O"-dimension of the L-O-C framework was also addressed by several contributions. In a study of British consumers Tregear and Ness (2005) show that consumers in rural areas and those displaying a high degree of involvement with farming are more likely to be interested in local food. Research by Bougherara et al. (2009) points out that French households that consider environmental and social concerns are more likely to participate in community supported agriculture. Participants of an exploratory qualitative study among conscious consumers by McEachern et al. (2010) linked buying local food on farmers markets to avoiding "food miles" (at the same time these customers acknowledging their own limitations when it comes to ethical consumption, i.e. time, convenience, and price). A mixed-methods study by Megicks et al. (2012) produces ambiguous results. Ethics and sustainability were identified as drivers of sustainability of buying local food in qualitative focus groups, but in a follow-up quantitative study the ethical sustainability dimension of local food shopping did not positively affect consumer buying in this market. Research by Peterson et al. (2015) reveals cultural differences in motivation to buy local food: while French consumers are primarily interested in protecting the environment, U.S. respondents are more motivated by supporting local farmers. Birch et al. (2018) identify egoistic motivation, ethical identity and environmental consciousness as driving forces for supporting locavorism. While none of the three factors have direct influence on increased purchase frequency, all three positively influence favourable beliefs about and propensity to buy local food.

The Category "C", for communalization is especially relevant according to most contributions: In La Trobe's (2001) study supporting the local community and economy was most often mentioned as a reason why people wanted to buy more local produce. Similarly, Tregear and Ness (2005) identify support for the protection of farmers as a strong discriminator of local food interest. In line with these findings, research by Kumar et al. (2021) indicates that consumers with a high motivation to support local agricultural businesses and the local economy have higher intentions to buy local produce. Furthermore, supporting local farmers also positively affects brand love, i.e. passionate and emotional attachment with these products. Testa et al. (2018) were able to show in two studies conducted in Italy and the US that people not inclined to purchase food locally can be positively influenced by social norm messaging. In a survey of consumers in China and Denmark Zhang et al. (2020) find that in both countries collectivistic values are significantly and positively related to locavorism.

Summing up, the motivation to buy locally farmed and produced products is both egoistic and altruistic. Egoistic motivation includes the belief that these products are riper, fresher, better tasting and superior when it comes to food safety issues. Altruistic motivation entails lowering the transportation induced carbon footprint and reducing the environmental impact by buying local products, encouraging animal welfare, supporting local agriculture, and promoting a sense of community. Motives related or triggered by the implementation of technology in SFSCs were not of particular interest in the literature so far.

3 Methodology

The aim of the study at hand is to investigate what channel formats are typically provided by farmers when marketing directly to consumers and how these formats cater to different consumer needs. Therefore, we implemented a two-step qualitative study design. In a first step, we investigated direct-to-consumer farmers in the state of Upper Austria using a judgement sample. The state of Upper Austria was chosen because it represents economically one of the strongest agricultural states within Austria and can be classified as a typical Central European region in terms of economic output and population parameters (Eurostat 2022). The farmers were selected based on an online register of direct-to-consumer farmers available on a website operated by the Austrian Chamber of Agriculture. In total we identified and contacted 381 direct-to-consumer farmers by telephone of whom 276 participated in our study which leads to a response rate of 72%. All farmers were interviewed using a structured interview guideline with open-ended-questions. After an explanation of the purpose of the study, farmers were asked to describe all direct-to-consumer channels they use to sell their products. All interviews were protocolled in writing and were categorized and structured according to typical listings of SFSCs in the literature (e.g. Michel-Villarreal et al. 2019).

In a second step we selected three SFSCs (automated box scheme, food co-op, and traditional box scheme) which can be classified as more innovative and alternative as traditional direct-to-consumer channels and represent different levels of technology use. Using a snowball sampling technique we identified three to seven customers per channel and investigated the customers' motives to visit the channels using in-depth interviews.

In a warm-up phase, we assured all respondents that they could not give any "wrong" answers. Furthermore, we asked our respondents to indicate their total food expenditure at the SFSC in question. Then we investigated consumer motives implementing a laddering technique (Reynolds and Gutman 1988). First, we used a simple elicitation technique by asking respondents directly which attributes or characteristics of the investigated SFSC are of relevance to them. Then we performed a traditional laddering interview using the identified attributes or characteristics as a base to uncover relevant means-end structures (Gruber et al. 2008). All interviews were audiotaped and afterwards analyzed using content analysis.

4 Results

Nearly 95% of all 276 investigated farmers owned a direct-to-consumer channel when distributing their products to the end-consumer. All farmers used a mix of different direct-marketing channels to cater to consumers. Approximately 41% of the farmers also supplied conventional stationary food retailers with their products. The most dominant direct-to-consumer-channel was the farm shop (~52%) followed by personal direct sales at the farm (~37%), farmers' markets (~35%), food co-op (~15%), webshop (~11%), and box schemes (~10%). Figure 1 provides an overview of all identified stationary direct-to-consumer channels and their associated technology use.

Results of our laddering study shed light on the motives for visiting three different direct-to-consumer channels with different levels of technology. We found attributes associated to every dimension of the L-O-C framework developed by Reich et al. (2018).

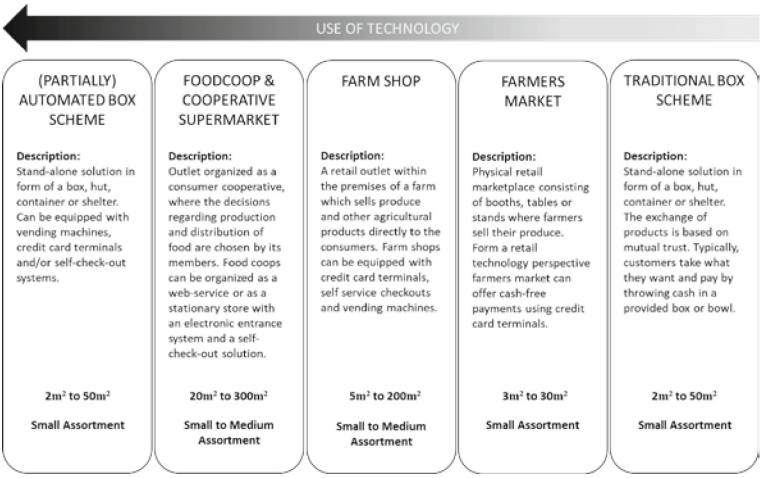


Fig. 1. Identified stationary direct-to-consumer channels

In terms of the lionization of local food, customers of all investigated channels indicated that the higher quality of provided food, often associated with the label "organic" is a substantive attribute of the chosen channel.

"the food is of better quality, healthier not necessarily, but the quality is way better" (female, 25 years, online food co-op shopper)

"it is of better quality [compared to conventional food channels]" (male, 41 years, vending machine shopper)

" their pumpkin seed oil is really of exceptional quality" (female, 63 years, traditional box scheme shopper)

The opposition to long-distanced food systems and communalization of food economies were most of the time not directly mentioned as a specific attribute of a channel, but were strongly associated with the attribute of provision of "local food".

"….for me it is important that I know the producer, that I can look him/her into the eye […] we have to support our local farmers, they are our future […] the food industry takes the product of the farmer an adds stuff to it, they process and manipulate the famers product, that is how they make money" (female, 63 years, traditional box scheme shopper)

"The local things should not vanish, because there is a lot of stuff from foreign countries in our stores or from far away, although the same stuff is available with the same quality close by or in the neighborhood" (female, 21 years, vending machine shopper)

Dimensions of locavorism and associated attributes were associated to the values of self-actualization, sustainability, fairness, freedom and personal safety.

"Because I want to live sustainable, I want to consume just what I need" (female, 26 years, virtual food co-op shopper)

"The farmers get a fairer price […] the cooperative is also a community […] I do not want pesticides, I do not want glyphosate, I want products as natural as possible […] I want healthy soil and I want to stay healthy myself" (female, 69 years, co-operative supermarket shopper)

A negative motive associated with the investigated direct-to-consumer channels was a lower level of convenience due to problems with the availability of products, small assortments, and opening hours. Also, high prices in SFSCs were mentioned as an economic reason to shop at other more conventional food channels.

"You cannot get everything […] also the prices are higher" (female, 56 years, traditional box scheme shopper)

Here the use of technology enables farmers to overcome these issues. Automated box systems or cooperatives with entrance systems and self-checkouts enable customers to shop when conventional channels are closed. Furthermore, the virtual presence of food co-ops allows customers to gain a deep product knowledge, a convenient selection process and better coordination within the co-operative. Nevertheless, coordination processes are still complex and therefor virtual services are also considered to be inconvenient due to very inflexible order and pick-up times.

"Even on Sundays you can shop there […] and get something fresh" (female, 20 years, vending machine shopper)

"I can enter the store with my card whenever I want […] a freedom I enjoy" (female 32 years, co-operative supermarket shopper)

Sometimes it does not fit [with my schedule] because you have to pick up on Fridays […] if you are on a trip on weekends you do not order" (female, 27 years, virtual food co-operative shopper).

In total, locavore attributes and characteristics plus the associated value propositions outplayed for all investigated customers disadvantages caused by small assortments and inflexible opening hours or delivery times.

5 Conclusion

Short food supply chains as farmer-to-consumer direct marketing channels have attracted attention in recent years for several reasons: supply chain resilience, sustainability, farmer empowerment and the trend of locavorism, i.e. a growing consumer demand for local products. This research advances the current understanding of this topic from both the consumers' and the farmers' perspective.

The findings indicate that apart from the dominating locavorism attributes and associated values, traditional economic and convenience-related attributes (assortment size and opening hours) can also trigger to shop at direct-to-consumer channels or SFSCs. Technology use in this context can help farmers to soften the negative associations consumers have of certain channels. In the case of automated, self-service box schemes, co-operative supermarkets, and vending machines the 24/7 availability of these concepts can positively moderate the drawback of a limited assortment. Virtual food coops offer more choice and can implement click & collect schemes, but come at the disadvantage of less spontaneity as they involve some degree of planning. This illustrates that technology can both aid and hinder the use of SFSCs.

Finally, none of the investigated shop formats can compete with one-stop-shopping at traditional super- or hypermarkets, as they do not offer a full range of goods for daily needs. This mirrors the farmers' situation when it comes to direct distribution channels. It is unlikely that solely relying on farmer-to-consumer marketing is going to be a viable business model for agricultural businesses in the future. Yet, the trend of locavorism and technology-facilitated direct marketing activities is interesting especially for small and medium sized farmers when it comes to diversifying and establishing a second, complementary pilar of their business model.

References

Aprile, M.C., Caputo, V., Nayga, R.M., Jr.: Consumers' preferences and attitudes toward local food products. J. Food Prod. Market. **22**(1), 19–42 (2016)

Balzano, M., Vianelli, D.: What contributes to locavorism as a consumer ideology? Br. Food J. **124**(13), 460–477 (2022)

Baptista, N., Alves, H., Matos, N.: Scoping challenges and opportunities presented by COVID-19 for the development of sustainable short food supply chains. Sustainability **14**(21), 14475 (2022)

Bavorova, M., Unay-Gailhard, I., Lehberger, M.: Who buys from farmers' markets and farm shops: the case of Germany. Int. J. Consum. Stud. **40**(1), 107–114 (2016)

Benedek, Z., et al.: Farm diversification as a potential success factor for small-scale farmers constrained by COVID-related lockdown. Contributions from a survey conducted in four European countries during the first wave of COVID-19. PLoS ONE, **16**(5), e0251715 (2021)
Birch, D., Memery, J., Kanakaratne M.D.S.: The mindful consumer: balancing egoistic and altruistic motivations to purchase local food. J. Retail. Consum. Serv. **40,** 221–228 (2018)
Böhm, M., Krämer, C.:Neue und innovative Formen der Direktvermarktung landwirtschaftlicher Produkte. Analyse und Erarbeitung von Handlungsempfehlungen. Freising (2020)
Bougherara, D., Grolleau, G., Mzoughi, N.: Buy local, pollute less: what drives households to join a community supported farm? Ecol. Econ. **68**(5), 1488–1495 (2009)
Byker, C., Rose, N., Serrano, E.: The benefits, challenges, and strategies of adults following a local food diet. J. Agric. Food Syst. Commun. Dev. **1**(1), 125–137 (2010)
Cappelli, A., Cini, E.: Will the COVID-19 pandemic make us reconsider the relevance of short food supply chains and local productions? Trends Food Sci. Technol. **99**, 566 (2020)
Capt, D., Wavresky, P.: Determinants of direct-to-consumer sales on French farms. Rev. Agric. Environ. Stud.-Revue d'Etudes en Agriculture et Environnement (RAEStud),**95**(906–2016-71345), 351–377 (2014)
Chenarides, L., Manfredo, M., Richards, T.J.: COVID-19 and food supply chains. Appl. Econ. Perspect. Policy **43**(1), 270–279 (2021)
European Commission. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Farm to Fork Strategy, for a Fair, Healthy and Environmentally-Friendly Food System, Brussels, 20.5.2020, Com (2020) 381 final
Evola, R.S., Peira, G., Varese, E., Bonadonna, A., Vesce, E.: Short food supply chains in Europe: scientific research directions. Sustainability **14**(6), 3602 (2022)
Eurostat. Regions in Europe – 2022 interactive edition. https://ec.europa.eu/eurostat/cache/digpub/regions/#population-density
Feldmann, C., Hamm, U.: Consumers' perceptions and preferences for local food: a review. Food Qual. Prefer. **40**, 152–164 (2015)
Grebitus, C., Lusk, J.L., Nayga, R.M., Jr.: Effect of distance of transportation on willingness to pay for food. Ecol. Econ. **88**, 67–75 (2013)
Gruber, T., Szmigin, I., Reppel, A.E., Voss, R.: Designing and conducting online interviews to investigate interesting consumer phenomena. J. Cetacean Res. Manag. **11**(3), 256–274 (2008)
Huddart Kennedy, E., Parkins, J.R., Johnston, J.: Food activists, consumer strategies, and the democratic imagination: Insights from eat-local movements. J. Consum. Cult. **18**(1), 149–168 (2018)
Jarzębowski, S., Bourlakis, M., Bezat-Jarzębowska, A.: Short food supply chains (SFSC) as local and sustainable systems. Sustainability **12**(11), 4715 (2020)
Khan, F., Prior, C.: Evaluating the urban consumer with regard to sourcing local food: a Heart of England study. Int. J. Consum. Stud. **34**(2), 161–168 (2010)
Kirner, L., Fensl. F., Glawischnig, G. & Hunger, F. (2020); Direktvermarktung: eine wirtschaftliche und soziale Option für eine zukunftsfähige Landwirtschaft? Erkenntnisse für die agrarische Bildung am Beispiel der Direktvermarktung von Milch und Milchprodukten. R&E-SOURCE. *Open Online Journal for Research and Education, Jahrestagung zur Forschung 2022*, online: http://journal.ph-noe.ac.at
Kumar, S., Murphy, M., Talwar, S., Kaur, P., Dhir, A.: What drives brand love and purchase intentions toward the local food distribution system? A study of social media-based REKO (fair consumption) groups. J. Retail. Consum. Serv. **60**, 102444 (2021)
La Trobe, H.: Farmers' markets: consuming local rural produce. Int. J. Consum. Stud. **25**(3), 181–192 (2001)
Lioutas, E.D., Charatsari, C.: Smart farming and short food supply chains: Are they compatible? Land Use Policy **94**, 104541 (2020)

McEachern, M.G., Warnaby, G., Carrigan, M., Szmigin, I.: Thinking locally, acting locally? Conscious consumers and farmers' markets. J. Mark. Manag. **26**(5–6), 395–412 (2010)
Megicks, P., Memery, J., Angell, R.J.: Understanding local food shopping: Unpacking the ethical dimension. J. Mark. Manag. **28**(3–4), 264–289 (2012)
Michel-Villarreal, R., Hingley, M., Canavari, M., Bregoli, I.: Sustainability in alternative food networks: A systematic literature review. Sustainability **11**(3), 859 (2019)
Michel-Villarreal, R., Vilalta-Perdomo, E.L., Canavari, M., Hingley, M.: Resilience and digitalization in short food supply chains: A case study approach. Sustainability **13**(11), 5913 (2021)
Paciarotti, C., Torregiani, F.: The logistics of the short food supply chain: a literature review. Sustain. Prod. Consump. **26**, 428–442 (2021)
Peterson, H.H., Taylor, M.R., Baudouin, Q.: Preferences of locavores favoring community supported agriculture in the United States and France. Ecol. Econ. **119**, 64–73 (2015)
Printezis, I., Grebitus, C., Hirsch, S.: The price is right!? A meta-regression analysis on willingness to pay for local food. PLoS ONE **14**(5), e0215847 (2019)
Reich, B.J., Beck, J.T., Price, J.: Food as ideology: measurement and validation of locavorism. J. Consum. Res. **45**(4), 849–868 (2018)
Renting, H., Marsden, T.K., Banks, J.: Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environ Plan A **35**(3), 393–411 (2003)
Reynolds, T.J., Gutman, J.: Laddering theory, method, analysis, and interpretation. J. Advert. Res. **28**, 11–31 (1988)
Stanton, J.L., Wiley, J.B., Wirth, F.F.: Who are the locavores? J. Consum. Mark. **29**(4), 248–261 (2012)
Testa, F., Russo, M.V., Cornwell, T.B., McDonald, A., Reich, B.: Social sustainability as buying local: effects of soft policy, meso-level actors, and social influences on purchase intentions. J. Public Policy Mark. **37**(1), 152–166 (2018)
Thilmany, D., Canales, E., Low, S.A., Boys, K.: Local food supply chain dynamics and resilience during COVID-19. Appl. Econ. Perspect. Policy **43**(1), 86–104 (2021)
Tregear, A., Ness, M.: Discriminant analysis of consumer interest in buying locally produced foods. J. Mark. Manag. **21**(1–2), 19–35 (2005)
Zepeda, L., Deal, D.: Organic and local food consumer behaviour: Alphabet theory. Int. J. Consum. Stud. **33**(6), 697–705 (2009)
Zhang, T., Grunert, K.G., Zhou, Y.: A values–beliefs–attitude model of local food consumption: an empirical study in China and Denmark. Food Qual. Prefer. **83**, 103916 (2020)

The Influence of Brand Digital Storytelling Using the Hero's Customer Journey Communication Technique on Customer Acquisition and Retention

Emilie Gachassin(✉), Catherine Prentice, and Park Thaichon

School of Business, Faculty of Business Education, Law and Arts, Vienna, Austria
{emilie.gachassin,Catherine.prentice,park.thaichon}@usq.edu.au

Abstract. The research explores how digital brand storytelling, through The Hero's Customer Journey technique, influences customer acquisition and retention, focusing on the entertainment industry. 16 In-depth semi-structured interviews was undertaken for this study. Based on the study's results, digital storytelling using Hero's Customer Journey communication strategy can positively impact customer acquisition and retention. The study showed that digital storytelling using the Hero's Customer Journey communication strategy could positively impact customer acquisition and retention. For customer acquisition, the characters element of the story was found to be particularly influential. However, the study found that the storytelling technique did not prompt intention to visit; instead, it led customers to visit websites and review platforms. For customer retention, the story's secondary characters and settings elements were incredibly influential in triggering positive brand experience memory, leading to greater loyalty and repeat business. The study shows the significance of digital brand storytelling as a strategic branding strategy, especially digital marketing relationships and provides a clear insight into the advertising and acquisition and retention literature. The study also has important insights for managers.

Keywords: brand · digital storytelling · Hero's Journey · customer journey · communication · social media · and advertising

1 Introduction

Digital brand storytelling combines the power of a good brand story with modern tools such as digital video and photography to acquire, retain and build a relationship. In addition, it has been demonstrated to be a powerful communication tool because it uses human emotions to communicate with a target audience. Therefore, the significant role is to convince customers to be part of the journey through the medium of Storytelling (Pulizzi 2012). One of the archetypes used in Storytelling is the Hero's archetype which is often associated with the journey where a hero is the story's central character and is often tasked with a great mission. However, what would happen if the Hero's journey

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 129–136, 2023.
https://doi.org/10.1007/978-3-031-31836-8_17

archetype were combined with the customer journey in storytelling advertising? Previous studies have shown that Storytelling is more effective in engaging customers, increasing brand awareness, and promoting loyalty because Storytelling can tap into emotions, values, and personal experience, which can create a more memorable and impactful message (Fog et al. 2010; Lundqvist et al. 2012). Next, Storytelling has been linked to favourable responses to advertising, attitude change and retention (Hamelin et al. 2020), more significant word-of-mouth (Kang et al. 2020), and purchase intent (Chiu et al. 2012). Then, brand storytelling has become popular not only in advertising but also as a crucial part of creating and implementing brand strategy (Delgado-Ballester and Fernández-Sabiote 2016), especially research into the persuasive power of stories, the narrative process, and customer behaviour (Lundqvist et al. 2012). Finally, the latest research examines the relationship between the customer and the brand (Crespo et al. 2022). Most of the research above has compared the effectiveness of non-story-based communication with storytelling-based communication and found that customers are often more reactive to Storytelling (Hamelin et al. 2020; Chiu et al. 2012). While the influence of Storytelling has been extensively studied, research has yet to be conducted to compare the impact of Storytelling on customer acquisition and retention. As a result, this research investigates how the structure of digital brand Storytelling using the customer hero's journey communication technique influences customer acquisition and retention, focusing on the entertainment industry. This study specifically focused on the narrative elements. Fog et al. (2010) created: the conflict, the character, the message, and the plot.

R1: How and what element of digital brand storytelling advertising structure using The Hero's Customer Journey technique influence customer acquisition? R2: How and what element of digital brand storytelling advertising structure using The Hero's Customer Journey technique influence customer retention?

This study adds three significant findings. First, brand storytelling is a powerful marketing communication tool over non-story-based communication (Hamelin et al. 2020; Chiu et al. 2012), but studies have never been done on digital brand storytelling's impact on customer acquisition and retention. This research contributes to the literature on marketing digital communications channels and customer acquisition and retention, therefore, marketing relationships. Second, this study examines how story structure—message, conflict characters, and plot—affects customer acquisition and retention, which is crucial for brand communication strategies. Finally, the discovery affects brand managers' daily work. Brand managers reclaim creative control from advertising agencies and tell brand stories (Avery 2020). However, they fail to engage with consumers frequently (Houghton 2021) because they often view the brand to be the Hero of a strategic brand story (Aaker 2018), a tactical brand story, or a company-centric tactical story rather than a customer-centric tactical story. Therefore, it is important to study how a customer hero journey storytelling can be used as an effective strategic communication technique to attract and retain customers and how the hero archetype affects marketing relationships. A conceptual framework was built based on the literature review and studies relating to the Hero's Customer Journey model and structure of a story, customer acquisition and retention strategy to visualise the relationship between the components of the study (Fig. 1).

Fig. 1. The Hero's Customer Journey influences and its elements influencing customer acquisition and retention. Source: The conceptual framework developed by the author

2 Literature Review

2.1 Digital Brand Storytelling

Martinus and Chaniago (2017) defined *brand storytelling* as storytelling "connects the brand to value and emotion, delivers exceptional products, and distinguishing competitors" (203). Walter and Gioglio state that brand storytelling creates a company's identity via narrative and storytelling (2019, 4). Storytelling brings a brand to life, adds value, and deepens the emotional connection, increasing brand equity, brand attitudes, and purchase intentions (Chiu et al. 2012). Storytelling is essential to effective branding since a brand is the sum of all communications informing a potential customer about brand experiences (Herskovitz and Cristal 2010). Storytelling connects, evokes emotion, inspires loyalty, helps consumers understand brand values, and fosters trust and loyalty (Moin 2020; Fog et al. 2010).

2.2 The Elements of Good a Brand Storytelling

Escalas (2004) highlight structural elements such as a temporal framework and a contextual environment. Fog et al. (2010), as well as Biesenbach (2018) emphasise the value of strong characters, especially using brand archetypes such as the hero. The necessity of a storyline is likewise emphasised by Fog et al. (2010), while Biesenbach (2018) adds that the plot is more appealing if it focuses on conflict, Fog et al. (2010) and McKee and Gerace (2018) argue that the message is the most essential element. As a result of the above, digital brand storytelling has long been used as a fundamental approach to accomplish marketing relationships, including attracting and maintaining consumers. Therefore, structural elements in the storytelling ad, such as the main character and their actions in the plot, assist the viewer in relating to the story in the ad, which generates more favourable feelings towards the brand. Regardless of how personal or passionate a commercial may be, its objective is to compel customers to act. Therefore, each commercial contains a call to action (CTA).

2.3 Brand Archetypes and Customer Relationship

Butler and Peppard (1998) define relationship marketing as establishing and maintaining long-lasting relationships with customers, suppliers, and other market participants.

Brands have adopted relationship marketing to attract, retain, and enhance customer relationships and foster customer loyalty (Lodge and Wood 2008). Customer acquisition and retention are the core processes of marketing and brand strategies and primary factors in determining a brand's long-term profitability (Sharp and Romaniuk 2016). The Hero's Customer Journey storytelling is like the AIDA model of the customer journey. The primary distinction is the emotional force that enables marketers to craft a narrative-driven journey. The primary objective is to transform the customer into a hero rather than sell to them. It enables marketers to understand customers' issues at a particular customer journey stage, providing the solutions necessary to move on to the next stage. A story puts customers at the center of the journey, starting with a problem and concluding with a resolution that transforms them into the story's hero. The journey takes them from their current mundane world to one rich with new experiences and opportunities for growth. Rather than describing the customer's physical actions, The Hero's Customer Journey is the story marketers tell at each touchpoint. By framing the customer journey as The Hero's Journey, marketers are encouraged to focus on the customer's needs concerning their positions (Walkers and Gioglio 2019) in their advertising.

3 Research Design

3.1 Method

This study used a qualitative exploratory, inductive approach to data collection using a sample of 16 semi-interviews to understand consumers' thoughts on digital brand storytelling ads. Open-ended questions were used to explore how they are experienced in the real-world approach (Creswell and Guetterman 2021). The study obtained 6 semi-structured interviews with the customer retention group and 10 with acquisition groups. Purposive sampling was used to ensure the qualifying criteria for each participant were met. The study stopped at 16 interviews due to saturation, supported by the recommendation of Creswell and Guetterman (2021), according to which phenomenological studies require between five and 25 interview responses. This study interviewed 35–55-year-old females and males in Tweed Heads and the Gold Coast, Australia. Most of the questions were open-ended, with a limited number of closed questions on age, educational achievement, income category, and gender. Techniques such as probes and prompts were used to generate as much information as possible, and each interview lasted 30 - 45 min. Only 4 males responded to the interview. The age restriction creates a more cohesive group, making comparisons more meaningful, viewing brands as part of personal image-building and consumption, and seeking a holistic experience (Djamasbi et al. 2011). *Acquisition* group: participants who have never been to this venue, and *retention* group: participants who have visited the venue more than 10 times the venue within the past 6 months. The number of visits has been determined by calculating the average number of visits, spending, and ranking in their loyalty program. The researcher used Facebook ads to recruit the acquisition group and retention group members from the venue's membership database. The Facebook ad was chosen over other visual-oriented social media platforms because the researcher wanted to focus on critical text-based messages and explore imagery experience in carousel advertising to attract potential and retain customers. The Facebook message was next designed on the

Facebook mock-up sponsorship page. Finally, the participants were directed to answer the interview questions.

3.2 Data Analysis

The semi-structured interviews have been transcribed, converted to text, and examined with thematic analysis. Open coding was then performed to group the responses into categories with common themes (Corbin and Strauss 2015). Thematic analysis is thus appropriate to unveil the nuances of empirical phenomena (Saldana 2016). Once the data was coded and categorised, the author identified themes and patterns to answer the research question and find topics that could be explored further. Finally, the themes were regrouped into one writing report to develop a theory (Saldana 2016).

4 Results

The results were presented by using the Hero's customer journey schema. The results showed that digital storytelling using the Hero's Customer Journey communication strategy could positively impact customer acquisition and retention. However, the four elements of the story have differing levels of influence on these two groups. Based on the study's results, digital storytelling using Hero's Customer Journey communication strategy can positively impact customer acquisition and retention. However, the study found that the four elements of the story have differing levels of influence on these two groups. For customer acquisition, the characters element of the story was found to be particularly influential. This suggests that using relatable and likable characters in the brand's storytelling can help attract new customers. However, the study found that the storytelling technique did not necessarily prompt the intention to visit. However, it led to customers finding out more about the brand through visiting websites and review platforms like TripAdvisor or Facebook reviews. For customer retention, the story's secondary characters and settings elements were found to be especially effective in triggering positive brand experience memory with the premise. These elements can help reinforce a customer's positive experience with the brand, leading to greater loyalty and repeat business. Finally, the study found that the storytelling technique also positively supports the retention group's convincing friends and family (acquisition group) to try the brand. This highlights the potential for storytelling to be a powerful tool for user-generated content and can help to expand the brand's customer base.

5 Discussion

The character's element of the story was particularly influential for customer acquisition. Participants stated that they could see themselves in the hero's character. This result supports Escalas and Stern's (2003) findings that storytelling elicits emotions and feelings by enabling the participants to identify and empathise with their protagonists. The study found that the element of surprise significantly influenced customer acquisition and retention; however, they reacted to two different climaxes. To create attention-grabbing

storytelling, Rosen (2000) proposes using a dramatic arc and deconstructs the narrative into five parts: exposure, rising action, climax, falling, and stripping; therefore, this study complements with those study by adding that two climaxes are needed when the customer hero journey communication technique is used. While the storytelling positively influenced some respondents, others viewed it with scepticism and felt that it was not realistic. This study supports Lewis and Bridger's (2000) findings, who described that authenticity is based on people's personal experiences. Therefore, the ad's authenticity must be as accurate as possible to be consistent and avoid hostile criticism. This discovery reveals that using this technique must be authentic, which contradicts Aaker's (2018) theory that only the appearance of authenticity is required. The décor significantly influences customer retention because it translates to the visual aesthetics of the theme (customer journey) as trigger experience memories that are meaningful to them (Brakus et al. 2009). The participants were asked to imagine how the night would end; both groups agreed that the hero's protagonist would come home feeling content and happy. This suggests that the main character had a positive experience, which could impact customer acquisition and retention. Therefore, the study supports that the human brain naturally tends to focus on the final moments of an experience, known as the "happy ending." This rule states that people tend to judge an experience based on how they felt during the peak moments and at the end of the experience rather than considering the experience (Vestergaard and Schultz 2020) The study found that the Hero Customer Journey communication strategy did not significantly influence the intention to visit or recommend the venue to the acquisition group. Instead, the respondents indicated they would visit the venue's website and social media platforms to gather more information before deciding whether to visit or share the ad with their family and friends. Therefore, this study does not support Lundqvist et al. (2012) statement that storytelling influences the intention to purchase. However, the strategy effectively influenced customer retention for a repeat visit. In addition, the study revealed that the storytelling technique was positive and supported the retention group to convince friends and family to try the brand. This highlights the potential for storytelling to be a powerful tool for word-of-mouth marketing and can help to expand the brand's customer base (Chiu et al. 2012).

6 Implications

This study reduced the gap between the existing relationship marketing and brand storytelling, especially on the digital level. The paper explained the impact of digital brand storytelling using the customer Hero's Journey communication technique on customer acquisition and retention. This paper offers valuable advice to managers considering implementing this strategy, including warnings about potential risks associated with an incongruity between the campaign's plot and setting and the brand's personality. Finally, this study helps practitioners develop compelling digital brand storytelling using the hero's customer journey communication technique, and now there is a better understanding of the impact the elements of brand storytelling using the customer hero's journey are perceived by as well as their expected and unexpected impacts on each group. Digital brand storytelling campaigns appear to be powerful branding tools as well as a viable alternative to attract, retain and maintain digital marketing relationship.

7 Limitations and Future Research

This exploratory research has limitations and provides insights for future research. First, the small number of participants necessitates caution when transferring the results. Small samples are standard in qualitative studies; however, further tests of the effects of digital brand storytelling using The Hero's Customer Journey technique are needed to transfer the results. Therefore, using a mixed-methods approach using the SEQUEL method to question experts and customers of different entertainment destination venues may lead to a more holistic view of customers and marketers' perceptions.

References

Aaker, D.A.: Creating Signature Stories: Strategic Messaging That Persuades, Energizes and Inspires. Morgan James Publishing, New York (2018)

Avery, J.: The relational roles of brands. In: Marketing Management, pp. 123–138. Harvard Business School Publication (2020). https://doi.org/10.4324/9780203710807-11

Biesenbach, R.: Unleash the Power of Storytelling: Win Hearts, Change Minds, Get Results. Eastlawn Media, Evanston (2018)

Brakus, J.J., Schmitt, B.H., Zarantonello, L.: Brand Experience: what is it? How is it measured? Does it affect loyalty?" J. Market. **73**(3) (2009), 52–68. https://doi.org/10.1509/jmkg.73.3.52

Butler, P., Peppard, J.: Consumer purchasing on the Internet. Eur. Manag. J. **16**(5), 600–610 (1998). https://doi.org/10.1016/s0263-2373(98)00036-x

Chiu, H.-C., Hsieh, Y.-C., Kuo, Y.-C.: How to align your brand stories with your products. J. Retail. **88**(2), 262–275 (2012). https://doi.org/10.1016/j.jretai.2012.02.001

Corbin, J.M., Strauss, A.L.: Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. Sage, Los Angeles (2015)

Crespo, C.F., Gaspar Ferreira, A., Moita Cardoso, R.: The influence of storytelling on the consumer–brand relationship experience. J. Market. Analyt. **11**, 41–56 (2022). https://doi.org/10.1057/s41270-021-00149-0

Creswell, J.W., Guetterman, T.C.: Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research. Pearson (2021)

Delgado-Ballester, E., Fernández-Sabiote, E.: 'Once upon a brand': storytelling practices by Spanish brands. Span. J. Market. ESIC **20**(2), 115–131 (2016). https://doi.org/10.1016/j.sjme.2016.06.001

Djamasbi, S., Siegel, M., Tullis, T.: Visual hierarchy and viewing behavior: an eye tracking study. In: Jacko, J.A. (ed.) HCI 2011. LNCS, vol. 6761, pp. 331–340. Springer, Heidelberg (2011). https://doi.org/10.1007/978-3-642-21602-2_36

Escalas, J.E.: Narrative processing: building consumer connections to brands. J. Consum. Psychol. **14**(1–2), 168–180 (2004). https://doi.org/10.1207/s15327663jcp1401&2_19

Escalas, J.E., Stern, B.B.: Sympathy and empathy: emotional responses to advertising dramas. J. Consum. Res. **29**(4), 566–578 (2003). https://doi.org/10.1086/346251

Fog, K., Budtz, C., Munch, P., Blanchette, S.: The four elements of storytelling. In: Storytelling, pp. 31–46. Springer, Berlin (2010). https://doi.org/10.1007/978-3-540-88349-4_2

Hamelin, N., Thaichon, P., Abraham, C., Driver, N., Lipscombe, J., Pillai, J.: Storytelling, the scale of persuasion and retention: a neuromarketing approach. J. Retail. Consum. Serv. **55**, 102099 (2020). https://doi.org/10.1016/j.jretconser.2020.102099

Herskovitz, S., Crystal, M.: The essential brand persona: storytelling and branding. J. Bus. Strateg. **31**(3), 21–28 (2010). https://doi.org/10.1108/02756661011036673

Houghton, D.M.: Story elements, narrative transportation, and schema incongruity: a framework for enhancing brand storytelling effectiveness. J. Strat. Market. 1–16 (2021). https://doi.org/10.1080/0965254x.2021.1916570

Kang, J.-A., Hong, S., Hubbard, G.T.: The role of storytelling in advertising: consumer emotion, narrative engagement level, and word-of-mouth intention. J. Consum. Behav. **19**(1), 47–56 (2020). https://doi.org/10.1002/cb.1793

Lodge, D., Wood, N.: Modern Criticism and Theory: A Reader. Pearson Education, Harlow (2008)

Lundqvist, A., Liljander, A., Gummerus, J., van Riel, A.: the impact of storystelling on the consumer brand experience: the case of a firm-originated story. J. Brand Manag.**20**(4) 283–297 (2012). https://doi.org/10.1057/bm.2012.15

Martinus, H., Chaniago, F.: Analysis of branding strategy through instagram with storytelling in creating brand image on proud project. Humaniora**8**(3), 201 (2007). https://doi.org/10.21512/humaniora.v8i3.3678

McKee, R., Gerace, T.: Storynomics: Story-Driven Marketing in the Post-Advertising World. Twelve, New York (2018)

Moin, S.M.A.: Storytelling for hearts: brand–consumer conversations in the digital age. In: Brand Storytelling in the Digital Age, pp. 53–68. Springer, Cham (2020). https://doi.org/10.1007/978-3-030-59085-7_4

Rosen, E.: The Anatomy of Buzz: How to Create Word-of-Mouth Marketing. Doubleday, Currency (2002)

Pulizzi, J.: The Rise of Storytelling as the new marketing. Publ. Res. Q. **28**(2), 116–123 (2012). https://doi.org/10.1007/s12109-012-9264-5

Johnny, S.: The Coding Manual for Qualitative Researchers. SAGE (2016)

Sharp, B., Romaniuk, J.: How Brands Grow. Oxford University Press, Melbourne (2016)

Walter, E., Gioglio, J.: The Laws of Brand Storytelling Win - and Keep - Your Customers Hearts and Minds. McGraw-Hill Education, New York (2019)

The Development of Online Shopping and Finding Information About Products in the Visegrad Four Countries

Richard Fedorko(✉), Štefan KráĽ, and Lenka Štofejová

Faculty of Management and Business, University of Presov, Presov, Slovakia
{richard.fedorko,lenka.stofejova}@unipo.sk,
stefan.kral@smail.unipo.sk

Abstract. Today, the importance of e-commerce is undeniable and is even growing. In today's digital age, it is common for consumers to search for information about products on the Internet before making a purchase. The paper evaluates the course of the use of the Internet to search for information about products with regard to online shopping in the countries of the Visegrad Four (Czech Republic, Hungary, Poland, Slovakia) between 2012 and 2022. The paper provides a theoretical basis for the issue of online shopping and information search and describes the current state of online shopping in the countries of the Visegrad Four. Based on data from the Eurostat database, the paper points to the most significant findings in the development of online shopping and information search in the countries under review during the monitored years. The Czech Republic recorded the highest share of information searches in 2012 and 2022, while Poland achieved the highest growth in this regard. Slovakia recorded the highest share of online shoppers in 2012 and the Czech Republic in 2022, while Hungary achieved the highest growth in this regard. It can be assumed that both searching for information about products on the Internet and online shopping will grow in the coming years, mainly due to the advantages and uniqueness of digital technologies.

Keywords: Online shopping · Internet · Visegrad Four · E-commerce · Finding information

1 Introduction

Due to the fact that the Internet has become an indispensable tool for obtaining information, communication and entertainment, the average daily time spent on the Internet per inhabitant increases every year. In 2021, users spent estimated 192 min per day online, with online retail currently being the fastest growing retail sales channel, with the fastest growing customer base and ever-expanding product offer (Chaffey et al. 2019; Statista Research Department 2022).

Before making a purchase, consumers today are increasingly relying on research to inform their decisions. The availability of online product-related information and costs has influenced online shoppers' behaviors and intent to buy. However, with the

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 137–144, 2023.
https://doi.org/10.1007/978-3-031-31836-8_18

overwhelming amount of product data available, customers are often overwhelmed and confused (Rosário and Raimundo 2021). There are not many studies that examine the evolution of online shopping and at the same time the evolution of using the Internet to search for product information. The purpose of the research is to evaluate and analyze the course of the use of the Internet to search for information about products with regard to the development of online shopping in the Visegrad Four countries. The results can then be used by sellers when drawing up and planning their business strategies and also in creating content on their websites.

2 Theoretical Background of the Issue

The issue of electronic commerce covers a broad field of knowledge, the importance of which is undeniable. Electronic commerce, i.e. e-commerce, is a form of trading carried out in the online environment of the Internet, while the Internet represents a single platform that connects the seller and the buyer (Tan 2013; Brodie 2017). As the world copes with the COVID-19 pandemic, customer behavior is changing and there is a dramatic shift going on - from traditional shopping to e-commerce. Consumer needs and demands are also changing, and businesses have no choice but to meet them. Consumers now more than ever rely on the digital world, so businesses are forced to adapt their strategies to reflect this trend (Kim et al. 2017; Štefko et al. 2020; Štefko et al. 2022). E-commerce has several unique features that are capable of challenging traditional business thinking and help explain why interest in e-commerce is growing. These include interactivity, personalization and customization, social technologies, universal standards, global reach, richness, ubiquity, and density of information (Laudon and Traver 2021).

The importance of electronic commerce is also growing in the countries of the Visegrad Four (V4). With the growth of e-commerce, the Slovak Republic can compete with many large European countries. More than 15,630 e-shops are registered in Slovakia. The best-selling online product categories in 2021 included clothing, furniture, medicine, and nutritional supplements. With regard to services, consumers preferred food and groceries delivery services the most (Shoptet 2022; Eurostat 2022). The fastest growing e-commerce market in Europe is the Czech Republic. There are currently more than 50,900 e-shops operating in the Czech Republic. In 2021, the best-selling product category purchased online was clothing, followed by cosmetics and household goods. With regard to the services, the most popular were food delivery and accommodation services and services of streaming platforms (Morgan 2019; Czech e-commerce 2022). In Poland, e-commerce is mainly made up of small and medium-sized enterprises. There are currently 42,100 e-shops operating in the Polish market. The most frequently purchased goods in 2021 included clothing and household goods (Ecommerce News 2022; Expandeco 2022). In Hungary, online shopping represents only a small part of retail activities and is progressing at the slowest pace among the V4 countries. The most frequently purchased products in Hungary in 2021 were clothes, electronics, and books (Statista 2022).

The Internet is currently considered a primary source of information, communication, and entertainment, but it is also currently used as a dynamic medium for business transactions. One of the purchase decision phases, which precedes the purchase

itself, is the search for information about products or services. The process of searching for information before purchasing is one of the most important parts of the consumer decision-making process. Consumers seek information before making a purchase in order to make more informed decisions. This mainly concerns information about product features, product price, or product delivery options that are displayed on the seller's website. These days, consumers are also interested in information about the product's sustainability and environmental impact. Consumers also search for information on websites like customer reviews websites or price comparisons websites (Xiang et al. 2015; Branco et al. 2016; Zhang et al. 2016; Dutta and Das 2017; Rajnoha et al. 2019; Olšavský et al. 2022). The rapid development of the Internet and digital technologies has enabled consumers to become more sophisticated in searching for information also in providing information by sharing their experiences on social media or third-party online platforms. Online comments and reviews play a critical role in the decision-making process, influencing attitudes, purchasing decisions and consumer behavior of consumers (Bacik et al. 2017; Tan et al. 2018; Del Chiappa et al. 2018; Gursoy 2019; Hassan and Sharma 2020).

Currently, the Internet is an indispensable tool when searching for product information. The popularity of online search is increasing primarily because of the perceived usefulness of the Internet (the speed, simplicity, and efficiency of access to information). Several studies have been conducted to identify the factors that lead consumers to use the Internet as a means of searching for product/services information (Clemes et al. 2014; Dutta and Das 2017). Time savings, information filters and price comparisons were found to be the most important features. Consumers can be influenced (either positively or negatively) when presented with product attributes as desirable or undesirable. In addition, when searching for product information on the Internet, consumers browse different websites that present different or conflicting perspectives. Therefore, consumers' attitudes towards the product may differ depending on the websites visited (Peterson and Merino 2003; Darley et al. 2010; Barzilai et al. 2015; Roscoe et al. 2016).

Consumers consider searching for Internet information to be an important activity. This leads to so-called information satisfaction. Consumer satisfaction with information found online is a major determinant that significantly impacts a positive attitude toward websites, overall usefulness, and intention to purchase online. Consumers who have visited several websites and accessed different information will evaluate the collected information regarding the overall experience and then make a purchase decision (they will either buy the product or not). When searching for information about products on the Internet, consumers are either driven by hedonic or utilitarian motivation. Hedonically motivated consumers search for information about products in order to enjoy the information they find. Regarding utilitarian motivation, consumers search for information about products to minimize the risk of purchasing the wrong product (Al-Maskari and Sanderson 2010; Wu et al. 2015; Ozkara et al. 2016; Bilgihan 2016). Today, consumers expect to have instant access to the latest and most accurate information and reviews posted by real users. They also want to be able to compare the searched products according to various attributes in order to make the most efficient purchase possible. After searching for information about products on the Internet, consumers are more likely to make an online purchase (Lu et al. 2016; Gursoy 2019).

3 Methodology

The aim of the paper is to evaluate and analyze the course of the use of the Internet to search for information about products with regard to the development of online shopping in the countries of the Visegrad Four (Slovakia, the Czech Republic, Poland, Hungary) in the years 2012 to 2022 and subsequently point out the most interesting findings and differences.

In relation to the available data, we formulated the following research questions: How did online shopping change in the V4 countries during the period under review? How did the internet use for finding information about products change in the V4 countries during the period under review? What differences in online shopping and finding information about products can be observed in the V4 countries? The data used in the analysis were obtained from the database of the Statistical Office of the European Communities (Eurostat). The data analyzed cover the general population - individuals aged 16 to 74 who made at least one online purchase in 12 months. The unit of measurement is the Percentage of individuals. The obtained data were graphically processed in the RStudio program.

4 Results

Based on the available data, it is possible to evaluate and compare the course of searching for information about products on the Internet, as well as the development of online shopping in the countries of the Visegrad Four in the monitored years, and to point out significant changes and differences.

Nowadays, it is common for consumers to search for product information on the Internet before making a purchase. Looking at Fig 1, it could be concluded that this was not the case in the past either. Figure 1 shows the course of the development of the product information search on the Internet in the V4 countries and the overall average of the EU countries from 2012 to 2022. Fluctuating development was recorded in all the V4 countries as well as in the EU countries until 2018. Within the EU countries, this fluctuating development can be observed until 2022. From 2019 to 2022, a growing trend of searching for information about products on the Internet in all countries was recorded, with the exception of Slovakia, which recorded a year-on-year decrease (-4%) in 2022. The Czech Republic recorded the highest share both in 2012 (62.06%) and in 2022 (81.57%) in this regard. On the contrary, the lowest share was recorded by Poland in 2012 (47.52%), but in 2022 the lowest share was recorded by Slovakia (67.11%). Despite these differences, all countries recorded a significant increase compared to 2012 in the search for information about products on the Internet, with the most significant growth recorded by Poland (+26.73%), followed by the Czech Republic (+19.51%) and Hungary (+18.97%). Slovakia achieved the lowest growth (+8.69%).

The development of online shopping is shown in Fig. 2. The given data shows a growing development trend not only in all V4 countries but also with regard to the overall average of EU countries in the monitored period. The highest share of online shoppers in 2012 was recorded by Slovakia (44.73%), which reached a share at a level comparable to the average of EU countries (40.54%). Other V4 countries recorded a significantly lower

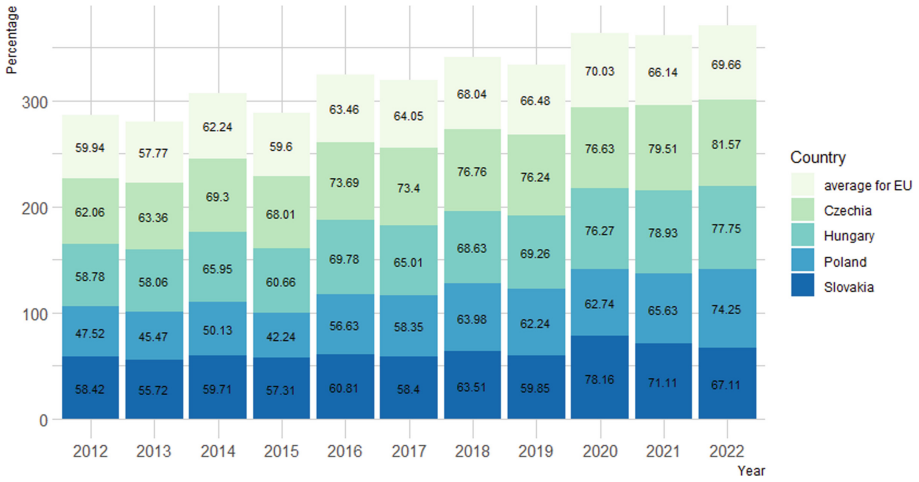


Fig. 1. Share of consumers who found information about products via the Internet (% of internet users) (Eurostat 2023)

level than the average of EU countries. In 2022, the Czech Republic recorded the highest share of online shoppers (77%), closely followed by Slovakia (76.72%). A possible reason for the differences between the monitored countries might be the fact that the Czech Republic has the fastest growing e-commerce market in Europe (Morgan 2019). The lowest share of online shoppers in 2022 was, surprisingly, recorded in Poland. Surprisingly because Hungary was expected to yield such numbers, as Hungarian e-commerce showed the slowest growth rate, mainly due to consumer distrust (Jurčo 2020). These results may indicate an increase in the confidence of Hungarian consumers. Hungary (45.11%), followed by the Czech Republic (44.19%), Poland (34.25%) and Slovakia (31.99%), recorded the most significant increase in the number of online shoppers over the years. With regard to the overall average of EU countries, an increase of 27.49% was recorded (from 2012).

Looking at Fig. 1 and Fig. 2, the rate of searching for product information on the Internet could be compared to the rate of online shopping. While the share of online shoppers grew in the monitored period, the share of Internet users who searched for product information on the Internet recorded a fluctuating development trend. However, despite a relatively high share of users looking for product information on the Internet, the share of online shoppers was significantly lower. In 2012 and 2013, this share was even twice as low in the Czech Republic and Hungary. Over the years, the differences have gradually narrowed down. Over the monitored period, Slovakia recorded values at a level comparable to the average of EU countries. Likewise, since 2016, the differences in both investigated variables have been minimal in Slovakia. In 2021 and 2022, a higher proportion of users shopping online than those searching for product information on the Internet was recorded.

There are several reasons for the disparity between Internet searches and online shopping. Many consumers lack digital literacy skills. As a result, some users may get hold of inaccurate data or miss crucial data altogether. Some consumers also tend to visit

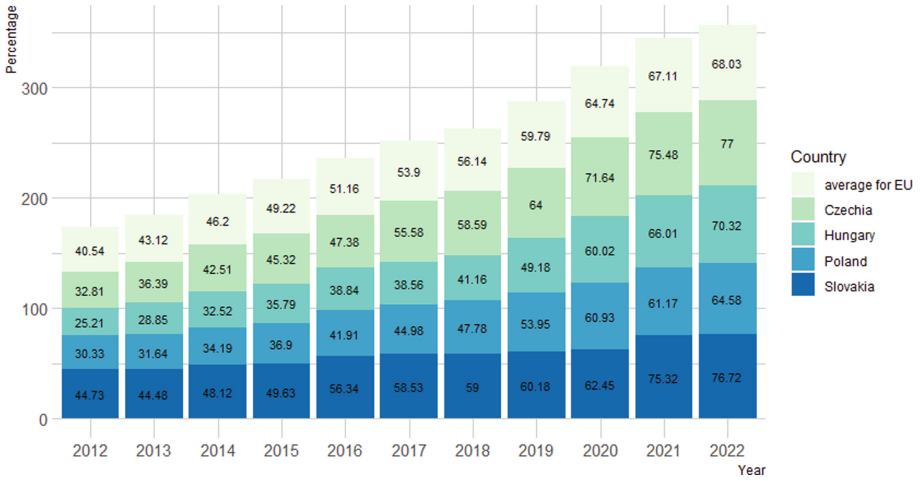


Fig. 2. Share of online consumers (% of internet users) (Eurostat 2023)

only one or two websites when searching for information and do not spend enough time searching. Another problem can be shallow search strategies that result in unproductive searches. For example, using the wrong keywords, using just a few keywords, switching search engines, and superficial searches without deeper analysis. Also, many consumers cannot tell the difference between less reliable websites and reliable ones (Johnson et al. 2004; Zhang and Quintana 2012; van Deursen and van Diepen 2013; Monchaux et al. 2015).

5 Conclusion

The importance of online shopping is increasing every day, and in today's digital age, it is not uncommon for consumers to research a wide range of information about products online before making a purchase. Based on the obtained data, it is possible to state several most significant findings.

While the share of online shoppers recorded an increasing trend, the share of Internet users who searched for product information on the Internet showed a fluctuating trend. Between 2019 and 2022, a growing trend of searching for information about products on the Internet in all countries (with the exception of Slovakia) was recorded. The Czech Republic recorded the highest share in both 2012 and 2022. Despite the differences, all countries recorded a significant increase in the search for product information on the Internet in the monitored period, with Poland recording the most significant growth. Compared to the relatively high share of product information searches on the Internet, the share of online shoppers was significantly lower in the monitored countries and years. In 2012, Slovakia recorded the highest share of online shoppers, and in 2022 it was the Czech Republic, while Hungary recorded the highest increase during the monitored period. It can be assumed that in the coming years, consumers will search for information about products on the Internet more and more often, as well as make

more online purchases. This is mainly because of the undeniably unique advantages that digital technologies bring along.

Future research might focus on comparing the collected data with data collected from other European countries or on comparing data from a gender and age perspective. The obtained results can subsequently be used by sellers when planning their business strategies and also when creating content on their websites.

Acknowledgements. This article is one of the partial outputs under the scientific research grant VEGA 1/0694/20 - Relational marketing research - perception of e-commerce aspects and its impact on purchasing behaviour and consumer preferences.

References

AlMaskari, A., Sanderson, M.: A review of factors influencing user satisfaction in information retrieval. J. Am. Soc. Inform. Sci. Technol. **61**(5), 859–868 (2010)

Bacik, R., Gavurova, B., Gburova, J.: Social media, corporate website and its impact on consumer purchasing decisions. J. Appl. Econ. Sci. **9**(5), 1312–1318 (2017)

Barzilai, S., Tzadok, E., Eshet-Alkalai, Y.: Sourcing while reading divergent expert accounts: pathways from views of knowing to written argumentation. Instr. Sci. **43**, 737–766 (2015)

Bilgihan, A.: Gen Y customer loyalty in online shopping: an integrated model of trust, user experience and branding. Comput. Hum. Behav. **61**, 103–113 (2016)

Branco, F., Sun, M., Villas-Boas, J.M.: Too much information? Information provision and search costs. Mark. Sci. **35**(4), 605–618 (2016)

Brodie, R.J.: Enhancing theory development in the domain of relationship marketing: how to avoid the danger of getting stuck in the middle. J. Serv. Mark. **31**, 20–23 (2017)

Clemes, M.D., Gan, C., Zhang, J.: An empirical analysis of online shopping adoption in Beijing, China. J. Retail Consum. Serv. **21**(3), 364–375 (2014)

Czech e-commerce: Size of e-commerce market (2022)

Darley, W.K., Blankson, C., Luethge, D.J.: Toward an integrated framework for consumer behavior and decision making process: a review. Psychol. Mark. **27**, 94–116 (2010)

Del Chiappa, G., Lorenzo-Romero, C., AlarcóndelAmo, M.D.C.: Profiling tourists based on their perceptions of the trustworthiness of different types of peer-to-peer applications. Curr. Issue Tour. **21**(3), 259–276 (2018)

Dutta, C.B., Das, D.K.: What drives consumers' online information search behavior? Evidence from England. J. Retail. Consum. Serv. **35**, 36–45 (2017)

Ecommerce News: E-commerce in Poland (2022)

Eurostat Internet purchases – goods or services (2022)

Eurostat: Finding information about product via Internet & Internet purchases – goods or services (2023)

Expandeco: Expanze do Polska (2022)

Gursoy, D.: A critical review of determinants of information search behavior and utilization of online reviews in decision making process. Int. J. Hosp. Manag. **76**, 53–60 (2019)

Hassan, A., Sharma, A.: The Emerald Handbook of ICT in Tourism and Hospitality, p. 2020. Emerald Publishing Limited, Bingley (2020)

Chaffey, D., Edmundson-Bird, D., Hemphill, T.: Digital Business and E-commerce Management. Pearson Education Limited, London (2019)

Johnson, E.J., Moe, W.W., Fader, P.S., Bellman, S., Lohse, G.L.: On the depth and dynamics of online search behavior. Manage. Sci. **50**, 299–308 (2004)

Jurčo, G.: Online marketing in Hungary (2020)
Kim, T.Y., Dekker, R., Heij, C.: Cross-border electronic commerce: distance effects and express delivery in European Union markets. Int. J. Electron. Commer. **21**(2), 184–218 (2017)
Laudon, K.C., Traver, C.G.: E-commerce 2020–2021- Business – Technology – Society. Pearson Education Limited, London (2021)
Lu, A.C.C., Gursoy, D., Lu, C.Y.R.: Antecedents and outcomes of consumers' confusion in the online tourism domain. Ann. Tour. Res. **57**, 76–93 (2016)
Monchaux, S., Amadieu, F., Chevalier, A., Mariné, C.: Query strategies during information searching: effects of prior domain knowledge and complexity of the information problems to be solved. Inf. Process. Manage. **51**, 557–569 (2015)
Morgan, J.P.: E-commerce Payments Trends: European Overview (2019)
Olšavský, F., Štarchoň, P., Mitková, Ľ, Dudić, B.: Dynamics of the Slovak consumer behaviour in the context of ethnocentrism: managerial implications. Agric. For. **68**(3), 7–21 (2022)
Ozkara, B.Y., Ozmen, M., Kim, J.W.: Exploring the relationship between information satisfaction and flow in the context of consumers' online search. Comput. Hum. Behav. **63**, 844–859 (2016)
Peterson, R.A., Merino, M.C.: Consumer information search behavior and the Internet. Psychol. Mark. **20**, 99–121 (2003)
Rajnoha, R., Lesnikova, P., Stefko, R., Schmidtova, J., Formanek, I.: Transformations in strategic business planning in the context of sustainability and business goals setting. Transform. Bus. Econ. **18**(2), 44–66 (2019)
Rosário, A., Raimundo, R.: Consumer marketing strategy and e-commerce in the last decade. J. Theor. Appl. Electron. Commer. Res. **16**(7), 3003–3024 (2021)
Roscoe, R.D., Grebitus, C., O'Brian, J., Johnson, A.C., Kula, I.: Online information search and decision making: effects of web search stance. Comput. Hum. Behav. **56**, 103–118 (2016)
Shoptet: Slovenský e-commerce nespomaľuje (2022)
Statista: Share of population shopping online in Hungary from 2010 to 2021 (2022)
Statista Research Department: Internet usage worldwide - statistics & facts (2022)
Stefko, R., Fedorko, R., Bacik, R., Rigelsky, M., Olearova, M.: Effect of service quality assessment on perception of TOP hotels in terms of sentiment polarity in the Visegrad group countries. Oecon. Copernic. **11**(4), 721–742 (2020)
Stefko, R., Bacik, R., Fedorko, R., Olearova, M.: Gender-generation characteristic in relation to the customer behavior and purchasing process in terms of mobile marketing. Oecon. Copernic. **13**(1), 181–223 (2022)
Tan, H., Lv, X., Liu, X., Gursoy, D.: Evaluation nudge: effect of evaluation mode of online customer reviews on consumers' preferences. Tour. Manage. **65**, 29–40 (2018)
Tan, S.: Ecom Hell: How To Make Money In Ecommerce Without Getting Burned. Ecom Hell, San Francisco (2013)
van Deursen, A.J.A.M., van Diepen, S.: Information and strategic Internet skills of secondary students: a performance test. Comput. Educ. **63**, 218–226 (2013)
Wu, L.L., Wang, Y.T., Wei, C.H., Yeh, M.Y.: Controlling information flow in online information seeking: the moderating effects of utilitarian and hedonic consumers. Electron. Commer. Res. Appl. **14**(6), 603–615 (2015)
Xiang, Z., Magnini, V.P., Fesenmaier, D.R.: Information technology and consumer behavior in travel and tourism: insights from travel planning using the internet. J. Retail Consum. Serv. **22**, 244–249 (2015)
Zhang, M., Chen, G., Wei, Q.: Discovering consumers' purchase intentions based on mobile search behaviors. Flexible Query Answ. Syst. **2015**, 15–28 (2016)
Zhang, M., Quintana, C.: Scaffolding strategies for supporting middle school students' online inquiry processes. Comput. Educ. **58**, 181–196 (2012)

How Facebook's Brand Personality Affects Brand Commitment and Preference: The Mediating Role of Self-image Congruence

Johan Hellemans(✉), Kim Willems, and Malaika Brengman

Imec-SMIT, Vrije Universiteit Brussel, Brussel, Belgium
{Johan.hellemans,Kim.willems,malaika.brengman}@vub.be

Abstract. There needs to be more research on how self-image congruence affects consumer outcomes concerning social network site (SNS) brands. As SNSs like Facebook continue to grow, they must position themselves effectively to stand out from their competitors. This study aims to contribute to our understanding of this topic by exploring the mediating effect of self-image congruence on brand personality (BP), brand commitment, and preference for the Facebook brand. We conducted PLS path modelling on data from American millennial Facebook users (N = 512, Mage = 27.1, SD age = 4.9, Female = 52%). In our model, actual and ideal self-image congruence partially mediate the impact of BP dimensions (emotionality and responsible) on brand commitment. The BP dimension activity directly affects brand commitment without mediation, whereas simplicity has no significant effect. Furthermore, brand commitment has a positive impact on preference for the SNS. This study has practical implications for SNSs and marketers who wish to position their brand or use social media as a selling channel.

Keywords: Brand personality · Self-image congruence · Brand commitment · Brand preference · Facebook · Social network sites · Social media

1 Introduction

Facebook remains one of the most popular social SNSs in terms of the number of active users. However, other platforms, such as TikTok and Instagram, have recently gained significant popularity (Hellemans et al. 2020, 2021). With the proliferation of SNSs, competition for users' attention has increased. Consequently, SNS platforms must find ways to differentiate themselves and remain relevant. Brand commitment refers to the favourable emotional attachment to a brand that leads to continued usage, positive word-of-mouth, and higher user involvement and participation (Fournier 1998; Kim et al. 2008). Establishing a strong brand commitment may help Facebook maintain its positioning among users in the face of growing competition.

Consumer psychology research on brands often focuses on how brands are perceived in human terms (Aaker 1997) and how consumers establish relationships with them (Fournier 1998). It is suggested that now, more than ever, consumers seek products and services that provide social and expressive value beyond utilitarian benefits (Aaker 1997;

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 145–155, 2023.
https://doi.org/10.1007/978-3-031-31836-8_19

Fournier 1998), which extends even to the digital world (Belk 2014). Previous studies have found that BP in a digital context is linked to affective, relational, and behavioral outcomes, such as brand commitment and brand preference (Ghorbani et al. 2022). Therefore, BP is a crucial tool for brands to differentiate themselves in the marketplace (Japutra and Molinillo 2019), especially for those in later stages of their life cycle, as opposed to earlier stages (Eisend and Stokburger-Sauer 2013). Given that Facebook is assumed to be in a more mature phase of its life cycle (Hellemans et al. 2021) than, for instance, TikTok, BP could be an effective tool for Facebook to shape its brand commitment and brand preference.

2 Objectives

Most research on BP has focused on SNSs as a digital context for brand building. In this context, BP has been found to have direct and indirect effects on brand equity and measures of brand relationship (Ghorbani et al. 2022). However, little attention has been given to the BP of the platforms themselves (Saeed et al. 2022; Rojas-Lamorena et al. 2022). This study aims to investigate how the BP of Facebook impacts users' brand commitment and preference, and the role of self-image congruity. The study has three contributions: (1) it is one of a few empirical studies to investigate BP and self-image congruence for a brand like Facebook and consider its impact on users' brand commitment and preference. (2) It contrasts the impact of actual-self congruence and ideal-self congruence. (3) It examines the mediating role of self-congruence between BP and brand commitment, offering insight into potential routes for SNS brands to increase their brand equity.

3 Literature Review

Many consumer research directions explore how brands are perceived in human terms by BP, brand user imagery, or brand relationships (Aaker and Fournier 1995; Fournier 1998). Aaker (1997) defines *brand personality* formally as "the set of human characteristics associated with a brand." Aaker (1997) established a BP scale based on 42 items attributed to five dimensions: *sincerity, excitement, competence, sophistication, and ruggedness*. Geuens et al. (2009) introduced a simplified scale based solely on the big five personality items that could be generalized, resulting in five factor scale using 12 items: *responsibility, activity, aggressiveness, simplicity, and finally, emotionality*. Both scales are BP's most widely used measures (Saeed et al. 2022). Although measuring brand personalization is not without criticism (Oklevik et al. 2020), both scales proved robust in several studies, and BP attracts increasing attention (Llanos-Herrera and Merigo 2018). The question follows which BP traits give rise to a better self-image congruence. The meta-analysis by Eisend and Stokburger-Sauer (2013) shows that the specific BP dimensions of sincerity and competence have the most substantial impact on brand attitudes and commitment across product categories and brands. A recent study that looks at BP data over an 18-year period confirms that both dimensions and excitement have a more substantial effect on brand equity than sophistication and ruggedness (Luffarelli et al. 2022).

4 Self-image Congruence

Brand personality theory leans heavily towards self-congruence theory from social psychology (Radler 2018), where it is asserted that consumers prefer brands with a perceived fit with their self-image (Sop 2020). A body of empirical research indicates that the connection between perceived brand image and a consumer's self-concept can bring forth an array of positive consumer and marketing outcomes related to affective, relational, and conative consequences (Aguirre-Rodriguez et al. 2012; Eisend and Stokburger-Sauer 2013; Ghorbani et al. 2022; Sirgy et al. 2017; Sung and Kim 2010).

Four main selves that have been conceptualized in the self-image congruence field are; (1) the 'actual' self (the way one sees oneself), (2) the 'ideal' self (how one would like to be), (3) the 'social' self (how one presents oneself to others), and (4) the 'ideal social' self (the way one would like others to see oneself). Each type of self-image congruence has been related to specific motives of self-concept (Sirgy 2018). To date, most studies have focused on the actual self. Findings related to other dimensions of the self-concept remain limited and inconclusive (Radler 2018).

Regarding Facebook, we assume the behavior is driven by the need for consistency (actual self) compared to self-enhancing motives (ideal self). Recent findings offer compelling evidence that actual self-confirmation is the main self-image congruence-related motive upon engaging in Facebook activities (Eftekhar et al. 2014; Golbeck et al. 2011). Further on, an important reason to be on Facebook is to maintain existing relationships. Given the fact that people on Facebook know each other to some degree would provide accountability and steer self-representation that does not deviate too much from the actual self (Hollenbeck and Kaikati 2012).

4.1 Self-image Congruence, Brand Personality of Social Media Brands

Research assessing self-image congruence and BP on social media brands remains scarce and inconclusive. Maree (2017) did not find a relationship between individual personality and perceived SNS platform personality congruence and brand attitude for LinkedIn. Another study examining self-image congruence for Facebook and Twitter amongst users found a relationship between self-image congruence and brand relationship quality and subsequent behavioral intention for Twitter but not for Facebook (Pentina et al. 2013.a). In a related study, Pentina et al. (2013.b) reported on the role of matching personality traits to generate trust in Twitter as a social media brand, which influenced behavioral intention to use Twitter, and brands followed on the platform in a sample of American and Ukrainian users. For the latter, the personality match *conscientiousness* was most instrumental, whereas in the American case, *openness* and *emotional stability* indicated greater trust toward Twitter.

4.2 Mediating Effect of Self-image Congruence Between BP and Consequences

Matzler et al. (2016) investigate the mediating effect of self-image congruence between BP and visit intention in the context of a tourist destination. The mediation effect in their study is partially supported. The *activity* dimension is fully mediated, whereas *emotionality*, *simplicity*, and *responsibility* are partially mediated. No mediation is found for

the *aggressiveness* dimension. Their study further shows that the self-image congruence effect varies between cultures. This partial mediation is like the findings of Usakli and Baloglu (2011), who used an idiographic BP scale specifically constructed to measure BP for their touristic destination to investigate the mediating self-image congruence between BP and intention to return and intention to recommend a tourist destination. The three dimensions of *vibrancy*, *competence*, and *sincerity* were fully mediated, whereas the *sophistication* dimension was only partially mediated for intention to return. All four dimensions were only partially mediated for the intention to recommend. The *contemporary* dimension had no effect on the intention to return and was fully mediated for the intention to recommend. Whereas both studies use items that reflect actual and ideal self-image congruence, the possible differential effect of one over the other is not reported. Another study investigating data from Facebook users evaluating a liked brand on the platform showed a significant, positive influence of self-image congruence on brand engagement and purchase intention. The brand engagement was positively associated with purchase intention. Furthermore, brand engagement partially mediated the association between BP and purchase intention (Lee et al. 2018).

4.3 Conceptual Model and Hypotheses

Further research is highly warranted, given the limited number of studies and inconclusive results of earlier investigations into the relationships between BP, self-image congruence, and brand-related outcomes for SNSs. While support for these relationships has been found for other brand categories and using SNS as a context (Ghorbani et al. 2022), more research is needed to establish whether similar effects can be observed for SNSs themselves. Following the above elaboration, we apply a similar model (Fig. 1) derived from the destination personality literature (Matzler et al. 2016; Usakli and Baloglu 2011; Yang et al. 2020).

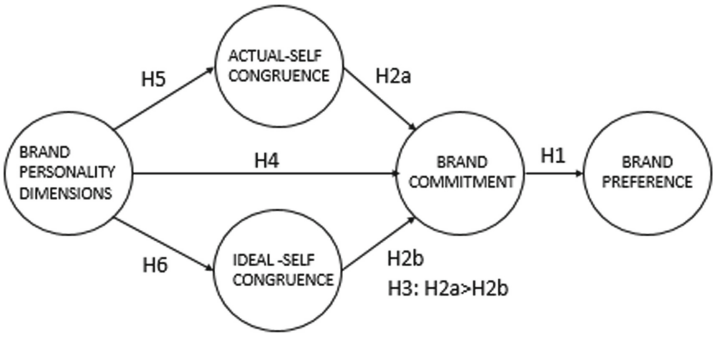


Fig. 1. Conceptual model

Given its previously demonstrated relationship with brand constructs like repeat use and positive word of mouth (Fournier 1998; Kim et al. 2008) in other brand categories, we hypothesize that: (H1) brand commitment positively impacts brand preference for Facebook. Further, we hypothesize that (H2a, H2b) brand commitment for Facebook is

positively influenced by self-image congruence (Matzler et al. 2016; Usakli and Baloglu 2011). However, in contrast with these studies and given the evidence that actual self-confirmation is the main self-image congruence-related motive for engaging in Facebook activities, we hypothesize that the effect will be stronger for actual self-congruence than ideal self-congruence (H3). Following Eisend and Stokburger-Sauer (2013), we assume BP influences brand commitment (H4a) and that the effect of the brand dimension *responsibility* is strongest (H4b). Finally, following Matzler et al. (2016), we hypothesize (H5) that self-image congruence mediates the relationship between BP dimensions and brand commitment via actual self-image congruence (Eftekhar et al. 2014; Golbeck et al. 2011). Nonetheless, we cannot entirely rule out that self-image congruence mediates the relationship via ideal self-image congruence (H6).

5 Methodology

An online self-completed questionnaire that guaranteed anonymity was administered to US millennials (18 to 34 years old) via a nationally representative online panel. In total, 580 respondents passed the age and Facebook usage filters, of which 557 completed the survey successfully. For this paper, we focus on those respondents that rated all BP items (N = 512, age = 27.1, SD = 4.9, Female = 52%). This group might be particularly valuable for Facebook assuming more competition and higher frequency usage among younger users.

Existing scales were used to measure the constructs to evaluate our hypotheses. Actual and ideal self-image congruence were measured by three items each, adapted from Sirgy et al.(1997) on a 7-point scale, anchored as not at all/completely: (1) Facebook is consistent with how I see myself; (2) Facebook reflects who I am; and (3) Facebook is a mirror image of me. The following three items were added to measure ideal self-image congruence: (1) I want to have the same personality a typical Facebook user has; (2) Using Facebook enhances my social image; (3) I present a better self-image to others by using Facebook. Facebook brand personality (BP) was measured using Geuens et al. (2009) 12-items, 5-factor 7-point scale anchored as not at all/completely, including the following dimensions and their respective items: '*responsibility'* with (1) down-to-earth, (2) stable, and (3) responsible; '*activity'* with (4) active, (5) dynamic, and (6) innovative; '*aggressiveness'* with (7) aggressive, and (8) bold; '*simplicity'* with (9) ordinary, and (10) simple; and finally '*emotionality'* with (11) sentimental, and (12) romantic. Facebook's brand commitment and preference were measured using a 5-point Likert agreement scale. The following four items from Wang (2002) were used: (1) I consider myself to be a loyal user of Facebook; (2) When it comes to products/services of social media sites, I am committed to Facebook; (3) I am proud to tell others that I use Facebook; and (4) I feel a strong attachment to Facebook. Three items were used adopted from Yi and Jeon (2003) to measure brand preference: (1) I like Facebook more so than other social media providers; (2) I have a strong preference for Facebook; (3) I would recommend Facebook to others.

SmartPLS-software was used to validate the measurement and structural model (Ringle et al. 2015). The initial model with the original five factors of Geuens et al. (2009) did not show adequate reliability and discriminant validity. Inspection showed

that aggressiveness did not correlate as intended with the bold item and that the latter also loaded on *active*. We removed aggressiveness and added the bold with the *activity* items; active, dynamic, and innovative. The model with four BP factors showed adequate reliability with all latent factors' composite reliability above 0.8 and all factor loadings of the items above 0.75 at a significant level ($p < .05$). Further, the average variance extracted (AVE) for each construct is higher than 0.50, showing the used measures have convergent validity (Fornell and Larcker 1981). All measures exhibit discriminant validity, with the heterotrait-monotrait ratio of correlations (HTMT) lower than the threshold of 0.9 (Henseler et al. 2014). Potential Common Method Variance (CMV) bias was addressed a priori at the set-up of the questionnaire by creating proximal, psychological, and methodological separation between the different measured items (MacKenzie and Podsakoff 2012). Finally, following the procedure of Kock and Lynn (2012), all factor-level VIFs resulting from a full collinearity assessment are lower than the 3.3 cut-off indicating no CMV problems (Kock 2015). In summary, these tests support the reliability and validity of the measurement model used, and we can further assess the structural model results. For completeness, we also report the average summed items scores and correlations in Table 1. All reported correlations in Table 1 are significant ($p < .05$). Paired samples t-tests further show all pairs between the personality factors to be significant except for the dyad responsibility-simplicity.

Table 1. Mean, SD and correlations between measures

	Mean	SD	1	2	3	4	5	6	7
Responsibility (1)	4.16	1.33	1.00						
Activeness (2)	4.57	1.32	.72	1.00					
Simplicity (3)	4.13	1.30	.56	.40	1.00				
Emotionality (4)	3.61	1.49	.63	.58	.47	1.00			
Actual self-image congruence (5)	3.49	1.57	.56	.48	.34	.51	1.00		
Ideal self-image congruence (6)	3.25	1.53	.54	.46	.37	.55	.72	1.00	
Commitment (7)	3.08	0.90	.59	.57	.31	.54	.64	.59	1.00
Preference (8)	3.39	0.97	.46	.51	.25	.38	.42	.36	.68

6 Results

A bootstrap resampling method with 5000 samples was run to estimate the structural model. The direct paths, their significance, and the explained variance of the model are reported in Fig. 2. The model explains 46% of the variance in Facebook's brand preference (R2 Adj. = .46, $p < .05$) and 53% of the variance in Facebook's brand commitment. (R2 Adj. = .53, $p < .05$). The total effects and specific indirect effects of interest, significances, and bias-corrected confidence intervals are presented in Table 2. Most of the hypotheses are supported. Brand commitment has a significant positive

effect (b = .68, t = 21.11, p < .05, [.61,.73]) on Facebook's brand preference supporting hypothesis H1. Facebook's brand commitment is significantly positively impacted by both actual self-image congruence (ACTUAL SC) (b = .31, t = 5.91, p < .05, [.21,.41]) and ideal self-image congruence (IDEAL SC) (b = .14, t = 2.82, p < .05, [.04,.25]) confirming hypothesis H2. The impact of actual self-image congruence (ACTUAL SC) is larger than the effect of ideal self-image congruence (IDEAL SC), supporting hypothesis H3.

Actual self-image congruence (ACTUAL SC) is related the most to the personality dimension *responsibility* (b = .34, t = 5.35, p < .05, [.21,.46]) followed by *emotionality* (b = .23, t = 4.14, p < .05, [.12, .34]), and to a lesser degree by *Activeness* (b = 0.11, t = 2.00, p < .05, [.00,.22]). Ideal self-image congruence (IDEAL SC) is related to the personality dimension *emotionality* (b = .33, t = 6.51, p < .05, [.23,.43]) and *responsibility* (b = .27, t = 4.77, p < .05, [.16,.38]). *Simplicity* showed no effect with either ACTUAL SC or IDEAL SC, so Hypothesis H4a was partially supported. H4b was not supported. While the total effect of *responsibility* on *commitment* is the largest, *activeness* and *emotionality* also showed an equal effect on commitment. Finally, H5 and H6 were partially supported. We find a partial mediation effect for *responsibility* and *emotionality* via both actual and ideal self-image congruence, whereas no mediation occurred for *activeness*. The model only shows a significant direct effect.

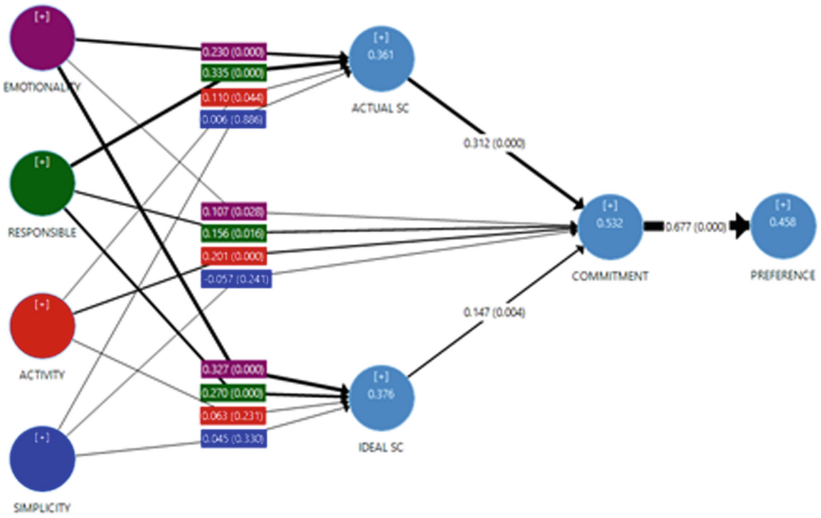


Fig. 2. Path diagram (b, p-value, and R^2)

7 Conclusions, Future Research, and Limitations

This research examined the effects of BP and users' self-image congruence on brand commitment and preference. Our findings show that users of Facebook give personality traits to the SNS. However, we could not replicate the original structure of Geuens et al.

(2009). Only four factors were recovered. Facebook is foremost associated with *activeness* (activity + bold item), followed by *responsibility* and *simplicity*, and lowest associated with *emotionality*. The *aggressiveness* factor was not retained.

Table 2. Total effects, and specific indirect effects

Total effects	B (M)	T	P	95%RI	
EMOTIONALITY -> ACTUAL SC	0.23	4.14	0.00	0.12	0.34
RESPONSIBLE -> ACTUAL SC	0.34	5.35	0.00	0.21	0.46
ACTIVENESS -> ACTUAL SC	0.11	2.00	0.05	0.00	0.22
SIMPLICITY -> ACTUAL SC	0.01	0.14	0.89	-0.08	0.09
EMOTIONALITY -> IDEAL SC	0.33	6.51	0.00	0.23	0.43
RESPONSIBLE -> IDEAL SC	0.27	4.77	0.00	0.16	0.38
ACTIVENESS -> IDEAL SC	0.06	1.26	0.21	-0.04	0.16
SIMPLICITY -> IDEAL SC	0.05	0.98	0.33	-0.04	0.14
EMOTIONALITY -> COMMITMENT	0.23	4.41	0.00	0.13	0.33
RESPONSIBLE -> COMMITMENT	0.30	4.72	0.00	0.17	0.43
ACTIVENESS -> COMMITMENT	0.24	4.41	0.00	0.13	0.35
SIMPLICITY -> COMMITMENT	-0.05	0.97	0.33	-0.14	0.05
ACTUAL SC -> COMMITMENT	0.31	5.91	0.00	0.21	0.41
IDEAL SC -> COMMITMENT	0.14	2.82	0.00	0.04	0.25
EMOTIONALITY -> PREFERENCE	0.15	4.35	0.00	0.09	0.22
RESPONSIBLE -> PREFERENCE	0.20	4.58	0.00	0.11	0.29
ACTIVENESS -> PREFERENCE	0.17	4.18	0.00	0.09	0.25
SIMPLICITY -> PREFERENCE	-0.03	0.97	0.33	-0.10	0.03
ACTUAL SC -> PREFERENCE	0.21	5.68	0.00	0.14	0.28
IDEAL SC -> PREFERENCE	0.10	2.82	0.00	0.03	0.17
COMMITMENT -> PREFERENCE	0.68	21.11	0.00	0.61	0.73
Specific indirect effects					
EMOTIONALITY -> ACTUAL SC -> COMMITMENT	0.07	3.26	0.00	0.03	0.12
EMOTIONALITY -> IDEAL SC -> COMMITMENT	0.05	2.49	0.01	0.01	0.09
RESPONSIBLE -> ACTUAL SC -> COMMITMENT	0.11	3.83	0.00	0.06	0.17
RESPONSIBLE -> IDEAL SC -> COMMITMENT	0.04	2.33	0.02	0.01	0.08
ACTIVENESS -> ACTUAL SC -> COMMITMENT	0.03	1.88	0.06	0.00	0.07
ACTIVENESS -> IDEAL SC -> COMMITMENT	0.01	1.14	0.25	0.00	0.03

Previous research (Maree 2017; Pentina et al. 2013) has found no association between brand personality and self-image congruence. However, our results show that, for the

Facebook brand, BP dimensions positively impact self-image congruence, leading to higher brand commitment and preference levels. As expected, we found that the actual self-image route is stronger than the ideal self-image route, but interestingly, the latter also matters. Self-image congruence typically results from a match between an individual's self-concept and the product-user image. However, with SNSs, this relationship is more complex because users, their profiles, and content shape the product/brand experience. The perceived fit between the self and the Facebook brand, including its features, and the perceived match between the self and the user-generated digital self-expressed through social media may lead to a stronger self-congruence effect.

Brand owners, advertising on SNSs must recognize that users' perceptions of the personality of the SNS may affect their perception of the promoted brands. As a result, the success of their social media marketing may rely on whether their brand's personality aligns with the crucial associations attributed to the SNS. Selecting the appropriate SNSs involves not only considering the size and user demographics but also pursuing a brand alliance or co-branding approach that matches the personality of the brand, consumers and the SNS. Such fit aligns with Voorveld et al. (2018) findings that advertising evaluations are highly context-specific and linked to the specific attributes of the SNS.

By utilizing a cross-sectional approach, researchers can determine which variables are significant in the development of a theoretical model, despite the limitations commonly associated with this type of research regarding causality direction and CMV (Spector 2019) which also apply to our research.

Further research needs to investigate differences in BP of different SNSs, and differences between user groups to explore to which degree the BP dimensions that influence brand equity differ across user groups and SNSs, and via which self-image motives. Research could also look further into the consecutive steps of mediating factors to explain brand equity by including the concept of brand personality appeal (Willems 2022) or by investigating the role of brand credibility and trust (Dwivedi et al. 2018; Villagra et al. 2021). Another exciting avenue for future research is the inclusion of the brand persona of the CEO. Given that the brand persona and public image of CEOs of SNS like Marc Zuckerberg or Elon Musk can impact how users perceive and interact with the social network they lead, it might be necessary for SNSs to consider not only their brand personality but also the persona of their CEO and how it aligns with the platform's users and values (Andreini et al. 2021).

References

Aaker, J.L.: Dimensions of brand personality. J. Mark. Res. **34**(3), 347–356 (1997)

Aaker, J., Fournier, S.: A brand as a character, a partner, and a person: three per-spectives on the question of brand personality. Adv. Consum. Res. **22**, 391–395 (1995)

Aguirre-Rodriguez, A., Bosnjak, M., Sirgy, M.J.: Moderators of the self-congruity effect on consumer decision-making: a meta-analysis. J. Bus. Res. **65**(8), 1179–1188 (2012)

Andreini, D., Fetscherin, M., Zarantonello, L.: How a CEO's personality, performance, and leadership predict advertising credibility: conceptualizing and measuring CEO brand image. J. Advert. Res. **61**(1), 110–124 (2021)

Belk, R.: Digital consumption and the extended self. J. Mark. Manag. **30**(11–12), 1101–1118 (2014)

Dwivedi, A., Johnson, L.W., Wilkie, D.C., De Araujo-Gil, L.: Consumer emotional brand attachment with social media brands and social media brand equity. Eur. J. Mark. **53**(6), 1176–1204 (2018)
Eftekhar, A., Fullwood, C., Morris, N.: Capturing personality from Facebook photos and photo-related activities: how much exposure do you need? Comput. Hum. Behav. **37**, 162–170 (2014)
Eisend, M., Stokburger-Sauer, N.E.: Brand personality: a meta-analytic review of antecedents and consequences. Mark. Lett. **24**(3), 205–216 (2013)
Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. **18**(1), 39–50 (1981)
Fournier, S.: Consumers and their brands: developing relationship theory in consumer research. J. Consum. Res. **24**(4), 343–373 (1998)
Geuens, M., Weijters, B., De Wulf, K.: A new measure of brand personality. Int. J. Res. Mark. **26**(2), 97–107 (2009)
Ghorbani, M., Karampela, M., Tonner, A.: Consumers' brand personality perceptions in a digital world: a systematic literature review and research agenda. Int. J. Consum. Stud. **46**(5), 1960–1991 (2022)
Golbeck, J., Robles, C., Turner, K.: Predicting personality with social media. In: CHI'11 Extended Abstracts on Human Factors in Computing Systems, pp. 253–262 (2011)
Hellemans, J., Willems, K., Brengman, M.: Daily active users of social network sites: Facebook, Twitter, and Instagram-use compared to general social network site use. In: Martínez-López, F.J., DAlessandro, S. (eds.) Advances in digital marketing and eCommerce. SPBE, pp. 194–202. Springer, Cham (2020). https://doi.org/10.1007/978-3-030-47595-6_24
Hellemans, J., Willems, K., Brengman, M.: The new adult on the block: daily active users of TikTok compared to Facebook, Twitter, and Instagram during the COVID-19 crisis in Belgium. In: MartínezLópez, F.J., LópezLópez, D. (eds.) Advances in Digital Marketing and eCommerce. SPBE, pp. 95–103. Springer, Cham (2021). https://doi.org/10.1007/978-3-030-76520-0_10
Henseler, J., Ringle, C.M., Sarstedt, M.: A new criterion for assessing discriminant validity in variance-based structural equation modeling. J. Acad. Mark. Sci. **43**(1), 115–135 (2014). https://doi.org/10.1007/s11747-014-0403-8
Hollenbeck, C.R., Kaikati, A.M.: Consumers' use of brands to reflect their actual and ideal selves on Facebook. Int. J. Res. Mark. **29**(4), 395–405 (2012)
Japutra, A., Molinillo, S.: Responsible and active brand personality: on the relationships with brand experience and key relationship constructs. J. Bus. Res. **99**, 464–471 (2019)
Kim, J.W., Choi, J., Qualls, W., Han, K.: It takes a marketplace community to raise brand commitment: the role of online communities. J. Mark. Manag. **24**(3–4), 409–431 (2008)
Kock, N.: Common method bias in PLS-SEM: a full collinearity assessment approach. Int. J. e-Collabor. (IJEC) **11**(4), 1–10 (2015)
Kock, N., Lynn, G.: Lateral collinearity and misleading results in variance-based SEM: an illustration and recommendations. J. Assoc. Inf. Syst. **13**(7), 546–580 (2012)
Lee, J.K., Hansen, S.S., Lee, S.-Y.: The effect of brand personality self-congruity on brand engagement and purchase intention: The moderating role of self-esteem in Facebook. Curr. Psychol. **39**(6), 2116–2128 (2018). https://doi.org/10.1007/s12144-018-9898-3
Llanos-Herrera, G.R., Merigo, J.M.: Overview of brand personality research with bibliometric indicators. Kybernetes **48**(3), 546–569 (2018). https://doi.org/10.1108/K-02-2018-0051
Luffarelli, J., Delre, S.A., Landgraf, P.: How has the effect of brand personality on customer-based brand equity changed over time Longitudinal evidence from a panel data set spanning 18 years. J. Acad. Marketing Science, pp. 1–19 (2022)
MacKenzie, S.B., Podsakoff, P.M.: Common method bias in marketing: causes, mechanisms, and procedural remedies. J. Retail. **88**(4), 542–555 (2012)
Maree, T.: Linkedin users' self-brand congruence, attitudes and social media use integration. Communication **43**(3–4), 95–113 (2017)

Matzler, K., Strobl, A., Stokburger-Sauer, N., Bobovnicky, A., Bauer, F.: Brand personality and culture: the role of cultural differences on the impact of brand personality perceptions on tourists' visit intentions. Tour. Manage. **52**, 507–520 (2016)

Oklevik, O., Supphellen, M., Maehle, N.: Time to retire the concept of brand personality? Extending the critique and introducing a new framework. J. Consum. Behav. **19**(3), 211–218 (2020)

Pentina, I., Zhang, L., Basmanova, O.: Antecedents and consequences of trust in a social media brand: a cross-cultural study of Twitter. Comput. Hum. Behav. **29**(4), 1546–1555 (2013)

Pentina, I., Gammoh, B.S., Zhang, L., Mallin, M.: Drivers and outcomes of brand relationship quality in the context of online social networks. Int. J. Electron. Commer. **17**(3), 63–86 (2013)

Radler, V.M.: 20 Years of brand personality: a bibliometric review and research agenda. J. Brand Manag. **25**(4), 370–383 (2018)

Ringle, C.M., Wende, S., Becker, J.M.: SmartPLS 3 [computer software]. SmartPLS GmbH (2015)

Rojas-Lamorena, Á.J., Del Barrio-García, S., Alcántara-Pilar, J.M.: A review of three decades of academic research on brand equity: a bibliometric approach using co-word analysis and bibliographic coupling. J. Bus. Res. **139**, 1067–1083 (2022)

Saeed, M.R., Burki, U., Ali, R., Dahlstrom, R., Zameer, H.: The antecedents and consequences of brand personality: a systematic review. EuroMed J. Bus. **17**(4), 448–476 (2022). https://doi.org/10.1108/EMJB-12-2020-0136

Sirgy, M.J.: Self-congruity theory in consumer behavior a little history. J. Glob. Scholars Market. Sci. **28**(2), 197–207 (2018)

Sirgy, M.J., Lee, D.-J., Yu, G.B.: Revisiting self-congruity theory in consumer behavior: Making sense of the research so far. In: Jansson-Boyd, C., Zawisza, M. (eds.) Routledge International Handbook of Consumer Psychology, pp. 185–201. Routledge, Taylor & Francis, London (2017)

Sirgy, M.J., et al.: Assessing the predictive validity of two methods of measuring self-image congruence. J. Acad. Mark. Sci. **25**(3), 229–241 (1997)

Sop, S.: Self-congruity theory in tourism research a systematic review and future research directions. Eur. J. Tour. Res. **26**, 2604 (2020)

Spector, P.E.: Do not cross me: optimizing the use of cross-sectional designs. J. Bus. Psychol. **34**(2), 125–137 (2019)

Sung, Y., Kim, J.: Effects of brand personality on brand trust and brand affect. Psychol. Mark. **27**(7), 639–661 (2010)

Usakli, A., Baloglu, S.: Brand personality of tourist destinations: an application of self-congruity theory. Tour. Manage. **32**(1), 114–127 (2011)

Villagra, N., Monfort, A., Sanchez Herrera, J.: The mediating role of brand trust in the relationship between brand personality and brand loyalty. J. Consum. Behav. **20**(5), 1153–1163 (2021)

Voorveld, H.A., Van Noort, G., Muntinga, D.G., Bronner, F.: Engagement with social media and social media advertising: the differentiating role of platform type. J. Advert. **47**(1), 38–54 (2018)

Willems, Kim: Brand personality appeal in retailing: comparing fashion- and grocery retailing. J. Retail. Consum. Serv. **64**, 102833 (2022). https://doi.org/10.1016/j.jretconser.2021.102833

Wang, G.: Attitudinal correlates of brand commitment: an empirical study. J. Relationsh. Mark. **1**(2), 57–75 (2002)

Yang, S., Mohd Isa, S., Ramayah, T.: A theoretical framework to explain the impact of destination personality, self-congruity, and tourists' emotional experience on behavioral intention. SAGE Open **10**(4), 2158244020983313 (2020)

Yi, Y., Jeon, H.: Effects of loyalty programs on value perception, program loyalty, and brand loyalty. J. Acad. Mark. Sci. **31**(3), 229–240 (2003)

Exploring Colombian Digital Buyers of Luxury Jewellery: Segment Exploration (FIMIX-PLS)

Javier A. Sánchez-Torres[1], Liliana Agudelo-Escobar[1], Francisco-Javier Arroyo-Cañada[2], Ana Argila-Irurita[2(✉)], and Maria-Luisa Sole-Moro[2]

[1] Department of Marketing, University of Medellin, Medellin, Colombia
jasanchez@udemedellin.edu.co
[2] Department of Business, Faculty of Economics and Business, University of Barcelona, Barcelona, Spain
{fjarroyo,aargila,mlsolesole}@ub.edu

Abstract. Jewels are items of personal adornment that has been a part of human expression throughout history as goods with multiple tangible and intangible meanings. The evolution of commercial transactions linked to the use of the Internet has promoted the use of this digital channel for the purchase and sale of jewellery. However, it is not yet clear if, due to the nature of jewellery, people carry out this purchase process in the same way through e-commerce as in physical stores. This study explores a research gap on the elements that determine the purchase of jewellery through e-commerce and applies a structural equation model using the partial least squares methodology. The results show that some essential elements of the physical purchase are maintained, but that buyers are also aware of the advantages and limitations of e-commerce. Also, through segment exploration, two possible types of digital buyers of jewellery are identified. The contribution of this research lies in adding to the development of the line of research on digital distribution channels, specifically for luxury jewellery in Colombia.

Keywords: Purchase · Luxury jewellery · Segment exploration · e-commerce · Behaviour

1 Introduction

E-commerce has established itself as a preferred channel worldwide for the purchase and sale of different products and services (Sánchez-Torres et al. 2021.a). However, there are products that due to their specific characteristics may not be in demand through digital channels (Javier A. Sánchez-Torres et al. 2022), such as luxury jewellery, since this product category has conditions related to its high emotional and economic value, as well as physical characteristics, which have traditionally been linked to sales in physical stores (Baker et al. 2018; Guercini et al. 2020). Nevertheless, the sociocultural changes that the Internet has brought to consumption have permeated the luxury sector and this type of product is also being demanded through digital channels (Jain 2020; Kapferer 2015; Kim and Sullivan 2019; Shankar and Jain 2021).

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 156–177, 2023.
https://doi.org/10.1007/978-3-031-31836-8_20

Luxury jewellery is a fashion item that has accompanied humanity since ancient times (Chandon et al., 2016; Chang et al., 2022). Jewellery has evolved along with civilizations to position itself as a component of women's and men's fashion, being part of their clothing symbols for many people. (Brandão et al. 2021; Kastiya and Phophalia 2021; Kumagai and Nagasawa 2021).

Studies on the use of jewellery have found that there are several reasons for its use, from socioeconomic, as a hallmark of social status (Amitabh 2019), and demographic reasons, since it is more highly valued by females, to psychological and behavioural motivations, as an item of sentimental value (Shankar and Jain 2021) or a demonstration of affection (Chandon et al. 2016; Phelps et al. 2014).

Regarding marketing, different studies have found that the purchase of jewellery involves different reasons, such as design, quality, trust in the seller and the relationship with the jeweller, and occasions for gift-giving (Kandasamy et al. 2018; Praveenkumar 2019). Likewise, brand-positioning studies have found that brands that remain traditional manage to endure over time (Pereira et al. 2019). Celebrity endorsements and famous brand ambassadors and influencers also have positive effects on jewellery buying. (Jaggi 2019).

Recent studies on luxury products show the great potential of e-commerce for marketing them, especially after the COVID pandemic (Hoang et al. 2022; Lawry 2022); however, there are few studies that analyse the purchase of luxury jewellery through digital channels (Amitabh 2019, 2020; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Rivard et al. 2006). Therefore, the objective of this paper is to explore the factors that lead to the purchase of luxury jewellery via e-commerce and to analyse whether there are different groups of buyers. In order to do so, this paper first presents a literature review in which some behavioural hypotheses are proposed, based on previous studies on the purchase of jewellery and digital purchasing. Then the methodology is described, in which the empirical model is tested and a segmentation process called FIMIX (Sarstedt et al. 2020) is applied through the partial least squares structural equations methodology. Finally, the results and conclusions are presented.

2 Literature Review and Hypothesis

The theoretical framework was completed in December 2021 using the WoS and Scopus databases with the following:

Fields: papers, books, book chapters, and thesis.
Time period: the last 20 years
Equation search: "Luxurious" or "jewellery" or "purchase" or "e-commerce"

It resulted in 25 documents, as shown in Table 1, which summarizes the main variables that can affect the purchase of jewellery through e-commerce. The few empirical studies on reasons for the electronic purchase of luxury jewellery have been carried out in Asian countries such as India and Thailand, possibly due to the interest in and high use of jewellery in these countries. These studies focused on exploring the variables that affect the purchase of jewellery through electronic channels (Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018).

The methodologies used structural equations, and the relational models took classic variables related to the purchase of this type of product such as quality, design, price or brand promotion and, on the other hand, introduced variables from adoption models of classic electronic purchases taken from unified theories of technological adoption such as UTAUT, highlighting perceived risk, hedonism in electronic purchases, effort expectations and expectations of purchase results, among others (Table 1).

Table 1. Variable summary and measurement scale

Variable	Authors	Description	Items
Design and fashion	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Praveenkumar 2019; Veerasaksri 2018)	These are the perceived design and fashion characteristics of the product with respect to its visual and aesthetic characteristics Studies on jewellery purchases show that customers take these characteristics of jewellery very seriously	DF1. When I buy jewellery, I look for original designs DF2. It is very important that the jewellery has designs that match my personal fashion DF3. I like jewellery with unique and original designs
Product and quality	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Praveenkumar 2019; Veerasaksri 2018)	These are the perceived quality characteristics of the product with respect to its materials, production, quality, and origin certificates, among others factors Jewellery purchasing studies show that customers demand certificates of origin, purity, and quality	PQ1. I consider the quality of the jewellery's metals and precious stones PQ2. I am looking for jewellery that has a guarantee certification of quality and origin PQ3. I am interested in jewellery that has a guarantee and after-sales service
Price and discount	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	This refers to price fluctuation and its influence on the purchase intention Some studies have shown that offers and discounts motivate the purchase of jewellery online	PD1. I search for and compare prices before deciding to buy a piece of jewellery PD2. I consider discounts when I buy a piece of jewellery PD3. I am interested in potential offers that the jewellery might have

(*continued*)

Table 1. (*continued*)

Variable	Authors	Description	Items
Free delivery	(Javier A. Sánchez-Torres, Sandoval, et al. 2021; Veerasaksri 2018)	This is when the transaction and shipping costs are free for the customer Free shipping is an important factor in buying this type of product, since it is usually sent by certified mail, which considerably increases its cost	FD1. I am looking for jewellery sellers that do not have shipping costs FD2. I am interested in buying jewellery online when shipping is free FD3. Not having extra shipping costs in online jewellery purchases is important to me
Occasional purchases	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	This is a type of purchase that is made sporadically and that is conditioned by a particular need or occasion	OP1. When I have to give a special gift to my loved ones or myself, I choose a piece of jewellery OP2. I symbolize special occasions with my loved ones or for myself with jewellery OP3. Jewellery is the gift I choose to give on special occasions
Promotions and marketing communications	(Joseph 2014; Kandasamy et al. 2018; Praveenkumar 2019)	These are all communication and promotion actions issued by jewellery sellers	MC1. When buying jewellery, I consider the communications that my seller sends MC2. I am interested in the advertisements I see for jewellery MC3. Receiving communications from my jewellery seller motivates me to buy

(*continued*)

Table 1. (*continued*)

Variable	Authors	Description	Items
Attitude toward purchasing jewellery	(Veerasaksri 2018)	Attitude is defined by the degree to which an individual evaluates a behaviour favourably or unfavourably	AT1. I like to buy jewellery AT2. I love to buy jewellery AT3. Jewellery is one of my favourite purchases
Intention to purchase jewellery through the Internet	(Celik 2016)	Purchase intention reflects purchasing behaviour	IN 1. I intend to buy jewellery through e-commerce
Subjective norms	(Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	This is defined by close social pressure that affects a person's decisions. Behavioural theories have shown that the subjective norm affects the decisions of the individual	SN1. I take into account the recommendations made by people who are close to me SN2. I consider the opinions of people that I trust SN3. Before buying jewellery, I ask other people on whether I should purchase the item
Perceived behavioural control	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	This refers to the personal perception of how easy or difficult the performance behaviour is	PBC1. Buying jewellery is something I can do easily PBC2. I buy jewellery when I want PBC3. Buying jewellery is something that does not cause me anguish

(*continued*)

Table 1. (*continued*)

Variable	Authors	Description	Items
Individual and hedonic factors	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	These are the intrinsic reasons why a person intends to buy jewellery, such as feeling good, beauty, and so on Although these reasons are not directly a determining factor in the purchase process, they are among the factors that can describe the individual and hedonic segment	IH1. I enjoy buying and wearing jewellery because it makes me feel beautiful IH2. Buying and wearing jewellery emits positive and joyous feelings in a person
Social status	(Amitabh 2019; Das and Sabbir 2019; Kandasamy et al. 2018; Kastiya and Phophalia 2021; Praveenkumar 2019; Veerasaksri 2018)	This refers to the extrinsic reasons that a person has when intending to buy jewellery, such as prestige and status In the case of jewellery, it has been shown that the status it represents socially influences the person's desire to purchase	SS1. I buy jewellery because wearing it gives me social status SS2. I think that wearing jewellery is synonymous with wealth and class
Haptic information – physical touch	(Kastiya and Phophalia 2021; Peck and Childers 2003)	This is related to the need to physically touch and examine the product Customers have a need to be able to appreciate products such as jewellery with all their senses to evaluate their physical characteristics, and studies show that not being able to do so generates distrust	TP1. When I buy jewellery, I want to examine it personally TP2. It is important for me to touch and see the jewellery before I buy it TP3. It is essential to hold the piece of jewellery so I can appreciate what I will end up owning

(*continued*)

Table 1. (*continued*)

Variable	Authors	Description	Items
Effort expectancy	(J.A. Sánchez-Torres et al. 2018; Javier A. Sánchez-Torres et al. 2019)	This relates to the ease or difficulty of buying online The few studies on the purchase of jewellery on the Internet show that the buyer highly values that web stores follow an effective purchase process	EE1. I think that buying jewellery through e-commerce is easy and simple EE2. I think that buying jewellery through e-commerce gives me advantages over buying it in a physical place EE3. I think that buying jewellery through e-commerce saves me time
Performance expectancy	(J.A. Sánchez-Torres et al. 2018; Javier A. Sánchez-Torres et al. 2019)	This relates to the subsequent benefits of making purchases online The few studies on the purchase of jewellery online, show that buyers highly value the fact that web stores implement and follow an effective purchase process	PE1. I believe that buying jewellery through e-commerce generates benefits for me PE2. I think that buying jewellery through e-commerce gives me advantages over other channels
Risk	(J.A. Sánchez-Torres et al. 2018; Javier A. Sánchez-Torres et al. 2019)	This refers to the perception of the risks of buying online. Consumers will feel a sense of risk when purchasing luxury products online	RC2. In general, I think there are high risks of fraud when I buy through e-commerce RC2. I think the chance of facing problems with e-commerce purchases of jewellery are high

The following hypotheses are proposed (Fig. 1):

H1: Individual and hedonic factors influence the purchase of jewellery through e-commerce.
H2: Fashion and design influence the purchase of jewellery through e-commerce.
H3: Product and quality influence the purchase of jewellery through e-commerce.
H4: Price and discounts influence the purchase of jewellery through e-commerce.
H5: Free delivery influences the purchase of jewellery through e-commerce.
H6: Occasional purchase influences the purchase of jewellery through e-commerce.
H7: Social influence influences the purchase of jewellery through e-commerce.
H8: Social influence influences social status.
H9: Social status influences the purchase of jewellery through e-commerce.
H10: Marketing and communication influence the purchase of jewellery through e-commerce.
H11: Effort expectancy influences the purchase of jewellery through e-commerce.
H12: PBC influences consumers' attitudes to buying jewellery through e-commerce.
H13: Performance expectancy influences consumers' attitudes to buying jewellery through e-commerce.
H14: Risk perception influences consumers' negative attitudes to buying jewellery through e-commerce.
H15: Haptic information – touching products – influences consumers' perceived risk of buying jewellery through e-commerce.
H16: Haptic information – touching products – influences consumers' attitudes to buying jewellery through e-commerce.
H17: Attitude influences the purchase of jewellery through e-commerce.

3 Methodology

3.1 Measurement Tool

The measurement tool was applied based on empirical studies on the purchasing behaviour of jewellery and luxury goods through e-commerce (Table 1). The constructs were grouped into a total of 15 categories and are presented with their respective measurement indicators in Fig. 1. All the items were measured using Likert-type scales ranging from 1 to 7 to have a better level of contrast.

A pilot test was carried out with marketing experts to validate the understanding of the questions. Likewise, a pre-test with 10 buyers confirmed the understanding of the questions, and reliability and validity tests of the tool were subsequently carried out (Sanchez-Torres and Juarez-Acosta 2019).

The study was carried out in Colombia, specifically focused on customers of a local jewellery brand, which allowed the use of a convenience sample. To encourage completion of the survey, the possibility of participating in a random draw for an 18-carat gold bracelet was offered to those who completed it (all research expenses were paid by the researchers themselves and no conflict of interest is declared).

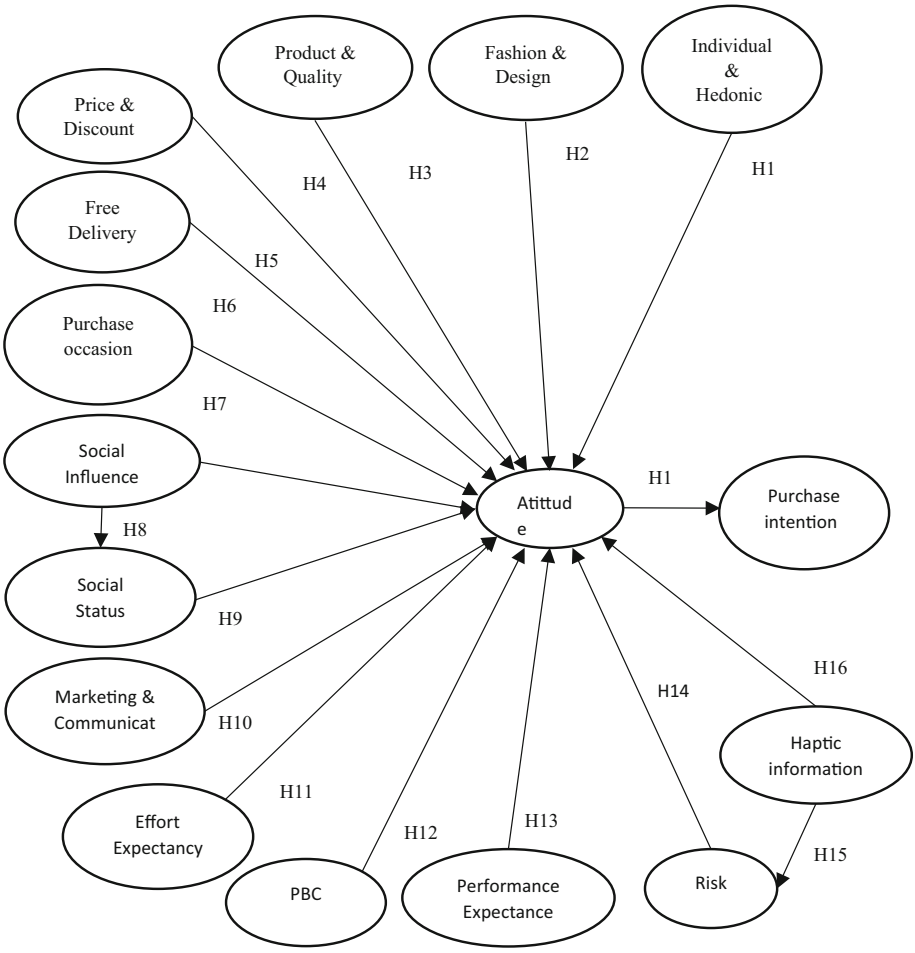


Fig. 1. Proposed model

The analysis of the data was carried out using the partial least squares (PLS-SEM) methodology, which allows analysis of cause–effect relationships between the variables and exploration of effect models between independent variables and dependent ones. Likewise, the benefits of this technique allow validating both the measurement tool and the relationships of significance and effect between the variables with relatively small samples (Sarstedt et al. 2022).

4 Sample

The survey was applied to a total of 204 people in Colombia through a digital form. Only age and gender were taken as control questions. The results show that 46% of the sample were 35 to 49 years old, followed by 33% of respondents who were 21 to 34 years old,

14% were 16 to 25 and 7% of respondents were over 49 year old. By sex, 70% of the respondents were females and 30% males.

5 Measurement Tool

First, the validation tests of the measurement tool were carried out following what was proposed by considering that all the tests were satisfactory. This is reflected in terms of both the reliability of the items that measure each construct and the reliability of the measurement of all the constructs (Hair et al. 2021) (Table 2).

Measures of convergent validity were also validated. The Dillon–Goldstein coefficient of reliability value was greater than 0.70 for all variables (Gefen et al. 2000). Cronbach's alpha test resulted in values above 0.70 (Churchill and Iacobucci 2004) and analysis of variance resulted in values over 0.50 (Henseler et al. 2014). With these tests, balanced and similar behaviour in how the items measure their respective constructs was confirmed (Table 2).

Table 2. Validation tests of the measurement tool

Item	Loads*	t-statistic	P Values	Construct	Cronbach's Alpha	rho_A	Composite reliability	Average variance extracted (AVE)
AT1	0,941	79,375	0,000	Attitude	0,905	0,904	0,941	0,841
AT2	0,945	112,860	0,000					
AT3	0,863	42,091	0,000					
EE1	0,921	26,004	0,000	Effort Expectances	0,867	0,951	0,915	0,783
EE2	0,906	19,725	0,000					
EE3	0,824	10,810	0,000					
FD1	0,834	3,551	0,000	Fashion & Design	0,813	0,871	0,889	0,729
FD2	0,686	2,569	0,010					
FD3	0,954	3,642	0,000					
DF1	0,896	24,652	0,000	Free Delivery	0,851	0,725	0,869	0,792
DF2	0,728	6,871	0,000					
DF3	0,925	33,955	0,000					
IH1	0,889	31,004	0,000	Individual & Hedonic	0,914	0,915	0,946	0,854
IH2	0,948	68,402	0,000					
IH3	0,934	38,313	0,000					
MC1	0,773	8,745	0,000	Marketing & Communication	0,777	0,840	0,869	0,792
MC2	0,897	37,532	0,000					
MC3	0,905	45,746	0,000					

(*continued*)

Table 2. (*continued*)

Item	Loads*	t-statistic	P Values	Construct	Cronbach's Alpha	rho_A	Composite reliability	Average variance extracted (AVE)
PBC1	0,911	63,193	0,000	Perceived Behavioral Control	0,802	0,861	0,884	0,720
PBC2	0,929	79,392	0,000					
PBC3	0,784	10,034	0,000					
PE1	0,950	72,630	0,000	Performance Expectance	0,951	0,954	0,968	0,911
PE2	0,938	45,706	0,000					
PE3	0,974	176,969	0,000					
PQ1	0,888	21,806	0,000	Product & Quality	0,816	0,925	0,883	0,716
PQ2	0,814	8,694	0,000					
PQ3	0,835	6,994	0,000					
PD1	0,855	3,163	0,002	Price	0,837	0,858	0,898	0,816
PD2	0,806	4,780	0,000					
PD3	0,991	6,395	0,000					
RP1	0,948	44,974	0,000	Risk	0,937	0,950	0,959	0,887
RP2	0,946	59,369	0,000					
RP3	0,932	12,802	0,000					
SI1	0,858	21,129	0,000	Social influence	0,709	0,752	0,839	0,640
SI2	0,887	5,060	0,000					
SI3	0,729	53,531	0,000					
SS1	0,931	45,584	0,000	Social Status	0,924	0,939	0,951	0,867
SS2	0,937	43,966	0,000					
SS3	0,925	44,974	0,000					
TP1	0,930	31,455	0,000	Touch product	0,949	0,951	0,967	0,908
TP2	0,971	130,219	0,000					
TP3	0,957	86,431	0,000					
PO1	0,925	73,139	0,000	Purchase by occasion	0,906	0,919	0,941	0,841
PO2	0,890	38,130	0,000					
PO3	0,936	77,043	0,000					

(Note: *Significant difference: P-value < 0.05).

Divergent validity was supported by two tests. The first compared the average variance extracted (AVE) value of the variables with the correlation of the constructs with respect to each variable elevated to the square, and the results demonstrate that each variable is related more to its own items than to the others (Fornell and Larcker 1981) (Table 3). The Henseler–Ringle test showed values below 0.90, thus validating the measurement tool (Henseler et al. 2014) (Table 4). This showed that the items that measure

Table 3. Discriminant validity - Fornell – Larcker test

AT	0,91														
EE	0,29	0,88													
FD	0,36	0,1	0,85												
DF	0,08	0,27	0,09	0,83											
IH	0,73	0,31	0,27	0,08	0,92										
MC	0,59	0,30	0,40	0,24	0,44	0,83									
PBC	0,59	0,53	0,20	0,10	0,47	0,31	0,84								
PE	0,20	0,85	0,11	0,26	0,29	0,28	0,46	0,95							
PQ	0,32	−0,02	0,55	0,08	0,31	0,30	0,12	−0,06	0,84						
PC	0,18	0,20	0,27	0,48	0,14	0,42	0,00	0,21	0,25	0,90					
RP	0,00	−0,10	0,17	0,18	0,09	0,11	0,01	−0,08	0,11	0,10	0,94				
SI	0,34	0,31	0,41	0,24	0,28	0,50	0,24	0,32	0,40	0,29	0,23	0,80			
SS	0,42	0,47	0,07	0,15	0,47	0,24	0,46	0,45	0,02	0,05	0,13	0,23	0,93		
TP	0,23	−0,11	0,31	0,06	0,32	0,22	0,11	−0,11	0,34	0,12	0,43	0,22	0,13	0,95	
PO	0,68	0,26	0,33	0,11	0,57	0,47	0,49	0,23	0,26	0,21	0,12	0,21	0,32	0,16	0,91

Table 4. Discriminant validity -Henseler–Ringle test

AT														
EE	0,30													
FD	0,41	0,19												
DF	0,08	0,32	0,12											
IH	0,60	0,39	0,32	0,08										
MC	0,68	0,28	0,55	0,31	0,51									
PBC	0,69	0,64	0,24	0,15	0,55	0,39								
PE	0,28	0,75	0,12	0,38	0,31	0,33	0,51							
PQ	0,34	0,06	0,66	0,07	0,34	0,40	0,17	0,07						
PC	0,17	0,16	0,29	0,58	0,14	0,47	0,10	0,21	0,29					
RP	0,04	0,16	0,20	0,23	0,11	0,13	0,28	0,08	0,14	0,12				
SI	0,40	0,41	0,52	0,35	0,35	0,70	0,31	0,39	0,48	0,35	0,31			
SS	0,45	0,57	0,12	0,21	0,51	0,24	0,50	0,49	0,04	0,06	0,14	0,29		
TP	0,25	0,17	0,37	0,06	0,34	0,27	0,15	0,12	0,40	0,16	0,45	0,28	0,14	
PO	0,74	0,37	0,36	0,11	0,63	0,56	0,56	0,25	0,29	0,21	0,14	0,26	0,34	0,17

each variable focus on their own construct and not on the others establishing the quality of the measurement tool.

Table 5. Rsquared

	R^2	R^2 Adjusted
Attitude	0,758	0,727
PBC	0,285	0,281
Performance expectances	0,561	0,552
Purchase	0,302	0,289
Risk	0,188	0,183
Social status	0,053	0,047

6 Model Test

Then the model was tested to evaluate the proposed hypotheses. A bootstrapping procedure was run with 5,000,000 subsamples and the results satisfactorily showed that the model explains the dependent variables with acceptable levels of *R* squared (Table 5). Likewise, the hypotheses were tested under a level of confidence of 0.05%, applying a statistical t-test greater than 1.76 (Table 6).

Table 6. Summary of the model and hypotheses

	Hypothesis	Original sample (O)	t (| O/STDEV|)	P- Values
H1	IH -> AT	0,334*	5,024	0,000
H2	FD -> AT	0,068	1,149	0,251
H3	PQ -> AT	0,034	0,554	0,580
H4	PD -> AT	−0,002	0,032	0,974
H5	DF -> AT	−0,029	0,408	0,683
H6	PO -> AT	0,256*	3,714	0,000
H7	SI -> AT	0,046	0,690	0,490
H8	SI -> SS	0,230*	2,404	0,016
H9	SS -> AT	0,085	1,487	0,137
H10	MC -> AT	0,207*	2,974	0,003

(*continued*)

Table 6. (*continued*)

	Hypothesis	Original sample (O)	t (| O/STDEV|)	P- Values
H11	EE -> AT	−0,161	1,736	0,083
H12	PBC -> AT	0,316*	4,538	0,000
H13	PE -> AT	−0,067	0,764	0,445
H14	RP -> AT	−0,174*	3,360	0,001
H15	TP -> AT	−0,009	0,164	0,870
H16	TP -> RP	0,434*	5,572	0,000
H17	AT -> PURCHASE	0,532*	8,327	0,000

(Note: *Significant difference: P-value < 0.05).

7 Segment Exploration (FIMIX-PLS) (PLS-POS)

The finite mixture partial least squares (FIMIX-PLS) latent segmentation technique was applied based on finite mixture models, which allows the correct identification of segments in order to determine the distribution of the total mixture of population and of the estimated parameters (path) (Sarstedt et al. 2022). Likewise, and as recommended by (Hair et al. 2021) the prediction-oriented segmentation (POS) approach in PLS (PLS-POS) was applied in order to reliably identify the structures of the segments and their differences in the estimated models for each of them. Therefore, the process suggested by (Hair et al. 2021) was applied as follows: in Step 1, the FIMIX-PLS procedure was executed to generate segments; in Step 2, the number of optimal segments was chosen; in Step 3, the PLS-POS procedure was applied to define whether it was necessary to reassign the segments; and in Step 4, the path estimations of the final segments were calculated. Finally, to check the predictive power of the segmentation with respect to the total data group, in step 5, the weighted values of R^2 was calculated.

8 Step 1

The common FIMIX-PLS algorithm was adjusted for a stop criterion of "1*" 10^(–5) and a maximum of 5,000 iterations, opting for the best solution of the 10 repetitions to avoid coincidence with a local optimum. As the sample is small, the recommendation of Hair et al. (2020) to run a first algorithm with a higher maximum number of segments of 5 and a second with a higher upper limit of 4 was applied. In both cases the lower limit was 1.

9 Step 2

It was not necessary to follow the selection criteria for the number of segments, since in Step 1, FIMIX-PLS only determined two segments, which presumably indicates that there may not be heterogeneity in the sample and the final result of the process may not be present (Table 7).

Table 7. Relative sizes of the generated segments FIMIX-PLS

Segment 1	Segment 2
0,794	0,206

10 Step 3

The PLS-POS procedure was executed with two groups to determine a result with a maximum of 1,000 iterations given the smaller size of the sample. From the result, the assignment of each element of the sample to one of the two segments is obtained. The results show two possible segments in the purchase decision, because some values of R^2 of the proposed segments are higher than R^2 of the total sample, and thus possible differences between said segments must be considered (Table 8).

Table 8. PLS-POS

	R^2 of the original sample	R^2 PLS-POS Segment 1	R^2 PLS-POS Segment 2
Attitude	0,758	0,772	0,855
PBC	0,285	0,281	0,349
PE	0,561	0,709	0,494
Purchase	0,302	0,487	0,198
RP	0,188	0,560	0,000
Status	0,053	0,396	0,413

11 Step 4

Groupings are formed directly in the two possible segments, since it is not necessary to make other types of groupings, and the bootstrapping significance tests are carried out to check the path estimates (Table 9).

Table 9. Model test summary by segment

	Segment 1			Segment 2		
	Path (β)	t-statistic	P Values	Path (β)	t-statistic	P Values
AT -> PURCHASE	0,642*	11,708	0,000	0,267*	1,792	0,040
EE -> AT	−0,262*	2,181	0,029	−0,047	0,241	0,810
FD -> AT	0,152*	1,927	0,054	−0,006	0,048	0,962
DF -> AT	−0,015	0,161	0,872	−0,037	0,332	0,740
IH-> AT	0,317*	3,531	0,000	0,245	1,520	0,129
MC-> AT	0,218*	2,634	0,008	0,203	1,243	0,214
PBC -> AT	0,262*	3,146	0,002	0,391*	2,386	0,017
PE -> AT	−0,117	0,911	0,362	−0,185	1,019	0,308
PQ -> AT	0,038	0,485	0,628	−0,097	0,610	0,542
RP -> AT	−0,196*	2,011	0,044	−0,227	1,648	0,099
SI -> AT	−0,126	1,182	0,237	0,352*	1,877	0,061
SI -> SS	0,629*	11,125	0,000	−0,643*	5,454	0,000
SS -> AT	0,243*	2,623	0,009	0,178*	1,192	0,233
TP -> AT	0,002	0,018	0,986	0,057	0,472	0,637
TP -> RP	0,748*	16,894	0,000	0,012	0,057	0,954
PO -> AT	0,233*	2,887	0,004	0,468*	2,195	0,028

(Note: *Significant difference: P-value < 0.05).

12 Step 5

The sum of the R^2 values of each segment were weighed by the relative size. The results show that the values of R^2 are greater than the global R^2 of the original sample and therefore the segments generated explain the behaviour of the buyers better than grouping them (Table 10).

Table 10. Predictive power

	R^2 original sample	R^2 weighted segments 1–2
Attitude	0,758	0,789
Purchase	0,302	0,427

13 Discussion

The results validated Hypothesis H1: $\beta = 0.334$* which proposes that people who enjoy carrying out the purchase process through e-commerce will tend to buy jewellery through

this channel; this is an important strategy for jewellery brands, which is related with the web architecture, design, and usability. Hypothesis H6: $\beta = 0.256^*$ was supported: Occasional purchase influences buying of jewellery through e-commerce. This finding reinforces a classic purchase behaviour of jewellery, related to objects that are given to people. It is something that e-commerce sales must also promote, and campaigns should be implemented for special dates such as Valentine's Day, Christmas, and so on. Hypothesis H8: $\beta = 0.230^*$ is supported: that social influence impacts social status related to the use of jewellery, which shows that people in high status social circles are the ones inclined to buy jewellery; although this result does not directly affect electronic purchases, it can act as a reinforcement for promotional campaigns regarding the messages and symbols of the market (for example: images of people that denote social acceptance by the use of jewellery) and also elite customer loyalty programmes for use in the marketplace. Hypothesis H10: $\beta = 0.207^*$ is supported: that the marketing and communication actions carried out by brands influence the purchase of jewellery through e-commerce, and it is therefore necessary for jewellery stores that use this commercial channel to establish promotion programmes and differential prices for e-commerce. Hypothesis H12: $\beta = 0.316^*$ is supported: that PBC influences consumers' attitudes to buying jewellery through e-commerce; this result is very important, since it confirms that to make purchases of jewellery through e-commerce, customers must perceive that they control the entire process; although it is an individual process, it also includes control of the means of purchase. Hypothesis H14: $\beta = -0.174^*$ is validated: risk perception influences consumers' negative attitudes to buying jewellery via e-commerce. This is another result that establishes what previous studies have found regarding the purchase of jewellery through e-commerce. Since jewellery is a product with characteristics of high economic and symbolic value, purchases made via e-commerce will tend to be perceived as being high risk of fraud or problems in the delivery of and satisfaction with the product. Hypothesis H16: $\beta = 0.434^*$ is confirmed: that the limitation of not being able to touch jewellery in e-commerce purchases increases the perception of risk in the use of e-commerce. This result also reinforces previous studies associated with the nature of jewellery regarding the fact that customers want to touch the jewellery and try it on, among other details that are not completely possible through digital channels. Finally, Hypothesis H17: $\beta = 0.532^*$ is supported: that consumers' attitudes towards the purchase of jewellery through e-commerce generate more possibilities of buying jewellery online.

The results (Table 9) show interesting differences in the two possible types of jewellery buyers in the digital channel. It is found that in segment 1, the effect of the attitude towards the real purchase is greater compared to segment 2. There are also two other major differences between the two groups: segment 1 is reactive to communication and advertising actions in the electronic channel and has hedonic or enjoyment motivations for online purchases of jewellery, while segment 2 does not take these two reasons into account. For its part, group 1 is not reactive to social influence regarding buying jewellery on digital channels, while people in group 2 consider the opinion of other people who are close to them. The need to physically touch the item of jewellery to buy, is significant in group 1 while in group 2 it is not. Finally, for both groups, it was confirmed that

jewellery is bought for reasons of status and for special occasions such as anniversaries or birthdays.

14 Characterization Segment 1 – Expert

Considering the results for this type of jewellery buyer in digital channels, this segment can be characterized as people who like to wear luxury jewellery as a distinctive element, perhaps because of a strong social influence on demonstrating high status; they also prefer jewellery as a gift for special moments. Likewise, they are reactive customers who will use a digital channel if it offers benefits during the purchase, such as promotions or direct marketing, and therefore they will continue with their trusted brands. This is mainly because they will want to physically touch the item of jewellery. They will only buy via the digital channel if there is enough trust to eliminate the high perception of risk generated by making this type of purchase through this outlet. Finally, people in this segment are experienced in electronic shopping since they have the resources to do so– they even experience a level of fun when buying jewellery via the digital channel. However, in the long term, this group does not feel motivated to make purchases using digital channels (Table 9).

15 Characterization Segment 2 – Occasional

This segment presents a clear characterization of purchasing via a digital channel just because someone close to them has suggested it or provided motivation for it. The main factor that influences the purchase is because they are looking for a gift for a special occasion. The "occasional" buyer even reacts negatively to the social influence of buying jewellery to show status. However, this group perceives the nature of jewellery as a status symbol. This type of customer is not afraid to buy jewellery online and reinforces this by not needing to physically touch and see the jewellery thus not reactive to promotion. This could be summed up as follows: this type of buyer purchases sporadically and only does so for a special reason linked more to other people than to themselves, and is more likely to buy through a digital channel in the short term (Table 9).

16 Implications

16.1 Theoretical Implications

The theoretical contributions of this paper lie in being one of the first to explore the factors that motivate the purchase of luxury jewellery via e-commerce channels. Although some studies have analysed motivations for the purchase of luxury items through e-commerce, these cannot be generalized to jewellery. The results of this study explored possible constructs that explain this purchasing behaviour and allow us to begin to understand this phenomenon. Likewise, this study applied the FIMIX-PLS segmentation technique, allowing the detection of two possible customer segments for this sector. The results showed that for this particular case, there are two types of buyers that share similarities

but also have great differences in their attitudes and behaviours regarding electronic purchases of luxury jewellery.

Regarding the possible segments of types of buyers who purchase jewellery electronically, this study determined, through the FIMIX_PLS method, two different possible segments: The type 1 segment, which was called the "expert", contains the largest proportion of buyers: these customers are more relationship-oriented with the brand and will possibly react positively to use of digital channels to buy jewellery from their traditional brands. Therefore, it is possible that a long-term relationship between the brand and the customer is required for the e-commerce sales to be successful.

Customers in the second segment, called "occasional" customers, are motivated by the search for jewellery on the digital channel for a gift or special occasion and are more likely to buy from brands in which they do not have a close relationship with. They usually do not buy often and are risk-taking in buying on the digital channel.

17 Managerial Implications

The practical and managerial implications are interesting for luxury jewellery brands. This study offers an empirical model that validates different variables that customers consider when using e-commerce to purchase luxury jewellery. Therefore, it is recommended that commercial managers should plan and manage their digital marketplaces, considering the factors of web navigability, user experience, the virtual showroom, elements of trust in the transaction, and promotional elements, as well as many others.

18 Conclusions

The main objective of this paper was to explore what factors lead to the purchase of luxury jewellery through e-commerce channels. The results obtained in the empirical study conclude that in the purchase process through the e-commerce channel, the customer will seek the advantages and benefits that technology offers. This may include future expectations of making electronic purchases and aspects linked to digital interaction reflected in the enjoyment that was experienced during the purchase.

All this is always framed in terms of the perceived control of being able to make purchases of jewellery electronically, in which the perception of risk can interfere, and there is a negative aspect of high demotivation to use this channel related to the need to touch the item of jewellery to reduce said perceived risk in this channel.

In purchases made through physical channels, customers seek to buy jewellery as presents or to celebrate special occasions, and it was found that the promotional actions carried out through the digital channel motivate electronic purchases.

This study has some limitations related to the possible exclusion of variables that can be decisive in this purchase process (this limitation could be overcome by other variables being tested to explain the purchase of luxury goods through electronic commerce) or factors specific to the purchase of jewellery (e.g., new trends, sustainability). To add to this, this study does not analyse a specific marketplace. Therefore, it is very general and excludes evaluations of web navigability, web design, and web friendliness, among

other elements that may affect the digital customer when making purchases on electronic platforms.

Finally, the regional sample may not reflect a global characterization. Given that the jewellery buyers evaluated are from a specific country and context, it will be necessary for subsequent studies to carry out comparative analyses or to use more robust samples. Therefore, as future research emerges, this study should be continued and furthered. Along with new studies, it is recommended that the limitations which were previously mentioned in this paper become investigated and resolved.

References

BAmitabh, A.: Factors affecting consumer buying behaviour towards gold jewellery. Int. J. Recent Technol. Eng. (IJRTE) **8**(3), 8088–8093 (2019). https://doi.org/10.35940/ijrte.C6438.098319

Amitabh, A.: Analysis of Consumer behavior : A special reference to gold jewellery purchase. In: SRM, T. (Ed.), India Gold Policy Centre at IIM Ahmedabad Gold and Gold Markets 2020, New Delhi (2020)

Baker, J., Ashill, N., Amer, N., Diab, E.: The internet dilemma: an exploratory study of luxury firms' usage of internet-based technologies. J. Retail. Consum. Serv. **41**, 37–47 (2018). https://doi.org/10.1016/j.jretconser.2017.11.007

Brandão, A., Ramos, S., Gadekar, M.: Artist jewelry designer entrepreneurship: does it only glitter or is it also gold? J. Res. Mark. Entrep. **23**(2), 251–267 (2021). https://doi.org/10.1108/JRME-03-2020-0031

Celik, H.: Customer online shopping anxiety within the unified theory of acceptance and use technology (UTAUT) framework. Asia Pac. J. Mark. Logist. **28**(2), 278–307 (2016). https://doi.org/10.1108/APJML-05-2015-0077

Chandon, J.-L., Laurent, G., Valette-Florence, P.: Pursuing the concept of luxury: introduction to the JBR special issue on "luxury marketing from tradition to innovation." J. Bus. Res. **69**(1), 299–303 (2016). https://doi.org/10.1016/j.jbusres.2015.08.001

Chang, W.-Y., Taecharungroj, V., Kapasuwan, S.: Sustainable luxury consumers' preferences and segments: conjoint and cluster analyses. Sustainability **14**(15), 9551 (2022). https://doi.org/10.3390/su14159551

Churchill, G.A., Iacobucci, D.: Marketing Research: Methodological Foundations. (Thomson, Ed.)Structural Equation Modeling (8th edn.), Mason (2004). http://books.google.com/books?id=AESy0VZNv98Candpgis=1

Das, D., Sabbir, M.M.: Exploring factors affecting consumers' intention toward purchasing imitation jewelry: an extension of theory of planned behavior. Turk. J. Mark. **4**(3), 221–240 (2019). https://doi.org/10.30685/tujom.v4i3.61

Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. **18**, 39–50 (1981). https://doi.org/10.2307/3151312

Gefen, D., Straub, D., Boudreau, M.-C.: Structural equation modeling and regression: guidelines for research practice. Commun. Assoc. Inf. Syst. **4**, 2–76 (2000). https://doi.org/10.17705/1CAIS.00407

Guercini, S., Ranfagni, S., Runfola, A.: E-commerce internationalization for top luxury fashion brands: some emerging strategic issues. J. Manage. Dev. **39**(4), 423–436 (2020). https://doi.org/10.1108/JMD-10-2019-0434

Hair, J.F.J., Hult, M., Ringle, G.T., Sarstedt, M.: A primer on partial least squares structural equation modeling (PLS-SEM). SAGE Publications, Inc. (3rd edn.) (2021). https://doi.org/10.1080/1743727x.2015.1005806

Henseler, J., Ringle, C.M., Sarstedt, M.: A new criterion for assessing discriminant validity in variance-based structural equation modeling. J. Acad. Mark. Sci. **43**(1), 115–135 (2014). https://doi.org/10.1007/s11747-014-0403-8

Hoang, D., Kousi, S., Martinez, L.F.: Online customer engagement in the aftermath of COVID-19: opportunities for the luxury industry. In: Martínez-López, F.J., Martinez, L.F. (eds.) Advances in Digital Marketing and eCommerce: Third International Conference, 2022, pp. 259–266. Springer International Publishing, Cham (2022). https://doi.org/10.1007/978-3-031-05728-1_27

Jaggi, S.: Impact of advertisements on consumer buying behaviour for jewellery purchase. Int. J. Recent Technol. Eng. (IJRTE) **8**(4), 8779–8786 (2019). https://doi.org/10.35940/ijrte.D9293.118419

Jain, S.: Assessing the moderating effect of subjective norm on luxury purchase intention: a study of Gen Y consumers in India. Int. J. Retail Distrib. Manage. **48**(5), 517–536 (2020). https://doi.org/10.1108/IJRDM-02-2019-0042

Joseph, J.K.: Consumer behaviour in the gold jewellery market of Kerala. Int. J. Bus. Admin. Res. **1**(6), 86–91 (2014)

Kandasamy, C., Muniraj, S., Prasad, M.: Applying structural equation model (SEM) for buying behavior of jewellery products. Int. J. Pure Appl. Math. **118**(15), 117–122 (2018)

Kapferer, J.N.: The future of luxury: challenges and opportunities. J. Brand Manag. **21**(9), 716–726 (2015). https://doi.org/10.1057/bm.2014.32

Kastiya, S., Phophalia, S.: A study of factors influencing customer's offline jewellery purchases in Jaipur City. Mukt Shabd J. **9**(7), 2195–2203 (2021)

Kim, Y.-K., Sullivan, P.: Emotional branding speaks to consumers' heart: the case of fashion brands. Fash. Text. **6**(1), 1–16 (2019). https://doi.org/10.1186/s40691-018-0164-y

Kumagai, K., Nagasawa, S.: Hedonic shopping experience, subjective well-being and brand luxury: a comparative discussion of physical stores and e-retailers. Asia Pac. J. Mark. Logist. **34**(9), 1809–1826 (2021). https://doi.org/10.1108/APJML-04-2021-0256

Lawry, C.A.: Futurizing luxury: an activity-centric model of phygital luxury experiences. J. Fash. Mark. Manag. (2022). https://doi.org/10.1108/JFMM-05-2021-0125

Peck, J., Childers, T.L.: To have and to hold: the influence of haptic information on product judgments. J. Mark. **67**(2), 35–48 (2003). https://doi.org/10.1509/jmkg.67.2.35.18612

Pereira, B., Teah, K., Sung, B., Teah, M.: Building blocks of the luxury jewellery industry: conversations with a CEO. Asia Pac. J. Mark. Logist. **31**(4), 817–829 (2019). https://doi.org/10.1108/APJML-10-2018-0415

Phelps, J.E., Lewis, R., Mobilio, L., Perry, D., Raman, N.: Viral marketing or electronic word-of-mouth advertising : examining consumer responses and motivations to pass along email viral marketing or electronic word-of-mouth advertising : examining consumer responses and motivations to pass along email. J. Advert. Res. **44**(4), 333–348 (2014). https://doi.org/10.1017/S0021849904040371

Praveenkumar, S.: Buying behavior of consumers towards gold jewellery in Madurai district, Tamilnadu. Int. J. Res. Human. Arts Lit. **7**(1), 95–102 (2019). https://www.researchgate.net/publication/331869688

Rivard, S., Raymond, L., Verreault, D.: Resource-based view and competitive strategy: an integrated model of the contribution of information technology to firm performance. J. Strat. Inf. Syst. **15**(1), 29–50 (2006). https://doi.org/10.1016/j.jsis.2005.06.003

SanchezTorres, J.A., JuarezAcosta, F.: Modelling SME e-commerce with IMAES. J. Bus. Indus. Mark. **34**(1), 137–149 (2019). https://doi.org/10.1108/JBIM-04-2018-0132

SánchezTorres, J.A., Canada, F.J.A., Sandoval, A.V., Alzate, J.A.S.: E-banking in Colombia: factors favouring its acceptance, online trust and government support. Int. J. Bank Mark. **36**(1), 170–183 (2018). https://doi.org/10.1108/IJBM-10-2016-0145

SánchezTorres, J.A., ArroyoCañada, F.J., ArgilaIrurita, A., Sole-Moro, M.L., Fernández, J.C., SernaRamírez, J.A.: Omnichannel: factors that determine adoption of webrooming and showrooming for three product categories. In: Martínez-López, F.J., Martinez, L.F. (eds.) Advances in Digital Marketing and eCommerce: Third International Conference, 2022, pp. 208–223. Springer International Publishing, Cham (2022). https://doi.org/10.1007/978-3-031-05728-1_23

Sánchez-Torres, J.A., Arroyo-Cañada, F.J., Rojas-Berrio, S.P., Robayo-Pinzón, O.J., Fontalvo-Cerpa, W.: The Colombian electronic consumer: analysis of the leading factors of e-commerce use. Int. J. Electron. Mark. Retail. **10**, 283–308 (2019). https://doi.org/10.1504/IJEMR.2019.100704

Sánchez-Torres, J.A., Berrío, S.P.R., Rendón, P.A.O.: The adoption of E-commerce in SMEs: The colombian case. J. Telecommun. Digital Econ. **9**(3), 110–135 (2021). https://doi.org/10.18080/jtde.v9n3.403

Sánchez-Torres, J.A., Sandoval, A.V., Arroyo-Cañada, F.J., Rojas-Berrio, S.: Exploring the factors affecting the use of C2C in Colombia. Cuadernos de Gestion **21**(1), 7–18 (2021). https://doi.org/10.5295/CDG.180945JS

Sarstedt, M., Hair, J.F., Ringle, C.M.: "PLS-SEM: indeed a silver bullet" – retrospective observations and recent advances. J. Mark. Theory Pract. **30**, 1–15 (2022). https://doi.org/10.1080/10696679.2022.2056488

Sarstedt, M., Ringle, C.M., Cheah, J.H., Ting, H., Moisescu, O.I., Radomir, L.: Structural model robustness checks in PLS-SEM. Tour. Econ. **26**(4), 531–554 (2020). https://doi.org/10.1177/1354816618823921

Shankar, A., Jain, S.: Factors affecting luxury consumers' webrooming intention: a moderated-mediation approach. J. Retail. Consum. Serv. **58**, 102306 (2021). https://doi.org/10.1016/j.jretconser.2020.102306

Veerasaksri, T.: Major factors that influence offline and online jewelry purchase in Thailand. Thammasat University (2018)

Covid-19 Pandemic: The Least Factor Affecting the Lebanese E-commerce

Nada Khaddage-Soboh(✉)

Research Faculty, Adnan Kassar School of Business (AKSOB), Lebanese American University (LAU), Beirut, Lebanon
Nada.khaddage@lau.edu.lb

Abstract. The purpose of this study is to explore the Lebanese crisis effect along with the pandemic on the electronic commerce in the country. Qualitative data was collected using structured interviews with retailers and wholesalers who have been trading electronically for 5 years or more. A thematic inductive analysis was adopted. The results of the study have shown that e-commerce in the country was effected by various effects in addition to Covid-19; the banking issue, the devaluation of the currency, the dramatic inflation rate, the fixed salaries, Beirut blast, and an increasing level of mistrust. Retailers worldwide may use the study to have a clear view of the case happening in the country and how macro-level issues outside an organization may affect the demand level. Thus, it may be used as a guide for similar cases as all the interviewees succeeded to sustain the business despite the situation. Previous literature has excessively presented the factors that may influence e-commerce yet there are no studies to date explaining the effects of the mixture of factors that affected Lebanon between 2019 and 2022.

Keywords: e-consumption · Crisis · RCA model · Lebanon

1 Introduction

E-commerce has exponentially grown during Covid-19 outbreak (Farah et al. 2022.a). Companies, including the smallest, have noticed the possibility and high importance of e-selling their products and services (Sheth 2020). An increase in online searches and purchases have been realized during the pandemic especially when the service quality meets or exceeds the customers' expectations (Itani et al. 2022). During the pandemic, online purchases' frequency has increased in both developed and advancing countries where demand changed from brick-and-mortar retail to e-commerce. A significant rise in online purchasing of various items; like grocery, electronics, pharmaceuticals, cosmetics compared to other products, was conceived (Barnes 2020). The Internet and Communication Technologies (ICT) have immensely shifted the way businesses perform (Karabasevic et al. 2021). It has been realized that since beginning of the pandemic human activities have been done virtually rather than in person. The global supply-demand balance was afflicted.

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 178–184, 2023.
https://doi.org/10.1007/978-3-031-31836-8_21

The usage of e-commerce platforms has limited the spread of the virus, facilitated the communication between e-trade transactional parties, and increased the shopping efficiency. The preventive measures have played important role in supporting e-commerce (Camilleri 2021). As the outbreak started, countries around the world have declared lockdowns to limit the deaths' numbers. Such declarations have damaged all the national economies and private businesses mainly the service, retail, hospitality and tourism sectors (Paraschiv et al. 2022; Itani & Hollebeek, 2021).

Some studies anticipate that the digitalization of both the marketplace and the consumers' habits may lead to structural changes in the purchasing behavior afterwhile (Kim, 2020; Farah et al. 2022.b), which was proven after the SARS pandemic in China in 2002–2003 (Clark 2018). Global e-commerce has been sufficiently covered by a reasonable number of studies explaining its various contexts, drivers and consequences during and after the pandemic, yet not the specific Lebanese situation. This study is an initial effort toward filling a literature gap by exploring the factors that affected the Lebanese e-commerce actions between 2019 and 2022. This study intends to answer the following research question: How were the e-commerce activities affected during the pandemic in Lebanon? To address our research question, we draw on e-commerce literature during the pandemic time and the various factors that affected it. The study is descriptive exploratory in nature, seeking "to provide a picture of a phenomenon as it naturally occurs" (Bickman et al. 2009; p. 5) in an almost unstudied area Lebanon, as a case study. Thematic inductive analysis is used to show the factors affecting its e-commerce activities between 2019 and 2022.

This paper contributes to literature and practice. Firstly, it studies the way e-commerce activities were affected by the pandemic outbreak. Secondly, it details the Lebanese differentiated monetary and economic situations in relation to such activities. The study may be used as a practical case study for businesses that might face almost similar situations. To the best of the author's knowledge, this is the first paper to study the Lebanese e-commerce case during the pandemic. The paper is organized as follows. The first section a literature review of e-commerce during crisis time followed by the data collection research methods, findings and analysis. The paper concludes with a discussion and limitations.

2 Literature Review

The trade structure has encountered major changes as a result of the COVID-19 pandemic. Effective e-commerce services management became essential, and the introduction of online services to both goods and services businesses were at rise. Almost 21% of European offline stores faced bankruptcy and were forced to close their business during that era. As per global trends, about one third of the world will be ready to buy online by 2021, and 18% of the sales among global retailers will shift to online (Statista 2020). Other organizations worldwide were urged to invest in developing their ecommerce services otherwise they will perish (Farah et al. 2020).

Previous literature related react-cope-adapt (RCA) model to the online purchasing behavior in crisis times. This model passes through three different stages; the reacting, the coping and the adapting phase (Hamilton et al. 2019). Kirk and Rifkin (2020) used

this model to detail the consumer behavior during Covid-19 pandemic what is adopted in the current study as well (Fig. 1).

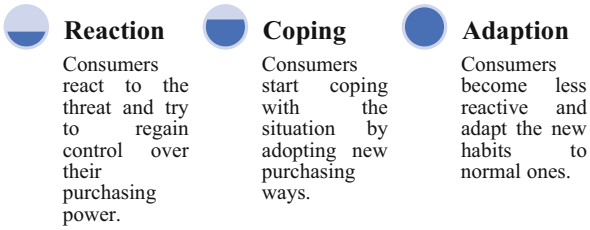


Fig. 1. RCA framework

Consumers start reacting to the threat that may be perceived during crisis times, trying to regain their lost freedoms. Then, they start coping with the situation and accepting new behaviors that they have control over despite the situation. On the long term, consumers adjust by shifting their consumption habits to what is reachable and can be bought (Guthrie et al. 2021).

Hoarding was the first direct effect on consumer behavior and e-consumption during the latest pandemic where consumers tend to save the most needed products disinfectants, meat, milk, bread…. These unusual purchase actions happened due to the uncertainty of their future availability. After reacting, consumers started to cope either as problem-focused or emotion-focused to decrease the stress level of the situation. Problem-focused purchasing is the action of buying products that mainly will solve or diminish the problem and make life less stressful i.e.; buying essential living products (Abosag and Farah 2015). Emotion-focused coping activities are directed to own feelings and emotions to detach the consumer from the problem i.e.; going deeper into therapy, religion… (Saada et al. 2022). On the long term, stressful times have led to the creation of new practices and thus to a shift in the consumption lifestyles (Farah et al. 2019).

As per McKinsey & Co., 75% of the US consumers have tried new brands or channels during crisis times. Consumers discovered new channels such as online purchasing and home delivery to find it easier and more convenient. Late consumers, who are older in age, would follow when they realize the practicality of such steps (Liu et al. 2019).

3 Methodology

The approach of this study is qualitative, with an inductive thematic analysis to explore and analyze the factors affecting the e-commerce process in Lebanon between 2019 and 2022. To collect the data, the author interviewed 6 wholesalers and 4 retailers who were active in different fields the Lebanese market for at least 5 years. The interviews were verbatim transcribed and codes were extracted. The interviewees were active in the food, clothing, cosmetics, electronics, and medical equipment (detailed in Table 1). The key themes reflected the traders' opinions after a deep analysis using the coding process (Braun and Clarke 2006; Mahdi et al. 2022). The coding process was validated and reviewed by two external auditors who ensured the reliability and transparency of the reached results.

Table 1: Sample Adopted in the study (The author)

	Type of Business	Sector	Duration in Business
Int.1	Wholesaler	Medical Equipment	5 years
Int.2	Wholesaler	Clothing	8 years
Int.3	Wholesaler	Clothing (Kids)	7 years
Int.4	Wholesaler	Electronics	9 years
Int.5	Wholesaler	Food	3 years
Int.6	Wholesaler	Cosmetics	5 years
Int.7	Retailer	Clothing	3 years
Int.8	Retailer	Electronics	3 years
Int.9	Retailer	Food	3 years
Int.10	Retailer	Cosmetics	8 years

4 Findings

Previous literature confirmed that consumer behaviour changes during crisis times due to various factors that may differ from one context to the other (Dabbous & Tarhini, 2021). The findings of this study did not vary from what was found in the literature, yet the factors that affected the Lebanese e-consumption level during the pandemic times were a mixture of various ones that were barely seen the literature (Farah et al. 2018). All the retailers and wholesalers interviewed agreed that the Lebanese consumers' e-consumption reaction was common with almost all consumers around. Their primary aim was ensuring that all the main products are available at their places especially when the borders were closed. Nevertheless, there are various factors that affected their businesses negatively, as seven of them expressed, which were irrelated to the global health issue. The interviewees listed other issues that are specifically connected to the Lebanese context and are as follows:

4.1 The Lebanese Banking Issue

The economic crisis affected mostly the Lebanese banking sector as per four of the respondents. The visa cards or paying online were not a choice for the Lebanese anymore what affected their ability to purchase the same amount that they used to do previously, a wholesaler considered confessed,

> *"The customers who used to purchase through their bank accounts can't reach their money anymore what affected their consumption level" (Int. 2)*

Retailers faced the same issue but at less impact where one of them complained that 70% of their previous sales' payments were through the visa or credit cards which is not the case anymore. The inability for people to pay thorough their banking cards affected negatively the level of sales. Another retailer confirmed,

"Customers who used to pay electronically can't even use their internet visa cards anymore so definitely that affected our businesses negatively" (Int. 7).

4.2 The Devaluation of the Lebanese Currency (Lyre)

Retailers who mainly concentrate on the Lebanese market consumers seem to be more affected due to the devaluation of the Lebanese currency where its value devaluated around 30 times in two years period of time. Such devaluation affected the consumption rate where consumers especially whose salaries are in the local currency don't have the same consumption ability. Consumers prioritized buying the lively necessity goods, as reported by one of the retailers saying,

"I sell cosmetics but the devaluation of the salaries made the Lebanese shift their buying concentration to the most important products, like food and drinks," (Int. 10)

On the other hand, a food retailer confessed as well that even the food consumption level diminished during the past two years, she says;

"It is not only the products' amount that was affected but also the brands. Some of the consumers had to change the brands to a less-known ones to sustain their living". (Int. 9)

4.3 The Dramatic Inflation Rate Compared to the Fixed Salaries

Due to the devaluation of the currency compared to foreign currencies and the fact that the Lebanon is mainly an importing country, the prices dramatically increased, and so the inflation rate (Wu et al. 2022). The compounding monetary and economic factors contributed to the level of e-consumption in the country; it was reported;

"We as electronic products wholesalers import all our raw materials and some final products. All what we sell is directly controlled by foreign currencies. All these circumstances affected the level of demand in the three past years". (Int. 4)

4.4 Beirut Blast and the Mistrust Level in the Lebanese Economy

All the interviewees shared the same opinion concerning the level of mistrust in the Lebanese economy especially after the banking crisis in the country. Six of them agreed that their customers always complain that they lost the trust due to the issues they faced with the banking sector. Their customers considered that they never expected that to happen and they are pessimistic about the Lebanese situation so they are not able to cope with the situation. Adding to that, almost 9 of the interviewees considered that the Lebanese are still shocked from Beirut Blast and the situation that followed it so they are still trying to cope with the situation to regain their consumption actions. One wholesaler said,

"I think Lebanese need time to wake up from their psychological trauma after the Blast, it is not explained as lived. Their consumption behavior was also affected after the blast." (Int. 1)

5 Discussion and Limitations

Various organizations and customers shifted their shopping behaviors during the Covid-19 outbreak and its preventive actions. A big number of consumers minimized the human-to-human and adopted digital shopping methods (Camilleri and Falzon 2020). Countries' circumstances varied as there were several factors affecting the e-commerce activities mainly the technological capabilities of each. Many businesses, like Amazon, benefited from the online marketplaces' expertise to deliver personalized services based on previous searches (Shopify 2021). This study targeted the Lebanese case during the pandemic time (2019–2022) to realize that the consumer behaviour was negatively affected due to various different constraints. It was reached that the e-commerce process in the country was badly affected due to the inability of the Lebanese to access their money in their local banks. The whole system was affected by various factors which proves the interrelation of various factors that may affect the e-commerce process rather than the human reactive, coping and adaptive behaviours. For future and broader picture, it is suggested to study the topic from the consumers' point of view. In this way a comparative analysis may be reached so that the topic may be fully covered.

References

Abosag, I. & Farah, M. (2015), Religiously Motivated Consumer Boycott: The Impact on Brand Image, Product Judgment and Customer Loyalty Developments in Marketing Science: *Proceedings of the Academy of Marketing Science*, p. 167

Barnes, S.J.: Information management research and practice in the post-COVID-19 world. International Journal of Information Management **55**, 102175 (2020). https://doi.org/10.1016/j.ijinfomgt.2020.102175

Bickman, L., Rog, D.: Applied research design: a practical approach. In: Bickman, L., Rog, D. (eds.) The SAGE Handbook of Applied Social Research Methods, pp. 3–43. SAGE Publications Inc., Thousand Oaks (2009). https://doi.org/10.4135/9781483348858.n1

Braun, V., Clarke, V.: Using thematic analysis in psychology. Qual. Res. Psychol. **3**(2), 77–101 (2006). https://doi.org/10.1191/1478088706qp063oa

Camilleri, M.A.: Strategic dialogic communication through digital media during COVID-19 crisis. In: Camilleri, M.A. (ed.) Strategic Corporate Communication in the Digital Age, pp. 1–18. Emerald Publishing Limited, Bingley (2021). https://doi.org/10.1108/978-1-80071-264-520211001

Camilleri, M.A., Falzon, L.: Understanding motivations to use online streaming services: integrating the technology acceptance model (TAM) and the uses and gratifications theory (UGT). Spanish J. Mark. - ESIC **25**(2), 217–238 (2020). https://doi.org/10.1108/SJME-04-2020-0074

Clark, D.: Alibaba: The House that Jack Ma Built. HarperCollins Publishers (2018)

Farah, M., Hasni, M., Abbas, A.: Mobile-banking adoption: empirical evidence from the banking sector in Pakistan. Int. J. Bank Mark. **36**(7), 1386–1413 (2018)

Farah, M.F., Mrad, M., Ramadan, Z., Hamdane, H.: Handle with care: adoption of drone delivery services. In: Martinez-Lopez, F.J., Gázquez-Abad, J.C., Breugelmans, E. (eds.) Advances in National Brand and Private Label Marketing: Seventh International Conference, 2020, pp. 22–29. Springer International Publishing, Cham (2020). https://doi.org/10.1007/978-3-030-47764-6_3

Farah, M.F., Ramadan, Z.B., Harb, D.H.: The examination of virtual reality at the intersection of consumer experience, shopping journey and physical retailing. J. Retail. Consum. Serv. **48**, 136–143 (2019)

Farah, M.F., Ramadan, Z., Kanso, J.: Satisfying the online food crave: the case of online food aggregators. Int. J. Consum. Stud. **46**(4), 1413–1427 (2022)

Farah, M.F., Ramadan, Z., Yunis, M.: The Examination of Tech Disruptions' Patterns on the Consumer Journey. In: Martínez-López, F.J., Gázquez-Abad, J.C., Ieva, M. (eds.) Advances in National Brand and Private Label Marketing: Ninth International Conference, 2022, pp. 142–149. Springer International Publishing, Cham (2022). https://doi.org/10.1007/978-3-031-06581-1_19

Guthrie, C., Fosso-Wamba, S., & Arnaud, J. (2021). Online consumer resilience during a pandemic: An exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. *Journal of Retailing and Consumer Services, 61*

Hamilton, R., Mittal, C., Shah, A., Thompson, D., Griskevicius, V.: How financial constraints influence consumer behaviour: an Integrative Framework. J. Consum. Psychol. **29**(2), 285–305 (2019)

Itani, O.S., Hollebeek, L.D.: Light at the end of the tunnel: Visitors' virtual reality (versus in-person) attraction site tour-related behavioral intentions during and post-COVID-19. Tour. Manage. **84**, 104290 (2021). https://doi.org/10.1016/j.tourman.2021.104290

Itani, O., Kalra, A., Riley, J.: Complementary effects of CRM and social media on customer co-creation and sales performance in B2B firms: The role of salesperson self-determination needs. Inf. Manage. **59**(3), 103621 (2022)

Karabasevic, D., Radanov, P., Stanujkic, D., Popovic, G., Predic, B.: Going green: strategic evaluation of green ICT adoption in the textile industry by using bipolar fuzzy Multimoora method. Indus. Text. **72**(1), 3–10 (2021)

Kim, R.Y.: The impact of COVID-19 on consumers: preparing for digital sales. IEEE Eng. Manage. Rev. **48**(3), 212–218 (2020). https://doi.org/10.1109/EMR.2020.2990115

Kirk, C.P., Rifkin, L.S.: I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic. J. Bus. Res. **117**, 124–131 (2020). https://doi.org/10.1016/j.jbusres.2020.05.028

Liu, D., Liu, A., Tu, W.: The acceptance behaviour of new media entertainment among older adults: living arrangement as a mediator. Int. J. Aging Human Dev. **91**(3), 274–298 (2019)

Mahdi, A., Farah, M.F., Ramadan, Z.: What to believe, whom to blame, and when to share: exploring the fake news experience in the marketing context. J. Consum. Mark. **39**(3), 306–316 (2022)

Paraschiv, E.Ț., Manea, D., Ionescu, C., Mihai, M., Șerban, O.: The change in e-commerce in the context of the Coronavirus pandemic. Manage. Mark. Challenges Knowl. Soc. **17**(2), 220–233 (2022)

Saada, R.B., Bou-Hamad, I., Harajli, D.: Influence of emotional marketing on consumer behavior towards food and beverage brands during the COVID-19 pandemic: a study from Lebanon. J. Mark. Commun. 1–18 (2022)

Sheth, J.: Impact of Covid-19 on consumer behavior: will the old habits return or die? J. Bus. Res. **117**, 280–283 (2020)

Shopify: "The future of eCommerce 2021: Shopify Plus' annual report on global commerce trends (2021). https://enterprise.plus.shopify.com/rs/932-KRM-548/images/Shopify_Future_of_Commerce.pdf?utm_source5drift&utm_medium5content&utm_campaign52020-12-future-ecommerce-report-2021

Statista: Statistics and Market Data about E-commerce (2020). https://www.statista.com/markets/413/e-commerce

Wu, W., Wang, L., Erzurumlu, Y.O., Gozgor, G., Yang, G.: Effects of country and geopolitical risks on income inequality: evidence from emerging economies. Emerging Mark. Financ. Trade **58**(15), 4218–4230 (2022). https://doi.org/10.1080/1540496X.2022.2070002

On the Capture and Use of Private Conversations on Mobile Phones for Marketing Purposes: A Case in the Tourism Sector

Joan-Francesc Fondevila-Gascón[1,2], David Lopez-Lopez[3(✉)], Elena Puiggròs[1], and Paula Perez-Cubero[1]

[1] EUM - University of Girona, Girona, Spain
{jf.fondevila,elena.puiggros,paulapc.98}@mediterrani.com
[2] Blanquerna - Ramon Llull University, CECABLE, Barcelona, Spain
[3] ESADE - Ramon Llull University, Barcelona, Spain
david.lopez1@esade.edu

Abstract. The digitization of the Broadband Society is generating a profound debate on access to users' browsing and personal data. An axis of controversy is the case of mobile telephony. Many people suspect that smartphones record users' conversations, without their consent, through the microphone, subsequently providing data to companies so that they make personalized announcements regarding the topic of conversation. In addition, there are various authors who argue that large internet companies use artificial intelligence to analyze these huge volumes of captured data in order to classify users and create accurate profiles. The objective of this research, of an experimental nature using participant observation and discussion group techniques, is to find out and analyze the phenomenon of capturing conversations for commercial purposes, to try to verify how they specifically affect the tourism sector. The study concludes that different companies in the tourism sector collect and use conversation data both to create profiles and detect patterns of behavior and to offer related advertising. Likewise, it is concluded that in certain cases the consumer becomes aware of the mechanism, and discomfort is generated that could even negatively affect the advertised brand.

Keywords: Phone conversations · customer behavior · Programmatic advertising · Artificial Intelligence

1 Introduction

The development of the fourth industrial revolution facilitates the appearance of what some authors describe as the "Digital Citizen" (Beneicke et al. 2019). This new digital citizen, thanks to the intensive use of technology, has modified their behavior and reacts differently to the stimuli that companies and brands use to attract them, convert them into customers and make them happy. Therefore, companies and brands in most sectors are forced to transform their processes, especially marketing ones, to adapt to this new phenomenon, facilitating, according to Corlu et al. (2021), their digital transformation.

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 185–215, 2023.
https://doi.org/10.1007/978-3-031-31836-8_22

No sector is exempt from this need for digital transformation, however, Pesonen (2020), states that the tourism industry is one of the most affected since in this sector users, in most cases, may decide their destinations based on the content generated by other users.

The fact that, according to Martínez-López et al. (2020), online user-generated content (UGC) reflects and affects consumer behavior, inevitably introduces new market formulas into the tourism sector such as e-commerce, algorithms applied to pricing, artificial intelligence, robotics, process automation and different technologies throughout the entire customer experience, including 1) Pre-trip, 2) During the trip, 3) Post-trip (Stamboulis et al. 2003; Bowenet al. 2017; Schwab 2016) and defines the new concept of "Smart Tourist Destinations" (STD) (Moreno et al. 2018).

These smart destinations (STD) strive to offer a hyperconnected user, through his mobile, tablet, computer, or even, increasingly frequently, wearable devices (such as glasses, watches, or clothing), an omnichannel experience (Cerezo et al. 2017) and, in some cases, even *phygital* (Johnson et al. 2021) including, among others, IoT and digital sensing, Virtual Reality (VR) or Augmented Reality (AR).

The availability of these omnichannel experiences offered by STDs, together with the digital behavior of the new consumer result, according to Gretzel et al. (2015), the fact that more than 95% of tourists use the digital resources at their disposal, at least at some point, of their tourist experience. This effect, according to various authors, guarantees the sustainable development of the territory, promotes the interaction and inclusion of tourists in the environment, increases the quality of their experiences and also, collaterally, the experience of residents (Celdrán-Bernabeu et al. 2018; Herrero Crespo et al. 2019).

On the other hand, according to various authors, a trip by a hyperconnected tourist leaves a digital or electronic footprint, that is, a series of data that offers exclusive information about the traveler, for example, the consumption patterns they carry out on a trip, in any of the different stages of it (before, during and after) (Fuchs, Höpken et al. 2014; Santos et al. 2016; Henseler et al. 2018).

This digital footprint is extracted, according to various authors, from browsing the Internet or on a mobile device, from the search for information about the tourist destination on websites or on search engines, from social networks, as well as through the use of data obtained through the device itself (geolocation) (Almeida et al. 2016; Almeida et al. 2018). Other authors, such as Kröger et al. (2019), Frick et al. (2021), and Xiu et al. (2023), add the phone's own microphone as a data collection source and differentiate between two options: 1) "conscious" listening through "always listening" assistants (such as Siri, Google or Cortana) and 2) silent or unconscious listening, through other applications with purposes apparently different from the one of "active listening".

The digital footprint, according to Castillo (2020), is a reflection of the real life of people on the Internet and, thanks to massive data processing and the application of Artificial Intelligence, this reflection can be used to 1) classify behaviors, 2) detect trends and patterns and 3) to discover exceptions and particular behaviors of specific individuals (Henseler et al. 2018).

2 Theoretical Analyses on Technology for Capturing Conversations and Hypothesis Development

According to Castillo (2020), the data economy grows due to two factors: 1) the increase in data production as a result of the use of new technologies, and 2) the database generated through the digital footprint, from which obtains and collects information that creates a personalized profile of each user. The creation of the personal profile is given by the collection of data, which is used to trace the navigation of each user on the Internet (digital footprint) and extract behavior patterns that allow more and more to specify the profile of these. The business model of some companies consists of monitoring and controlling user behavior through fingerprint tracking and, subsequently, selling this information to third-party companies (Capozzi 2020).

The use of algorithms based on Artificial Intelligence (AI) allows companies, when it comes to having data and information, to be able to personalize demand with the aim of segmenting markets or setting prices. In addition, it intends to segment demand, establish markets and prices and modify the value chain of the tourism industry and the balance of the tourism market in the face of technological irruption (Moreno et al. 2018). Mathematical algorithms derive data patterns and other information from which complex relationships can be analyzed and decisions made (Jones et al. 2018).

This AI algorithm system aims to manipulate and find out what type of ads to show and to which users, in order to improve marketing efficiency and increase monetization and return on investment (López de Mántaras 2019; Rhodes et al. 2020). This system represents a competitive advantage for companies that want to develop this type of strategy (Martínez 2021). According to Más et al. (2020), these algorithms can continue to learn from and feedback to the data source, with which this system evolves and progresses.

AI is introduced in various fields (Zlatanov and Popesku 2019) and this fact may create an ethical or moral dilemma since it could lead to an invasion of privacy. In addition, these applications can reinforce what they have learned from real-world data, which means that AI can aggregate, evaluate and analyze vast amounts of data, sometimes beyond human capacity (Shaw 2019).

Online companies use this user information to personalize and target ads to make them more attractive and align with consumer interests, but as these strategies become more widely used, there has been a reaction of concern about user privacy (Tucker 2014). Large internet platforms use algorithms to address the advice and recommendations of their users through existing systems, such as big data and thus integrate them into algorithms to implement commercial profiles for users who visit websites. Thus, they are able to better and more accurately identify what the user is looking for at any given moment (Castillo 2020).

According to Samuel et al. (2021), this personalization of ads based on user behavior data produces a substantial improvement in various ratios such as Click-through-rate (%CTR) or Return-On-Ad-Spend (ROAS), this fact generates an intensive use of the so-called "programmatic advertising" that bases its entire technique on adjusting ads-to-person. That is why, according to the same author, the collection of consumer data

becomes "key", and some companies may even cross "red lines" and ethical boundaries to obtain such data.

Example 1
The use of cookie exchange and synchronization systems makes it easier to display personalized advertising messages that appear on web pages, although they are increasingly controlled and restricted as a result of the evolution of regulations (Aviñó Belenguer 2021; Gutiérrez Palacios 2021; Diaz 2015). In addition, they can give consent to Internet platforms to distribute the data and follow the movements and circulation that a user makes on the website, without the said user being registered. Holmes (2018) mentions that cookies are used to record clickstream data in order to infer user identification and individualized browsing.

The antivirus software company Avast reflects that 60% of Spanish citizens accept the cookie policy on web pages. One of the main reasons is the possibility of faster access to the page. On the other hand, only 13% directly reject cookies and 14% read the privacy policy on what the acceptance of cookies entails on the internet page. Cookies can record a person's browsing activity and allow advertisers to use this information for the purpose of offering personalized or targeted advertising (AMIC 2022).

Example 2
Devices and technology companies for spying on and controlling users are becoming more sophisticated. According to Yang et al. (2022), since the appearance of COVID-19, the demand for video conferencing applications such as Zoom, Slack, Webex, and Teams has grown, for personal or professional use. In addition, to support the functionality of these applications, users must accept a series of requirements, such as access to the camera and microphone of the device used. These requirements are common in any operating system with these characteristics. But if we analyze in detail, for example, the case of Webex, we find that in 2022, a group of researchers from the University of Wisconsin-Madison and Loyola University Chicago stated the following[1]:

> *"Our user study shows that users are unaware of Webex listening to their microphone while muted. We examined all widely used VCAs and desktop operating systems and pinpointed a potential privacy leak within Webex. We discovered that while muted, Webex continuously reads audio data from the microphone and transmits statistics of that data once per minute to its telemetry servers".*

To which Cisco, owner of Webex, immediately responded in a statement provided to SecurityWeek, which they did listen to, but the data collected was limited to audio settings for "*supporting user experience*".

A few days later, Cisco announced that it stops listening to any data or metadata if the microphone is muted.

Example 3
According to Veale et al. (2022), Google is the largest spying and data recording company

[1] https://www.securityweek.com/webex-monitors-microphone-even-when-muted-researchers-say/

through Real-Time Bidding (RTB), to such an extent that the authors wonder: "*Can the Transparency and Consent Framework Ever Authorize Real-Time Bidding after the Belgian DPA Decision?*".

The RTB is an increasingly successful bid-based online advertising model based on a real-time auction of different advertising spaces. To carry out this technique, web pages and mobile devices are required to collect the data of each Internet user in the form of cookies, which allows a visitor profile to be created and segmented according to tastes, geographic location, and consumption habits, among others. According to the Irish Council for Civil Liberties, European citizens receive between 149 and 462 RTB broadcasts per person daily, depending on the country (Fig. 1).

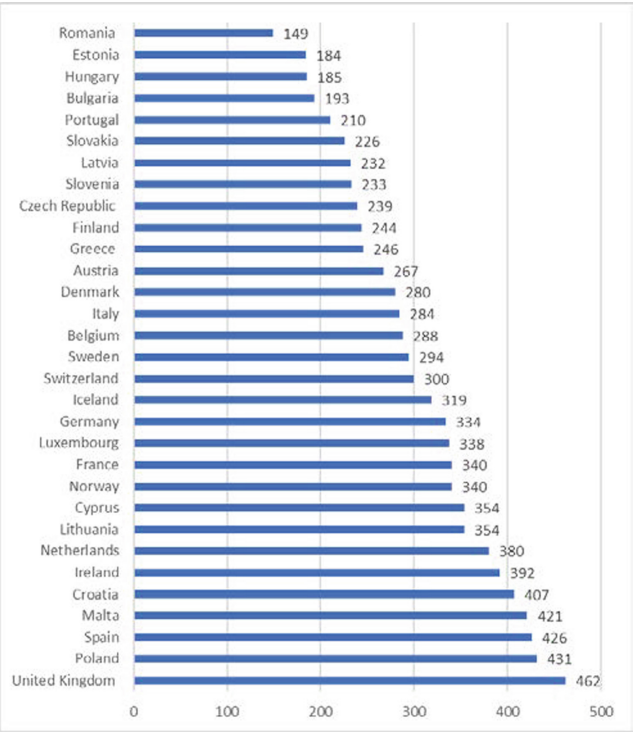


Fig. 1. RTB broadcasts per person (daily) by country in Europe. Data Source: Irish Council for Civil Liberties

According to the same source, the average number of broadcasts received by European citizens is 376 times a day per user, which means around 197 billion daily broadcasts in total. This figure almost doubles in the case of the United States, since its citizens receive an average of 747 broadcasts per day and per user, which means a total of about 294 billion times a day.

Ryan (2022) affirms that, in 2021, the RTB sector generated more than 117 billion dollars between Europe and the United States and that there is some concern about the

collection, use, and especially the sale of this private data among companies and even between countries such as China and Russia.

Based on the above analysis, the following hypothesis is proposed in this paper:

H1. *Mobile devices make use of the data obtained in private conversations to offer advertisements for tourist experiences in accordance with the wishes that consumers express in their conversations.*

3 Research Design

On the basis of the above theoretical analysis, we will conduct a corresponding research design to test the hypothesis proposed in Sect. 2 with practical data.

The predominant methodological technique is scientific observation, in the sense that a series of groups are observed experimentally. This technique, according to various authors, makes it possible to describe and explain the behavior of the individuals analyzed, since adequate and reliable data is extracted, corresponding to a correctly identified event or situation and in a defined theoretical context (Campos et al. 2012; Ciesielska et al. 2018; Oates et al. 2022).

The experiment consisted of carrying out 10 scientific observations (or tests) during the first semester of 2022 in which a total of 27 individuals from similar social environments participated, since it can be, according to Oates et al. (2022) complex to encourage the participation of completely unknown people in this type of test.

3.1 Design of Each Scientific Observation (or Test)

The purpose of each test is to analyze if, after a group of people talking about a specific topic, near a mobile, phone for a certain amount of time, ads related to that topic appear over the next few hours or days on that device. For this, each test was designed in 4 phases (Fig. 2).

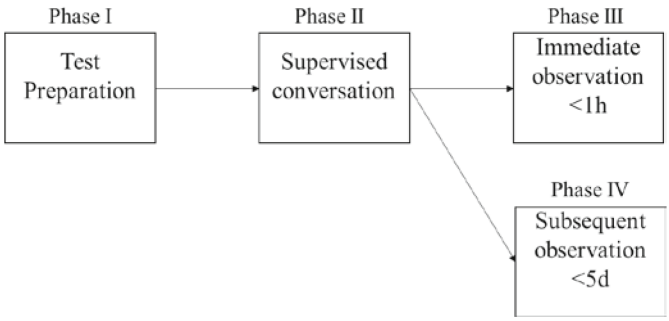


Fig. 2. A 4-phases design for each test.

Phase I. Test preparation
This phase consists of the following activities:

1. Formation of the group. Meeting of a maximum of 3 people at the specified place and time.
2. Review, prepare, and registration of their respective mobile devices. The brand and model of each of the devices are registered, and all applications and floating windows were closed. Finally, it was guaranteed that they have enough battery for 30 min of operation and that the microphone is activated.
3. Explanation of the test and signature of consent to record the session and to use the results for scientific purposes.

Phase II. Test Execution: Supervised Conversation
The execution consisted of the following activities:

1. Deposit the reviewed mobiles on a table that was at a distance of < 1 m from the participants.
2. Open and read (mentally) an envelope that contained the main topic to be discussed as well as the keywords that had to be expressly mentioned in the conversation. For the selection of the topic, the Expert Judgment technique was used, following Oates et al. (2022), and it was not previously shared with the participants nor was any search or prior consultation carried out on the Internet or social networks. The experts had to select a theme related to a specific trip or tourist destination, with excursions and attractions well-known to the general public.
3. To maintain a fluent conversation of exactly 10 min, supervised by a group of observers and recorded with the prior consent of each and every one of those present. Observers guarantee that all keywords are explicitly mentioned.

Phase III. Immediate Observation
After the conversation, each participant used their mobile phone and freely browsed, for 1 h, on social networks or Internet pages to see if any advertisement on the subject mentioned appeared, that is, if there was any advertising insertion with a semantic link as a result of the content analysis of the conversation carried out.

If any Ads appeared, the participants were to take a screenshot and note the channel and time of appearance.

Phase IV. Subsequent Observation
Each participant had to record the possible appearances of ads, with a semantic link, that could occur in the following hours or days, up to a maximum of 5 days.

3.2 Design of the Complete Experiment

The complete experiment is made up of 10 scientific observations (or tests) designed by a panel of 4 experts, following the specifications mentioned in previous points.

The selected themes are shown in Fig. 3.

Observation Number	*Main Topic*	*Main Keywords*
1	Journey to Rome (Italy)	Tourist excursions: - Fontana di Trevi - Rome Coliseum - Roman Pantheon - Vatican Museum - Roman Forum Others: Eating pizza/pasta, taking ice cream on the stairs of Plaza España, tourist apartment housing in the center of Rome
2	Trip to Budapest (Hungary)	Tourist excursions: - Bastion of fishermen - Budapest Parliament - Chain Bridge - Széchenyi spa Others: Accommodation in a tourist apartment in the Pest neighborhood, typical languages (is similar to a pizza), entrance to see a show in the Budapest opera. Make a free tour, visit a museum, garden or market. Flight from Barcelona to Budapest Direct. Look at the transport that is there, if there is a tourist bus or subway.
3	Journey to Seville (Spain)	Tourist excursions: - The Cathedral of Seville - The Giralda - Real Alcazar de Sevilla - Metropol parasol or mushroom viewpoint Others: Accommodation in a hotel in the center of Seville and go see a flamenco show.
4	Journey to New York (United States)	Tourist excursions: - Central Park - Statue of Liberty - Museum of Natural History - Times Square - Brooklyn Bridge - Empire State Building Others: hotel accommodation in the Midtown neighborhood, buying tickets to watch an NBA game, or attending a theater show.
5	Journey to Palma de Mallorca (Balearic Islands, Spain)	Tourist excursions: - Santa María Cathedral - Bellver Castle - Royal Palace of Almudaina - DRACH COVES - Soller train Others: rent a car to go to the most famous beaches in Mallorca or go in a ferry from Barcelona to Palma de Mallorca with our car, tourist apartment in Palma de Mallorca, eat the coca of "Trampó" and get tourist bus through the city

Fig. 3. Main topics and main keywords for the complete experiment.

6	Trip to Lisbon (Portugal)	Tourist excursions: - Belem's tower - Mirador Portas do Sol - San Jorge Castle - Santa Justa elevator Others: rent a car from Barcelona to Lisbon or take a direct plane from Barcelona to Lisbon, hotel accommodation in the center of Lisbon, eat the famous Belém cakes.
7	Trip to Tokyo (Japan)	Tourist excursions: - Meiji sanctuary and the Sensoji temple - Tokyo Tower - Shibuya cross (the busiest pedestrian crossing in the world) - Mount Fuji - Himeji Castle - Akihabara commercial area (anime, manga, and video games). Others: hotel accommodation in the center of Tokyo, eating at a traditional Sushi restaurant. Go to a traditional Japanese Karaoke or Traditional Spa.
8	Trip to Cusco (Peru)	Tourist excursions: - Plaza de las Armas - Cathedral of Cusco - 7 colored mountain - Macchu Picchu Others: rent a transfer to go on excursions, accommodation in a tourist apartment/hotel in Cusco, eat typical ceviche dish, and go to visit where they make the wool (alpaca) that creates the typical Peruvian dress.
9	Journey to Singapore (Singapore)	Tourist excursions: - Gardens by the Bay (gigantic gardens) - Mirador of the Marina Bay Sands Hotel - Little India (neighborhood) - Merlion Park and visit Merlion statue - Universal Studios Singapore (amusement park). Others: Search Flights from Barcelona to Singapore, hotel accommodation in the center of Singapore, "street sales", some of these positions have a Michelin star.
10	Trip to Marrakech (Morocco)	Tourist excursions: - Yamaa Square (main square) - Majorelle gardens - Palacio de Ma Bahia - Menara Gardens Others: direct flight from Barcelona to Marrakech. Accommodation in Hotel Riads (traditional palace with interior garden), eating traditional tajine or couscous food and drinking hot browsing and hiring a free tour or excursion in the Sahara Desert in camel.

Fig. 3. (*continued*)

4 Empirical Results and Explanations

The 10 tests, which make up the experiment, were carried out according to the stipulated schedule, under the supervision of a group of observers, and recorded with the authorization of those present.

4.1 Scientific Observation 1: Journey to Rome (Italy)

For the first scientific observation test, three women (P1, P2, and P3) were invited on April 11, 2022, to a restaurant. All mobile devices, in this case, run an Android operating system.

The registration data of this test are those that appear in Fig. 4.

Variable	*Value*
Day / Time	11/04/2022 (13:40 h to 13:50h) GMT +1
Place	Restaurant
Test duration	10 minutes
# People	(3) Participant 1 (P1), Participant 2 (P2), Participant 3 (P3)
Status/Social Relationship	Friendship
Brand and operating system of mobile devices	P1: Xiaomi Redmi Note 9. Android Operating System P2: Xiaomi Mi 9. Android Operating System P3: Oppo A72. Android operating system

Fig. 4. Registration data of observation #1.

As a result (Fig. 5), in all devices of the scientific observations participants appeared advertisements related to the tourism sector.

In the case of P1 and P2, it took 4 min for the first ad to appear; in P3, 10 min. The social network in which the most ads appeared was Instagram (5 ads), followed by Facebook (2) and the RAC1 website (2). P1 received five advertisements, two publications for tourist destinations in Ireland and Bilbao, an advertisement for the Booking platform for tourist accommodation reservations, a publication for the tourist attraction and destination (Dublin Library), and, finally, an accommodation offer and tourist attraction in PortAventura World (Hotel + Ticket from €65). It was followed by P2, with two advertisements (Pizzeria Dona Calabrese restaurant and tourist attraction next to the tourist destination of a walk through the Gothic Quarter of Barcelona). Finally, P3 received two advertisements (on the same RAC1 website the announcement of Cruises and Club Med appeared promoting their new Resort in Marbella). The only relevant advertisement with the tourist destination (Fig. 2), in this case, Rome (Italy), impacted (the Italian restaurant Pizzeria Dona Calabrese).

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	All (P1, P2 and P3)
	When?	P1: 4 min (13:54) P2: 4 min (13:54) P3: 10 min (14:00)
	Where? *(in which Social network or website)*	P1: Instagram Social Networks (IG) and Facebook P2: Instagram Social Network (IG) P3: RAC1 website
	How many? *(total ads that have appeared)*	P1: 5 ads P2: 2 ads P3: 2 ads
	Type of Ad for P1	- Discover Ireland. IG (tourist destination) - Visit Biscay. IG (tourist destination) - Portaventura World "Opening offer. Hotel + entrance from € 65 Pers./night". Facebook (accommodation/tourist attraction) - Booking stay. Facebook (accommodation) - Discover Ireland's "Famous Dublin Library." Facebook (tourist destination/tourist attraction)
	Type of Ad for P2	- Pizzeria Dona Calabrese Restaurant (Hospitality) - Secret Barcelona. Walk through the Gothic neighborhood of Barcelona (tourist attraction/tourist destination)
	Type of Ad for P3	- Cruises "Cruise passengers for 2022 are almost given away" (Transport) - Club Med "New Resort in Marbella with all-inclusive from € 945" (housing/tourist destination)
	Ad specifically related to this tourist destination?	Yes (P2) - Pizzeria Dona Calabresa Restaurant
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P1): 50 min later with 2 Instagram ads - Renfe SNCF "Paris for € 49" (Transport/Tourist Destination) - Visit Panama (Tourist Destination)

Fig. 5. Results of observation #1.

4.2 Scientific Observation 2: Trip to Budapest (Hungary)

In the second test, we invited three relatives (P1, P2 and P3) on April 12, 2022, in a house. All mobile devices run the Android operating system. The registration data of this test are those that appear in Fig. 6.

As a result of the conversation, all the participants (P1, P2, and P3) got ads related to the tourism sector on Instagram. The time for the first ad to appear was 4 min (P1), 7 min. For the second (P2), and 18 min. For the third (P3).

Variable	*Value*
Day / Time	12/04/2022 (21:28h to 21:38h) GMT +1
Place	Private apartment
Test duration	10 minutes
# People	(3) Participant 1 (P1), Participant 2 (P2), Participant 3 (P3)
Status/Social Relationship	Family
Brand and operating system of mobile devices	P1: Samsung Galaxy A51. Android operating system P2: Samsung Galaxy A52 5g. Android operating system P3: Samsung A5 2017. Android Operating System

Fig. 6. Record data of observation #2.

The participant with the highest number of ads (4) on the device was P1. 4 announcements were received in the first 5 h and an additional announcement on Renfe SNCF was received the following day.

P3 received two ads, one also from the transport company Renfe SNCF (Paris for €49) and the other was an offer of accommodation and tourist attraction at PortAventura World (Hotel + Ticket from €65).

P2 received only one ad. This ad was also from Renfe SNCF (Paris for €49). Note that in this observation all the participants (P1, P2 and P3) received an ad on Instagram from the transport company Renfe SNCF. Complete results are shown in Fig. 7.

4.3 Scientific Observation 3: Journey to Seville (Spain)

Three women (P1, P2, and P3) were invited to take the test on April 13, 2022 in a private house. Participants P1 and P3 use the Android operating system devices and, instead, P2 the iOS system.

The registration data of this test are those that appear in Fig. 8.

Only P2 and P3 got related Ads. Five minutes after the start of the conversation, a P2 got a recommendation to watch the YouTube video "Bulerías. Fabi and Maria. 2021".

The social network in which most ads appeared on the mobile devices was Instagram (13), followed by Facebook (2) and YouTube, and the Cadena SER (Spanish radio station) website. The participant with the most ads was P2 (12), ahead of P3. (5). The only ad in relation to the specific tourist destination was gotten by P2 (on YouTube, the Andalucía Flamenco Channel). The same ad about "Guia Repsol" appeared on P2 and P3 on the Instagram application. No participant received announcements hours and days after the end of the conversation. Complete results are shown in Fig. 9.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	All (P1, P2 and P3)
	When?	P1: 4 min (21:41) P2: 7 min (21:44) P3: 18 min (21:55)
	Where? *(in which Social network or website)*	P1, P2 y P3: Instagram (IG)
	How many? *(total ads that have appeared)*	P1: 4 Ads P2: 1 Ad P3: 2 Ads
	Type of Ad for P1	- Weekendesk Spain (Travel Agency) - Travel to El Cairo "Trip to Egypt" (Tourist Destination) - Barcelona Tips "3 tourist destinations: Carcasona and Perpiñán (April 16, 2022), Andorra and Naturlandia (April 16, 2022) and
		Montserrat (April 17, 2022)" (Tourist destination) - Xató route (excursion)
	Type of Ad for P2	- Renfe SNCF "Paris for € 49" (Transport/Tourist Destination)
	Type of Ad for P3	- Renfe SNCF "Paris for € 49" (Transport/Tourist Destination) - Portaventura World "Hotel + entrance from € 65 Pers.
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P1): Next day 13/04 with 1 advertisement on Instagram - Renfe SNCF "Travelers, to the train!" (Transport)

Fig. 7. Results of observation #2.

Variable	*Value*
Day / Time	13/04/2022 (13:11h to 13:21h) GMT+1
Place	Private house
Test duration	10 minutes
# People	(3) Participant 1 (P1), participant 2 (P2), participant 3 (P3)
Status/Social Relationship	Friends
Brand and operating system of mobile devices	P1: Oppo Find X2 Lite. Android operating system P2: iPhone 6. iOS operating system P3: Xiaomi Note 10 Pro. Android Operating System

Fig. 8. Record data of observation #3.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	(P2 and P3)
	When?	P2: 4 min (13:25h) P3: 9 min (13:30h)
	Where? (in which Social network or website)	P2: Instagram Social Networks (IG), Facebook and YouTube P3: Instagram Social Network (IG) and Chain SER
	How many? (total ads that have appeared)	P2: 11 ads P3: 5 ads
	Type of Ad for P1	N/A
	Type of Ad for P2	- Alsa Bus "Buy your ticket to make that getaway you need." IG (Transport) - Pescadea restaurant. IG (Hospitality) - Portaventura World “Hotel + entrance from € 65 Pers./noche”. IG (accommodation/tourist attraction) - Renfe SNCF "Paris for € 49". IG (Transport/Tourist Destination) - Petit Mirador Hotel. IG (accommodation) - Oasis Hunters “Escape from your routine in secret oasis. Book your rural getaway. ” IG (Travel Agency) - RV Hotels "Romantic getaway in Empordà". IG (accommodation/tourist destination) - Repsol Guide “Still without Plan for Holy Week? Recommendations and plans in our profile”. IG (excursion) - Huakai Spain "Do you come to discover Jordan with a group of your age?" IG (Travel Agency/Tourist Destination) - Renfe SNCF "Marseille for € 49". Facebook (Transport/Tourist Destination) - Portaventura World “Spring offer: hotel + entrance from € 65 Pers./noche”. Facebook (accommodation/tourist attraction)
	Type of Ad for P3	- Repsol Guide “Still without Plan for Holy Week? Recommendations and plans in our profile”. IG (excursion) - "Trip to Phuket, Phi Phi, Krabi and Bangkok 12 days from € 862". IG (tourist destination) - Riu Hotels & Resorts “Offer 15% Dto. to the Canary Islands: flight + hotel”. IG (tourist destination/transport/accommodation) - Airbnb "Scap yourself to the jungle." SER chain (accommodation) - Honimunn "Tailoring boyfriend trips and get a € 250 bonus for your anniversary trip." IG (Travel Agency)
	Ad specifically related to this tourist destination?	Yes (P2) - “Bulleria. Fabi and María. 2021. Recommendation: Andalusia Flamenco ”. Youtube (others) ("during conversation")
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	No

Fig. 9. Results of observation #3.

4.4 Scientific Observation 4: Journey to New York (United States)

For this test, a couple (P1 and P2) were invited on April 17, 2022 in a private house. Both participants had mobile phones running iOS operating system. The registration data of this test are those that appear in Fig. 10.

Variable	*Value*
Day / Time	17/04/2022 (12:25h to 12:35h) GMT + 1
Place	Private house
Test duration	10 min
# People	(2) Participant 1 (P1), participant 2 (P2)
Status/Social Relationship	Couple
Brand and operating system of mobile devices	P1: iPhone 11 Pro. iOS Operating System P2: iPhone 12. iOS Operating System

Fig. 10. Record data of observation #4.

Only P1 obtained results from advertisements related to the tourism sector. In 9 min, the first ad appeared (of a total of 7), on Instagram. Two publications related to the tourist destination were shown. No ads related to de conversation were received hours or days after the end of the test. Complete results of the observation are show in Fig. 11.

4.5 Scientific Observation 5: Journey to Palma de Mallorca (Balearic Islands, Spain)

The conversation took place on April 18, 2022 in a private house, where three relatives (P1, P2 and P3) participated and all had mobile devices running Android operating system. The registration data of this test are those that appear in Fig. 12.

None of the participants received an advertisement related to the tourism sector.

But surprisingly, a person who was listening and occasionally participated in the conversation (one of the observers) got 5 ads the next day on the Instagram social network. The first ad was on the Booking tourist accommodation rental platform, promoting accommodation with sea views; the second, from the passenger maritime transport company Trasmed of the Crimaldi Group, promoting the tourist destination Sardinia; the third, an advertisement for the Logitravel travel agency commenting on the tourist destination of Mallorca; the fourth, the profile of CN Travel Spain on 10 routes to do in Spain; and, finally, the Nomolesten tourist accommodation platform.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	P1
	When?	P1: 9 min (12:44)
	Where? (in which Social network or website)	P1: Instagram Social Networks (IG)
	How many? (total ads that have appeared)	P1: 7 ads
	Type of Ad for P1	- "Study English in the United States. Travel and learn languages in 2022!" (Tourist destination) - Rocroi Adventure (excursion) - Lets Go Surveys “Draw! Trip for 2 people to Cancun ”(Tourist destination) - Petit Mirador Hotel (accommodation) - Wegow Spain “Barceló Desalia. Come to the Dominican Republic 7 days with your friends to celebrate the 15th Anniversary of Desalia with 1000 more people ”(Tourist destination/Music Festival) - Cultural Cares Spain “Advantages of being au pair, round -rounded ticket, attend a course, weekly salary and vacation and a home in the US” (tourist destination) - Youtooproject "Australia" (Tourist destination)
	Type of Ad for P2	N/A
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	Yes (P1) - "Study English in the United States. Travel and learn languages in 2022!" (Tourist destination) - Cultural Cares Spain “Advantages of being au pair, round -rounded ticket, attend a course, weekly salary and vacation and a home in the US” (tourist destination)
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	No

Fig. 11. Results of observation #4.

Finally, in the announcement of the travel agency Logitravel that was promoting the tourist destination of Mallorca “Paquetes Mallorca. Chosen fashion destination 2022! Up to a 30% discount” if a relationship is detected between the destination chosen for this test. Complete results are shown in Fig. 13.

Variable	*Value*
Day / Time	18/04/2022 (18:15h a 18:25h) GMT+1
Place	Private house
Test duration	10 min
# People	(3) Participant 1 (P1), participant 2 (P2), participant 3 (P3)
Status/Social Relationship	Relatives
Brand and operating system of mobile devices	P1: Xiaomi Redmi Note 9 Pro. Android Operating System P2: Huawei Y5. Android operating system P3: Samsung Galaxy A20. Android operating system

Fig. 12. Record data of observation #5.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	None
	When?	N/A
	Where? (in which Social network or website)	N/A
	How many? (total ads that have appeared)	N/A
	Type of Ad for P1	N/A
	Type of Ad for P2	N/A
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	N/A
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	"Yes. An observer got, the next day,5 ads on Instagram - Booking ""Precious attic with Views of the Sea € 90"" (Accommodation) - Trasmed Ferry ""This summer plays Sardinia"" (Transport/Tourist Destination) - Logitravel ""Mallorca packages"" (Travel Agency/Tourist Destination) - CN Travel Spain ""10 amazing routes for Spain that you have to do once in life"" (Tourist Excursion) - Nomolesten ""Hotels with charm"" (accommodation)"

Fig. 13. Results of observation #5.

4.6 Scientific Observation 6: Trip to Lisbon (Portugal)

Three friends (P1, P2 and P3) met on the night of April 30 to May 1, 2022 in a restaurant. In addition, all mobile devices were running iOS operating system. Lisbon was the chosen tourist destination for the conversation. The registration data of this test are those that appear in Fig. 14.

Variable	*Value*
Day / Time	30/04/2022 - 01/05/2022 (23:51h a 00:01h) GMT+1
Place	Restaurant
Test duration	10 min
# People	(3) Participant 1 (P1), participant 2 (P2), participant 3 (P3)
Status/Social Relationship	Friendship
Brand and operating system of mobile devices	P1: iPhone 12. iOS Operating System P2: iPhone 11 pro max. IOS operating system P3: iPhone 11. iOS Operating System

Fig. 14. Record data of observation #6.

Ads related to the tourism sector appeared to participants P1 and P3. In addition, the time it took for the first ad to appear was 7 min for P1 and 22 min for P2.

The participant who got the most ads was P1 (7: 6 on Instagram and 1 on Brand). The first was from the airline Vueling, followed by the bus company Alsa on the Marca website. 3 advertisements for vehicle brands such as Skoda, WV and Harper's Bazaar Spain in collaboration with Audi appeared, as well as an advertisement for the tourist destination Nusa Penida (Bali, Indonesia) on the profile of Cambio de divisas by Ria and, finally, the accommodation Gallery Hotels.

P2 got 3 ads, the first two on Instagram and the last one on Sport. The first was from the official account of Tourism of Flanders and Brussels, in which it was mentioned "Which of the cycling routes in Flanders do we see in the photo?". The accommodation Intercontinental Hotels & Resorts also appeared and, finally, the tourist destination of Indonesia.

None of the advertisements shown to the participants was linked to the tourist destination chosen for the conversation. In the case of P1, the next day an offer from Barcelona Hotels Resorts "Summer holidays up to 40% off" appeared on Instagram. On the same day, Agoralingua's "Virtual Portuguese Classes" ad appeared on a mobile device of the participants on the Emisora.org website. In this case, there was a connection to the tourist destination chosen in this test. See Fig. 15 for complete dataset.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	P1 and P2
	When?	P1: 7 min (00:08) P2: 22 min (00:32)
	Where? (in which Social network or website)	P1: Instagram Social Network (IG) and brand website P2: Instagram Social Network (IG) and Sport website
	How many? (total ads that have appeared)	P1: 7 ads P2: 3 ads
	Type of Ad for P1	P1: - Vueling. IG (Transport) - BUS ALSA. Brand (transport) - Skoda Spain. IG (Transport) - WV Spain. IG (Transport) - Change of currencies by ria "Nusa Penida (Bali, Indonesia)". IG (tourist destination) - Gallery Hotels. IG (accommodation) - Harper's Bazaar Spain "Collaboration paid with Audi Spain". IG (Transport)
	Type of Ad for P2	P2: - Tourism Flanders and Brussels (Official Tourism Account of Belgium: Flanders and Brussels) "Which of Flanders' cycling routes do we see in the photo?" IG (tourist destination/excursion/transport) - She Travel Club "Intercontinental Hotels & Resorts". IG (accommodation) - “Secret Indonesia. Expedition dates. From July 1 to 10, 2022. Sport (tourist destination)
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P1): Next day 01/05 with 1 announcement on Instagram - Barcelona Hotels Resorts "Summer vacation up to 40% of Dto." (Accommodation) - Agoralordugua "Virtual Classes of Portuguese". Website website.org.es (others)

Fig. 15. Results of observation #6.

4.7 Scientific Observation 7: Trip to Tokyo (Japan)

In the following scientific observation test, we invite two friends (P1 and P2) on May 1, 2022 in a bar. In this case, all the mobile devices used were running Android systems. The registration data of this test are those that appear in Fig. 16.

Variable	*Value*
Day / Time	01/05/2022 (12:17h a 12:27h) GMT+1
Place	Private house
Test duration	10 min
# People	(2) Participant 1 (P1), participant 2 (P2)
Status/Social Relationship	Friendship
Brand and operating system of mobile devices	P1: Samsung A21. Android operating system Q2: Samsung Galaxy S22 Ultra 5G. Android operating system

Fig. 16. Record data of observation #7.

After the conversation, only P2 obtained results from advertisements related to the tourism sector. In this case, it took 2 min for an ad from "Barcelona Energía" to appear on Instagram about a raffle to live an experience sleeping in a tree for two people. There was no announcement related to the tourist destination chosen for the test. None of the participants found more advertisements related to the tourism sector hours and days after the end of the conversation. Complete results are shown in Fig. 17

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	P2
	When?	P2: 2 min (12:29)
	Where? (in which Social network or website)	P2: Instagram Social Network (IG)
	How many? (total ads that have appeared)	P2: 1 ad
	Type of Ad for P1	N/A
	Type of Ad for P2	- Barcelona Energía "Lucky draw! Live a 100% sustainable experience with this gift, sleeping in the top of a tree for two people" (Accommodation)
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	No

Fig. 17. Results of observation #7.

4.8 Scientific Observation 8: Trip to Cusco (Peru)

We gathered three relatives (P1, P2 and P3) on May 25, 2022 at their house. All the participants used the Android system on their mobile devices. The registration data of this test are shown in Fig. 18.

Variable	*Value*
Day / Time	25/05/2022 (20:44h to 20:54h) GMT+1
Place	Private house
Test duration	10 min
# People	(3) Participant 1 (P1), participant 2 (P2), participant 3 (P3)
Status/Social Relationship	Couple
Brand and operating system of mobile devices	P1: Xiaomi Redmi Note Pro 9. Android operating system P2: Xiaomi Redmi 8T. Android operating system P3: Oppo A54 5G. Android operating system

Fig. 18. Record data of observation #8.

Ads related to the tourism sector appeared to participants P1 and P3, to P1 in 9 min and to P3 in 11 min after the conversation. Both participants got the same number of ads displayed on their devices (3).

P1 found the advertisement for the PortAventura World tourist attraction on the Emisora.org website, followed by the Toulouse tourist destination on Instagram and, finally, the Vueling airline also on Instagram.

P3 saw an ad from the Tourist Forum travel agency promoting the tourist destination of Salzburg, an ad for the tourist destination of Formentera and, finally, Hoteles Mediterráneo promoting their hotel and the tourist destination of Peñíscola "Hotel & Spa Castillo de Peñíscola".

None of the ads was related to the tourist destination chosen for the conversation.

Moreover, in the case of P1, 3 h later he found two ads on Twitter, one about the Bahia Principe Hotels accommodation and the other about the Iberia airline company. On the other hand, for P3 there were 4 announcements: about the Barceló Nura accommodation, a Last Minute travel offer from the Spend-Less profile, the Barceló Aguamarina accommodation, where Mallorca is also promoted and, finally, the Nomolesten tourist accommodation platform. See complete dataset in Fig. 19.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	P1 and P3
	When?	P1: 9 min (21:05) P3: 11 min (21:07)
	Where? (in which Social network or website)	P1: Issuera.org website and Instagram Social Network (IG) P3: Instagram Social Network (IG)
	How many? (total ads that have appeared)	P1: 3 ads P3: 3 ads
	Type of Ad for P1	P1: - Portaventura World “10% discount. in your tickets”. Emission.org (tourist attraction) - Visitz Toulouse. IG (tourist destination) - Vueling. IG (Transport)
	Type of Ad for P2	N/A
	Type of Ad for P3	P3: - Tourist Forum "Trip to Salzburg" (Travel Agency/Tourist Destination) - Visit Formentera "Formentera awaits you" (tourist destination) - Mediterranean hotels "Hotel & Spa Castillo de Peñíscola" (housing/tourist destination)
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P1 and P3) P1: 3 hours later. 2 announcements on Twitter - Bahia Principe Hotels (Accommodation) - Iberia (Transportation) P3: 30 min later with 4 ads on Instagram - Barceló Nura “Barceló Hotels & Resorts. Come and feel the essence of the Mediterranean” (Accommodation) - Spend-Less "Last Minute travel offers with up to 70% discount" (Others) - Barceló Aguamarina “Book your holidays in Majorca with up to 25% discount” (Accommodation/Tourist destination) - Nomolesten “Live your best summer. Hotels with charm” (Accommodation)"

Fig. 19. Results of observation #8.

4.9 Scientific Observation 9: Journey to Singapore (Singapore)

We gathered three co-workers (P1, P2 and P3) on May 28, 2022 at home. All mobile devices used by the participants were Android operating system. Singapore was the selected tourist destination for the conversation. The registration data of this test are those that appear in Fig. 20.

Variable	*Value*
Day / Time	28/05/2022 (22:59h a 23:09h) GMT+1
Place	Private house
Test duration	10 min
# People	(3) Participant 1 (P1), participant 2 (P2), participant 3 (P3)
Status/Social Relationship	Co-workers
Brand and operating system of mobile devices	P1: Xiaomi Redmi Note 8 2021. Android OS P2: Xiaomi 10T. Android operating system P3: Xiaomi T30. Android operating system

Fig. 20. Record data of observation #9.

The participants who obtained results from advertisements related to the tourism sector were P1 (in 4 min) and P2 (in 5 min).

The participant who received the most ads was P1 (6, on Instagram) and P2 only got one (on La Vanguardia).

The first ad for P1 shown was "Vueling", followed by the offer for the "Warner amusement park" in Madrid (twice, once in InstaStories and the other in the Instagram post). Then, a raffle for a trip to the islands of Greece and Malta of the App Imageners profile and, finally, two announcements about the tourist destinations of Panama and Toulouse.

The only advertisement that was shown to P2 was the passenger shipping company Balearia about a Ferry to Mallorca.

None of the participants received an advertisement related to the tourist destination of Singapore.

Four ads appeared to the P1 participant the day after the conversation ended on Instagram and Spotify. On Instagram appeared the ads of the Surf in Morocco, followed by the airline Qatar Airways and the travel agency WeRoad Spain. The last announcement was on Spotify, about the passenger maritime transport company Grimaldi Trasmed together with the promotion of the tourist destination of the Balearic Islands (Fig. 21).

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	P1 and P2
	When?	P1: 4 min (23:12) P2: 5 min (23:13)
	Where? (in which Social network or website)	P1: Instagram Social Network (IG) P2: La Vanguardia Website
	How many? (total ads that have appeared)	P1: 6 ads P2: 1 ad
	Type of Ad for P1	P1: - Vueling (transport) - Warner Madrid Park "Enjoy this summer in PW with your friends 50%" in instasts (tourist attraction) - Imageners App "Draw two 10 -day trips for winner + companion for the islands of Santorini, Mykonos and Malta" (Tourist destination) - Visit Panama (Tourist Destination) - Warner Madrid Park "Enjoy this summer in PW with your friends 50%" in publication (tourist attraction) - Visit Toulouse (tourist destination)
	Type of Ad for P2	P2: - Balearia "Ferry Mallorca from € 40 per car journey" (Transport/Tourist Destination)
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P1): Next day 29/05, 4 ads: - Surf in Morocco. Ryanair's flight from Barcelona to Agadir (Morocco) for € 7.99. IG (Transport/Tourist Destination) - Qatar Airways. IG (Transport) - Weroad Spain. IG (Travel Agency) - Grimaldi Trasmed "In summer everything begins in Trasmed, reserve your trip to the Balearic Islands." Spotify (Transport/Tourist Destination)

Fig. 21. Results of observation #9.

4.10 Scientific Observation 10: Trip to Marrakech (Morocco)

For this last scientific observation of the experiment, we invited two co-workers (P1 and P2) to talk about Marrakech on June 15, 2022 in a central street in the city of Barcelona. The operating system of P1's mobile device was iOS and, instead, P2's operating system was Android.The registration data of this test are those that appear in Fig. 22.

Variable	*Value*
Day / Time	15/06/2022 (20:18h to 20:28h) GMT+1
Place	Street
Test duration	10 min
# People	(2) Participant 1 (P1), participant 2 (P2)
Status/Social Relationship	Co-workers
Brand and operating system of mobile devices	P1: IPhone 11 Pro. iOS operating system P2: Huawei P Smart 2019. Android operating system"

Fig. 22. Record data of observation #10.

All participants (P1 and P2) obtained results from advertisements related to the tourism sector.

P2 received five announcements on Twitter, the first at 8 min. The five announcements were from Iberia.

On the other hand, P1 obtained two advertisements for the tourist destination Jordan, one on InstaStories and another on Instagram. Also, the first ad took 5 min to appear. No advertisement was related to the tourist destination chosen for the test.

Two ads appeared to P2 the day after the conversation ended. Complete dataset is shown in Fig. 23.

5 Conclusions

Once the 10 scientific observation tests have been completed, the following evidence can be concluded:

1. In 100% of the observations, one or several advertisements related to the tourism sector were obtained. Additionally, tests 1, 3, 4, 5, and 6 presented at least one advertisement in relation to the specific destination mentioned in the conversation. Therefore, 5 out of 10 (50%) tests conducted generated a direct hit with the conversation destination.

   These 5 announcements were the following:

   - Test 1: Trip to Rome (Italy). Advertisement for the Pizzeria Dona Calabrese restaurant.
   - Test 3: Trip to Seville (Spain). “Bulerías. Fabi and Maria. 2021. Recommendation: Canal Andalucía Flamenco”.
   - Test 4: Trip to New York (United States). Announcements about “Study English in the United States. Travel and learn languages in 2022!” and “Advantages of being an au pair, round-trip ticket, attending a course, weekly salary and vacations, and a home in the United States.”
   - Test 5: Trip to Palma de Mallorca (Spain). Announcement of the offer “Mallorca Packages. Chosen fashion destination 2022! Up to 30% discount.
   - Test 6: Trip to Lisbon (Portugal). Announcement of virtual Portuguese classes.

Observation Phase	*Variable*	*Value*
PHASE 3 Observation in < 1h	Who?	All (P1 and P2)
	When?	P1: 5 min (20:33) P2: 8 min (20:36)
	Where? (in which Social network or website)	P1: Instagram Social Network (IG) P2: social network Twitter
	How many? (total ads that have appeared)	P1: 2 ads P2: 5 ads
	Type of Ad for P1	P1: - Visit Jordan "Explore Jordan. Time to discover "in instasts (tourist destination) - Visit Jordan "Explore Jordan. Time to discover "in publication (tourist destination)
	Type of Ad for P2	P2: - Iberia 5 times the same announcement "Each flight is important, but some make the world a better place. Discover real stories of flights that have changed lives. Because, connecting
		people we do future"(Transport)
	Type of Ad for P3	N/A
	Ad specifically related to this tourist destination?	No
PHASE 4 Observation in < 5h	Has any other Ad appeared hours or days later?	Yes (P2): Next day 16/06, 2 ads - Iberia "Each flight is important, but some make the world a better place. Discover real stories of flights that have changed lives. Because, connecting people we do future. " Social network Twitter (Transport). - Vueling "It was suit. Inside summer shirt. Limited places. This summer flight from € 29.99 ". Vandal website (transport)"

Fig. 23. Results of observation #10.

2. Ads were detected (in tests 6, 9, and 10) in which, without specifically mentioning the tourist destination, they referred to how to travel or get to, using some means of transport, to the destination or, failing that, to any of the attractions mentioned tourist.

- Test 6 (trip to Lisbon): Rent a car from Barcelona to Lisbon. Skoda car advertisement, WV and Harper's Bazaar Spain in collaboration with Audi.
- Test 9 (trip to Singapore): Amusement Park at Universal Studios Singapore. Advertisement for Parque Warner Madrid. Search flights from Barcelona to Singapore. Advertisements for Vueling, Ryanair and Qatar Airways.
- Test 10 (trip to Marrakech): Find a direct flight from Barcelona to Marrakech. Iberia and Vueling announcements.

3. In some cases (test 2 and 3), the same announcement was repeated within the same test, but in different participants and at different times.

   - Test 2 (trip to Budapest): Renfe SNCF advertisement "Paris for €49 shown to P2 and P3.
   - Test 3 (trip to Seville): Repsol Guide Announcement "Still no plan for Easter? Recommendations and plans in our profile" shown to P2 and P3.

4. The same ads were shown in different tests, with different participants, on different days, and in different locations.

   - Tests 1 and 9: Visit Panama.
   - Tests 1, 2, and 3: Renfe SNCF "Paris for €49".
   - Tests 1,2, and 3: PortAventura World "Hotel + Ticket from €65". In the case of test 8, it does not correspond to the same hotel and entrance ad.
   - Tests 3 and 4: Hotel Petit Mirador.
   - Trials 5 and 8: Nomolesten "Hotels with charm".
   - Trials 8 and 9: Visit Toulouse.

5. The channel that stood out the most was Instagram, probably due to its growing and high advertising content compared to the other options, with 69 ads. Twitter added 8 ads, and Facebook, 5. The RAC1 and Emisora.org websites added two ads each, and YouTube, Cadena SER, Marca, Sport, La Vanguardia, Spotify and Vandal, one. The results are shown in Fig. 24.
6. It can be seen (Fig. 25) that 42 advertisements are related to a tourist destination (35.6%), ahead of transport (airlines, shipping companies, or automobiles), with 26 advertisements (22%), and advertisements for tourist accommodation (22 ads, 18.6%). The 10 announcements (8.5%) of Others correspond to excursions or tourist plans, music festivals, and other diverse announcements. In fifth place is the tourist attraction (9 ads, 7.6%), followed by travel agencies (7 ads, 5.9%) and hotels (2 ads, 1.7%).

In light of the evidence obtained from this empirical investigation, we can validate **H1** and affirm that mobile devices listen to conversations through microphones, thus creating personalized ads based on what the person wants or has done. Shown apparent interest.

6 Discussion, Limitations, and Future Lines of Research

It is determined that half of the tests carried out caused a direct impact with the tourist destination treated in the conversation. This confirms the urgent need to legislate on the capture of conversations and their commercial use without the knowledge of those affected and, logically, without their permission. It is true that from the marketing environment, the usefulness or coverage of theoretical needs spontaneously manifested by

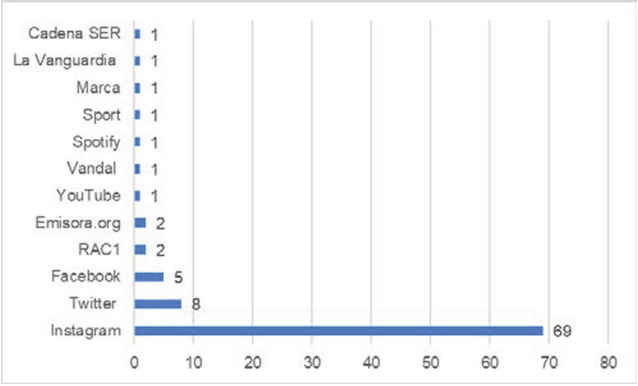


Fig. 24. Observations by channel.

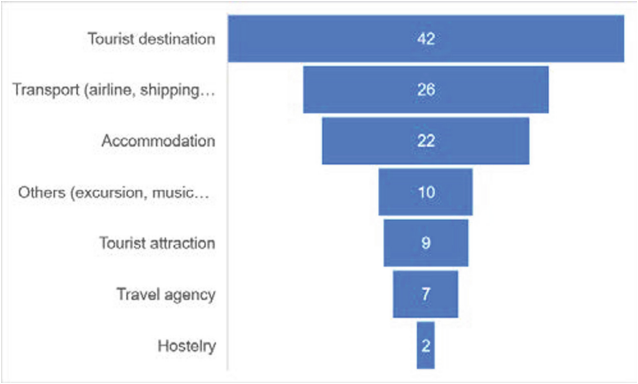


Fig. 25. Observations by Type.

the audience is defended, but this can clash with rights such as privacy or privacy (Gutiérrez Palacios 2021). It is a delicate matter and a debate that will probably continue for a long time.

Large technology companies use methods such as algorithms, big data, and fingerprints to obtain maximum information about users, and this is reflected in the experiment developed. The main idea is to know their tastes and needs to create a complete user profile (Castillo 2020). As Spain is the third European country in RTB (Ryan 2022), which promotes the control of data by web pages and applications that intend to follow what users see and search on the Internet, the relevance of the results is elderly.

The increase in the use of mobile devices and the way in which the main companies in the sector use the data for commercial or unknown purposes is worrying, in line with Almeida (2019). E-commerce solutions such as location-based commerce, focused on ad hoc offers based on the geo-positioning of the potential client, can stimulate the capture of conversations, which is evident in the results obtained.

The main limitations of this research are the very recent nature of the object of study, the low number of participants and tests, the language used (only in Spanish) and the location used (only in the city of Barcelona).

The academic literature is scarce or treats the issue in a generalist way. This is an advantage in the sense that it is an innovative item, but the disadvantage is the lack of context and previous background, which makes the documentation task difficult. In addition, there is a certain obscurantism around the issue, and there is reluctance in companies and entities when it comes to providing data, probably due to the existing legal vacuum in this regard.

Regarding future lines of research, in the coming years it is foreseeable that the use of data will give rise to controversy in the technological and ethical-moral field, since the espionage of new technologies in general, and in the tourism sector, will constitute objects of study in which great advances will have been made. Research on other sectors could shed light on some practices that worry the majority of users. In addition, recent cases of dubious legality or outright illegal wiretapping are bringing our object of study to the forefront of the media. If we combine it with the phenomenon of fake news, this opens up a huge range of possibilities in terms of scientific research.

In conclusion, the future of this phenomenon is completely uncertain and uncontrollable, because those who manage it (the big Internet companies) are the first to be interested in maintaining darkness that experimental research such as this one tries to combat. Combining the formula of covering consumer needs with the regulatory framework is a balancing exercise that is frequently situated on the threshold of what is ethical and legal, which should encourage companies, industry organizations and consumer associations, and users to agree on a satisfactory solution for all parties.

References

Almeida, M.M.: Robots, inteligencia artificial y realidad virtual: una aproximación en el sector del turismo. Cuadernos de Turismo **1**(44), 13–26 (2019)

Almeida, M.M., Ribeiro, C.: Use of social networks on travel decision making. In: Social Networks and Travel Behaviour 5MC & WCs meetings, Bucharest (2016)

Almeida, M.M., Ribeiro, C.: Use of Social Media within tourism travel behaviour. In: Final Conference Social Networks and Travel Behaviour, Milan, 14th-16th (2018)

AMIC. El 50% dels espanyols no saben per a què serveixen les cookies. El Butlletí de l'AMIC (Associació de Mitjans d'Informació i Comunicació) **431**(20-05-2022), 33–34 (2022)

Aviñó Belenguer, D.: El uso de cookies de publicidad comportamental desde la óptica de la protección de datos. Revista Aranzadi de derecho y nuevas tecnologías **56**, 5 (2021)

Beneicke, J., Juan, A.A., Xhafa, F., Lopez-Lopez, D., Freixes, A.: Empowering citizens' cognition and decision making in smart sustainable cities. IEEE Consum. Electron. Mag. **9**(1), 102–108 (2019)

Bowen, J., Whalen, E.: Trends that are changing travel and tourism. Worldwide Hospitality Tourism Themes **9**(6), 592–602 (2017)

Campos y Covarrubias, G., Lule Martínez, N. E.: La observación, un método para el estudio de la realidad. Xihmai**7**(13), 45–60 (2012)

Capozzi, M.S.: Te están observando, te están perfilando. ¿Lo sabes? Revista La Ley Privacidad **4**, 7 (2020)

Castillo, J.A.: El turismo en la economía de los datos y la economía de plataformas en la UE: Especial referencia al Reglamento UE 1150/2019. Revista de privacidad y derecho digital **5**(19), 115–155 (2020)

Celdrán-Bernabeu, M.A., Mazón, J.-N., Giner Sánchez, D.: Open data y turismo. Implicaciones para la gestión turística en ciudades y destinos turísticos inteligentes. Investigaciones Turísticas **15**, 49–78 (2018)

Cerezo, A., Guevara, A., Enciso, M.: Big data como fuente de conocimiento turístico: especial referencia al Open Data y al Big Data Social. Estudios Turísticos **213–214**, 185–204 (2017)

Ciesielska, M., Boström, K.W., Öhlander, M.: Observation Methods. In: Ciesielska, M., Jemielniak, D. (eds.) Qualitative Methodologies in Organization Studies, pp. 33–52. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-65442-3_2

Corlu, C.G., Goyal, A., Lopez-Lopez, D., Torre, R.D.L., Juan, A.A.: Ranking enterprise reputation in the digital age: a survey of traditional methods and the need for more agile approaches. Int. J. Data Anal. Tech. Strat. **13**(4), 265–290 (2021)

Diaz, N.: Personalized Digital Advertising: How Data and Technology Are Transforming How We Market. Pearson Education, Old Tappan, New Jersey (2015)

Frick, N.R., Wilms, K.L., Brachten, F., Hetjens, T., Stieglitz, S., Ross, B.: The perceived surveillance of conversations through smart devices. Electron. Commer. Res. Appl. **47**, 101046 (2021)

Fuchs, M., Höpken, W., Lexhagen, M.: Big data analytics for knowledge generation in tourism destinations: a case from Sweden. J. Destin. Mark. Manag. **3**(4), 198–209 (2014)

Gretzel, U., Sigala, M., Xiang, Z., Koo, C.: Smart tourism: foundations and developments. Electron. Mark. **25**(3), 179–188 (2015). https://doi.org/10.1007/s12525-015-0196-8

Gutiérrez Palacios, M.D.R.: ¿Seguirá siendo necesario el consentimiento del usuario para los cookies de publicidad comportamental en línea? Revista De Derecho De La UNED (RDUNED) **27**, 493–546 (2021)

Henseler, J., Müller, T., Schuberth, F.: New guidelines for the use of PLS path modeling in hospitality, travel and tourism research. In: Applying Partial Least Squares in Tourism and Hospitality Research, pp. 17–33 (2018)

Holmes, D.E.: Big data: Una Breve Introducción, 2a edn. Antoni Bosch, Barcelona (2018)

Herrero Crespo, Á., San Martín Gutiérrez, H., García de los Salmones, M., del M.: Servicios "Smart" y valor de los destinos turísticos inteligentes: análisis desde la perspectiva de los residentes. J. Reg. Res. **2019/3**(45), 77–91 (2019)

Johnson, M., Barlow, R.: Defining the phygital marketing advantage. J. Theor. Appl. Electron. Commer. Res. **16**(6), 2365–2385 (2021)

Jones, L.D., Golan, D., Hanna, S.A., Ramachandran, M.: Artificial intelligence, machine learning and the evolution of healthcare: a bright future or cause for concern? Bone Joint Res. **7**(3), 223–225 (2018)

Kröger, J.L., Raschke, P.: Is my phone listening in? On the feasibility and detectability of mobile eavesdropping. In: Data and Applications Security and Privacy XXXIII: 33rd Annual IFIP WG 11.3 Conference, DBSec 2019, Charleston, SC, USA, July 15–17, 2019, Proceedings 33, pp. 102–120. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-22479-0_6

López de Mántaras, R.: Inteligencia Artificial: temores, realidades y dilemas éticos (2019). Revista Interactiva. https://interactivadigital.com/opinion-marketing-digital/inteligencia-artificial-temores-realidades-y-dilema-eticos/

Martínez, P.: Is the EU human rights legal framework able to cope with discriminatory AI? Internet, Law Polit. E-J. **34**, 1–14 (2021)

Martínez-López, F.J., Anaya-Sánchez, R., Fernández Giordano, M., Lopez-Lopez, D.: Behind influencer marketing: key marketing decisions and their effects on followers' responses. J. Mark. Manag. **36**(7–8), 579–607 (2020)

Más, A., Ramón, A.B., Aranda, P.: La revolución digital en el sector turístico: Oportunidad para el turismo en España. Ekonomiaz **98**, 228–251 (2020)
Moreno, L., Ramón, A., Such, M.J.: The challenge of long-term tourism competitiveness in the age of innovation: Spain as a case study. Investigaciones Regionales: J. Reg. Res. **42**, 13–34 (2018)
Oates, B.J., Griffiths, M., McLean, R.: Researching Information Systems and Computing. Sage (2022)
Pesonen, J.: Management and leadership for digital transformation in tourism. Handbook of e-Tourism, pp. 1–34 (2020)
Rhodes, L. (Productora), Orlowski, J. (Director). El dilema de las redes [Documental]. Netflix, Estados Unidos (2020)
Ryan, J.: The biggest data breach: ICCL report on scale of real-time bidding data broadcasts in the U.S. and Europe. Irish Council for Civil Liberties (2022). https://www.iccl.ie/digital-data/iccl-report-on-the-scale-of-real-time-bidding-data-broadcasts-in-the-u-s-and-europe/
Samuel, A., White, G.R., Thomas, R., Jones, P.: Programmatic advertising: an exegesis of consumer concerns. Comput. Hum. Behav. **116**, 106657 (2021)
Santos, M.C., Veiga, C., Águas, P.: Tourism services: facing the challenge of new tourist profiles. Worldwide Hospitality Tourism Themes **8**(6), 654–669 (2016)
Schwab, K.: The Fourth Industrial Revolution. World Economic Forum, Geneva (2016)
Shaw, Artificial intelligence and ethics. Ethics and the dawn of decision-making machines. Harvard Magazine (2019). https://harvardmagazine.com/2019/01/artificial-intelligence-limitations
Stamboulis, Y., Skayannis, P.: Innovation strategies and technology for experience-based tourism. Tour. Manage. **24**, 35–43 (2003)
Tucker, C.E.: Social networks, personalized advertising, and privacy controls. J. Mark. Res. **51**(5), 546–562 (2014)
Veale, M., Nouwens, M., Santos, C.: Impossible asks: can the transparency and consent framework ever authorise real-time bidding after the Belgian DPA decision? Tech. Reg. **2022**, 12–22 (2022)
Xiu, L., Chen, Y., Yu, G., Yang, Y.: The impact of conversational interaction on users' cognitive absorption in mobile news reading context: evidence from EEG. Behav. Inf. Technol. 1–14 (2023, in press)
Yang, Y., West, J., Thiruvathukal, G.K., Klingensmith, N., Fawaz, K.: Are You Really Muted?: A Privacy Analysis of Mute Buttons in Video Conferencing Apps. In: Proceedings on Privacy Enhancing Technologies, pp. 1–21 (2022)
Zlatanov, S., Popesku, J.: Current applications of artificial intelligence in tourism and hospitality. In: International Scientific Conference on Information Technology and Data Related Research, Sinteza, pp. 84–90 (2019)

The Impact of Influencers on Consumers' Purchasing Decisions When Shopping Online

Jakub Horváth and Richard Fedorko(✉)

Faculty of Management and Business, University of Presov, Presov, Slovakia
{jakub.horvath,richard.fedorko}@unipo.sk

Abstract. Consumer behaviour is not only essential to attract new customers but also to retain existing customers. If a customer is satisfied with a particular product, he will repeat the purchase. Marketing should therefore be implemented in such a way that it persuades customers to repeat a purchase. It is, therefore, clear that customer acquisition, particularly customer retention, is very important. This can only be achieved by understanding and being attentive to the consumer's purchasing behaviour and decision-making. The paper examines the impact of influencers on consumers' purchasing decisions, specifically from the perspective of different categories of a consumer's educational level. The paper provides a theoretical basis for the issue of the purchase decision process and describes other factors affecting consumers in the buying process. Based on statistical evidence, it was found that almost half of the respondents are influenced by influencers or celebrities they follow in their purchasing decisions. However, verification of the relationship between this influence and the educational level of the respondents has not been demonstrated.

Keywords: Influencers · Consumer behaviour · Purchasing decision making · E-commerce

1 Introduction

The consumer purchase decision process has been traditionally divided into several stages, which have been adapted to the digital environment. In today's digital age, customers have access to a wealth of information and resources at their fingertips, which has drastically changed how customers evaluate and make purchasing decisions (Amartha Rangsang and Millayani 2021).

According to Schiffman et al. (2013), the main steps in the purchase decision-making process are problem recognition, which involves recognising the need and opportunity, and then information seeking, through which customers examine the environment and select relevant data to make a rational decision. The last step is the evaluation of alternatives, i.e. the so-called rationality search, and carefully evaluating all alternatives before the customer chooses the most appropriate one. The authors divide the purchase decision process into three distinct but interrelated phases: the input phase - which is more concerned with external influences, e.g. corporate marketing efforts and the socio-cultural

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 216–223, 2023.
https://doi.org/10.1007/978-3-031-31836-8_23

environment (family, culture, etc.); the process phase - which is concerned with customer decision-making. It is about need recognition, pre-purchase research and evaluation of alternatives; the output phase - involves the behaviour that follows the purchase decision. The outcome is a test purchase or a repeat purchase and a post-purchase evaluation.

According to Hes et al. (2010), the purchase decision-making process is tied to consumer behaviour aimed at satisfying their own needs. The purchase decision process consists of five steps: problem recognition, information gathering, evaluation of alternatives, purchase decision, and post-purchase behaviour (Zuroni and Goh 2012). The model focusing on the purchase decision process emphasises that the purchase process starts long before the actual purchase and continues after the purchase is made. The model gives the impression that the consumer goes through all five stages in each purchase. However, in most routine purchases, the consumer skips or repeats some of the stages (Kita et al. 2017).

2 Theoretical Background of the Issue

Every purchase decision process starts with the consumer identifying a problem they need solved or a need they seek to fulfil. The consumer feels that something is missing and needs to be solved. Their goal is to return to normal (Kotler and Keller 2007).

If the consumer's urge is strong enough and the product to satisfy the need is available, the consumer will buy it at that moment. If not, the consumer may remember the need and search for relevant pieces of information. The consumer acquires information from the following sources (Kotler and Keller 2013): private sources (friends, family, neighbours and acquaintances), commercial sources (retailers, advertising, packaging, etc.), public sources (consumer rating agencies, advertising vehicles, etc.), empirical sources (product manipulation, usage, etc.).

Authors Richterová et al. (2015) define this step as the assessment of alternative options or competing options for satisfying the need in terms of expected utility. Consumers themselves set the criteria for evaluating the alternatives and their importance, and then they can determine their order of importance and finally select the most appropriate one. In this way, the consumer tries to reduce uncertainty with respect to the available alternatives and the resulting benefits (Kita et al. 2017).

In the case of the evaluation process, Cibáková and Bartáková (2007) state that each consumer assesses the importance of a product according to their needs and wants. Consumers view a product as a set of characteristics on the basis of which consumers attribute a certain degree of value to the product. Consumers' perceptions of product characteristics may differ from the actual product characteristics. Consumers will generally buy the product that, from their point of view, contains the most preferred set of characteristics. During the purchase phase, digital marketing channels may influence consumers' purchase decisions on products they were not previously interested in (Botelho Pires et al. 2022).

Finally, in the post-purchase phase, a new evaluation of the chosen alternative is performed, weighing the performance after using it. If the product matches the expectation, the consumer is satisfied. Otherwise, he is dissatisfied. According to Kotler and Keller (2007), consumers' expectations are based on the information they have received from

sellers, friends and other sources. If the seller exaggerates the value of the product, the consumer's expectations are not met, and a situation is created that leads to dissatisfaction. Some sellers lower the level of value in order to increase consumer satisfaction with the product. Ultimately, it is necessary to evaluate which digital marketing channel(s) are most appropriate, according to consumers' perceptions, for each stage of the purchase process (Botelho Pires et al. 2022).

In today's digital age, the consumer's purchasing process in e-commerce has become an essential part of our day-to-day lives. As e-commerce continues to grow, it is becoming increasingly important to understand how consumers make decisions about purchases in e-commerce. Trust is one of the most important factors when it comes to making purchases in e-commerce (Zuniarti et al. 2021). Research has found that trust is positively associated with purchasing intention (Zhao et al. 2020).

In this dimension, Social media influencers (SMIs) have become a powerful force in the digital marketing space and are increasingly impacting the purchasing process in e-commerce. This is evidenced by the recent survey conducted by Statista (2018), which reports that 58 percent of brand strategists and marketers agree that influencer marketing will become integrated into their future marketing activities.

SMIs have the ability to reach a wide audience, and their content is often seen as more authentic and trustworthy than traditional advertisements. By leveraging the power of SMIs, companies are able to communicate their brand messages to consumers effectively. Furthermore, SMIs are able to create a more immersive experience for consumers through their posts, which often leads to increased customer value co-creation behaviour and higher purchase intentions (Stubba and Colliander 2019). Additionally, research indicates that SMIs are more effective in persuading consumers when their personality traits are similar to those of the consumers (Colliander and Dahlén, 2011). This is because consumers are more likely to feel inspired by SMIs and imitate their behaviours when they have similar personality traits.

Moreover, the attractiveness of the content posted by SMIs and the credibility of the sources of the information they post also influence consumers' feelings of inspiration (Stubba and Colliander 2019). As such, SMIs can have a significant impact on the buying process in e-commerce and should be leveraged by companies to communicate brand messages and increase purchase intentions effectively.

3 Methodology

The aim of this paper is to investigate whether there are statistically significant associations between the level of influence of Social media influencers' (SMIs) opinions and respondents' education level in the online shopping process.

Based on the stated objective, the following research question is formulated: In the online shopping process, are there statistically significant associations between the level of influence of SMIs opinions and the education level of respondents?

Based on the above research question, the following research hypothesis is formulated:

H: We assume that there are statistically significant associations between the level of influence of SMIs opinions and respondents' education level in the online shopping process.

The data for the analyses were obtained by conducting primary research, which was carried out through a questionnaire method. Data collection through an electronic questionnaire was conducted in the month of October 2022. The link to the electronic questionnaire was distributed by email (authors' private database). The selection of the research sample can be characterised as a selection based on availability and voluntariness. The research sample consists of responses from 421 respondents. Data collection took place only in Slovakia.

The analytical processing of the data was carried out in two chronological parts. The first part, which highlights the rough findings of the research, was devoted to the depiction of descriptive statistics. The second part of the analytical processing, which explores deeper relationships, is interpreted in the form of inductive statistics. In this part, due to the stated hypothesis and the nature of the data, Spearman's correlation test was used. Statistical analysis was carried out using SPSS 22 software.

The object of research of the present paper is the respondents or members of the following generations (Table 1):

Table 1. Age distribution of respondents by generation (own elaboration based on Young 2017)

C	Centennials (2001–2009)
Y	Millennials (1984–2000)
X	Generation X (1964–1983)
S	Generation S (1963 and earlier)

In terms of defining the age groups of our respondents, the paper follows the methodology of author Miles Young (2017) of Ogilvy & Mather, which consists of Generation C, or Centennials, who are currently between the ages of 14 and 22, Generation Y, or Millennials, who are currently between the ages of 23 and 39, Generation X, or Baby Boomers, who are currently between the ages of 40 and 59, and finally Generation S, or Snow Flakes, who are currently 60 and older.

4 Results

This chapter is devoted to the presentation of research results in the form of descriptive statistics, primarily in the form of Tables 2 and 3.

Respondents were almost evenly represented in terms of their education level - Higher Education (N = 176; 41.7%) and High school education with a matriculation diploma (N = 180; 42.8%). On the other hand, 53 respondents (12.6%) have a High school education without a matriculation diploma, and 12 respondents (2.9%) have only Primary education.

Almost half of the respondents are influenced by the opinion of SMIs they follow when shopping online (N = 208; 49.4%). 46 respondents (10.9%) were neutral about being influenced by the opinions of influencers or celebrities when shopping online. Finally, 167 respondents (39.7%) are not influenced by the opinion of influencers or celebrities they follow when shopping via the Internet.

Table 2. Representation of respondents based on education (own elaboration)

	Abundance	%	Cumulative %
Primary education	12	2,9	2,9
High school education without a matriculation diploma	53	12,6	15,5
High school education with a matriculation diploma	180	42,8	58,3
Higher Education	176	41,7	100
Total	421	100	

Table 3. Influence of SMIs opinion when shopping online (own elaboration)

	Abundance	%	Cumulative %
1 - Completely disagree	64	15,2	15,2
2 - Disagree	44	10,5	25,7
3 - Partially disagree	59	14,0	39,7
4 - Neither agree nor disagree/neither agree	46	10,9	50,6
5 - Partially agree	83	19,7	70,3
6 - Agree	77	18,3	88,6
7 - Completely agree	48	11,4	100
Total	421	100	

5 Verification of the Research Hypothesis

In the methodological part of the article, the research hypothesis was formulated, the verification of which is dealt with in this chapter. The verification in question provides a probabilistic concept of acceptance or rejection of the predicted statement.

H: We assume that there are statistically significant associations between the level of influence of SMIs opinions and respondents' education level in the online shopping process.

Based on the results presented in Table 4 and Fig. 1, it can be observed that the average value of the influencer influence level when shopping online was 4.1 points on a scale of 1 - lowest influence to 7 - biggest influence.

Based on the nature of the variables, non-parametric tests were used to test the hypothesis.

The present hypothesis investigates whether there is a statistically significant association between the level of education and the level of influence of influencers in online shopping. To analyse the hypothesis, the non-parametric Spearman's correlation test was used after taking into account the nature of the variables.

Based on the results presented in Table 5, it can be concluded that there is no statistically significant relationship between the level of education and the level of influence of influencers in the online shopping process, and thus our hypothesis is not supported.

Table 4. Descriptive statistics of influencers' influence rate in online shopping (own elaboration)

N	421
Average	4,100
Median	4,000
Standard deviation	1,9699
Skewness	−,198
Pointedness	−1,208
Span	6,0
Minimum	1,0
Maximum	7,0

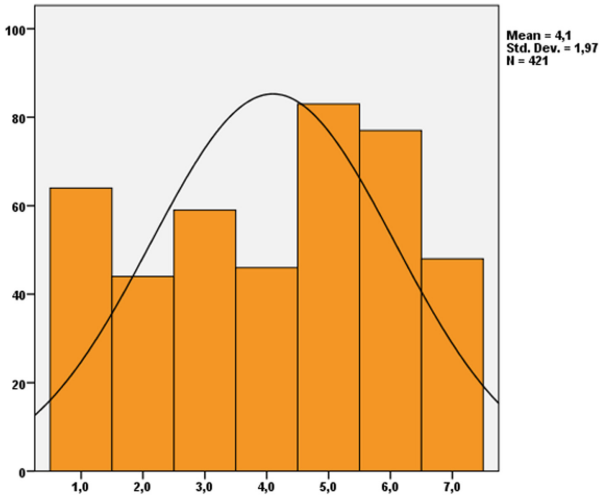


Fig. 1. Descriptive statistics of influencers' level of influence in online shopping (own elaboration)

Table 5. Spearman's correlation test of the Internet (own elaboration)

Spearman´s rho	Correlation Coefficient	,063
	Sig. (2-tailed)	,195
	N	421

6 Conclusion

The versatility of the Internet has made it an amazing attraction for people all over the world. People use it for various purposes like communication, education and research, entertainment and online shopping. There are various influences on consumers in the

process of online shopping. Based on our analysis, it can be concluded that the majority, or 73.1%, of respondents, are influenced by reviews and recommendations from family and friends when shopping online. Almost half of the respondents (49.4%) are influenced by the opinion of SMIs they follow when shopping online. Just over half of respondents (55.5%) are influenced by the email newsletters they subscribe to when shopping online. Finally, the majority or 69.1% of respondents, use price comparison sites when shopping online.

The hypothesis under investigation predicted statistically significant associations between educational level and the level of influence of influencers in the online shopping process. However, this association was not confirmed. Thus, it can be concluded that educational level does not influence how consumers are influenced by the SMIs they follow when shopping online.

In the past, the authors such as Venus Jin et al. (2019), Taylor (2020) and Leung et al. (2021) also dealt with the researched issue. The research mentioned above did not directly focus on the degree of impact of influencers on customer decision-making but investigated other essential connections in the field of digital marketing communication and e-commerce, which largely coincide with the results of our research. Our findings build on the aforementioned studies and extend the body of knowledge in research on the impact of SMIs on consumers' online purchase process.

The limitation of the subject research was the demographic composition of the sample of respondents, which was located in Slovakia. Therefore, the results of the conducted research cannot be wider generalised. At the level of future research, it would be appropriate to distribute the demographic composition of the surveyed respondents.

Based on this knowledge, it can be concluded that in the future, it would be more appropriate to focus on other aspects, such as gender differences and differences in income groups in connection with social media influencer marketing, which could demonstrate a significant connection.

Acknowledgements. This article is one of the partial outputs under the scientific research grant VEGA 1/0694/20 - Relational marketing research - perception of e-commerce aspects and its impact on purchasing behaviour and consumer preferences.

References

Amartha Rangsang, R., Millayani, H.: The effect of online consumer review on customer purchase decision process in the e-commerce site blibli.com. e-Proc. Manage. **8**(6), 8501–8513(2021)

BotelhoPires, P., et al.: Connecting digital channels to consumers' purchase decision-making process in online stores. Sustainability **14**(21), 1–21 (2022)

Cibáková, V., Bartáková, G.: Základy marketingu, 1st edn. Iura Edition, Bratislava (2007)

Colliander, J., Dahlén, M.: Following the fashionable friend: the power of social media: weighing publicity effectiveness of blogs versus online magazines. J. Advert. Res. **51**(1), 313–320 (2011)

Hes, A., et al.: Chování spotřebitele při nákupu potravin, 1st edn. Alfa, Bratislava (2010)

Kita, J., et al.: Marketing. Wolters Kluwer, Bratislava (2017)

Kotler, P., Keller, K.L.: Marketing Management, 12th edn. Grada Publishing, Praha (2007)

Kotler, P., Keller, K.L.: Marketing Management, 14th edn. Grada Publishing, Praha (2013)

Leung, F.F., Gu, F.F., Palmatier, R.W.: Online influencer marketing. J. Acad. Market. Sci. **50**(2), 226–251 (2022). https://doi.org/10.1007/s11747-021-00829-4

Richterová, K., et al.: Spotrebiteľské správanie. Sprint 2, Bratislava (2015)

Schiffman, L., O'cass, A., Paladino, A., Carlson, J.: Consumer Behaviour. 6th ed. French's Forest. Pearson Australia Group Pty, NSW (2013)

Statista. (2018). Influencer marketing worldwide

Stubba, C., Colliander, J.: This is not sponsored content" – the effects of impartiality disclosure and e-commerce landing pages on consumer responses to social media influencer posts. Comput. Hum. Behav. **98**, 210–222 (2019)

Taylor, R.: The urgent need for more research on influencermarketing. Int. J. Advert. Rev. Market. Commun. **39**(7), 889–891 (2020)

VenusJin, S., et al.: Instafamous and social media influencer marketing. Mark. Intell. Plan. **37**(5), 567–579 (2019)

Young, M.: Ogilvy o reklamě v digitálním věku. Svojtka&Co., Bratislava (2017)

Zuniarti, I., et al.: The effect of the presence of e-commerce on consumer purchasing decisions. Int. J. Data Netw. Sci. **5**(3), 479–484 (2021)

Zhao, Y., Wang, L., Tang, H., Zhang, Y.: Electronic word-of-mouth and consumer purchase intentions in social e-commerce. Electron. Comm. Res. Appl. **41**, 100980 (2020). https://doi.org/10.1016/j.elerap.2020.100980

Zuroni, M.J., Goh, H.L.: Factors influencing consumers' attitude towards e-commerce purchases through online shopping. Int. J. Humanit. Soc. Sci. **2**(4), 223–230 (2012)

Black Friday vs. Green Friday: A Comparative Sentiment Analysis of Spanish Social Media Users' Perceptions

Michele Girotto, Ana Maria Argila Irurita(✉), and María Luisa Solé Moro

School of Economics and Business, Universitat de Barcelona, Barcelona, Spain
{michele.girotto,aargila,mlsolesole}@ub.edu

Abstract. The main objective of this study was to assess the marketing practices of companies related to Black Friday and Green Friday 2022 events in the Spanish market. This assessment was approached from the perspective of consumers by using the method of sentiment analysis of Spanish users who interact with companies through Facebook, Twitter and Instagram social network accounts. The study sample is made up of 8 companies, with a total of 4,342 comments received between November 2 and December 4, 2022. Data was collected with the data miner application exportcomments and sentiment analysis was performed at Atlas.ti based on pre-processed data. Based on content analysis, negative sentiments were clustered into 8 categories while positive sentiments were grouped into 5 main theme categories. Most of the sentiment analysis results indicated that companies that carried out the Black Friday promotional event approach showed data with highest negative consumer sentiment compared to companies that carried out Green Friday practices, which were mostly related to a more educational consumer approach to promotional events. This study emphasizes the critical and active attitude towards Black Friday discounts and the influence of consumers' previous experiences with the brand and brand image, which affect consumer expectations on Green Friday or Black Friday approaches by companies.

Keywords: Sentiment analysis · Content analysis · Black Friday event · Green Friday event

1 Introduction

Social networks are a well-known channel of interaction between users and brands in digital environments and the content generated by these interactions has been investigated by several studies (Flyverbom et al. 2017, Tan et al. 2002, Helm 2000). User-generated content (UGC) has been broadly used by researchers to obtain data about users' behaviours online and to better understand how it can be used by companies to improve their relationship with customers as well as to increase the engagement (Palos-Sanchez et al. 2019). At the same time, as information technologies advanced, online engagement also increased progressively, where users can engage in activities such as

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 224–242, 2023.
https://doi.org/10.1007/978-3-031-31836-8_24

liking products, recommending them to people in their network, commenting on a product they have purchased whether they are satisfied or dissatisfied with it. These feelings and opinions become even more important when they occur on a large scale. In that sense, sentiment analysis (SA) has become a definitive field of study. SA is defined as the process of uncovering sentiments in texts by using various text mining techniques or statistical algorithms on the texts (Liu 2012; Pang and Lee 2008).

In the United States, the Friday that follows Thanksgiving has been considered the beginning of the Christmas shopping season since 1932, and many famous brands offer significant discounts and opportunities in their products. Having survived to the present day, this event is also experienced in many countries outside the United States (Thomas and Peters 2011). In this context, on Black Friday companies from different sectors offer discounts and special promotions to their customers to increase sales and enhance their brand value, which can be an excellent opportunity to examine user behaviours and companies' marketing strategies in digital environments (Thelwall et al. 2011; Thomas and Peters 2011; Bell et al. 2014). In the specific case of Spain, a study by Shopify e-commerce platform shows that the average cost of purchases by Spaniards in this app has increased to 77.4 euros, 8% more than in 2021, when it amounted to 71.6 euros during the long weekend event that covers Black Friday and Cyber Monday (de Elena 2022). However, against this background, we can observe several media news covering controversial practices carried out by companies during these promotional events (Cugat 2022; ACN 2022), as well as there have been previous studies examining inappropriate promotion and marketing strategies by companies during these online promotional events (Saura et al. 2019; Wilson et al. 2019), identifying a critical attitude of users against these activities, which impacted on companies' reputations.

Precisely, the Spanish Organization of Consumers and Users (OCU) denounced a few days before Black Friday 2022 event that it had detected irregularities in 99% of the offers, because online shops do not take the lowest price of the last 30 days as a reference, but any price in this period or even the recommended sale price, which is a breach of trade regulations (OCU 2022). In addition, the Catalan Consumer Agency (Agència Catalana de Consum) and the General Directorate of Commerce (Direcció General de Comerç) monitored 70 companies and around 1,400 products during the Black Friday period (October – November 2022) and said they had detected "possible breaches of price regulations" in more than 50% of the analysed cases (Clemente 2022). At the same time, some companies announced that they were not carrying out any Black Friday promotional activity, mostly aiming at educating consumers on their commercial margin (Arufe 2021) or, more recently, because of the environmental impact of these events (Santamaría 2022; González 2022).

Accordingly, Black Friday has been studied from different approaches. For instance, Bell et al. (2014) examined the marketing strategy approach for an effective Black Friday event based on calling user attention, and Khodabakhsh et al. (2018) studied offered insights of user behaviours associated with important events that have a temporary nature, such as Black Friday or Cyber Monday events. Earlier studies had dealt with Black Friday Weekend consumption in the United States context, focusing on consumers' motivation to purchase during this event (Harrison et al. 2010), on collective consumption

rituals associated with Black Friday or on shopping convenience in terms of perceived usefulness and shopping enjoyment.

As these promotional shopping events spread to other countries, studies began to examine it in a broader range of countries. For instance, study analysed the motivations and meanings related to individuals in the United Kingdom, who chose to buy in physical stores on Black Friday, instead of browsing the web, or McLeod et al. (2016) examined the delivery methods UK consumers typically choose and their willingness to pay more for alternative sustainable delivery during the Black Friday shopping event. In addition, authors identified shoppers showing both positive and negative emotions on Black Friday, where positive emotions were related to excitement and happiness, whereas negative emotions included anger, anxiety, belligerence, disgust, distress, irritability, sadness, and tension (Taylor et al. 2011). Consumers' previous experiences with brands greatly affect the expectations that people have developed about Black Friday. Such as expectations of BF deals, expectations of retailer capability, and expectations of lack of customer service (Lennon et al. 2018).

Sentiment analysis has been applied to many areas, such as helping to understand passenger experiences and attitudes towards train companies in the UK (Mogaji and Erkan 2019), estimation of the consumers' purchasing intention about durable goods in retail sales (Bag et al. 2019), or customer satisfaction with tourism products (Cheng and Jin 2019, Jimenez-Marquez et al. 2019). Specifically related to social impact in terms of reactions of social media users to specific events, some studies used SA to explore Black Friday practices such as how UGC can be analysed using knowledge discovery techniques (Tsolmon et al. 2012), how users share UGC content about social media events (Cody et al. 2016) or to determine the positive perceptions of consumers about the Black Friday event related to product promotions in contrast to the negative perceptions towards topics such as fraud, insults and noise and customer service (Saura et al. 2019).

Therefore, the Black Friday event on social media has been previously examined within the context of literature on marketing promotions, mostly focusing on Twitter-based user content (Thelwall et al. 2011). For example, Khodabakhsh et al. (2018) and Reyes-Menendez et al. (2018) used sentiment analysis of tweets posted during large social events to identify the feelings related to user actions and communication published on those digital platforms. Other studies explored the perspectives of Turkish Twitter users on the activities within the context of "Black Friday" (Ataman and Özgüner 2021), determining that tweets were related to different sentiments, such as negative reasons due to ideological and religious attitudes, companies lack of transparency, advertising and marketing pressure or positive perceptions linked to requests-suggestions and wishes. Similarly, Tuyani Araújo Soares et al. (2022) study focused on the perceptions of Brazilian Twitter users from the practices of Black Friday, identifying consumers emotions related to fraud, deal perceptions, influencing factors (lack of money, doubts about promotions), mostly negative. As seen previously, Twitter has been seen as the preferable platform to study users' sentiments towards specific promotional event activities such as Black Friday. In this vein, Saura, Reyes-Menéndez et al. (2018), using Twitter data from users in Spain, identified that most of the tweets identified were neutral and were used to promote and foster the global strategy around the #BlackFriday event, while the

tweets classified as positive were related to consumer satisfaction with the product they had purchased, but they were not linked to the published Black Friday offers and, finally, the tweets considered negative were a minority.

Moreover, we also identified literature dealing with green washing and blue washing concepts in Black Friday related practices. For example, Sailer et al. (2022), based on Instagram advertisement and consumer survey, identified that consumers' critical attitude towards Black Friday and high ad scepticism predict positive evaluations while sustainable purchase behaviour predicts negative evaluations. Nevertheless, although studies have dealt with sustainability in brands communication on social media (Testa et al. 2020, Lee and Weder 2021), there is a relevant lack of research related to Black Friday content. Furthermore, most studies focus on a single social network or sector, without a holistic integration of how sentiments towards particular Black Friday practices may differ based on brand type, brands' approach to Black Friday, or the social network platform.

In this context, the present study focuses on the analysis of digital marketing and promotion strategies of the companies identified by the General Directorate of Commerce as conducting controversial promotional practices on their online commerce on the Black Friday 2022 event in Spain. The analysis is focused on the UGC of social network's accounts of these brands in Facebook, Twitter, and Instagram. Additionally, this study aims to compare the UGC generated during the Black Friday event period for those companies that publicly mentioned that they were not doing Black Friday discounts. Therefore, in order to understand the trends in customer sentiment based on the brands' approach to the Black Friday event in Spain, this study attempts to explore real-time UGC content on the social media accounts of the analysed brands. Thus, the research questions were as follows:

- (RQ1) What main differences in sentiments (positive, negative, or neutral) are associated with the main UGC topics of companies participating or not in the Black Friday event on different social networks?
- (RQ2) What main themes can be associated to the positive and negative sentiments related to the companies that participate in Black Friday compared to those that do not participate?

To answer these questions, we examine, on the one hand, comments posted by consumers that are directly related to retail companies that participated in the 2022 Black Friday event in Spain and that were identified by the Catalan Consumer Agency as possibly conducting some promotional offer misbehaviour. On the other hand, we analysed comments posted by consumers that are directly related to retail companies that advertised that they were not taking part in the Black Friday event. In addition, we intended to understand the major topics and associated sentiments in the social network based UGC to find out which companies and topics were related to a higher positive consumer sentiment, and on which social network.

The contribution of this study is that our results expand the literature on consumer behaviour and the interaction of companies with UGC within the Spanish Black Friday event. Previous studies have looked at consumer perceptions of promotional offers, focusing primarily on Twitter and companies that offer Black Friday discounts. The

main contribution of this study is to provide a holistic approach for the comparison of consumer sentiment in relation to companies' engagement behaviours in Black Friday practices, by analysing UGC across three different social media accounts. Consequently, the remainder of this study is structured as follows: Sect. 2 deals with methodology development and data analysis, Sect. 3 outlines the preliminary results, and Sect. 4 introduces relevant discussions, from which conclusions are drawn.

2 Method

2.1 Data Collection and Analysis

The control of Black Friday of the General Directorate of Commerce has been carried out by monitoring the products with the most discounts, mainly computers, smartphones, small household appliances or household products offered on the Internet (Clemente 2022), which led to a list of companies suspected of possible irregularities. For this, we analysed a total of four companies included in the list provided by the Directorate of Commerce. In addition, we conducted media coverage of companies that were taking alternative approaches to the Black Friday event, also called Green Friday (González 2022; Santamaría 2022). Once we had the final list of selected companies, we reviewed each company's website to identify which social networks they had an active account on. Instagram, Twitter and Facebook were the social networks chosen for being the most popular as well as the most widely used in Spain (IAB 2022). Figure 1 shows the list of the final sample of selected companies and their overall social network accounts profiles chosen for the analysis.

To identify posts related to the Black Friday event, we ran a search on each of the social media accounts using the following search terms: "Black Friday", "Cyber Monday", Cyber Week", "Green Week", "Green Friday". Therefore, the data obtained shows the interactions of Twitter, Facebook and Instagram users with these companies during the period from November 2 to December 4, 2022, thus covering three weeks before the 2022 Black Friday event in Spain, the Black Friday, the celebration of Cyber Monday and a week after the event. For data collection purposes, the authors produced a list of posts from the companies analysed that were related to the Black Friday or alternative events. With the list of posts, the authors used exportcomment.com to extract user comments from each company's posts. Search spreadsheets collected through Data Miner (exportcomment.com) were then verified, corrected for duplicate or missing information, and then uploaded to ATLAS.ti software for coding and analysis (Mehmetoglu and Dann 2002).

We followed recommendations regarding all collection, analysis, and presentation of social network data (Sugiura et al. 2017; Christensen and Larsen 2020). Ethical approval was not required as all social network data from Twitter, Facebook and Instagram were retrieved from the public domain (Azionya and Nhedzi 2021). However, for ethical considerations in internet research, personal identity data were removed from all data collected (Ahmed et al. 2017); that ultimately identifies the source, so confidentiality efforts were made to de-identify participants. As a result of this process, 373 posts were collected across the three social network accounts of the analysed companies. Figure 2

Companies participating in the BF event			***Companies taking alternative approaches to the BF event***		
Brand	*Highlights*	*Social accounts analysed*	*Brand*	*Highlights*	*Social accounts analysed*
PC Components	Seller of home appliances, gaming, hardware, software and other components and accessories.	Instagram (pccomponentes/); Twitter (@pccomponentes); Facebook (@pccomponentes)	***Sepiia***	Black Friday Transparent: Apparel retailer that shares on this date the transparent price of its products.	Instagram (/sepiia2080/); Twitter (@Sepiia2080); Facebook (@sepiia2080)
Carrefour	A supermarket chain selling food, clothes, home appliance, etc.	Instagram (/carrefoures/); Twitter (@CarrefourES); Facebook (@carrefoures)	***EcoAlf***	Apparel retailer promoting the campaign *#recyclingblackfriday*	Instagram (/ecoalf/); Twitter (@ecoalf); Facebook (@ECOALF)
Fnac	Specialized seller of electronic items, computers, photographic	Instagram (/fnac_esp/); Twitter (@Fnac_ESP); Facebook (@Fnac.es)	***Rituals***	A multinational brand specialized in cosmetics	Instagram (@ritualscosmetics-spain);
	items, books, music and video, etc.			and personal care products promoting #GreenFriday	(Facebook (@RitualsCosmeticsES**)**
El Corte Inglés	A Spanish department store	Instagram (/elcorteingles/); Twitter (@elcorteingles); Facebook (@elcorteingles).	**Vodafone**	Transform Black Friday into Green Friday by launching exclusive discounts on smartphones and televisions if the customer hands in their old mobile at the time of purchase	Instagram (/vodafone_es/); Twitter (vodafone_es); Facebook (@vodafoneES)

Note: (BF) = Black Friday

Fig. 1. General characteristics of the profile of the selected sample of companies participating in the Black Friday and Green Friday initiatives

shows the distribution of the exported comments related to each company and posts across their social network accounts.

Company	Social Network	Nº of posts	Types of content and #	Selected comments
PCComponentes	Instagram	12	#BlackFriday, #descuentos #ofertas, #chollos, #sorteo, #concurso, #CyberWeek #PcComponentesCyberWeek, #DíaDelBlackEnPcComponentes, #ElBlackEnPcComponentes, #PcComponentesDeBlackFriday,#PrimerasOfertasPcComponentes	911
	Facebook	63		
	Twitter	132		
	TOTAL	**207**		
Carrefour	Instagram	4	#BlackFriday2022, #Sales, #Ofertas, #BlackFriday, #CiberMonday #PreBlackFriday, #ThanksGinving,	386
	Facebook	9		
	Twitter	3		
	TOTAL	**16**		
Fnac	Instagram	4	#BlackFriday	112
	Facebook	14		
	Twitter	15		
	TOTAL	**33**		
El Corte Inglés	Facebook	7	#CiberMonday, #BlackFridayECI, #BlackFriday	184
	Twitter	4		
	TOTAL	11		
Sepiia	Instagram	8	#modainteligente #modasostenible #circularidad #madeinspain #produccionlocal #consumoconsciente #transparencyfriday #consumoresponsable #preciotransparente #blackfriday #greenfriday #sostenibilitat #Eco #Mediambient #preciojusto	275
	Facebook	11		
	Twitter	7		
	TOTAL	26		
EcoAlf	Instagram	12	#RecyclingBlackFriday, #BreakYourHabitNotYourPlanet #BlackFriday	160
	Facebook	11		
	Twitter	12		
	TOTAL	35		
Rituals	Instagram	9	#GreenFriday #Recargas #Sostenibilidad #Verde #CyberMonday #Sorteo #Descuento #Reforestación #1regarga1árbo	1388
	Facebook	5		
	TOTAL	14		
Vodafone	Instagram	3	#BlackFriday #GreenFridayVodafone	926
	Facebook	12		
	Twitter	16		
	TOTAL	31		

Fig. 2. Distribution of exported comments from social network accounts of the analysed companies

This study analysed the social media textual data of the comments exported. To analyse data, this study applied two different analyses. First, comments were imported to ATLAS.ti software (version 22.2.0.225) as social network comments. Automated coding was then added to the data set. Two groups of coding were created: 1) Users (Facebook, Instagram, Twitter) and Type of sentiment (negative, positive, and neutral). Second, once the sentiments were analysed, we conducted a content analysis (Cho and Lee 2014, Schreier 2012). We started coding by reading the text of each comment previously coded as positive, negative or neutral. The results of these two analyses are presented in the next section.

3 Preliminary Results

This research explored two main questions related to consumer perspectives on the promotional event campaigns for Green Friday and Black Friday implemented in Spain during the 2022 event. First, we explored the variables in consumer sentiment based on content generated on companies' social media, and second, we identified the differences in topics emerging from the analysis of consumer sentiments. We discuss the preliminary results in the following sections.

3.1 Variations in Consumers' Sentiments Towards Black Friday and Green Friday Practices

Figure 3 shows the total distribution of consumer sentiments of the analysed companies that carry out promotional campaigns for the Black Friday event. In general, we can observe that all the analysed brands accumulated a higher frequency of negative sentiments compared to positive sentiments towards the content.

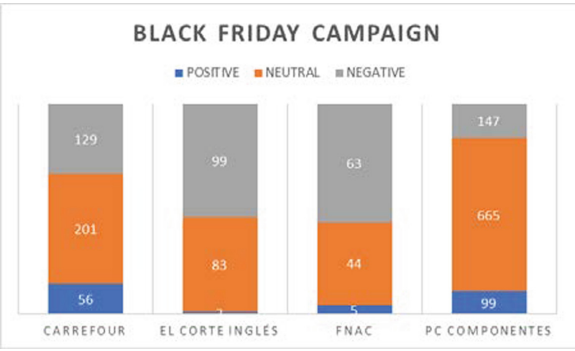


Fig. 3. Distribution of consumer sentiments towards Black Friday campaigns (Frequency count)

Carrefour and PC Componentes were the companies that received the most negative sentiments and, at the same time, those that showed a higher frequency of positive consumer sentiments. Comprehensively, across the total frequency distribution of the brands we can see that the predominant sentiment that emerges is related to the neutral

category. On the other hand, when examining the companies carrying out Green Friday campaigns as an alternative approach to the Black Friday promotional event, we noted a different pattern of consumer sentiments. As can be observed in Fig. 4, almost all the companies encompassed a higher frequency of positive sentiments if compared to the negative category, except for Vodafone. In addition, the same as for companies that run Black Friday campaigns, the neutral sentiment category is also the one that shows the highest frequency across companies that take the Green Friday event approach.

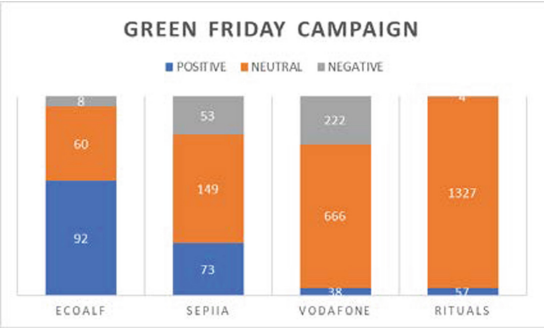


Fig. 4. Distribution of consumer sentiments towards Green Friday campaigns (Frequency count)

3.1.1 Black Friday Consumer Responses Across Social Networks

Furthermore, to understand how these sentiments were prevalent on specific social media accounts, we conducted an examination of the distribution of these sentiments across the different social networks where participating brands posted their Black Friday and Green Friday campaign contents. Figure 5 depicts the sentiment performance analysis conducted for the Carrefour company.

The total percentage of comments related to the negative category is higher across the three Carrefour social networks examined (Facebook, Twitter and Instagram) when compared to positive sentiments. However, we also found that the percentage of negative consumer sentiments is higher on the Instagram account in contrast to the Facebook brand account. Twitter, on the other hand, is the network in which the brand accumulated the highest consumer positive sentiment responses.

The Black Friday campaign developed by Fnac also showed a greater negative consumer sentiment response on its Facebook account, followed by its Instagram account. As in the pattern observed for the Carrefour campaign, Twitter was the social network account that recorded the highest percentage of positive consumer sentiments, as can be seen in Fig. 6.

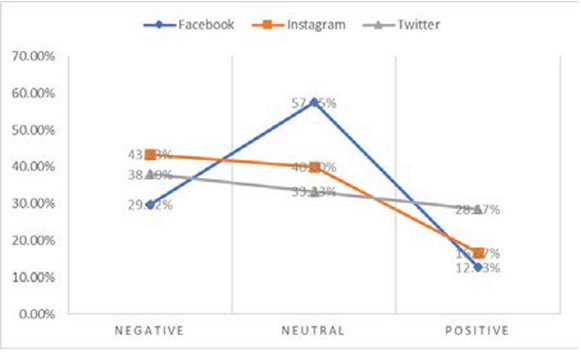


Fig. 5. Distribution of consumer sentiments towards Black Carrefour Friday campaign (total % count)

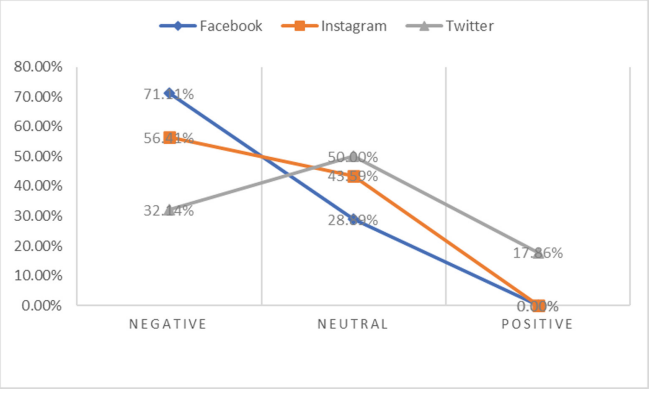


Fig. 6. Distribution of consumer sentiments towards Fnac Black Friday campaign (total % count)

In addition, when exploring user-generated content on El Corte Inglés social media accounts, Twitter was the account that showed the highest percentage of responses related to the negative sentiment category, in contrast to Carrefour and Fnac campaigns. Facebook was the second network that accumulated more negative sentiments (see Fig. 7). Once again, the Black Friday content posted by El Corte Inglés received a more negative or neutral response, compared to the positive sentiments registered in all its accounts.

The Black Friday event held by PC Componentes was the one that showed the lowest percentage of negative responses from consumers when compared to the rest of the companies previously analysed (Carrefour, El Corte Inglés, Fnac). Figure 8 depicts that in all its social network accounts, the highest percentage of consumer responses were related to the neutral sentiment category while positive comments were highly present in its Facebook account.

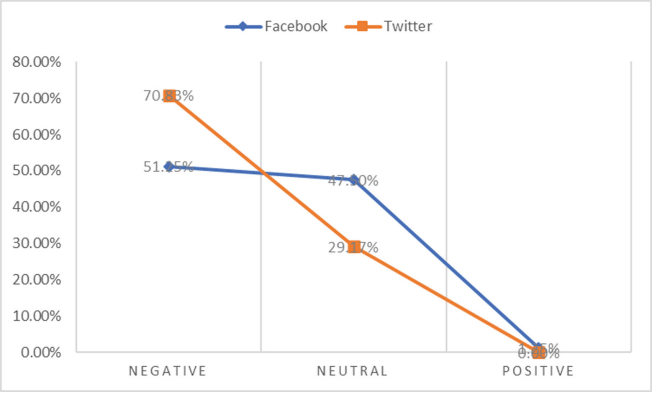


Fig. 7. Distribution of consumer sentiments towards El Corte Inglés Black Friday campaign (total % count)

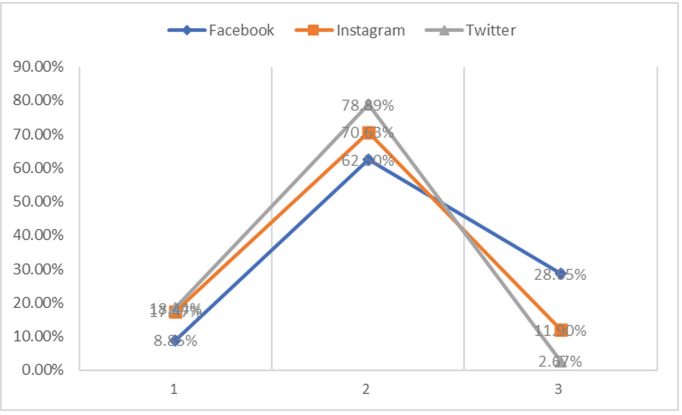


Fig. 8. Distribution of consumer sentiments towards PC Componentes Black Friday campaign (total % count)

3.1.2 Green Friday Consumer Responses Across Social Networks

The Green Friday alternative marketing campaign event developed by EcoAlf introduced the performance of the campaigns that addressed a different alternative for the promotional Black Friday event. As outlined at Fig. 9, consumers' response to the EcoAlf campaign posts across its three social network accounts were mostly related to the neutral and positive sentiments categories. Facebook concentrates the highest percentage of positive sentiments towards the brand campaign. On the other hand, Instagram presented a higher variety of consumers' interaction in terms of sentiment, with a small percentage of negative sentiments towards the brand practices.

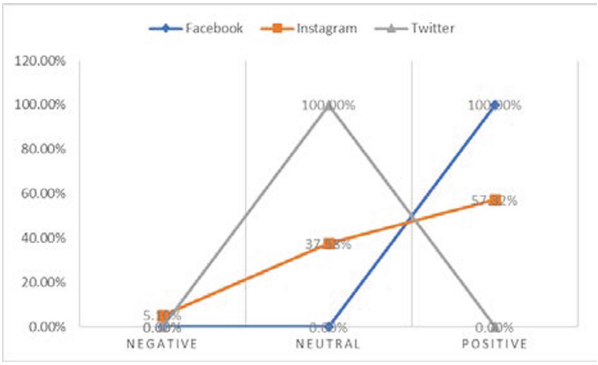


Fig. 9. Distribution of consumer sentiments towards EcoAlf Green Friday campaign (total % count)

Furthermore, Sepiia brand also accounted for the highest numbers of positive sentiment categories in both Facebook and Instagram accounts. Again, most of the accumulated consumer sentiment is concentrated at the neutral sentiment category as shown in Fig. 10. Instagram also emerged as a channel where consumers expressed negative feelings towards some of the company's marketing practices.

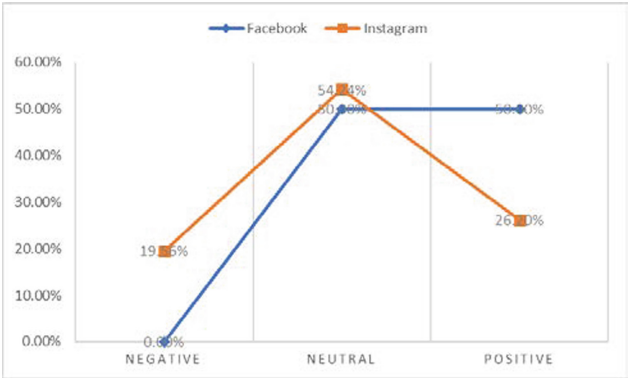


Fig. 10. Distribution of consumer sentiments towards Sepiia Green Friday campaign (total % count)

Rituals accounts performed similarly. As can be seen in Fig. 11, the company's Facebook and Instagram accounts concentrated most of consumer sentiments in the neutral category, followed by a lower frequency of positive sentiments. The presence of negative sentiments category is nearly not visible.

Finally, Vodafone was the last brand analysed. The campaign developed by Vodafone presented a more contrasted responses in terms of consumer sentiments when compared to the previous brand conducting Green Friday campaigns. Vodafone recorded the highest percentage of negative consumers sentiment across all three social networks assessed (Vodafone, Instagram and Twitter). Figure 12 shows Instagram as the channel where

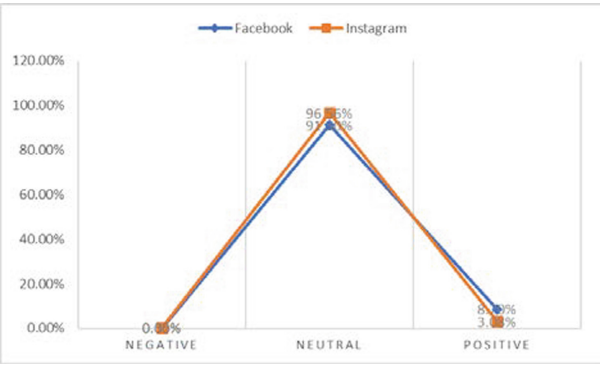


Fig. 11. Distribution of consumer sentiments towards Rituals Green Friday campaign (total % count)

consumers expressed their highest negative sentiments towards the brand. On the other hand, Facebook accumulated the lowest percentage of negative comments, showing the highest number of sentiments related to the neutral category.

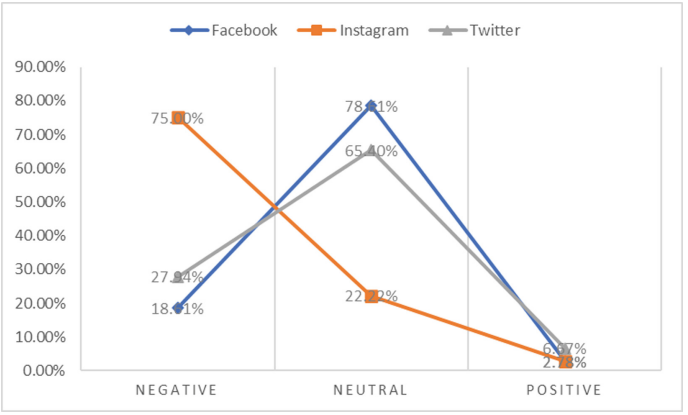


Fig. 12. Distribution of consumer sentiments towards Vodafone Green Friday campaign (total % count)

3.2 Main Themes Related to Positive and Negative Consumer Sentiments

To better understand the context that drove the emergence of the categories of consumer sentiment towards the Black Friday and Green Friday campaigns discussed in the previous section, we conducted content analysis for the categories of positive and negative sentiments. Figure 13 describes the most important themes that were associated with the negative sentiment category.

Type of sentiment	Group categories	Main themes	(F)
Negative	Black Friday perception	Seen as a fraud	188
		Seen as a trap	15
		Perception of high prices	39
		Lack of product interest	7
		Assuming not buying during BF	3
	Consumer behaviours during Black Friday	Low expectation from consumers	2
		Lack of trust on companies	58
		Negative opinions on brands general behaviours	6
		Negative opinions on consumers behaviours during BF event	2
		Consumers only buy due to economic reasons	1
	Perception on marketing campaign	Seen as a negative practice	27
	Problems during purchase experience	Technical issues	37
		Not finding the advertised discounts	10
		Product delivery	50
		Problems with prizes or contests	10
	Consumer to consumer interactions	Peer resolving doubts	1
		Peers' comments on companies' complaints	49
		Peer comments on prices /products	1
	Perception of brand and product	Lack of brand preference	2
		Perception of low brand/product quality	18
		Negative perceptions on brand value chains	5
		Customer service management of low quality	169
		Company´s sales calls approach	5
	Consumers dissatisfaction	Overall dissatisfaction	97
		Publicly not recommending buying from the brand	35
		Negative responses to the brand	4
		Complaints on missing sustainable practices	1
		Complaints on prizes and contests transparency	4
		Lack of clear information	4
		Complaints on companies' services	92
		Quality of the product	12
	Consumer to brand interactions	Doubts on BF discounts	2
		Doubts on BF products	1

*Note: (BF) = Black Friday; (F)= Frequency

Fig. 13. Main themes associated to the consumers negative sentiments.

As noted in Fig. 13, negative consumers' sentiments were grouped into 8 categories. The categories that accumulated the highest total frequency were "Black Friday perceptions" and "Consumer dissatisfaction". Related to the "Black Friday perceptions" category, on the one hand, most of the negative sentiments were associated to consumers seeing Black Friday as a fraudulent practice and, on the other, although companies were advertising promotional discounts, consumers linked it with higher prices, where consumers perceived companies purposely increasing the prices prior to the Black Friday event.

The second group of categories that accumulated themes with higher frequency of negative sentiments were "perception of brand and product" and "problems during purchase experience". In the category of "perception of brand and product" the most frequent mentioned theme was related to consumers' negative experiences with the company's customer service management. Moreover, in the category of "problems during the purchase experience", the most prominent theme was consumers' negative experience with the product delivery process during the Black Friday promotional period.

Furthermore, Fig. 14 depicts the categories grouping the positive sentiments identified across the different user generated contents on the company's social network accounts.

Therefore, positive sentiments were grouped into 5 main categories. The category that integrated the highest number of frequencies was "BF and GF activities", followed by the category "Brand image". The most prominent theme emerging within the "BF ad GF activities" category was related, on the one hand, to the user´s supportive behaviour towards marketing practices approach, which was more related to the companies conducting Green Friday campaigns. On the other hand, users depicted higher positive satisfaction with contests, prizes and gaming provided by the companies, mostly related to brands taking the Black Friday promotional approach.

Accordingly, the second most relevant category in terms of frequency count was "Brand image" and its most prominent emergent theme was associated to "brand love". Here users mentioned specifically how attached they were to the brand and provided comments about their admirations towards the mentioned company. This theme was mostly related to the companies adopting Green Friday campaign approaches.

3.3 Discussion and Conclusions

The results reveal that the companies that carried out Black Friday events accumulated a higher frequency of negative sentiments compared to those companies that adopted alternative Green Friday marketing promotional practices. At the same time, the results also show that consumers interacted differently on different social media accounts when expressing their sentiments and opinions on content related to this promotional period. In the case of companies conducting BF practices, Instagram and Facebook were the channels where highly negative sentiments were identified compared to Twitter. On the contrary, for the companies that carried out GF practices, Facebook and Instagram were the channels in which consumers showed more positive feelings towards the promotional content posted by the brands.

From these results it can also be inferred that brand positioning may also be a cause of negative consumer sentiments when faced with promotional marketing practices.

Type of sentiment	Group categories	Main themes	(F)
Positive	**Brand image**	Brand love	42
		Brand preference	17
		Brand quality	7
	Consumer satisfaction	Brand quality process and services	10
		Expectation with BF discounts	8
		Good experiences with BF prices	2
		Good experiences with company	4
		Good experiences with products	11
		Missing favourite products	1
		Company problem solving	3
	BF and GF activities	Satisfaction with promotional price discounts	22
		Positive perceptions of marketing campaign	78
		Satisfaction with contests, prizes, and gaming	98
		Consumer positive expectation towards discounts period	8
		User´s supportive behaviour towards marketing practices approach	108
		Positive interaction in brands contests	11
	Consumer to consumer interactions	Peer clarifying doubts of other users	12
		Peer supporting brand on other users' negative complaints	7
		Peers' supportive comments on brand fair price	5
		Peers' comments on packaging issues	3
	Brand to consumers interactions	Users' questions on BF discounts	1
		Users' responses to brands respecting their sustainable behaviour and conscious purchase	21
		Users' comments on product interest	16
		Brands responses on users' supportive comments and conscious consumption behaviour	7

*Note: (BF) = Black Friday, (GF)= Green Friday; (F)= Frequency

Fig. 14. Main themes associated to consumers' positive sentiments.

This is clearer when we approach the results in terms of thematic analysis of consumer sentiments. In the group of companies running BF campaigns, none of the companies showed a strong commitment to the company's sustainable vision compared to companies adopting the GF approach. In this sense, the most prominent themes that grouped the negative sentiments towards BF practices were linked to the consumers' lack of trust on the companies and BF seen as a fraud or a trap for consumers.

Additionally, besides current experiences during the BF period, the results also showed some negative sentiment categories related to previous experience of consumers

in terms of brand and product perceptions as well as consumers dissatisfactions with the way companies manage their customer service. These results expand previous studies (Saura et al. 2019; Wilson et al. 2019, Tuyani Araújo Soares et al. 2022) on the perspective that current consumers have an increasingly critical and active attitude towards BF discounts, as well as on the role of previous consumer experiences with the brand and the product affecting consumers' expectations towards BF deals (Lennon et al. 2018).

In the case of companies promoting GF practices, the brands linked their promotional campaign with their sustainability vision, and most of the positive sentiments were linked with users' supportive mentions to companies' initiatives, brand preference and brand love. These results also supported the relevance of the previous consumers' experience with the brand, as well as the consumer brand image towards consumers' expectation on GF or BF companies approaches.

References

ACN. Detectan irregularidades en más de la mitad de ofertas del Black Friday. VIAempresa, 12 December 2022. https://www.viaempresa.cat/es/economia/irregularidades-mitad-ofertas-black-friday_2176236_102.html

Ahmed, W., Bath, P.A., Demartini, G.: Using Twitter as a data source: an overview of ethical, legal, and methodological challenges. In: Woodfield, K. (eds.) The Ethics of Online Research (Advances in Research Ethics and Integrity. Emerald Publishing Limited, pp. 79–107 (2017)

Arufe, F.: Las empresas que dijeron no a las rebajas del Black Friday. Economia 3, 29 November 2021. https://economia3.com/2021/11/30/466849-la-resistencia-al-black-friday-empresas-que-dijeron-no-a-las-rebajas/

Ataman, F., Özgüner, O.: Determination of social media users' perceptions about "Black Friday" activity via sentiment analysis. Int. J. Multi. Curr. Educ. Res. **3**(3), 361–371 (2021)

Azionya, C.M., Nhedzi, A.: The digital divide and higher education challenges with emergency online learning: an analysis of tweets in the wake of the Covid-19 Lockdown. Turkish Online J. Dist. Educ. **22**(4), 164–182 (2021)

Bag, S., Tiwari, M.K., Chan, F.T.S.: Predicting the consumer's purchase intention of durable goods: an attribute-level analysis. J. Bus. Res. **94**, 408–419 (2019)

Bell, G.C., Weathers, M.R., Hastings, S.O., Peterson, E.B.: Investigating the celebration of black Friday as a communication ritual. J. Creat. Commun. **9**(3), 235–251 (2014)

Cheng, M., Jin, X.: What do Airbnb users care about? An analysis of online review comments. Int. J. Hosp. Manag. **76**, 58–70 (2019)

Christensen, L.L., Larsen, M.C.: Ethical challenges in digital research: a guide to discuss ethical issues in digital research (2020). https://vbn.aau.dk/en/publications/ethical-challenges-in-digital-research-a-guide-to-discuss-ethical-2/fingerprints/

Cho, J.Y., Lee, E.: Reducing confusion about grounded theory and qualitative content analysis: similarities and differences. Qual. Rep. **19**(32), 1–20 (2014)

Clemente, P.: Cataluña halla "irregularidades" en más del 50% de las ofertas del Black Friday. Activos, 12 December 2022. https://www.epe.es/es/activos/20221212/cataluna-halla-irregularidades-50-ofertas-79858916

Cody, E.M., Reagan, A., Peter, A.J., Dodds, S., Danforth, C.M.: Public opinion polling with Twitter. Phsysics and Society (2016)

Cugat, R.: La Generalitat halla "irregularidades" en más del 50% de las ofertas del Black Friday. El Periódico, 12 December 2022. https://www.elperiodico.com/es/consumo/20221212/generalitat-halla-irregularidades-50-ofertas-79852308

de Elena, V.: ¿Crisis en el consumo? Los españoles gastaron un 8% más en el "Black Friday." La Información 29 November 2022. https://www.lainformacion.com/economia-negocios-y-finanzas/crisis-consumo-espanoles-gastaron-mas-black-friday/2877587/

Flyverbom, M., Deibert, R., Matten, D.: The governance of digital technology, big data, and the internet: new roles and responsibilities for business. Bus. Soc. **58**(1), 3–19 (2017)

González, J.A.: Ni ofertas ni descuentos, estas empresas plantan cara al Black Friday. ABC Antropía, 25 November 2022. https://www.abc.es/antropia/abci-empresas-contra-black-friday-20221125073755_noticia.html

Harrison, R., Reilly, T., Gentry, J.: Black Friday: a video-ethnography of an experiential shopping event. In: Campbell, M.C., Inman, J., Pieters, R. (eds.) NA - Advances in Consumer Research Volume. Association for Consumer Research, MN, vol. 733 (2010)

Helm, S.: Viral marketing - establishing customer relationships by "word-of-mouse. Electron. Mark. **10**(3), 158–161 (2000)

IAB. Estudio de Redes Sociales 2022 (2022)

Jimenez-Marquez, J.L., Gonzalez-Carrasco, I., Lopez-Cuadrado, J.L., Ruiz-Mezcua, B.: Towards a big data framework for analyzing social media content. Int. J. Inf. Manage. **44**, 1–12 (2019)

Khodabakhsh, M., Kahani, M., Bagheri, E., Noorian, Z.: Detecting life events from twitter based on temporal semantic features. Knowl.-Based Syst. **148**, 1–16 (2018)

Lee, E., Weder, F.: Framing sustainable fashion concepts on social media. An analysis of #slowfashionaustralia Instagram posts and post-COVID visions of the future. Sustainability **13**(17), 9976 (2021)

Lennon, S.J., Kim, M., Lee, J., Johnson, K.K.P.: Consumer emotions on black Friday: antecedents and consequence. J. Res. Consum. **32**, 70–109 (2018)

Liu, B.: Sentiment Analysis and Opinion Mining. Springer, Cham (2012). https://doi.org/10.1007/978-3-031-02145-9

McLeod, F., Cherrett, T., Bailey, G., Dickinson, J.: "Shop and We´ll drop" - understanding the impacts of student e-shopping on deliveries to university halls of residence during Black Friday week. In: 21st Annual Logistics Research Network Conference (2016). https://www.researchgate.net/publication/312627294_%91SHOP_AND_WE%92LL_DROP%92_-_Understanding_the_impacts_of_student_e-shopping_on_deliveries_to_university_halls_of_residence_during_Black_Friday_week

Mehmetoglu, M., Dann, G.M.S.: Atlas/ti and content/semiotic analysis in tourism research. Tour. Anal. **8**(1), 1–13 (2002)

Mogaji, E., Erkan, I.: Insight into consumer experience on UK train transportation services. Travel Behav. Soc. **14**, 21–33 (2019)

OCU. OCU denuncia que el 99% de las rebajas anunciadas no son reales. OCU La Fuerza de Tus Decisiones 23 November 2022. https://www.ocu.org/organizacion/prensa/notas-de-prensa/2022/descuentosfalsos231122

Palos-Sanchez, P., Saura, J.R., Martin-Velicia, F.: A study of the effects of programmatic advertising on users' concerns about privacy overtime. J. Bus. Res. **96**, 61–72 (2019)

Pang, B., Lee, L.: Opinion mining and sentiment analysis. Found. Trends Inf. Retr. **2**(1–2), 1–135 (2008)

Reyes-Menendez, A., Saura, J.R., Alvarez-Alonso, C.: Understanding #WorldEnvironmentDay user opinions in twitter: a topic-based sentiment analysis approach. Int. J. Environ. Res. Public Health **15**(11), 2537 (2018)

Sailer, A., Wilfing, H., Straus, E.: Greenwashing and bluewashing in black Friday-related sustainable fashion marketing on Instagram. Sustainability **14**(3), 1494 (2022)

Santamaría, A.: Black Friday 2022: las empresas que no hacen descuentos Empresas. Expansión, 24 November 2022. https://www.expansion.com/empresas/2022/11/23/637ba080e5fdeac0748b45e1.html

Saura, J.R., Reyes-Menendez, A., Palos-Sanchez, P.: Are black Friday deals worth it? Mining twitter users' sentiment and behavior response. J. Open Innov. Technol. Market Complexity **5**(3), 58 (2019)

Schreier, M.: Qualitative Content Analysis in Practice. Sage, Thousand Oaks (2012)

Sugiura, L., Wiles, R.R., Pope, C.: Ethical challenges in online research: Public/private perceptions. Res. Ethics **13**(3–4), 184–199 (2017)

Tan, X., Yen, D.C., Fang, X.: Internet integrated customer relationship management a key success factor for companies in the e-commerce arena. J. Comput. Inf. Syst. **42**(3), 77–86 (2002)

Taylor, L.M., Kathleen, O., Shaw, K.: An analysis of consumer behavior on black Friday. Am. Int. J. Contemp. Res. **1**(1), 1–5 (2011)

Testa, D.S., Bakhshian, S., Eike, R.: Engaging consumers with sustainable fashion on Instagram. J. Fash. Mark. Manag. **25**(4), 569–584 (2020)

Thelwall, M., Buckley, K., Paltoglou, G.: Sentiment in twitter events. J. Am. Soc. Inform. Sci. Technol. **62**(2), 406–418 (2011)

Thomas, J.B., Peters, C.: An exploratory investigation of black Friday consumption rituals. Int. J. Retail Distrib. Manage. **39**(7), 522–537 (2011)

Tsolmon, B., Kwon, A.R., Lee, K.S.: Extracting social events based on timeline and sentiment analysis in twitter corpus. In: Bouma, G., Ittoo, A., Métais, E., Wortmann, H. (eds.) Natural Language Processing and Information Systems. NLDB 2012. Lecture Notes in Computer Science, vol. 7337, pp. 265–270. Springer, Berlin (2012). https://doi.org/10.1007/978-3-642-31178-9_32

Tuyani Araújo Soares, S., Modesto, J.G., Tuyani Araújo Soares, S., Modesto, J.G.: Persuasion and emotions: consumer fraud on black Friday Brazil. Ciencias Psicológicas **16**(2), 2339 (2022)

Wilson, M., Paschen, J., Pitt, C., Wallström, Å.: Restraint on black Friday: an investigation into consumer motivations for participating in "Buy Nothing Day": an abstract. In: Rossi, P., Krey, N. (eds.) AMSWMC 2018. DMSPAMS, pp. 859–859. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-02568-7_235

Analyzing Customer Behavior In-Store: A Review of Available Technologies

Olaf Saßnick, Robert Zniva(✉), Christina Schlager, Matthäus Horn, Reuf Kozlica, Tina Neureiter, Simon Kranzer, Viktoria Müllner, and Julian Nöbauer

Salzburg University of Applied Sciences, Salzburg, Austria
{olaf.sassnick,robert.zniva,christina.schlager,matthaeus.horn,
reuf.kozlica,tina.neureiter,simon.kranzer,viktoria.muellner,
julian.noebauer}@fh-salzburg.ac.at

Abstract. Online channels collect almost effortlessly a lot of behavioral customer data in a fully automated manner. Providing a comparable number of metrics for traditional brick-and-mortar environments is challenging and requires the introduction of additional sensor technology. In this work a systematic computer science literature review is carried out to provide an overview of measurement objects, associated characteristics, and sensor technologies for brick-and-mortar retail environments. The measurement objects can be divided into product and person detection, with the latter focusing on determining the characteristics of persons, namely frequency, path, and features. From the identified sensor technologies, image and depth sensors are the most versatile, but also require the highest computational effort and infrastructure cost. For the detection of some characteristics, other technologies, like wireless beacons, provide a viable alternative. Results are presented in a suitability matrix. Based on the results we propose a stronger interdisciplinary collaboration between marketing and computer science scholars.

Keywords: In-store technology · Brick-and-mortar · Retailing · Stationary · Analytics · Sensor technology · Customer behavior

1 Introduction

Over the recent years, technological advances brought new opportunities and challenges to the marketing world. What initially started as separated marketing efforts on individual channels, developed into an omni-channel situation where a customer's path-to-purchase is a combination of multiple touch-points on different channels (Barwitz and Maas 2018; Verhoef et al. 2015). Naturally, in such a system, retailers would want to identify the usage of channels to implement them in the most efficient way (Timoumi et al. 2022). To do so, performance metrics of each channel are collected (Gensler et al. 2007; Greenyer 2006). However, different channels provide different sets of metrics which complicates direct comparison of performance (Sides et al. 2019). To make matters worse, the ability or effort to collect data depends strongly on the nature of the channel. The more technology is involved in the channel, the more data is typically available. Online channels

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 243–252, 2023.
https://doi.org/10.1007/978-3-031-31836-8_25

collect almost effortlessly a lot of behavioral customer data in a fully automated manner (Erevelles et al. 2016). In E-commerce or online advertisement environments, multiple data points (the number of views, the viewing duration, clicking action, mouse pointer movement, the customer's location, shopping cart abandonment etc.) are collected, up to a point where customers in the digital world are fully identifiable by their digital fingerprints (e.g. Mazel et al. 2019; Palos-Sanchez et al. 2022). In addition, this allows the application of artificial intelligence (AI) to increase sales and improve efficiency (Guha et al. 2021).

However, opening up such opportunities by providing a comparable amount of metrics for traditional brick-and-mortar environments is challenging and requires the introduction of sensor technology. Although, current conceptual contributions and reviews in marketing and retailing research have focused on the description of different new-age technologies and associated changes in analytics (e.g. Guha et al. 2021; Kumar and Venkatesan 2021), literature on the nature and possibilities of different sensor technologies in the physical market space is scarce. The study at hand aims to add to the current understanding of in-store technology and analytics by presenting results of a comprehensive literature review on (in-store) sensor technology from a computer science perspective. Doing so, we provide: (i) an overview of typical measurement objects and associated characteristics in brick-and-mortar retail environments, (ii) an overview of different available sensor technologies, and (iii) an evaluation of the ability of these technologies to actually capture objects and characteristics. The aim of this approach is to foster the interdisciplinary understanding of retail technologies and provide marketers with a deeper knowledge of basic technological measurement possibilities and limitations.

2 Methodology

We based our study on a systematic literature review as proposed by (Snyders 2019). In a first step, we consulted prominent literature databases, namely, the Association for Computing Machinery (ACM), the Institute of Electrical and Electronics Engineers (IEEE), Springer Nature and Elsevier. A query consisting of three search categories was performed on each database with the search scope being limited to the title, keywords and the abstract.

The first search category specified the application of technologies and digitization and consisted of the terms: *technolog* OR smart* OR digital* OR digitization OR futuristic*. The second search category was used to reduce the results to the retail environment or omni-channel applications and comprised of the terms: *retail OR brick-and-mortar OR physical store OR physical shop OR stationary retail OR omni-channel OR omnichannel OR in-store OR point-of-sale OR offline retail* OR off-line OR grocery OR grocery retailing*. The third category was introduced to limit the results to studies which explore shopping-related technologies and consists of the terms: *shopper OR buyer OR customer OR customer OR B2C OR purchaser OR client OR patron*.

The query was performed on each data base and initially resulted in a total of 2,366 articles. To ensure a certain quality standard, we only queried for peer-reviewed publications. As a next step, a two-stage manual screening of title and abstract was carried out.

Only empirical research studies investigating technologies related to a brick-and-mortar retail setting was included in our review. Ultimately, this resulted in a total of 135 articles which are narrowed down by manual screening merely focusing on experimental studies involving technology suitable to capture objects and associated characteristics in a stationary retail environment. In total 46 articles were investigated.

3 Measurement Objects and Characteristics

As a first step, based on the identified articles, we categorized which objects and associated characteristics are measured in typical stationary retail settings. In this context, we identified two basic measurement objects: product and person detection. Product detection focuses on the identification and localization of physical products in the physical retail space and was mostly applied to monitor the availability of assortment, but could be also used to gain insights on how customers or employees move items within the stores (e.g. to localize misplaced items). Person detection included all studies which focused on tracking customers or employees in stores. In this regard, we identified three characteristics of persons which were measured, representing also different levels of accuracy:

Frequency: The entry and exit of customers are counted. Technical applications may not be limited to the in-store environment, for instance also the counting of people passing by a shop-window can be realized (Campos et al. 2011; Herviana et al. 2020).

Path: Actual paths of individual customers in-store are recorded. Depending on the technical application, the resulting path accuracy does vary according to three levels: (i) department level, (ii) aisle level and (iii) item-interaction level. For instance, Shen et al. (2018) only tracked the visited stores and the stay duration in a shopping mall, while Alipio et al. (2020) and Sturari et al. (2016) recorded customer movement in-store at aisle-level of accuracy. Further increasing the level of detail, Pierdicca et al. (2015) or Ali and Liu (2020) tracked the customer's interaction with store items.

Features: Lastly, characteristics of customers can be identified with a greater level of detail by determining demographics (gender, age, etc.) or sentiment (basic emotional status) (Bertacchini et al. 2017; Lee et al. 2014).

4 Technologies

According to our systematic literature review, the following technologies meet the requirements for the previously discussed applications. In this section, we give an overview on their respective working principles accompanied by usage examples. Further we compare the individual performances based on the reported results. As shown in Fig. 1 the technologies can be clustered according to their physical working principle.

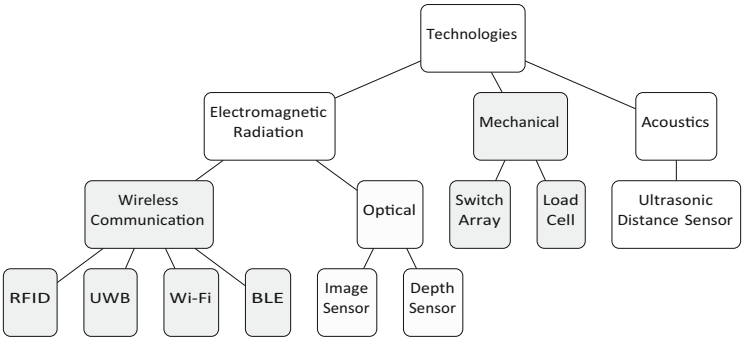


Fig. 1. Clustering of the technologies according to their working principles

4.1 Wireless Communication

The wireless communication cluster consists of four different technologies, namely ultra-wideband (UWB) low-energy bluetooth (BLE), wireless fidelity (Wi-Fi) and radio-frequency ID (RFID). RFID can be further categorized into active and passive RFID.

Passive RFID systems typically comprise of a reader unit and multiple passive tags without a self-contained power source. The tag, mainly consisting of an antenna and a microchip, is briefly powered by the signal energy transmitted by the RFID reader and sends back a weaker response signal. The main application of passive RFID is product identification. For example, Rashid et al. (2015) propose a smart shelf separated in multiple segments, where each segment is equipped with its own reader antenna. The individual placement of all contained products or items is determined by the proximity to the nearest reader antenna. An update period of one minute is achieved. This particular setup allows to track item interactions with the customers, i.e. how frequently an item is being picked up and put back. Exploring the possibilities for customer path identification with passive RFID, Wang et al. (2020) process the signal responses of multiple passive tags with known positions not only to track a shopping cart equipped with a reader unit, but also to detect the customers location by interpreting the signal dampening caused by the human body. The proposed installation is able to locate the shopping cart at a median tracking error of 20 cm and can identify the customer's location with a median tracking error of 25 cm, however it requires 135 passive RFID tags to cover a 3.6×2 m area. The authors note a time of 20 s required to read all 135 tags which limits the responsiveness.

Active RFID, UWB, BLE and **Wi-Fi** are mainly used for customer path identification. In all cases, the customer is equipped with a wireless transceiver unit. For BLE and Wi-Fi, the smartphone of the customer is used. Typically, no interaction by the customer is required, if the Wi-Fi or BLE function of the phone is activated. For UWB and RFID, which do not have reached the same adoption level in consumer electronics, typically the transceiver unit is installed in a shopping basket or cart. Multiple network nodes (access points, beacons) are installed in the retail setting in known positions. The received signal strength (RSS) to each known position is consequently used by the network to regularly determine the position of the customer, resulting in a path (Vossiek et al. 2003). In terms of localization accuracy, both UWB and active RFID outperform BLE and Wi-Fi. For

instance, Alipio et al. (2020) equipped a small shop (20 m^2) with four UWB beacons, recording a maximum position error of about 22 cm at maximum. Paolanti et al. (2017) reported a comparable maximum error of 20 cm when applying UWB, noting however that the accuracy depends on the materials of the surroundings, as conductive materials yield a poor performance due to a higher reflection rate of the electromagnetic waves. In comparison, Sturari et al. (2016) applied BLE technology, deploying six beacons to cover 8×15 m, resulting in an average error of 1.9 ± 1.0 m. Shen et al. (2018) report a poor performance of Wi-Fi based localization and combined this technology with BLE to improve localization accuracy. However, on a low accuracy level (individual shop visits within a mall) Chen et al. (2017) demonstrate a successful implementation of Wi-Fi based localization. In summary, while a higher accuracy for RFID and UWB is achieved, the main advantage of BLE and Wi-Fi for customer path identification is the usage of readily available customers smartphones. However, also employees use smartphones, hence data collected from employee devices needs to be disregarded, e.g. by using a filtering based on the check-in frequency (Chen et al. 2017). Overall, this method is not suitable for determining absolute customer frequency, as not every customer carries a smartphone and not every phone has Wi-Fi or BLE activated.

4.2 Optical

The optical cluster consists of all technologies which use electromagnetic radiation in the optical frequency spectrum. According to our review, image sensors turn out to be the most versatile sensors, capable of detecting products, persons and interaction of both. Determining customer frequency or density based on overhead mounted birds-eye perspective cameras is demonstrated by Alipio et al. (2020) and Myint and Sein (2021). Both reach a similar performance of above 99% for detecting persons. Naturally, image sensors capture visual features, and therefore can be used for visual product and customer identification. For example, Xu et al. (2020) and Satapathy et al. (2015) demonstrate vision-based stock monitoring, with a camera mounted nearby a shelf. As for customer identification, various features like gender, age and sentiment can be estimated based on the visual appearance of a customer. For instance, Lee et al. (2014) use image sensors to capture the customer's sentiment in six basic emotions and a reduced classification in positive or negative emotion. While the classification with six emotions was found to be less robust, resulting in a detection rate between 25% to 50%, the reduced classification resulted in a detection rate of 70% for the positive category and 90% for the negative category. In some cases, already installed infrastructures can be exploited. Ijjina et al. (2020) report successful usage of image sensor data of existing surveillance camera installations, to identify the age, gender, stay duration and sentiment of customers.

To improve the performance of an image sensor, it can be complemented with a depth sensor. Different techniques exist for depth sensing (Zanuttigh et al. 2016), for the literature studied, typically structured light is used. A dot light pattern illuminating the environment is created by a laser beam, invisible to the human eye. This light pattern is captured with an auxiliary image sensor, equipped with a filter lens, to only receive the narrow frequency band close to the laser beam operating frequency. Based on the projected pattern, the distance to objects in the environment (relative to the projector) can

be determined. A smaller-scaled dots-pattern indicates a nearby object, while a larger-scaled pattern identifies an object to be further away. Processing the pattern results in a 3-dimensional depth map of the image, relative to the sensors location. Depth sensors can be implemented to improve the measurement of frequency and density in a store, but also improve the classification of persons based on different features. For example, Lee et al. (2014) implement the monitoring of a store entrance by combining image and depth sensors. The depth data is used to detect and track persons for path identification and frequency counts. In an experiment with 400 customers, they report nearly 100% detection rate when relying on the depth sensor data, compared to 93% detection rate, when solely using an image sensor.

To summarize, image and depth sensors show the most universal capabilities, however they also generate the highest amount of data, thus requiring the highest amount of software-based processing and computational power of all included technologies. Typically, for processing, machine learning models are employed in the form of convolutional neural networks (CNN) (O'Shea and Nash 2015). For example, Ijjina et al. (2020) use a Wide Resnet CNN to estimate the age and gender demographics and apply a second CNN (mini Xception) to obtain the emotion of the customers. Furthermore, to identify customer paths with a consistent level of detail, a large number of sensors is required to cover the whole shop floor. Also, a consistent good lighting is required. Due to the high data amount, processing typically needs to happen with an edge-node nearby the sensor, which also increases infrastructure costs.

4.3 Mechanical and Acoustics

Further sensors being deployed in the studied literature are mechanical switch arrays, load cells and ultrasonic distance sensors. For example, load cells are typically used for product detection, as demonstrated by (Sarwar et al. 2020). On the other hand, as shown in Huang et al. (2019), mechanical switch arrays embedded in floor tiles can be used for collecting customer frequency data. This is also accomplished by ultrasonic sensors, which were applied by Hanooja et al. (2020) to detect persons by monitoring distance changes. In summary, based on our review, mechanical and acoustic sensors provide a limited ability to detect products and persons in stationary retailing.

5 Conclusion and Outlook

The study at hand adds to the current understanding of in-store technology and analytics by presenting results of a comprehensive literature review of (in-store) sensor technology from a computer science perspective. Our results show that sensors in stationary retail environments are predominantly used to identify and localize products and persons. Typically, characteristics like frequency, paths and object features are in the focus of the measurement. Different technologies were identified to produce associated metrics. Each identified technology has different advantages and disadvantages in terms of the ability to accurately measure a certain characteristic. Table 1 gives an overview in form of a suitability matrix.

Table 1. Suitability matrix for measurement objects based on the studied literature

Measurement \ Technology		Acoustics & Mechanical	Wi-Fi	BLE	UWB	RFID	Image & Depth Sensors
Product	Detection					●	●
Person	Frequency	●					●
...	Path - Department level		●	●	●	●	●
...	Path - Aisle level			●	●	●	●
...	Path - Item Interaction				●	●	●
...	Features						●

According to our classification, image and depth sensors are the most universal. Therefore, it may seem tempting to merely rely on image and depth sensors as they cover all the described measurement objects and associated characteristics. However, computational effort to process acquired data and the cost of infrastructure might shift the benefits towards the usage of a combination of different sensory types. Also, privacy concerns related with camera technology are relevant for customers. Hence, if absolute frequency metrics, customer paths at aisle-level of detail, and privacy are required, then this could be achieved more cost-efficient and privacy-aware by combining mechanical or acoustic sensor types with BLE beacons. Overall, processing costs will decline with future technological advances in hardware and computing algorithms (Williams 2017). So, while a widespread implementation in its current development state is not sustainable, it can be beneficial for retailers to invest in research efforts and test technologies.

Based on the results of our systematic literature review, some advances in the field of sensing technologies have not yet been fully researched in the context of brick-and-mortar retail, like millimeter wave radar sensors (Li et al. 2019) or device-free Wi-Fi sensing (Al-qaness et al. 2019), which could address some of the current limitations while also preserving the customers privacy. Furthermore, the upcoming mobile communication 5G standard does provide more accurate localization possibilities (del Peral-Rosado et al. 2018).

Finally, further interdisciplinary research between computer science, marketing and retailing could provide valuable insights. Especially the integration of the presented new measurement possibilities, associated data, and analytics in existing performance measurement schemes in stationary retailing is an interesting and challenging research possibility. In this context, the customer perception and acceptance of in-store retail technologies, associated services or new business models will also drive future research endeavors.

Acknowledgements. This research was supported by the COIN program of the Austrian Research Promotion Agency (FFG), Project Nr.: 884130.

References

Ali, K., Liu, A.X:. Monitoring browsing behavior of customers in retail stores via RFID imaging [Publisher: Institute of Electrical and Electronics Engineers (IEEE)]. IEEE Trans. on Mobile Comput. **21** (2020). https://doi.org/10.1109/tmc.2020.3019652

Alipio, M.I., Peñalosa, K.M.T., Unida, J.R.C.: In-store customer traffic and path monitoring in small-scale supermarket using UWB-based localization and SSD-based detection [Publisher: Springer Science and Business Media LLC]. J. Ambient. Intell. Human Comput. (2020) https://doi.org/10.1007/s12652-020-02236-z

Al-qaness, M.A.A., et al.: Channel state information from pure communication to sense and track human motion: a survey. Sensors **19**(15), 3329 (2019). https://doi.org/10.3390/s19153329

Barwitz, N., Maas, P.: Understanding the omnichannel customer journey: determinants of interaction choice. J. Interact. Market. **43**, 116–133 (2018). https://doi.org/10.1016/j.intmar.2018.02.001

Bertacchini, F., Bilotta, E., Pantano, P.: Shopping with a robotic companion. Comput. Hum. Behav. **77**, 382–395 (2017). https://doi.org/10.1016/j.chb.2017.02.064

Campos, P., Campos, M., Freitas, P., Jorge, J.: Foot-turistic multimedia: designing interactive multimedia installations for shoe shops [Publisher: Springer Science and Business Media LLC]. Multimed. Tools Appl. **61**(2), 471–487 (2011). https://doi.org/10.1007/s11042-011-0854-6

Chen, Y., Zheng, Z., Chen, S., Sun, L., Chen, D.: Mining customer preference in physical stores from interaction behavior [Publisher: Institute of Electrical and Electronics Engineers (IEEE)]. IEEE Access **5**, 17436–17449 (2017). https://doi.org/10.1109/access.2017.2744263

del Peral-Rosado, J.A., Raulefs, R., Lopez-Salcedo, J.A., Seco-Granados, G.: Survey of cellular mobile radio localization methods: from 1G to 5G. IEEE Commun. Surv. Tutor. **20**(2), 1124–1148 (2018). https://doi.org/10.1109/COMST.2017.2785181

Erevelles, S., Fukawa, N., Swayne, L.: Big Data consumer analytics and the transformation of marketing. J. Bus. Res. **69**(2), 897–904 (2016). https://doi.org/10.1016/j.jbusres.2015.07.001

Gensler, S., Dekimpe, M.G., Skiera, B.: Evaluating channel performance in multi-channel environments. J. Retail. Consum. Serv. 14(1), 17–23 (2007). https://doi.org/10.1016/j.jretconser.2006.02.001

Greenyer, A.: Measurable marketing: a review of developments in marketing's measurability. J. Bus. Indust. Market. **21**(4), 239–242 (2006). https://doi.org/10.1108/08858620610672605

Guha, A., et al.: How artificial intelligence will affect the future of retailing. J. Retail. **97**(1), 28–41 (2021). https://doi.org/10.1016/j.jretai.2021.01.005

Hanooja, T., Raji, C.G., Sreelekha, M., Koniyath, J., Ameen, V. M., Noufal, M.M.: Human friendly smart trolley with automatic billing system. In: 2020 4th International Conference on Electronics, Communication and Aerospace Technology (ICECA) (2020). https://doi.org/10.1109/iceca49313.2020.9297439

Herviana, A., Sudiharto, D.W., Yulianto, F.A.: The prototype of in-store visitor and people passing counters using single shot detector performed by OpenCV. In: 2020 1st International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE) (2020). https://doi.org/10.1109/icitamee50454.2020.9398507

Huang, H.-Y., Fanjiang, Y.-Y., Hung, C.-H., Tsen, W.-C.: The flow control in unmanned stores with sensing floor. In: 2019 IEEE 8th Global Conference on Consumer Electronics (GCCE) (2019). https://doi.org/10.1109/gcce46687.2019.9015364

Ijjina, E.P., Kanahasabai, G., Joshi, A.S.: Deep learning based approach to detect customer age, gender and expression in surveillance video. In: 2020 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT) (2020). https://doi.org/10.1109/icccnt49239.2020.9225459

Kumar, V., Venkatesan, R.: Transformation of metrics and analytics in retailing: the way forward. J. Retail. **97**(4), 496–506 (2021). https://doi.org/10.1016/j.jretai.2021.11.004

Lee, T.-W., Chiu, Y.-L., Wu, Y.-S., Liu, H.-S.: An intelligent image-based customer analysis service. In: The 16th Asia-Pacific Network Operations and Management Symposium (2014). https://doi.org/10.1109/apnoms.2014.6996534

Li, X., He, Y., Jing, X.: A survey of deep learning-based human activity recognition in radar. Remote Sens. **11**(9), 1068 (2019). https://doi.org/10.3390/rs11091068

Mazel, J., Garnier, R., Fukuda, K.: A comparison of web privacy protection techniques. Comput. Commun. **144**, 162–174 (2019). https://doi.org/10.1016/j.comcom.2019.04.005

Myint, E.P., Sein, M.M.: People detecting and counting system. In: 2021 IEEE 3rd Global Conference on Life Sciences and Technologies (LifeTech) (2021). https://doi.org/10.1109/lifetech52111.2021.9391951

O'Shea, K., Nash, R.: An introduction to convolutional neural networks (2015) [arXiv:1511.08458 [cs]]. https://doi.org/10.48550/arXiv.1511.08458

Palos-Sanchez, P.R., Martinez, R.R., García-Ordaz, M., López García, J.J.: The use of the shopping cart: the problem of abandonment in e-Commerce. In: Martínez-López. F.J., Martinez, L.F. (eds.), Advances in Digital Marketing and e-Commerce, pp. 93–103. Springer, Cham (2022). https://doi.org/10.1007/978-3-031-05728-1_12

Paolanti, M., Liciotti, D., Pietrini, R., Mancini, A., Frontoni, E.: Modelling and forecasting customer navigation in intelligent retail environments [Publisher: Springer Science and Business Media LLC]. J Intell Robot Syst **91**(2), 165–180 (2017). https://doi.org/10.1007/s10846017-0674-7

Pierdicca, R., Liciotti, D., Contigiani, M., Frontoni, E., Mancini, A., Zingaretti, P.: Low cost embedded system for increasing retail environment intelligence. In: 2015 IEEE International Conference on Multimedia & Expo Workshops (ICMEW) (2015). https://doi.org/10.1109/icmew.2015.7169771

Rashid, Z., Peig, E., Pous, R.: Bringing online shopping experience to offline retail through augmented reality and RFID. In: 2015 5th International Conference on the Internet of Things (IOT) (2015). https://doi.org/10.1109/iot.2015.7356547

Sarwar, M.A., Daraghmi, Y.-A., Liu, K.-W., Chi, H.-C., Ik, T.-U., Li, Y.-L.: Smart Shopping carts based on mobile computing and deep learning cloud services. In: 2020 IEEE Wireless Communications and Networking Conference (WCNC) (2020). https://doi.org/10.1109/wcnc45663.2020.9120574

Satapathy, R., Prahlad, S., Kaulgud, V.: Smart Shelfie – Internet of shelves: for higher on-shelf availability. In: 2015 IEEE Region 10 Symposium (2015). https://doi.org/10.1109/tensymp.2015.9

Shen, J., Cao, J., Liu, X., Tang, S.: SNOW: detecting shopping groups using WiFi [Publisher: Institute of Electrical and Electronics Engineers (IEEE)]. IEEE Internet Things J. **5**(5), 3908–3917 (2018). https://doi.org/10.1109/jiot.2018.2839525

Sides, R., Marsh, M., Hobbs, D., Furman, B.: The future of retail metrics; measuring success in a shifting marketplace (2019). https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-cb-future-of-retailmetrics.pdf. Accessed 9 Feb 2023

Snyder, H.: Literature review as a research methodology: an overview and guidelines. J. Bus. Res. **104**, 333–339 (2019). https://doi.org/10.1016/j.jbusres.2019.07.039

Sturari, M., et al.: Robust and affordable retail customer profiling by vision and radio beacon sensor fusion. Pattern Recogn. Lett. **81**, 30–40 (2016). https://doi.org/10.1016/j.patrec.2016.02.010

Timoumi, A., Gangwar, M., Mantrala, M.K.: Cross-channel effects of omnichannel retail marketing strategies: a review of extant data-driven research. J. Retail. **98**(1), 133–151 (2022). https://doi.org/10.1016/j.jretai.2022.02.008

Verhoef, P.C., Kannan, P., Inman, J.J.: From multi-channel retailing to omni-channel retailing. J. Retail. **91**(2), 174–181 (2015). https://doi.org/10.1016/j.jretai.2015.02.005

Vossiek, M., Wiebking, L., Gulden, P., Wieghardt, J., Hoffmann, C.: Wireless local positioning - Concepts, solutions, applications. In: Radio and Wireless Conference, 2003. RAWCON 2003. Proceedings, pp. 219–224 (2003). https://doi.org/10.1109/RAWCON.2003.1227932

Wang, P., Guo, B., Wang, Z., Yu, Z.: ShopSense: customer localization in multi-person scenario with passive RFID tags [Publisher: Institute of Electrical and Electronics Engineers (IEEE)]. IEEE Trans. on Mobile Comput. **21** (2020) https://doi.org/10.1109/tmc.2020.3029833

Williams, R.S.: What's Next? [The end of Moore's law]. Comput. Sci. Eng. **19**(2), 7–13 (2017). https://doi.org/10.1109/MCSE.2017.31

Xu, J., et al.: Design of smart unstaffed retail shop based on IoT and artificial intelligence [Publisher: Institute of Electrical and Electronics Engineers (IEEE)]. IEEE Access **8**, 147728–147737 (2020). https://doi.org/10.1109/access.2020.3014047

Zanuttigh, P., Marin, G., Dal Mutto, C., Dominio, F., Minto, L., Cortelazzo, G.M.: Time-of-Flight and Structured Light Depth Cameras. Springer, Cham (2016). https://doi.org/10.1007/978-3-319-30973-6

Digital Marketing and E-Commerce a Bibliometric Analysis

Miguel Guillén-Pujadas, David Alaminos, Emili Vizuete-Luciano, Ana María Argila-Irurita(✉), and María Luisa Solé-Moro

Business Department, University of Barcelona, Barcelona, Spain
{miguel.guillen,alaminos,evizuetel,aargila,mlsolesolel}@ub.edu

Abstract. In today's economy, electronic commerce is playing a fundamental role, positioning itself as one of the main means for the consumption of different users. Rooted to this type of consumer behavior, are associated the concepts of Digital Marketing with which it seeks to deepen the consumption strategies and predisposition to the use of different customers. In recent years, these two terms have gained great relevance in the academic world of the social and business environment. For this reason, a bibliometric analysis has been carried out with the aim of substantiating the main academic contributions to date and providing future lines of research in these areas. The methodologies used in the study combine quantitative techniques and scientific mapping, providing greater depth and clarity. With this, the relevance of these studies has been observed, highlighting the large number of publications and citations in recent years. In the same way, the involvement of large institutions such as the University of London, Massachusetts Institute of Technology, Hong Kong Polytechnic University, among others, has been revealed. The involvement of major journals such as the Journal of Marketing, Journal of Marketing Research, Journal of Business Research, Mis Quarterly and International Journal of Information Management has also been highlighted. Finally, different future lines of research have been proposed, such as: research on innovation strategies of Digital Marketing and E-Commerce systems in digital platforms and social networks; implementation of models of knowledge of user satisfaction; economic markets, competition and design of environments for the evolution of E-Commerce.

Keywords: Digital Marketing · E-Commerce · Bibliometrics · Web of Science · Citations

1 Introduction

Trends followed in Digital Marketing are undergoing transformations due to the different business strategy approaches to be able to compete in this field of commerce (Goldman et al., 2021). Investment in digital marketing techniques by companies is constantly increasing due to the thriving route of electronic sales, better known as E-Commerce, which creates a much more direct relationship between seller and buyer (Nisar and Prabhakar, 2017). E-Commerce has proven to be a very profitable platform for companies,

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 253–269, 2023.
https://doi.org/10.1007/978-3-031-31836-8_26

since Knowledge-based investments offer more creative ways of managing the company, they can realize new competitive positions or improve existing ones, and they can increase their productivity thanks to the cost reductions (Reynols, 2000).

Digital Marketing focuses on a set of processes to create a profile on digital channels to advertise a product or service, and even create a digital brand (Kannan and Li, 2017), developing all the necessary techniques to attract and retain customers after identifying them through Internet (Yang et al., 2004). Thanks to digital marketing, firms apply digital strategies to differentiate themselves, through the receipt of preferences issued by the consumer, trying to influence their buying decisions (Taken Smith, 2012). This is reflected in E-Commerce and the profits of companies while providing speed, confidentiality, customer service and security.

Electronic commerce platforms or E-Commerce as they are more commonly known, have had a higher increase than projected in previous years. Although the market was growing rapidly, the situation generated by the pandemic caused a significant acceleration during 2020, which decreased a bit in 2021, but is expected to continue to rise for this and the coming years. Online shopping has already become part of the habitual behavior of the common citizen and it is unlikely that it will go back, given the investment that has been made in the sector and the benefits that users have been able to see for themselves. Along the same lines, digital commerce platforms have strengthened and expanded thanks to new business alternatives created during the Covid-19 pandemic, such as home delivery (delivery), since confinement and restrictions led to an exponential rise of many personal ventures. According to Li et al. (2020), the main characteristics of electronic commerce are related to end users or customers and also to the companies that offer them. The first of these is accessibility, with information on products and services accessible 24 h a day; offer few difficulties to the consumer; a multimedia interaction; versatility of products and services; globalized platforms being able to reach any market from anywhere in the world; a decrease in costs both for the consumer, but mainly for companies; dynamism, being able to optimize the consumer experience thanks to the ease of collecting information about their preferences.

Marketing researchers have focused their attention more and more on the adoption of e-business, on measuring the success of electronic businesses, through the use of intelligent platforms to operate their transactions under the scaffolding of digital marketing. Scientific production forms the core of the information disseminated online (Li and Zhang, 2021), an increase in scientific production on electronic commerce and the implementation of digital strategies in organizations has been observed in recent years.

This work focuses on studying the most outstanding aspects of the academic publications carried out in the nexus between Digital Marketing and E-Commerce. A wide set of research papers have been compiled and analyzed in order to proceed with the present study, dealing with both qualitative and quantitative works, therefore, different methodologies were applied. A bibliometric analysis has been carried out, that is, a quantitative exploration of the literature found on the subject, with previous works obtained from the Web of Science Core Collection (WoS) database, owned by Clarivate Analytics. WoS brings together different reference databases, including the Science Citation Index Expanded (SCIE), the Social Science Citation Index (SSCI) and the Emerging Sources

Citation Index (ESCI). WoS currently contains more than 18,000 high-impact journals, establishing itself as the world leader in reference data.

The results of the analysis of the bibliometric review explain different maps, which represent the different factors and academics related to this area (Noyons, 1999). In order to achieve this objective, the impact of citations in scientific publications through these factors was studied. Using this framework of analysis, we will be able to identify those factors that have already been extensively studied by researchers and other factors that still need to be studied. Recently, scientific cartography has been considered an essential method within bibliometrics since it allows us to approach all lines of study in a more precise and visual way (Cobo et al., 2011).

The results achieved in the present work lead us to draw conclusions about the reliable observation of the most outstanding scientific aspects and the actors that have contributed the most to the study of digital marketing and E-Commerce, in addition to detailing the possible future lines of research in the area.

2 Methodology

Quantitative analysis, known in the bibliometric study as performance analysis, is very present in the different methodologies used in bibliometric analysis, in addition to scientific mapping (Noyons et al., 1999; Cobo et al., 2011). The purpose of these two techniques is to broaden as much as possible the vision of the set of works carried out on a specific field of research (Guillén-Pujadas et al., 2022). In our case, both performance analysis and scientific mapping of bibliographic records on digital marketing and E-Commerce are applied.

There is no longer any bibliometric review available on the research area covered in this analysis, this study aims to shed light on knowledge. To do this, we have outlined the following research questions:

- Question 1. What are the most current trends in the field, the most influential published articles and the Journals that make the greatest contributions on the area of Digital Marketing and E-Commerce?
- Question 2. What is the intellectual framework of current research?
- Question 3. a. What are the topics related with our research area?
  b. What are the lines with the greatest potential for future research?

Therefore, we will begin by building our bibliometric analysis from the aforementioned research questions. The advantage of bibliometric analysis to analyze unstructured data and try to graphically unite them through maps with the aim of analyzing the evolution of these areas (Baier-Fuentes et al., 2021). Thanks to this, it will be possible to obtain relevant information for researchers and users who want to deepen their knowledge of Digital Marketing and E-Commerce to make observations of those lines that interest them the most and even new research opportunities in the area (Donthu et al., 2021).

We have collected and analyzed bibliometric data on digital marketing and E-Commerce studies for your review. To achieve this, the SPAR-4-SLR protocol has been applied (Vizuete-Luciano, et al., 2022) (Fig. 1).

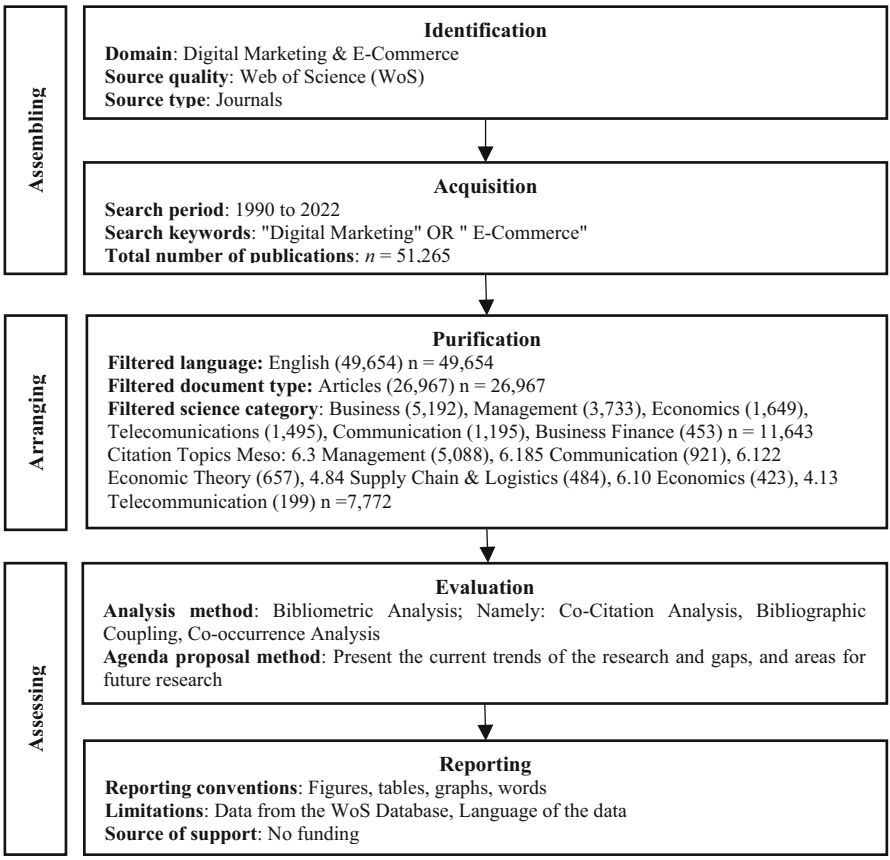


Fig. 1. Procedure of the study based on the SPAR-4-SLR Protocol.

The Web of Science (WoS), owned by the firm Clarivate Analytics, is the main database in terms of publications and research citations worldwide, thus allowing more accurate and contrasting information to be extracted. WoS comprises databases of bibliographical references and citations with historical information covering the period from 1900 to the present (Vizuete-Luciano et al., 2023).

In this bibliometric analysis, indicators such as the number of publications, the number of citations, the total number of documents and the h-index have been used, a single measure that includes both the number of publications and the number of citations. (Hirsch, 2005). The h-index is defined as the number of articles, N, by an author that have received at least N citations each.

Regarding the scientific mapping, it makes a representation of the possible intellectual links between the scientific actors that have connected in a certain field of research. (Small, 1997; Cobo et al., 2011; Merigó et al., 2018). For this task, the VoSviewer software (van Eck and Waltman, 2010) has been used, which gives us the opportunity to visualize the results through the following indicators:

– The bibliographic link, which occurs when two documents cite the same third article (Kessler, 1963).
– Co-citation, capable of measuring the most cited documents and occurs when two documents receive a citation from the same third document (Small, 1973).
– Co-keywords, analyzes the most relevant keywords of the works and gives the virtue of being able to analyze the structure of the concepts that cover a field of research (Callon et al., 1983).

Thanks to the results achieved, a complete and current vision of Digital Marketing and E-Commerce can be achieved through performance analysis and scientific mapping. But this vision is retrospective, and may change over the years, since new and better indicators may appear to analyze publications, especially for the most recent ones.

3 Results

3.1 Bibliometric Performance Analysis

3.1.1 Publications and Citation Structure

The first articles on Digital Marketing and E-Commerce that we found in our sample were published in the early 1990s. From the mid-1990s onwards, the number of publications related to the subject under study began to increase, reaching 60 articles in this discipline before the turn of the century. Since then, the production of articles has not stopped growing exponentially, in 2003 for the first time more than 100 articles were published. From 2015 onwards, the number of publications began to rise by hundreds per year, reaching 2021 and 2022 with more than 1000 articles in the discipline annually. Figure 2 shows the trend in the number of publications over time.

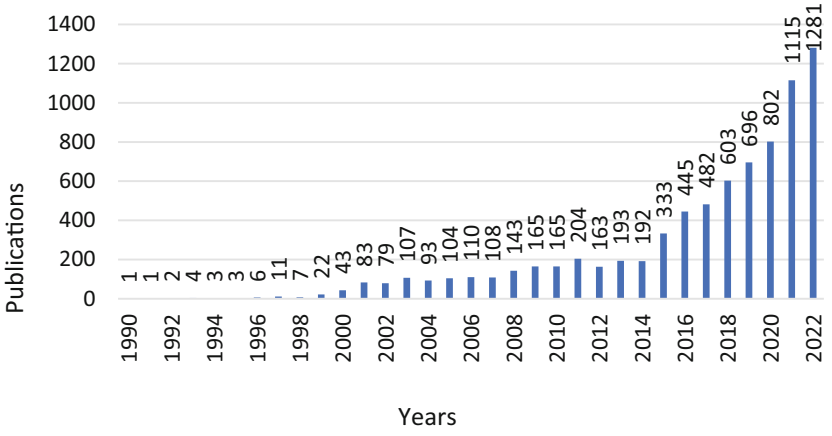


Fig. 2. Number of papers published per year

From the figure above, we can see how the first turning point in Digital Marketing and E-Commerce publications began in 2003, when the first theories on the use of the Internet in e-commerce began to be developed. Next, we will see how in 2011 we reach another key point after starting to come out of the financial crisis of 2008, implying increases in spending and consumption. Finally, from 2020 the number of articles was much higher, reaching more than a thousand publications per year. After the Covid-19 pandemic, digital commerce has become fundamental to business and has attracted a great deal of interest from different members of academia.

3.1.2 Influential Papers

As mentioned above, there are many articles referring to the concepts studied. These publications belong to different journals, authors, institutions and in turn have been cited by other academic articles. To continue with the study, in Table 1 we proceed to show the 15 most cited articles in reference to Digital Marketing and E-Commerce, found in the Web of Science Core Collection. The indicators used are publication title, authors' names, year of publication, total number of citations (TC) and the average number of citations between years (C/Y).

First, we find the article "The DeLone and McLean model of information systems success: a ten-year update" by authors DeLone, W. H. and McLean, E. R., the article was published in 2003 and today has a total of 4598 citations. This article improves the model proposed in 1993 on information systems (IS), adding value and highlighting the implication in E-Commerce. Years later, authors Boyd, D. and Crawford, K. published an article on Big Data that has managed to garner a large number of citations. The article "CRITICAL QUESTIONS FOR BIG DATA Provocations for a cultural, technological, and scholarly phenomenon" currently has 2,562 citations, which represents more than 213 citations per year. We find other articles of great interest such as "Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior" by Pavlou, P. A. and Fygenson, M. or "Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model" by Pavlou, P. A.; which have a large number of citations, being a reference in Digital Marketing and E-Commerce.

Table 1. Top 15 most cited papers on Digital Marketing and E-Commerce

Rank	Title	Author/s	Year	TC	C/Y
1	The DeLone and McLean model of information systems success: a ten-year update	DeLone, W. H.; McLean, E. R	2003	4598	218,95
2	CRITICAL QUESTIONS FOR BIG DATA Provocations for a cultural, technological, and scholarly phenomenon	Boyd, D.; Crawford, K	2012	2562	213,50
3	Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model	Pavlou, P. A	2003	1964	93,52
4	Hedonic and utilitarian motivations for online retail shopping behavior	Childers, T. L.; Carr, C. L.; Peck, J.; Carson, S	2001	1542	67,04
5	E-commerce: the role of familiarity and trust	Gefen, D	2000	1495	62,29
6	Communities of practice: The organizational frontier	Wenger, E. C.; Snyder, W. M	2000	1416	59,00
7	Electronic word-of-mouth in hospitality and tourism management	Litvin, S. W.; Goldsmith, R. E.; Pan, B	2008	1378	86,13
8	Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model	Malhotra, N. K.; Kim, S. S.; Agarwal, J	2004	1354	67,70
9	Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior	Pavlou, P. A.; Fygenson, M	2006	1301	72,28
10	Building effective online marketplaces with institution-based trust	Pavlou, P. A.; Gefen, D	2004	1245	62,25
11	E-loyalty - Your secret weapon on the Web	Reichheld, F. F.; Schefter, P	2000	1133	47,21
12	Customer loyalty in e-commerce: an exploration of its antecedents and consequences	Srinivasan, S. S.; Anderson, R.; Ponnavolu, K	2002	1084	49,27

(*continued*)

Table 1. (*continued*)

Rank	Title	Author/s	Year	TC	C/Y
13	Direct-marketing, indirect profits: A strategic analysis of dual-channel supply-chain design	Chiang, W. Y. K.; Chhajed, D.; Hess, J. D	2003	1081	51,48
14	Why do people play on-line games? An extended TAM with social influences and flow experience	Hsu, C. L.; Lu, H. P	2004	988	49,40
15	What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology	McKnight, D. H.; Chervany, N. L	2001	954	41,48

3.1.3 Leading Authors

Table 2 shows the 15 authors with the highest number of publications on Digital Marketing and E-Commerce studied. In this table we can see the names of the authors, the organization they belong to, the total number of publications (TP) for these topics, the total number of citations (TC) for these articles, the H-index calculated for these publications, the ratio of citations per article (TC/TP) and a counter of articles according to the total number of citations they have, if they exceed 100 citations, 50 citations or more than 10 citations.

We can see how Gupta, S, of the Indian Institute of Management is the author with the largest number of publications and with a large number of citations. He has a total of 24 articles with more than a thousand citations, so we can see how the ratio of citations per article reaches 45.08 citations per article. It is worth mentioning Benbasat, I. from the University of British Columbia, who with only 19 articles is the author with the most citations so far, with more than 2,200 citations and an H-index of 17, with 11 articles on these topics with more than 100 citations. It is also worth mentioning Kim, J. from the National Sun Yat Sen University, who has 15 articles with more than 1000 citations and an h-index of 10. Although, although it is true, the vast majority belong to the continents of North America and Asia.

Table 2. Top 15 Leading authors on Sustainable Brands and Retail topics

Rank	Authors	Organization	TP	TC	H.index	TC/TP	≥ 100	≥ 50	≥ 10
1	Gupta S	Indian Institute of Management	24	1.082	15	45,08	3	5	9
2	Chen L	University of North Carolina	21	293	8	13,95	0	2	5
3	Kumar A	London Metropolitan University	21	627	10	29,86	1	0	10
4	Kauffman R. J	Singapore Management University	20	766	15	38,30	1	5	11
5	Benbasat I	University of British Columbia	19	2.286	17	120,32	11	4	2
6	Lee J	Sungkyunkwan University	19	268	10	14,11	0	1	9
7	Wang Y	Carleton University	19	619	10	32,58	2	0	8
8	Liu Y	Zhejiang University	17	283	8	16,65	0	2	5
9	Kumar V	Carleton University	16	548	13	34,25	0	4	9
10	Li Y	Renmin University of China	16	159	7	9,94	0	0	3
11	Cheng T. C. E	Hong Kong Polytechnic University	15	967	8	64,47	2	1	5
12	Kim J	National Sun Yat Sen University	15	1.079	10	71,93	4	3	4
13	Li H	University of New Mexico	15	285	7	19,00	0	1	6
14	Wang L	University of Chicago	15	243	7	16,20	0	1	5
15	Zhang J	University of Texas System	15	265	6	17,67	1	0	4

3.1.4 The Most Productive and Influential Institutions

Next, we proceed to observe the 15 institutions with the highest number of articles in reference to the disciplines studied. Table 3 shows the names of the institutions, the country to which they belong, total publications (TP), total citations (TC), institution's h-index (H) and the ratio of total citations per total papers (TC/TP). We also found the number of articles with more than 100, 50 and 10 citations. Finally, we proceeded to look for the position they occupy in the different international rankings, with the intention of being able to observe how important the institutions are at world level and what implication they have in these topics. First, we found the Academic Ranking of World Universities (ARWU) and then we found the Quacquarelli Symonds World University Ranking (QS).

Table 3. The most productive and influential institutions

Rank	Organization	Country	TP	TC	H	TC/TP	≥ 100	≥ 50	≥ 10	ARWU	QS
1	University Of London	United Kingdom	118	4.941	34	41,87	13	9	44	17	6
2	City University Of Hong Kong	Hong Kong	81	6.263	40	77,32	15	16	37	151–200	54
3	University Of North Carolina	United States	68	2.627	23	38,63	10	2	24	29	102
4	Hong Kong Polytechnic University	Hong Kong	62	2.376	19	38,32	6	4	33	151–200	65
5	National University Of Singapore	Singapore	61	3.757	32	61,59	13	7	21	75	11
6	University Of Pennsylvania	United States	56	4.233	30	75,59	11	8	28	15	13
7	Michigan State University	United States	52	5.073	29	97,56	11	11	19	101–150	159
8	The University of Texas at Austin	United States	51	3.488	23	68,39	10	7	17	41	72
9	New York University	United States	48	3.717	22	77,44	10	4	18	27	39
10	University of Washington	United States	48	2.083	24	43,40	3	11	20	19	80
11	Pennsylvania State University	United States	45	3.246	24	72,13	6	6	23	101–150	93

(*continued*)

Table 3. (*continued*)

Rank	Organization	Country	TP	TC	H	TC/TP	≥ 100	≥ 50	≥ 10	ARWU	QS
12	Massachusetts Institute of Technology	United States	44	3.505	23	79,66	9	8	13	4	1
13	University Of Manchester	United Kingdom	43	1.342	19	31,21	3	5	23	35	28
14	University of Washington	United States	43	1.907	22	44,35	3	10	17	19	80
15	Carnegie Mellon University	United States	42	2.509	22	59,74	6	2	26	97	52

In first place, we find the University of London which harvests a total of 118 publications in this discipline, accumulating more than 4,900 citations and an h-index of 34 for these articles and having 13 with more than 100 citations. Next, we find the City University of Hong Kong, which has 81 articles and is the institution with the highest number of citations with a total of 6,263, its ratio of citations per article exceeds 77 points. In this aspect, Michigan State University of the United States stands out, which with only 52 articles has a ratio of 97.56 citations per article, being the highest average of the sample.

As observed, 66.66% of the institutions belong to the United States, with the remaining 13.33% belonging to the United Kingdom and Hong Kong and only one to Singapore. Likewise, if we look at the Academic Ranking of World Universities column, we can see that the fourth most important institution in the global ranking is the Massachusetts Institute of Technology (MIT). Likewise, we find another 8 universities within the top 50 of the most important universities in the world.

On the other hand, regarding the ranking provided by Quacquarelli Symonds World University Ranking, we find two universities in the top 10 and a total of 13 universities in the top 100. In this case, the QS ranking provides the first place to MIT, as opposed to the fifth place in the ARWU ranking. It is also noteworthy that the institution with the highest number of publications is ranked number 6 in the global ranking of Quacquarelli Symonds World University Ranking.

3.1.5 The Most Productive and Influential Countries

Now let's look at the most productive countries, where we find a greater number of contributions on the topics of Digital Marketing and E-Commerce. In order to identify the countries, we have used the countries from which the different authors of the articles have published. Table 4 uses the same variables as in Table 3, except that the university rankings have been removed and the population data (POP) of each country provided by the World Bank have been added, in order to determine the ratios Total Publications over Population (TP/POP) and Total Citations over Population (TC/POP). The following table shows the 15 countries with the highest number of publications. In first place we

find the United States with a total of 2,390 articles and 136,169 citations. It also has an H-Index of 171. This country stands out in these variables over the rest by far. Next, we find China with 1,237 publications and more than 27,000 citations. Given that it has a very large population, its population ratios are very low, as in the case of India.

Within these institutions, many European countries also stand out, such as England with 741 articles, Germany with 404, Spain 361, among others. Regarding the total number of publications per thousand inhabitants, we find that Finland is the country that needs the least number of inhabitants to produce an article and obtain citations, Netherlands also has a good ratio of publications and citations per population.

Table 4. The most productive and influential countries

Rank	Country	TP	TC	H	TC/TP	Population	TP/POP	TC/POP
1	United States	2390	136.169	171	56,97	331.893,74	7.201,10	410.278,90
2	China	1237	27.384	76	22,14	1.412.360,00	875,84	19.388,82
3	England	741	20.969	69	28,30	55.997,20	13.232,80	374.465,15
4	India	429	6.873	39	16,02	1.393.409,03	307,88	4.932,51
5	Germany	404	8.926	49	22,09	83.129,29	4.859,90	107.374,91
6	Australia	383	9.196	50	24,01	25.739,26	14.879,99	357.275,23
7	Spain	361	8.117	47	22,48	47.326,69	7.627,83	171.509,99
8	Taiwan	312	10.719	49	34,36	23.927,80	8.157,69	280.263,80
9	Canada	311	12.336	55	39,67	38.246,11	5.265,28	208.850,34
10	Italy	302	5.937	42	19,66	59.066,22	4.474,12	87.956,42
11	France	298	7.420	41	24,90	67.499,34	1.392,57	34.673,96
12	South Korea	269	9.661	49	35,91	213.993,44	1.257,05	45.146,24
13	Netherlands	202	7.686	48	38,05	17.533,40	11.520,87	438.363,35
14	Finland	162	3.432	30	21,19	5.541,02	29.236,51	619.380,88
15	Sweden	155	3.467	30	22,37	33.359,42	4.646,36	103.928,67

3.2 Science Mapping

One of the most widely used methodologies for bibliometric studies is scientific mapping. Through this methodology we can graphically observe the different connections between the elements we find in scientific publications. With this analysis we can complement and approximate more precisely the data and results obtained from the quantitative analysis with a much more visual model. Next, we will show different scientific mappings oriented to the different aspects treated previously in this same article, we will find the connection of the different authors cited in the articles, the most important journals and the most used keywords. As mentioned in the methodology, the VOSviewer software was used to

carry out these analyses. This tool allows us to create scientific mappings of citations, co-citations, co-occurrences and bibliographic coupling.

Citation and co-citation analysis establish the relationships between different articles, journals or authors that have been cited by more than one article together. Co-citation mapping will show the data of the articles cited and not of the articles that have made the citations. Therefore, if two articles are repeatedly co-cited together, they will have a closer relationship and a stronger relationship. On the other hand, the co-occurrence map shows the terms that are recurrently related. In the case of keywords, when we find the same keywords in more than one article.

In order to understand more precisely the framework in which the studies on Digital Marketing and E-Commerce are found, we proceed to develop a map of co-citations of journals, with this we will be able to highlight those journals with greater influence in these areas and with a higher level of citations. All this will imply that these journals will be the ones with the most prestigious articles. In order to carry out the mapping, it has been established that the journal must have been co-cited at least 2,334 times, which has exposed the 25 most co-cited journals.

Figure 4 shows the main marketing and business magazines. We can see three clusters where we can distinguish a blue management block, a red marketing block and a green communication block. In the blue block we can highlight the journals Mis Quarterly, Management Science, among others. In the red subgroup where we find journals related to marketing, we find Journal of Marketing, Journal of Marketing Research, Journal of Business Research, Journal of Retailing, etc. Finally, in the green block, we find communication and technology journals, some of them are: International Journal of Electronics and Communications, International Journal of Information Management, Computers in Human Behavior and Internet Research (Fig. 3).

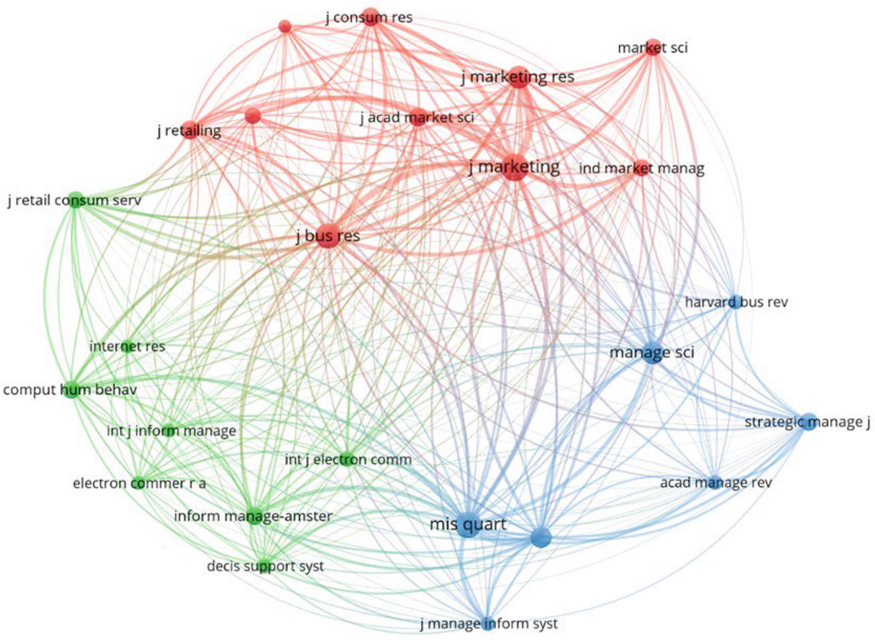


Fig. 3. Co-citation of journals

Finally, Fig. 4 shows the main keywords used in articles related to Digital Marketing and E-Commerce. With this scientific mapping, we will be able to differentiate the most recurrent topics within these researches and the future lines of research that can be a challenge for the academy. In the map of co-occurrence of keywords, we find the 50 most repeated keywords, having at least 180 occurrences. The most validated, used and significant keywords will be established.

As expected, at the epicenter of the mapping we find E-Commerce, being the most related and significant keyword. Next, we find the keywords Internet, Technology, Model and Impact, these variables are closely related to the topic we are dealing with. We can see how the scientific mapping of co-occurrence of keywords presents us with three clusters of topics, the first one more linked to e-commerce and user experience in blue, where future lines of research can be found: privacy in commercial transactions linked to trust and risk perceived by users when interacting with E-Commerce; user experience linked to technological models of acceptance and information technologies; adoption of e-commerce and information technologies. In the red cluster, we find key words more linked to business management and technology such as, performance, impact, design, systems, strategies, among others. Through this environment different futuristic researches can be observed: first of all, we find the topics social media, information, media and product where they relate the use of new technologies and user experience linked to communication; we also find references to the use of technologies, internet and

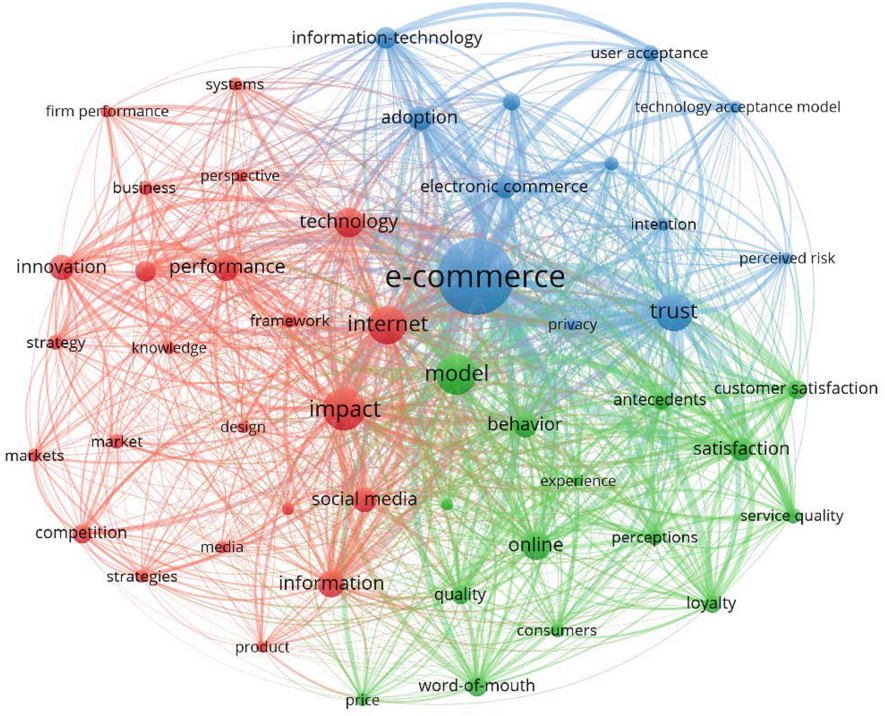


Fig. 4. Co-Occurrence of keywords

platforms related to the development of business innovation; in the same way we find the relationship of strategies and competition related to design and audiovisual media; in the green cluster we find models, behavior and consumer satisfaction, where future lines of research can be proposed: first of all we find how price, quality, world-of-mouth and consumers are directly related in order to define the user experience; customer loyalty with service quality and consumer satisfaction; in addition to observing the background of e-commerce, user experience, satisfaction and their behavior.

4 Conclusions

Digital platforms and the emergence of e-commerce have caused an increase in social economic activity related to these platforms. Through Digital Marketing and E-Commerce, we can relate the experiences and implementations by companies and consumers. Generating economic empowerment for all countries and causing changes in pre-existing consumption methods. Thanks to technological development and implementation by companies, we are able to offer greater experiences when consuming products. All this was reflected and enhanced during the Covid-19 pandemic where communication technologies were a fundamental pillar for the development of life and more specifically in the continuity and fluidity of commercial and professional activity. From that moment on, the importance of the topics discussed in this article was magnified even more.

For this reason, and noting the importance of these economic factors, we have proceeded to investigate previously published academic articles in order to establish a framework for past studies and marking future productions in a sector of such high value. For this reason, the combination of quantitative methodologies, together with scientific mapping, is so relevant. In this way it will be possible to scrutinize the fundamental elements of Digital Marketing and E-Commerce, focusing on the most important authors, institutions, countries, journals and keywords to date and reflecting possible future lines of research.

For the development of this study, a significant sample was obtained from the Web of Science Core Collection database. A total of 7,772 articles of great value and prestige in the social sciences have been obtained through the topics Digital Marketing and E-Commerce. These articles belong to the period between 1990 and 2022, where it has been observed and demonstrated the great interest that this topic has been developing, increasing exponentially the number of publications and citations as the years go by. These articles have been published by various authors, institutions and countries of great renown, which demonstrates the high degree of impact and importance for the whole world, from an academic and social point of view. The production of articles from different countries can be highlighted, being the United States, China and England the ones with the highest number of articles and citations. Highly prestigious institutions also stand out, accumulating the top positions in the most important university rankings ARWU and QS.

On the other hand, thanks to the scientific mapping developed through the VOSViewer program, which has made quantitative relationships of information through the different elements of the articles, it has been possible to highlight important factors

of current and future publications. The knowledge of prestigious journals such as: Management Science, Journal of Marketing, Journal of Marketing Research, International Journal of Information Management, among others, stands out. Finally, we have proceeded to observe the main Keywords used by the published academic articles, allowing us to observe the most studied factors such as: E-Commerce, Technology, Information, Social Media, Model… and those aspects that should be promoted in future lines of research.

4.1 Future Lines of Research

Next, we proceed to expose one of the major contributions of this article, the proposals of different future lines of research related to Digital Marketing and E-Commerce. Firstly, it is proposed to investigate the implementation of models to know the perception and acceptance of users in these economic systems. Next, the need to study the strategies for innovation and implementation of Digital Marketing and E-Commerce systems in businesses through electronic platforms and social networks is highlighted. It is also possible to observe the lack of research on economic markets, competition and the design of technological frameworks for the development of E-Commerce. Finally, the importance of word-of-mouth in the perception of quality and price in online shopping for different consumers and the implication of quality service related to customer satisfaction and brand loyalty could be investigated.

References

Baier-Fuentes, H., Merigó, J.M., Miranda, L., Martínez-López, F.J.: Strategic planning research through fifty years of long-range planning: a bibliometric overview. Strateg. Manag. **26**(1), 3–25 (2021). https://doi.org/10.5937/StraMan2101003B

Callon, M., Courtial, J.P., Turner, W.A., Bauin, S.: From translations to problematic networks: an introduction to co-word analysis. Soc. Sci. Inf. **22**(2), 191–235 (1983). https://doi.org/10.1177/053901883022002003

Cobo, M.J., López, A., Herrera, E., Herrera, F.: Science mapping software tools: review, analysis, and cooperative study among tools. J. Am. Soc. Inform. Sci. Technol. **62**(7), 1382–1402 (2011). https://doi.org/10.1002/asi.21525

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., Lim, M.L.: How to conduct a bibliometric analysis: an overview and guidelines. J. Bus. Res. **133**, 285–296 (2021). https://doi.org/10.1016/j.jbusres.2021.04.070

Goldman, S.P., van Herk, H., Verhagen, T., Weltevreden, J.W.: Strategic orientations and digital marketing tactics in cross-border e-commerce: comparing developed and emerging markets. Int. Small Bus. J. **39**(4), 350–371 (2021). https://doi.org/10.1177/0266242620962658

Pujadas, M.G., Luciano, E.V., Márquez, F.V., Moro, M.S.: Investigación bibliométrica sobre la belleza y los consumidores. Cuadernos del CIMBAGE **2**(24), 36–50 (2022). https://ojs.econ.uba.ar/index.php/CIMBAGE/article/view/2528

Hirsch, J.E.: An index to quantify an individual's scientific output. Proc. Natl. Acad. Sci. U.S.A. **102**(46), 16569–16572 (2005). https://doi.org/10.1073/pnas.0507655102

Kannan, P.K., Li, H.: Digital marketing: a framework, review and research agenda. Int. J. Res. Mark. **34**(1), 22–45 (2017). https://doi.org/10.1016/j.ijresmar.2016.11.006

Kessler, M.: Bibliographic coupling between scientific papers. JASIST J. Assoc. Inf. Sci. Technol. **14**(1), 10–25 (1963). https://doi.org/10.1002/asi.5090140103

Li, L., Zhang, J.: Research and analysis of an enterprise e-commerce marketing system under the big data environment. J. Organizat. End User Comput. **33**(6), nº15, 1–19 (2021). https://doi.org/10.4018/joeuc.20211101oa15

Li, X., Zhao, X., Xu, W., Pu, W.: Measuring ease of use of mobile applications in e-commerce retailing from the perspective of consumer online shopping behaviour patterns. J. Retail. Cons. Serv. **55**, 102093 (2020). https://doi.org/10.1016/j.jretconser.2020.102093

Merigó, J.M., Pedrycz, W., Weber, R., de la Sotta, C.: Fifty years of Information Sciences: a bibliometric overview. Inf. Sci. **432**, 245–268 (2018). https://doi.org/10.1016/j.ins.2017.11.054

Nisar, T.M., Prabhakar, G.: What factors determine e-satisfaction and consumer spending in e-commerce retailing? J. Retail. Consum. Serv. **39**, 135–144 (2017). https://doi.org/10.1016/j.jretconser.2017.07.010

Noyons, E.C., Moed, H.F., Luwel, M.: Combining mapping and citation analysis for evaluative bibliometric purposes: a bibliometric study. J. Am. Soc. Inf. Sci. **50**(2), 115-131 (1999). https://asistdl.onlinelibrary.wiley.com/doi/10.1002/(SICI)1097-4571(1999)50:2%3C115::AID-ASI3%3E3.0.CO;2-J

Taken Smith, K.: Longitudinal study of digital marketing strategies targeting millennials. J. Consum. Mark. **29**(2), 86–92 (2012). https://doi.org/10.1108/07363761211206339

Reynols, J.: E-commerce: a critical review. Int. J. Retail Distrib. Manag. **28**(10), 417–444 (2000). https://doi.org/10.1108/09590550010349253

Vizuete-Luciano, E., Guezel, O., Merigó, J.M.: Bibliometric research of the pay-what-you-want topic. J. Reven. Pric. Manag. **11**, 1–14 (2022). https://doi.org/10.1057/s41272-022-00414-6

Vizuete-Luciano, E., Guillén-Pujadas, M., Alaminos, D., Merigó-Lindahl, J.M.: Taxi and urban mobility studies: a bibliometric analysis. Transp. Policy **133**, 144–155 (2023). https://doi.org/10.1016/j.tranpol.2023.01.013

Yang, Z., Jun, M., Peterson, R.T.: Measuring customer perceived online service quality: scale development and managerial implications. Int. J. Oper. Prod. Manag. **24**(11), 1149–1174 (2004). https://doi.org/10.1108/01443570410563278

The Influence of TikTok Videos on German Gen Z Consumers' Attitude and Purchase Intention Towards Sustainable Brands

Susanne Plötz[1], Luisa M. Martinez[2,3], Luis F. Martinez[1(✉)], and Filipe R. Ramos[4]

[1] Nova School of Business and Economics, Universidade Nova de Lisboa, Carcavelos, Portugal
luis.martinez@novasbe.pt
[2] Instituto Português de Administração de Marketing – IPAM Lisboa, Lisbon, Portugal
[3] UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação, Lisbon, Portugal
[4] CEAUL - Centro de Estatística e Aplicações, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal

Abstract. Recently, Gen Z has become the largest group of consumers worldwide and as they are being digitally driven by social media, this is the best way to reach them. One social media app has become popular for this generation – TikTok. Another characteristic most Gen Z individuals show is their cheerful outlook towards sustainability. Thus, this study investigates the influence of TikTok videos on Gen Z consumers' attitude and purchase intentions towards sustainable brands. Primary data were collected using a self-administered online questionnaire with 241 valid responses from Gen Z TikTok users in Germany. The research findings show that TikTok has an influence on Gen Z consumers' behavior. Therefore, it is recommended that sustainable brands promote their products on TikTok. This study can help marketers and researchers in comprehending the consumers' attitude towards TikTok videos and understanding how to use it as a base for future studies and development of strategies that appeal to Gen Z's demands.

Keywords: Consumer behavior · consumer attitude · purchase intention · sustainability · sustainable brands · TikTok · social media · online advertisements · germany

1 Introduction

The group of people born between 1995 and 2010 is called Generation Z, or Gen Z for short (Cilliers 2017). They are also called "digital natives" because they have grown up with technology and social media. Thus, they can search for anything on the internet and access tons of information (Seemiller and Grace 2017). For them, the boundaries between the virtual and the real world are becoming increasingly blurred as they use social media apps daily. Along with popular apps like Snapchat, Facebook, and Instagram, Gen Z has been using TikTok more frequently (Dimock 2019). Some reasons why young users are attracted to this app include its trendy content, the "swipe" interface, full screen feeding, and the personalized "For You Page" (FYP) (Zhuang 2022). Furthermore, with 41% of

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 270–289, 2023.
https://doi.org/10.1007/978-3-031-31836-8_27

the users being between 16 and 24 years old, TikTok's community consists of teenagers and young adults, who, on average, spend 52 min per day on the app (Ma and Hu 2021). Therefore, this app is a good platform for accessing Generation Z.

Another important characteristic of Generation Z is their awareness of sustainability. In 1987, the United Nations defined sustainability as "meeting the needs of the present without putting future generations' ability to meet their own needs at risk" (United Nations 2021, p. 6). Other studies show that Gen Z cares more about the environment and is more aware of how to live in a sustainable way (Su 2019). This generation feels a great responsibility to protect the environment and is more worried about global warming and worsening environmental issues. As a result, the desire to purchase eco-friendly goods is stronger which comes along with a higher willingness to pay for sustainability-related features (Brand et al. 2022). Research confirms the importance of this study in that TikTok will become increasingly relevant for businesses since it is the most downloaded app worldwide in 2021 (Apptopia 2021). Furthermore, according to a global survey in 2022, 37% of responding marketers announced an increase in the usage of TikTok for advertising issues (Stelzner 2022). Moreover, according to Fitch (2016), Gen Z has been the largest group of consumers worldwide since 2020, which further stresses the significant importance for companies and marketers to focus on this generation and understand how to best reach them. More than ever, businesses need to rethink how they provide value to Gen Z customers and put their words into action, especially, when it comes to being sustainable (Francis and Hoefel 2018).

To date, there is only limited information available on TikTok and how short-form videos on this app can influence consumer behavior. This study further differs from earlier papers because the focus is specifically on TikTok. In contrast, past studies have considered social networks such as Facebook, Instagram, and other platforms in general. Moreover, there has been little empirical research on the influence of social media platforms on consumers' attitudes and purchase intentions regarding sustainability, even though social media is the easiest way to reach Gen Z consumers. Given that sustainability plays a key role in their lives, this research seeks to identify if sustainable TikTok videos influence Generation Z consumers' attitudes and purchase intentions toward sustainable consumption and how Gen Z's sustainable consumers' attitudes influence their purchase intentions. Information, trust, and entertainment were additional variables examined, which affect people's plans to buy products from TikTok in the long run. This study only includes German citizens as this country is one of the leaders in terms of the largest audiences per country in 2022, with approximately 19.51 million users interacting in the famous social video platform (Data Reportal 2022). The stated objectives are described by the following research question which reflects the aim of this research: *How do TikTok videos influence Gen Z in terms of consumer attitude and purchase intention towards sustainable brands?*

2 Literature review

2.1 Generation Z and TikTok

Bytedance's TikTok is meant to be a hub for short videos like lip-syncing, comedy, or music videos, and it also has social networking features. The videos posted on the app are 15 to 60 s long (Schwedel 2018). Over 60% of TikTok users on the platform are part of Generation Z (Doyle 2022). According to Shatto and Erwin (2016) Gen Z individuals have an attention span of 8 s, which is noticeably shorter compared to other generations that came before. Thus, short-form videos are a smart way to excite and inspire these viewers. Also, Shatto and Erwin (2016) found that TikTok's short, powerful videos are a good format to reach audiences which marketers may not have been able to reach before. This becomes apparent in the high number of downloads of the app. TikTok was the most downloaded app in the world in 2021, with 656 million downloads overall (Apptopia 2021).

TikTok is popular with young people because it gives them a place to express themselves, pass the time when they have a few minutes to spare and learn about a wide range of topics (Ma and Hu 2021). What differentiates TikTok from other social media apps is its unique artificial intelligence-based recommendation algorithm that automatically shows content based on the user's engagement (e.g., likes, shares, comments), audience breakdown (e.g., market segmentation, gender, age), or clicked hashtags. As a result, a key component of TikTok is that users are fed personal preference-based clips rather than having to search for and think about videos (Ma and Hu 2021). This method makes the app more user-friendly than other social media networks such as Facebook or YouTube, where users must still choose the next video from an algorithm's recommended list (Ma and Hu 2021). In other words, TikTok puts its idea into action by giving everyone personalized, positive content by constantly suggesting related, shareable, copyable, and expandable content and by managing the user's entertainment options while keeping track of how they reacted to previous videos. Wei (2020), who used to work for Amazon, called the app a *fast, hyper-efficient matchmaker* that puts users into personalized market segments based on their interests by looking at their online behavior. To illustrate, someone who watches many fashion and beauty videos will get comparable recommended videos when engaging with the app. In contrast, videos will hardly appear for a user who watches lots of sports content. Another reason that makes TikTok interesting for Gen Z is that user-generated content is widespread alongside professionally generated content since there are almost no barriers to entry as the cost of production is low (Zhuang 2022).

A study from McKinsey mentions that Generation Z is always looking for authenticity, truth, and the value of the individual expression, while rejecting stereotypes (Francis and Hoefel 2018). That is why most TikTok creators who went viral or reached "influencer" status are those to whom the young audiences can relate to (Zhuang 2022). Gen Z consumers will not simply buy a product without learning about the brand. First, they will look up the social media accounts to learn what the company is truly about (Rickers 2022). Thus, it should not be a surprise that people in Gen Z are driving the growth of personal brands and customized products. Accordingly, businesses must stop putting people into groups based on their income and start coming up with creative ways

to reach the unique traits of this generation. Meanwhile, TikTok is a good starting point for its diverse and authentic content (Muliadi 2020).

2.2 Sustainability in Social Media (TikTok)

Social media apps are frequently used as communication tools, as they provide businesses and marketers with effective means of disseminating their messages and extending communities. They allow interaction between consumers and companies, which makes social media platforms the easiest way to get people interested in trends (Zhao et al. 2022). Furthermore, social networking platforms can influence and encourage group decision-making (Carpenter et al. 2016). Research shows that people who use social media to reach out to the public believe they have more ability to effect change than people who do not (Porter et al. 2007). However, thus far marketers have mainly focused their advertising efforts on Twitter and Facebook. These two platforms focus on written text and a few pictures (Zhao et al. 2022). With the rise of Instagram and TikTok, visuals have become more important in advertising (Zhao et al. 2022). To promote products and hence increase their values, it is helpful for businesses to use visuals in their advertisements, so consumers remember special products and brands better (Zhao et al. 2022).

Although most of the people have social media accounts, and sustainability is important nowadays, research examining the use of social media to draw attention to sustainability is minimal. Also, the few studies that have been done on how people use social media to discuss sustainability have focused on environmental activism (Carpenter et al. 2016). However, sustainability leaders think social media platforms are good for getting people to act and spreading information (Carpenter et al. 2016). If Gen Z has easy access to information related to sustainability through social media, it may be possible for them to act and make changes in the future (Basch et al. 2022). It is worth taking a closer look at the influence of TikTok on the sustainable thinking of Gen Z. To find out if there are sustainability-related videos on TikTok that can be shown to the users, an investigation was carried out on the app. In the search function, the keywords "sustainability," "sustainable brands," "sustainable lifestyle," "zero waste," and "ethical brands" were entered to gain an overview of the frequency and content of sustainable videos on TikTok. Overall, it can be stated that most of the videos with many likes on this topic were TikTok users trying to educate others on sustainable consumption, provide tips on how to live a more sustainable lifestyle, inform others about brands that are bad for the environment, and give sustainable alternatives to brands and products, especially in the fashion industry. This way of information sharing between two or more consumers regarding a brand or a product can also be described as electronic word of mouth, in short, eWOM (Tabassum et al. 2020). Moreover, it can be mentioned that there are not many large, famous companies trying to promote their sustainable missions through advertisements on TikTok. Instead, many TikTok videos stem from small businesses promoting sustainable products. Noting these aspects of existing videos and missing empirical research which investigates the influence of short-form videos on sustainable consumer attitude, the following hypothesis is formulated:

H1: Sustainable TikTok videos have a positive impact on Gen Z sustainable consumer's attitude.

2.3 Purchase Intentions Throughout TikTok

A consumer's purchase intention is their plan to buy a good or service (Araujo et al. 2022). There are many ways to advertise and bring attention to products and brands on social media. Several studies have praised how useful and effective social media is for advertising (Alalwan et al. 2017; Duffett 2015; Jung 2017). Advertising, e-commerce live streaming, and in-app purchases are the most common ways to get people to want to buy something on TikTok (Zhuang 2022). As already stated, another strategy used nowadays to promote products is eWOM. Because digital customers have broader product knowledge and access more information, eWOM is a strong and effective advertising tool. Hence, many research worker have studied its effect on consumer decision-making (Tabassum et al. 2020). According to previous research, eWOM plays a vital role when Gen Z individuals make purchasing decisions (Muddasar et al. 2020). Hussain et al. (2020) explored that customers often read online reviews and recommendations before deciding whether to buy something. Based on the results of previous studies in how effective social media ads and eWOM are influencing purchasing intentions, this research study examines how sustainable TikTok videos affect people's desire to purchase products. The meaning of "sustainable" TikTok videos includes TikTok advertisements from sustainable brands and eWOM from other users related to sustainable products. To gain a better understanding, this study examines how much information, trust, and entertainment affect a person's decision to purchase a product.

2.3.1 Information

Information can be defined as a fact or circumstance of which one is informed (Madden 2000). Marketers and advertisers use different social media platforms to spread information about various goods and brands that have grown significantly (Bucko et al. 2018). Djordjevic and Cotton (2011) suggest that spreading information widely is the first step to making people aware and changing their behaviors. Voorveld et al. (2018) found that consumers used seven of the eight social media sites in their survey because they helped them keep up with the latest news and gain other meaningful information from social media apps. Carpenter et al. (2016) concluded that social media platforms make it easier for sustainability leaders to spread information with their audiences, especially among Gen Z, to bring more attention to regional projects and problems. While viewing content on TikTok, users like to use the app's powerful algorithm to gain information that is tailored to their preferences (Huang 2022). TikTok also lets users search for hashtags or user accounts, in addition to the very personalized FYP. According to Google's internal studies, around 40% of Gen Z members prefer TikTok over Google for online searches. One reason is that they deliver information from real people rather than faceless websites. As previously mentioned, Generation Z has a shorter attention span and prefers to gather information quickly. Thus, TikTok is a good format as it allows for a more complete and condensed search result (Huang 2022). In consequence, the following hypothesis is created:

H2a: Information in sustainable TikTok videos have a positive impact on purchase intention.

2.3.2 Trust

Most economic and social relationships with uncertainty are based on trust (Pavlou 2003), which Merriam-Webster (2022) defines as a sure reliance on the character, strength, ability, or truth of someone or something. Trust arises from accumulated information that enables one to make predictions with exceptional confidence regarding the possibility that the other party will fulfill its responsibilities (Johnson 2003). Especially online, where customers cannot see their exchange partner or the product they want to buy, there are a lot of uncertainties and dependencies. It has been stated that a lack of trust is one of the main causes why people do not use e-commerce. Consequently, trust is a defining feature for customers' online behavioral intentions (Pavlou, 2003). Liu et al. (2005) examined how individual consumers' expectations of trust are influenced by their intent to purchase online. The study found that consumers' level of trust greatly affected how likely they were to buy something online. Tabassum et al. (2020) have also shown that different types of eWOM positively affect the audience's trust and behavior intentions. TikTok provides various content, including videos from key opinion leaders (KOL), verified company accounts, and experts in particular fields. These accounts are usually more credible when educating people about certain products, especially concerning sustainability (Bamakan et al. 2019). Consequently, as past literature agrees that trust in social media ads and eWOM are key factors in impacting purchase intention, the following hypothesis is proposed:

H2b: Trust towards sustainable TikTok videos have a positive impact on purchase intention.

2.3.3 Entertainment

Dwivedi et al. (2021) concluded that entertainment is provided when an ad meets an audience's aesthetic and distraction needs while making them feel good. This helps people pay attention, have positive feelings, and have good attitudes. Entertainment also raises both advertising effectiveness and perceived value. A previous study by Van-Tien Dao et al. (2015) identified that entertaining advertisements are one of the key elements influencing effective advertising strategies in creating an emotional connection between customers and a brand message. It also shows how likable an ad is and how much pleasure and excitement it brings to the customer. Logan et al. (2012) performed a comparison study that demonstrated how entertainment affects TV commercials and the value of social media advertisements in a big way. Tabassum et al. (2020) concluded that it is important for digital commercials to have entertainment that people can relate to because social media platforms make it easy for Generation Z to ignore marketing messages that get in the way of their fun. Most of the commercial and user-made videos on TikTok are said to be entertaining or funny (Ma and Hu 2021). However, due to the short length and mass of content, many entertaining videos can be shown to the user quickly, leading to addictive behavior (Araujo et al. 2022). Overall, considering the previous findings from the literature, the following hypothesis can be formulated:

H2c: Enjoyment in sustainable TikTok videos have a positive impact on purchase intention.

2.4 The Influence of Sustainable Consumers' Attitude on Purchase Intention

According to Vermeir and Verbeke (2006), a positive attitude toward sustainable products and brands is a good way to get people to consume in a more sustainable fashion. However, even though the demand for sustainable products is increasing, and 50% of European consumer stated that they are willing to pay a higher price for them, the market share for sustainable goods is less than 1%, which makes it difficult for customers to switch to sustainable consumption in the long term (Zhao et al. 2022). Additionally, although a sustainable attitude is in a consumer's mind, numerous factors can still explain the inconsistency between consumers' positive attitude toward sustainable products and their actual purchasing behaviors. For example, habitual behavior or situational factors such as promotions or rebates on less sustainable products may contribute to lower use of sustainable goods. Furthermore, according to Vermeir and Verbeke (2006), consumers can have varying reasons for purchasing a product, which makes it harder to understand specific situations. Nevertheless, other previous studies found that attitude influences sustainable consumption behavior, and overall, a positive attitude toward sustainability could be observed (Shamdasani et al. 1993; Shrum et al. 1995; Tanner and Kast 2003). Therefore, to examine if Gen Z sustainable consumers not only have the attitude towards purchasing but also purchase sustainable products and brands, the following hypothesis is presented:

H3: Sustainable consumer's attitude of Gen Z has a positive impact on purchase intention (Fig. 1).

Therefore, we present the following conceptual framework:

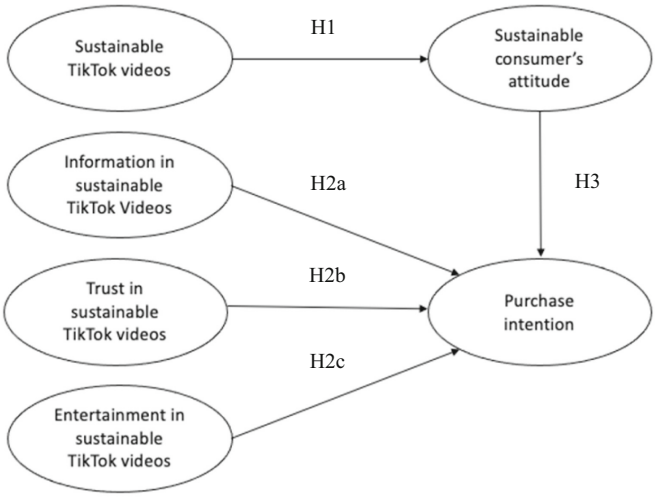


Fig. 1. Conceptual framework

3 Method

3.1 Data Collection and Sample

A quantitative methodology was adopted for this study. Participants were approached to complete a self-administered online survey utilizing Google Forms. Linear regressions were used to examine the survey results and draw conclusions related to the analyses, which helps to explain the relationships between the observed dependent variables and the independent variables (Hair et al. 2013). As this study focused on Generation Z, people born between 1995 and 2010 were chosen as the target group (Cilliers 2017). However, because people under the age of 18 need permission from their parents to take part in a survey, this survey only included people from 18 to 27 years old. Furthermore, the participant needed to use TikTok and live in Germany to be considered for participation. The online survey was distributed mostly through social media channels such as Facebook, WhatsApp, Instagram, and TikTok and was active from October 25th to November 7th, 2022. A non-probability sampling method called "snowball sampling" and "convenience sampling" were used to reach the target audience. These methods enable more respondents to reach in a shorter time than probability sample techniques (Hair et al. 2013). All respondents provided their responses voluntarily and without compensation. A total of 293 respondents responded to the survey. However, after screening for reliability and usability, not all of them could be used as only participants belonging to Generation Z, who are watching TikTok videos, and living in Germany, were considered. Overall, 241 responses met the criteria of the survey. An approximate balance between genders (106 males and 133 females) was achieved. Most of these individuals were university students at 73.9% (n = 178) and had a mean age of 23.3 years (SD = 2.30). Having a look at TikTok and when asked how often they use the app, more than half of the participants said daily, while 29% stated weekly. Lastly, when asked how long they use TikTok on an average day, 71.4% stated that they use the app for less than an hour. A total overview of the demographic characteristics is displayed below (Table 1).

Table 1. Demographic characteristics of the respondents

Items	*Categories*	*N*	*%*
Gender	Male	106	44.0
	Female	133	55.2
	Gender Diverse	2	0.8
Age Groups	18–21	43	17.8
	22–27	198	82.2
Education	High school	24	10.0
	University	178	73.9
	Currently working	39	16.2

(*continued*)

Table 1. (*continued*)

Items	*Categories*	*N*	*%*
TikTok Use Frequency	Other	3	1.2
	Quarterly	4	1.7
	Monthly	7	2.9
	Twice a month	12	5.0
	Weekly	70	29.0
	Daily	145	60.2
Average TikTok Use Per Day	Less than 1 h	172	71.4
	2–3 h	64	26.6
	4–5 h	3	1.2
	5+ h	2	0.8

Note: The ***respondent's*** gender, age group, education, and TikTok use are described by frequency and percent of the total sample

3.2 Questionnaire Design and Scale Development

The survey was divided into four sections. The first section began with general questions such as "When were you born?" or "Do you watch TikTok videos?" to ensure that the participants fit into the target audience. Next, a short introductory text regarding sustainable TikTok videos was given to ensure that participants understood the topic correctly and could answer the remaining questions. Two sustainable TikTok videos were also shown to refresh the participants' memory. It further gave those who saw little to no sustainable TikTok videos on their FYP the opportunity to rate the content. The third section was divided into five sub-sections with 43 questions in total to test the five developed hypotheses. The measured items were revalidated for this research after they were changed from existing scales to fit the research topic. The questionnaire was created utilizing a 5-point Likert scale from "1" – I strongly disagree to "5" - I strongly agree. An exception was made to determine the purchase intention of informative, trustful, and entertaining TikTok videos. Here, the five-point Likert scale was labeled as unlikely/likely, impossible/possible, and unlikely/likely (Freling et al. 2011). A metric interval scale, as the one used for this section, is one of the most common scales used in self-administered surveys (Hair et al. 2013). The measured items are fully listed in the Appendix. To complete the survey, the fourth and last section asked the participants to answer demographic questions such as age, gender, nationality, and education.

4 Results

The data were analyzed through IBM SPSS 28. The construct questions were used to create new continuous variables. Histograms were examined visually to ensure the sample population was normally distributed, and Shapiro-Wilks scores were calculated. For the usual significance levels, all variables have a normal distribution.

4.1 Scale Reliability and Validity

Before the analysis was carried out, scale reliability and validity were tested. First, Cronbach's Alpha (CA) was used to measure scale reliability. According to Hair et al. (2013), the coefficient value should be greater than 0.7 for internal consistency to be taken seriously. After looking at the construct CA values, the scales had a good to excellent level of internal consistency. In addition, each construct's composite reliability factor (CR) was computed. To confirm the reliability, values should be greater than 0.7 (Hair et al. 2013). In this study, CR values ranged from 0.85 to 0.96, also demonstrating high internal consistency. Lastly, the average variance extracted (AVE) was utilized to measure how well the individual constructs fit together. The AVE values should start from 0.5, which applies to the study constructs and therefore approves convergence validity (Hair et al. 2013). All factors considered, the mean values, standard deviation, and the frequency of items of each construct can be viewed in Table 2 below.

Table 2. Internal consistency of the study's constructs

Construct	Mean	SD	Number of Items	CA	CR	AVE
Sustainability in TikTok Videos	2.76	0.771	6	0.793	0.85	0.49
Attitude in Sustainability	3.21	0.822	5	0.866	0.90	0.65
Information Sustainability	3.52	0.886	3	0.749	0.86	0.67
Purchase Intention for Information Sustainability	3.39	1.036	3	0.918	0.95	0.86
Trust	3.05	0.888	5	0.916	0.94	0.75
Purchase Intention for Trust	3.39	1.009	3	0.915	0.95	0.86
Entertainment	3.26	0.894	5	0.880	0.91	0.68
Purchase Intention for Entertainment	3.30	1.008	3	0.931	0.96	0.88
Gen Z Sustainable Consumer's Attitude	3.68	0.808	7	0.890	0.91	0.61
Gen Z Purchase Intention	4.00	0.944	3	0.937	0.96	0.89

4.2 Measurement Model

A Spearman's rank-order correlation was run to assess the relationship between the different variables. Simple linear regression analyses were performed to confirm the relationship between the dependent variable – *purchase intention* – and the different constructs:

Consumer's sustainable attitude: $r_s(239) = .699$, $p < .001$, there was a statistically significant, strongly positive correlation between the variables. An ANOVA test, for

simple linear regression, revealed that sustainability in TikTok videos could statistically significantly influence consumer's sustainable attitude, $F(1, 239) = 225.564$, $p < .001$;

Informational content on TikTok: a statistically significant, strongly positive correlation between the variables, $r_s(239) = .623$, $p < .001$, was observed. An ANOVA test validated that information sustainability could statistically significantly predict purchase intentions, $F(1, 239) = 163.604$, $p < .001$;

Trustworthiness of TikTok: here, a statistically significant, strongly positive correlation between the variables, $r_s(239) = .649$, $p < .001$, was noted, and the ANOVA test confirmed that trust could statistically significantly predict purchase intentions, $F(1, 239) = 202.838$, $p < .001$;

Entertainment: There was a statistically significant, strongly positive correlation between the variables in TikTok, $r_s(239) = .536$, $p < .001$. Linear regression revealed that entertainment could predict purchase intentions statistically significantly: $F(1, 239) = 112.509$, $p < .001$;

Generation Z consumer attitudes: a statistically significant positive correlation between the variables, $r_s(239) = .704$, $p < .001$, can be stated for Gen Z's sustainable purchase intention. Furthermore, the linear regression confirmed that Generation Z consumer attitudes could predict purchase intentions: $F(1, 239) = 326.570$, $p < .001$.

According to Schmidt and Finan (2018), there are five assumptions that needed to be verified to ensure the simple linear regressions models are well made: linearity, independence of observations, absence of outliers, homoscedasticity, and residuals are normally distributed. All analyzes were executed accordingly. At a significance level of 5%, all assumptions of the simple linear regression models under study were validated. Therefore, all the hypotheses were supported.

5 Discussion

5.1 Theoretical Implications

The study's theoretical motivation was to extend the knowledge of TikTok's influence on sustainable consumer behavior in Germany. TikTok as an e-commerce channel is increasingly significant (Zhuang 2022), and sustainable production is important more than ever for successful organizations (Albino et al. 2009). This study makes a notable theoretical contribution to research in this area by examining many important factors. To begin with, a lack of scientific findings on the impact of TikTok videos on consumer behavior was identified in a search of empirical evidence. The published references mostly refer to other social media networks such as Instagram, Facebook, or social media in general, as the hype related to TikTok was quite recent (Zhuang 2022). Accordingly, this study adds to what has already been written by demonstrating how existing factors can be used to test new ideas related to TikTok. For an in-depth examination of informativeness, trustfulness, and entertainment in sustainable TikTok videos, two factors were extracted from Jain et al. (2018) and one factor from Pavlou (2003). Their studies have been related to online advertisements, while this paper solely focused on TikTok. Moreover, only very few articles deal with the influence of digital ads or eWOM on consumer behaviors

in relation to sustainability; social media is the best way to reach new customers in these digital-driven days, especially to catch Gen Z individuals who grew up in times of digitalization. That is why this research introduced hypotheses with influences for sustainability on consumer's attitudes and purchase intentions. The results show that the importance of sustainability for Generation Z is also a topic that finds acknowledgment and relevance on TikTok. The results of this research align with past empirical studies that investigated the influence of social media on consumer attitudes or purchase intention in diverse contexts.

5.2 Practical Implications

On one hand, the results of this study provide essential implications for managers of sustainable brands and can be used in developing future e-commerce strategies on TikTok. The findings not only show that TikTok is an efficient way to influence a consumer's attitude towards sustainable brands but also recommend that the content of the videos can influence their purchase intention. Therefore, the following recommendations can be implemented by marketers, advertisers, and TikTok users who want to educate about sustainable brands and products.

As mentioned in the literature review and through examining the outcomes of TikTok's frequency of use, more than half of the participants use the app daily. This shows us that the app is established in the everyday routine of Gen Z; hence TikTok is a good platform to reach them. According to this study, sustainable TikTok videos positively impact Gen Z's sustainable consumer attitude, supporting past studies which investigated the influence of social media advertisements on consumer attitude (Daugherty and Hoffmann 2014; Zhao et al. 2022; Forbes 2013). Thus, the study's first hypothesis is accepted. Consequently, short videos on TikTok, which include content on sustainability or the promotion of sustainable products, help Gen Z users become more aware of this topic and increase their perceptions. This can lead to users searching for, sharing, and commenting on sustainable videos and recommending the products in the videos to others. As a result, sustainable content on TikTok is widely disseminated and, at best, also influences other users in their attitudes toward sustainability.

The study also revealed that information, trust, and entertainment in sustainable TikTok videos positively influence Gen Z's purchase intention, supporting hypotheses 2a, 2b, and 2c. Thus, the results align with past empirical studies about the influence of informative, trustful and entertaining online advertisements on a consumer's purchase intention (Jain et al. (2018); Ventre and Kolbe 2020). As the survey demonstrated, providing information about the sustainable products shown in the TikTok video is essential. Although offering information is crucial to promoting sustainable consumption on social media platforms, marketers should not fill TikTok videos with a string of facts about sustainable products in general. Especially when it comes to sustainability, the subject is transformed into a scientific explanation based on studies and statistics. However, this is not the best strategy to attract Gen Z's attention. Keeping the videos simple helps Gen Z users to understand the meaning while giving details about the product. Thus, it is more effective to use TikTok as a jumping-off point by introducing key facts to motivate consumers to research sustainable products or brands. Furthermore, marketers can provide further information on their profile in the info box via a link or

newly uploaded videos to allow interested users to find out more about the sustainable product or brand.

Concerning the trustworthiness of TikTok, it is often difficult to give credibility to TikTok videos that inform about sustainable brands. Only because a company asserts to produce sustainably does not necessarily mean it is true. Furthermore, users can easily make claims in TikTok videos about sustainable brands, either to destroy their reputation or to support them. Thus, when it comes to creating trustworthy TikTok videos, it can be helpful to include key opinion leaders on sustainable topics since they are a reliable and well-respected influence with a proven expertise (Bamakan et al. 2019). Including them is a third opinion from a distinct perspective related to the sustainable brand, which helps TikTok users give more credibility to the videos and consider buying the product sooner. Another opportunity to make a TikTok video more trustworthy is to include evidence of sustainability. This means giving users the opportunity to look into certain areas of the company and showing what makes the company sustainable. To give an example, insights into the sustainable production of products and the recycling of materials can be given, or the sustainable corporate culture can be shown.

TikTok is an entertainment platform most users use to relax. Having a look at how to create sustainable videos entertaining for Gen Z users, marketers have a wide range of musical sounds and filters that they can apply to their videos to entertain users. Utilizing them and connecting a link to the sustainable product or brand they want to promote is an effective way to raise attention. Using trending hashtags and sounds, the video automatically achieves more reach and ends up on the FYP for more people. In addition, sustainable products can be promoted and inform users about products without lavish marketing campaigns and much effort, as Gen Z likes to watch TikTok videos that are authentic and simple. Another approach is to create your own challenge related to a sustainable brand message, which motivates other users to recreate it and thus indirectly draws attention to the brand or products. However, what must be considered is that trends on this platform can rapidly change. Viral sounds, dances or challenges can become irrelevant again after just a few weeks. That is why staying updated and keeping up with the latest trends are important. Given this study's findings, creating informative, trustworthy, entertaining, and sustainable TikTok videos in makes sense from a marketing perspective.

Lastly, the results show that the third hypothesis is accepted, demonstrating that Gen Z individuals are conscious of the importance of sustainability and implement this in their purchasing decisions. Gen Z individuals deal with many negative external influences when buying sustainable products. Most of them are currently at a young age, not yet mentally mature and even they are concerned about climate change and sustainability, they also have other problems on their minds. Furthermore, most of the Gen Z cohort does not have a high income yet. Because sustainable products are usually more expensive, there is a risk that Gen Z individuals will have the tendency to purchase cheap non-sustainable products. However, this study demonstrates that despite external negative influences, Gen Z is aware and actively tries to buy sustainable products. Relating this to the findings from our other hypothesis, TikTok is a useful source to reinforce Gen Z's sustainable attitudes and purchase intention. For instance, there are sustainable brands that offer products at fair prices. These companies can use TikTok to draw attention

to themselves and win over Gen Z consumers since there are still videos on the app promoting cheap, unsustainable products and fast fashion brands. Creating sustainable TikTok videos is an effective way to give Gen Z information about sustainable products in an entertaining way without making them feel like they are being forcefully lectured on the subject.

Consequently, with the findings of this research, advertisers can consider the recommendations above in their marketing strategies. Publishing sustainability reports on company websites is no longer sufficient for digitally promoting sustainability initiatives. Businesses must diversify their communication channels to demonstrate the sustainability-related initiatives they have adopted (Rickers 2022). Gen Z consumers choose sustainable consumption, requiring businesses to promote their sustainability strategy in a meaningful and straightforward way that appeals to possible customers (Rickers 2022). Moreover, Gen Z is the next generation of consumers with great purchasing power (Fitch 2016), so brands should listen to their needs and wants to win them over as faithful consumers. This means being present online and sharing commitment on social media platforms like TikTok because this is what Gen Z is comfortable with; their expressive personalities can further help sustainable organizations target their sustainable brand and products (Rickers 2022).

5.3 Limitations and Future Research

Even though this research uncovered much about how TikTok affects sustainable consumer attitudes and purchase intentions, some things should be kept in mind when understanding the results. The following limitations are the base for future research proposals. First, this study is restricted in the generalizability of the collected results because of the chosen sampling method. Due to budget and time constraints, non-probability sampling was the better option for this study. However, probability sampling would have made the results more generalizable. Also, the scales used were adapted from other past studies. Because of limited time, a pre-test was not performed to ensure the constructs were reliable and valid. Lastly, this research study solely focused on different business areas of TikTok regarding sustainability. Future studies may consider concentrating on one specific industry and investigating the influence of sustainable TikTok videos in one field. For example, the fashion industry is very strongly represented on TikTok. Therefore, it would be interesting to investigate whether there are differences in TikTok videos related to sustainable fashion brands influence sustainable consumers' attitudes and purchase intention, as a lot of fast fashion is advertised on TikTok. Additionally, this study was only designed for Generation Z members living in Germany, between the ages of 18 to 27 years. This allows for reproducing this research with a larger age range or a different generation as well as a larger geographical location. It may be useful to compare two generations to see if the same patterns of behaviors and opinions toward TikTok videos can be reproduced. Finally, since the TikTok app is continuously growing and being used for marketing purposes, more dimensions and aspects should be considered in further studies to increase this platform's effectiveness in attracting consumers' attention and recognition in terms of sustainability.

6 Conclusion

The aim of this study was to investigate if sustainable TikTok videos influence Gen Z in terms of consumer attitude and purchase intention. The research has examined that TikTok can be a useful platform for raising awareness of sustainable brands and products. The app helps enhancing positive consumer behavior towards sustainability which can be advantageous for both sustainable businesses and Gen Z consumers. Promoting a sustainable brand successfully on TikTok requires some key elements. The results recommend sustainable businesses to use TikTok for marketing reasons and increase this opportunity to draw attention to their sustainable products through informative, trustful, and entertaining short-form videos. Some sustainable brands, such as Patagonia or Veja, as well as sustainable startups, have already discovered the usefulness of TikTok and advertise by communicating information about their sustainable and fair-trade products (Zhao et al. 2022). Therefore, it can be highly recommended that other brands take an example of these brands and join them in their marketing success.

Acknowledgments. This work was funded by Fundação para a Ciência e a Tecnologia (UIDB/00124/2020, UIDP/00124/2020 and Social Sciences DataLab - PINFRA/22209/2016), POR Lisboa and POR Norte (Social Sciences DataLab, PINFRA/22209/2016). This study was also supported by UNIDCOM under a Grant by the Fundação para a Ciência e a Tecnologia (UIDB/DES/00711/2020) attributed to UNIDCOM/IADE – Unidade de Investigação em Design e Comunicação, Lisbon, Portugal. The authors declare that they have no conflict of interest.

Appendix: Measurement Scale Items

Scale	Items/Questions	Source
Sustainability in TikTok Videos	I see TikTok videos which promote sustainable products as trustworthy I find sustainable TikTok videos informational and effective I use TikTok to find authentic sustainable product reviews I look for sustainable product recommendations on TikTok I believe sustainable product reviews from people who share their opinion on TikTok more than actual ads from brands When I see user showing sustainable products on TikTok, it immediately catches my attention	Araujo et al. (2022)

(*continued*)

(*continued*)

Attitude in Sustainability	Sustainable TikTok videos are favorable Sustainable TikTok videos are pleasant Sustainable TikTok videos are convincing Sustainable TikTok videos are believable Sustainable TikTok videos are good	Jain et al. (2018)
Informative Sustainability	Sustainable TikTok videos are a valuable source of product information Sustainable TikTok videos are a convenient source of product information Sustainable TikTok videos help to keep me up to date	Jain et al. (2018)
Purchase Intention for Informative Sustainability	Please rate your intention to purchase a sustainable product after watching an informative sustainable TikTok video: – unlikely to likely – impossible to possible – improbably to probably	Freling et al. (2011)
Trust	Sustainable TikTok videos are reliable I have confidence in watching sustainable TikTok videos Watching sustainable TikTok videos is a trustworthy experience Sustainable TikTok videos are believable I believe that what is told in sustainable TikTok videos is true	Jani and Han (2011) Pavlou (2003)
Purchase Intention for Trust	Please rate your intention to purchase a sustainable product after watching an trustful sustainable TikTok video: – unlikely to likely – impossible to possible – improbably to probably	Freling et al. (2011)

(*continued*)

(*continued*)

Entertainment	Sustainable TikTok videos are fun to watch Sustainable TikTok videos are clever and quite entertaining Sustainable TikTok videos do not just sell – they also entertain me Sustainable TikTok videos are often amusing Watching sustainable TikTok videos fulfill me	Jain et. al. (2018)
Purchase Intention for Entertainment	Please rate your intention to purchase a sustainable product after watching an entertaining sustainable TikTok video: – unlikely to likely – impossible to possible – improbably to probably	Freling et al. (2011)
Gen Z Sustainable Consumer's Attitude	I consider purchasing sustainable brands because in the coming days they are less polluting The use of sustainable goods makes me feel happy I make a concerted effort to buy products made from recycled materials I buy sustainably produced products I choose sustainable products over conventional ones I buy sustainable products to do something good for the environment I buy sustainable products because I am convinced of the quality	Lavuri and Susandy (2020); Klug and Niemand (2020); Choi and Feinberg (2021)
Gen Z Purchase Intention	Please rate your intention to purchase a sustainable product in general: – unlikely to likely – impossible to possible – improbably to probably	Freling et al. (2011)

References

Alalwan, A.A., Rana, N.P., Dwivedi, Y.K., Algharabat, R.: Social media in marketing: a review and analysis of the existing literature. Telemat. Inform. **34**(7), 1177–1190 (2017)

Albino, V., Balice, A., Dangelico, R.M.: Environmental strategies and green product development: an overview on sustainability-driven companies. Bus. Strateg. Environ. **18**(2), 83–96 (2009)

Apptopia.: Leading Mobile Apps Worldwide in 2021, by downloads (in millions). Statista. https://www.statista.com/statistics/1285960/top-downloaded-mobile-apps-worldwide/. Accessed 15 Nov 2022

Araujo, C.J., Perater, K.A., Quicho, A.M., Etrata, A.: Influence of TikTok video advertisements on generation Z's behavior and purchase intention. Int. J. Soc. Manag. Stud. **3**(2), 140–152 (2022)

Bamakan, S.M.H., Nurgaliev, I., Qu, Q.: Opinion leader detection: a methodological review. Expert Syst. Appl. **115**, 200–222 (2019)

Basch, C.H., Yalamanchili, B., Fera, J.: Climate change on TikTok: a content analysis of videos. J. Community Health **47**(1), 163–167 (2022)

Brand, B.M., Rausch, T.M., Brandel, J.: The importance of sustainability aspects when purchasing online: comparing generation X and generation Z. Sustainability **14**(9), 5689 (2022)

Brosdahl, D.J., Carpenter, J.M.: Shopping orientations of US males: a generational cohort comparison. J. Retail. Consum. Serv. **18**(6), 548–554 (2011)

Bucko, J., Kakalejčík, L., Ferencová, M.: Online shopping: factors that affect consumer purchasing behaviour. Cogent Bus. Manag. **5**(1), 1535751 (2018)

Carpenter, S., Takahashi, B., Cunningham, C., Lertpratchya, A.P.: Climate and sustainability: the roles of social media in promoting sustainability in higher education. Int. J. Commun. **10**, 19 (2016)

Chen, Y.S., Chang, C.H.: Greenwash and green trust: the mediation effects of green consumer confusion and green perceived risk. J. Bus. Ethics **114**(3), 489–500 (2013)

Choi, S., Feinberg, R.A.: The LOHAS (lifestyle of health and sustainability) scale development and validation. Sustainability **13**(4), 1598 (2021)

Cilliers, E.J.: The challenge of teaching generation Z. Int. J. Soc. Sci. **3**(1), 188–198 (2017)

DataReportal, Hootsuite & We Are Social: Countries with the Largest TikTok Audience as of April 2022 (in millions). Statista. https://www.statista.com/statistics/1299807/number-of-monthly-unique-tiktok-users/. Accessed 15 Nov 2022

Daugherty, T., Hoffman, E.: eWOM and the importance of capturing consumer attention within social media. J. Mark. Commun. **20**(1–2), 82–102 (2014)

Dimock, M.: Defining generations: where millennials end and generation Z begins. Pew Res. Center **17**(1), 1–7 (2019)

Djordjevic, A., Cotton, D.R.E.: Communicating the sustainability message in higher education institutions. Int. J. Sustain. High. Educ. **12**(4), 381–394 (2011)

Doyle, B.: TikTok Statistics – Updated Nov 2022. Wallaroo. https://wallaroomedia.com/blog/social-media/tiktok-statistics/. Accessed 18 Nov 2022

Duffett, R.G.: Facebook advertising's influence on intention-to-purchase and purchase amongst millennials. Internet Res. **25**(4), 498–526 (2015)

Dwivedi, Y.K., et al.: Setting the future of digital and social media marketing research: perspectives and research propositions. Int. J. Inf. Manage. **59**, 102168 (2021)

Francis, T., Hoefel, F.: True Gen': Generation Z and Its Implications for Companies. McKinsey & Company, 12p (2008)

Fitch. Gen Z and the Future of Retail. Marketsource (2016). http://www.fitch.com/think/gen-z-and-the-future-of-retail. Accessed 2 Nov 2022

Forbes, L.P.: Does social media influence consumer buying behavior? An investigation of recommendations and purchases. J. Bus. Econ. Res. **11**(2), 107–112 (2013)
Freling, T.H., Crosno, J.L., Henard, D.H.: Brand personality appeal: conceptualization and empirical validation. J. Acad. Mark. Sci. **39**(3), 392–406 (2011)
Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E.: Multivariate Data Analysis 7thinternat. Pearson Education Limited, Harlow (2013)
Hair, J.F., Ortinau, D.J., Harrison, D.E.: Essentials of Marketing Research, 5th edn. McGraw-Hill Education (2020)
Huang, K.: *For Gen Z, TikTok is the new search engine*. NY Times (2022). https://www.nytimes.com/2022/09/16/technology/gen-z-tiktok-search-engine.html. Accessed 15 Oct 2022
Hussain, S., Song, X., Niu, B.: Consumers' motivational involvement in eWOM for information adoption: the mediating role of organizational motives. Front. Psychol. **10**, 3055 (2020)
Jain, G., Rakesh, S., Chaturvedi, K.R.: Online video advertisements' effect on purchase intention: an exploratory study on youth. Int. J. E-Bus. Res. **14**(2), 87–101 (2018)
Jani, D., Han, H.: Investigating the key factors affecting behavioral intentions: evidence from a full-service restaurant setting. Int. J. Contemp. Hosp. Manag. **23**(7), 1000–1018 (2011)
Johnson, D., Grayson, K.: Cognitive and affective trust in service relationships. J. Bus. Res. **58**(4), 500–507 (2005)
Jung, A.R.: The influence of perceived ad relevance on social media advertising: an empirical examination of a mediating role of privacy concern. Comput. Hum. Behav. **70**, 303–309 (2017)
Klug, K., Niemand, T.: The lifestyle of sustainability: testing a behavioral measure of precycling. J. Clean. Prod. **297**, 126699 (2021)
Kollmuss, A., Agyeman, J.: Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? Environ. Educ. Res. **8**(3), 239–260 (2002)
Lavuri, R., Susandy, G.: Green products: factors exploring the green purchasing behavior of South Indian shoppers. Indon. J. Sustain. Acc. Manag. **4**(2), 174–191 (2020)
Liu, C., Marchewka, J.T., Lu, J., Yu, C.S.: Beyond concern—a privacy-trust-behavioral intention model of electronic commerce. Inf. Manag. **42**(2), 289–304 (2005)
Logan, K., Bright, L.F., Gangadharbatla, H.: Facebook versus television: advertising value perceptions among females. J. Res. Interact. Mark. **6**(3), 164–179 (2012)
Ma, Y., Hu, Y.: Business model innovation and experimentation in transforming economies: ByteDance and TikTok. Manag. Organ. Rev. **17**(2), 382–388 (2021)
Madden, A.D.: A definition of information. In: ASLIB Proceedings. MCB UP Ltd (2000).
Muliadi, B. What the rise of TikTok says about Generation Z. Forbes. https://www.forbes.com/sites/forbestechcouncil/2020/07/07/what-the-rise-of-tiktok-says-about-generation-z/?sh=794fa66d6549. Accessed 12 Oct 2022
Pavlou, P.A.: Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model. Int. J. Electron. Commer. **7**(3), 101–134 (2003)
Pickerill, J.: Environmental Internet activism in Britain. Peace Rev. **13**(3), 365–370 (2001)
Porter, L.V., Sweetser Trammell, K.D., Chung, D., Kim, E.: Blog power: Examining the effects of practitioner blog use on power in public relations. Public Relat. Rev. **33**(1), 92–95 (2007)
Rickers, K.: How to use social media to communicate sustainability messages to Gen Z The Red Flower Factory (2022).https://theredflowerfactory.com/blog/how-to-use-social-media-to-communicate-sustainability-messages-to-gen-z/. Accessed 18 Nov 2022
Schmidt, A.F., Finan, C.: Linear regression and the normality assumption. J. Clin. Epidemiol. **98**, 146–151 (2018)
Seemiller, C., Grace, M.: Generation Z: educating and engaging the next generation of students. About Campus **22**(3), 21–26 (2017)
Shamdasani, P., Chon-Lin, G.O., Richmond, D.: Exploring green consumers in an oriental culture: role of personal and marketing mix factors. In: McAlister, L., Rothschild, M.L. (eds.) NA -

Advances in Consumer Research, vol. 20, pp. 488–493.Association for Consumer Research, Provo, UT (1993)
Shatto, B., Erwin, K.: Moving on from millennials: preparing for generation Z. J. Cont. Educ. Nursing **47**(6), 253–254 (2016)
Shrum, L.J., McCarty, J.A., Lowrey, T.M.: Buyer characteristics of the green consumer and their implications for advertising strategy. J. Advert. **24**(2), 71–82 (1995)
Social Media Examiner. Planned changes in use of selected social media for marketing purposes worldwide as of January 2022. Statista (2022). https://www.statista.com/statistics/258974/future-use-of-social-media-among-marketers-worldwide-by-platform/. Accessed 18 Nov 2022
Su, C.H., Tsai, C.H., Chen, M.H., Lv, W.Q.: US sustainable food market generation Z consumer segments. Sustainability **11**(13), 3607 (2019)
Schwedel, H.: A guide to TikTok for anyone who Isn'ta teen. Slate Magazine. https://slate.com/technology/2018/09/tiktok-app-musicallyguide.html. Accessed 3 Nov 2022
Tabassum, S., Khwaja, M.G., Zaman, U.: Can narrative advertisement and eWOM influence generation Z purchase intentions? Information **11**(12), 545 (2020)
Tanner, C., Wölfing Kast, S.: Promoting sustainable consumption: determinants of green purchases by Swiss consumers. Psychol. Mark. **20**(10), 883–902 (2003)
Van-Tien Dao, W., Nhat Hanh Le, A., Ming-Sung Cheng, J., Chao Chen, D.: Social media advertising value: The case of transitional economies in Southeast Asia. Int. J. Advert. **33**(2), 271–294 (2014)
Ventre, I., Kolbe, D.: The impact of perceived usefulness of online reviews, trust and perceived risk on online purchase intention in emerging markets: a Mexican perspective. J. Int. Consum. Mark. **32**(4), 287–299 (2020)
Vermeir, I., Verbeke, W.: Sustainable food consumption: exploring the consumer "attitude–behavioral intention" gap. J. Agric. Environ. Ethics **19**(2), 169–194 (2006)
Voorveld, H.A., Van Noort, G., Muntinga, D.G., Bronner, F.: Engagement with social media and social media advertising: the differentiating role of platform type. J. Advert. **47**(1), 38–54 (2018)
Voss, K.E., Spangenberg, E.R., Grohmann, B.: Measuring the hedonic and utilitarian dimensions of consumer attitude. J. Mark. Res. **40**(3), 310–320 (2003)
Wang, Y.: Humor and camera view on mobile short-form video apps influence user experience and technology-adoption intent, an example of TikTok (DouYin). Comput. Hum. Behav. **110**, 106373 (2020)
Webster, M.: Trust. Merrian Webster. https://www.merriam-webster.com/dictionary/trust. Accessed 4 Nov 2022
Zhao, L., Lee, S.H., Li, M., Sun, P.: The use of social media to promote sustainable fashion and benefit communications: a data-mining approach. Sustainability **14**(3), 1178 (2022)
Zhuang, X., Chen, G., Liu, Z.. Li, J.: TikTok and Kuaishou: a tale of two short-video sharing apps from china to the globe. INSEAD. https://publishing.insead.edu/case/tiktok-and-kuaishou-a-tale-two-short-video-sharing-apps-china-globe. Accessed 14 Nov 2022

Louis Vuitton, Cristiano Ronaldo and Lionel Messi. The Greatest Marketing Stunt of the Century, or just Hype Driven Vanity-Metrics?

Markus Rach(✉)

Associate Professor of Marketing, Shenzhen Technology University, Shenzhen, China
markus.rach@sztu.edu.cn

Abstract. On the 20th of November 2022, popular fashion brand Louis Vuitton released what marketing practitioners loosely refer to as the greatest photo of all time, or a marketing masterpiece. A series of Instagram posts portrayed the two football superstars Lionel Messi and Cristiano Ronaldo in a chess match on a LV checkerboard-branded suitcase. The players and the brand's posts quickly went viral, amassing millions of views and resulting in Instagram's 2nd most liked post of all times. However, were these posts truly a success for the sponsoring brand, or was the social media active marketing practitioners' community falling victim to overhyped vanity metrics? To find out, this research project tested via eye-tracking technology the attention distribution spread between the two celebrities and the sponsoring brand. Though this study does not aim to performance evaluate the campaign, the eye tracking study, in combination with diligent brand-recall measures, provides valuable insights into the likely brand-lift. The study relied on a demographic sample of Chinese students. Due to the Internet-censorship in China, the recruited sample has proven unaware of these viral Instagram posts. The study found an unequal attention distribution in favor of the celebrity players. The attention spread was explained by the posting entity; the post by the brand showcased the least skewed attention distribution, the post by Ronaldo the highest. Findings are supported by existing celebrity endorsement studies and highlight the importance of contemporary academic research to stimulate and engage with the marketing practitioners' community on the effectiveness of vanity metric driven influencer campaigns.

Keywords: Instagram · vanity metrics · influencer · sponsored post · marketing · Ronaldo · Messi · Louis Vuitton · vampire effect · celebrity endorsement

1 Introduction

On the 20th of November 2022, the world witnessed two mega events. The kick-off of the 2022 FIFA world cup in Qatar and the release of a sponsored campaign by the French luxury fashion brand Louis Vuitton, featuring two of the world's biggest superstars: Cristiano Ronaldo and Lionel Messi. Cristiano Ronaldo marks the world's

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 290–297, 2023.
https://doi.org/10.1007/978-3-031-31836-8_28

most followed person on Instagram (Frimayasa & Nasution, 2022) with over 500 million followers in early December 2022. Lionel Messi, an Argentinian football player, ranks equally amongst the most followed Instagram accounts with 385 million followers in the same timeframe. Louis Vuitton trails behind both megastars with just under 50 million followers. The post was released on Instagram by the brand, both superstars and the campaign's photographer. Impeccable timing by LV, timed to the start of the FIFA world-cup, catapulted the post to the centre of attention of much of the western social media world, but particularly the eager to content-share marketing practitioners on LinkedIn.

On Instagram, the post amassed a cumulated 80 million Likes by all four accounts, with 41 million Likes from Ronaldo's post, 31 million from Messi's post, 8 million from the post of LV and just shy of 0.8 million from the post of the photographer. Ronaldo's highly engaging post is only superseded by the world record egg IG-account, which sports a single post with over 55 million Likes. The post's viral nature was further displayed by over 1.070.000 relevant results on Google and countless opinion shares on LinkedIn. There, the post was shared by experienced marketing practitioners', marketing enthusiasts and even marketing academics, calling it the most genius marketing of 2022, or an iconic masterpiece.

Yet is it truly an iconic marketing masterpiece, or just a very expensive celebrity endorsed sponsored post? Is the marketing practitioners' community being misled by the vast vanity-metrics of this sponsored campaign and misses to acknowledge academic insights and knowledge to triangulate the campaign before voicing any premature conclusions?

1.1 Conceptual Background

Relying on celebrity or influencer endorsements is nothing new in the world of advertising (Erdogan, 1999). About 25–30 percent of all advertising makes use of a celebrity endorser, in Asian countries, this figure increases up to 70 percent (Hussain, 2020). Thus, marketers seem to place ample of resources on celebrity enhancing their brand's advertising efforts. Yet questions remain about the effectiveness of celebrity endorsements, particularly considering its toll of up to 10% of marketing budgets (Wang, S. W., & Scheinbaum, 2018).

According to McCracken (1989), a celebrity is a publicly known individual who uses her or his recognition in favor of a product by being depicted with it in an advertisement. Since McCracken's famous creation of the transfer of meaning model, celebrity endorsements have been studied extensively over the last years (Schimmelpfennig & Hunt, 2020; Erdogan, 1999). Most models suggest that the performance of celebrity endorsements relies on three intertwined constructs forming celebrity credibility, brand credibility and advertising credibility.

Celebrity credulity is formed by celebrity trust, celebrity expertise and attractiveness. These are meant to enhance recall effects, thus helping brands to gain higher levels of awareness from the already advertising overloaded consumer. Since only perceived brands can be considered as alternatives in a purchasing scenario, brands hope to increase awareness through the celebrity endorsement to stipulate an increase in purchase consideration.

With the birth of social media influencers, brand endorsements have been broadened to include both traditional celebrities as well as their modern counterpart of the social media influencer (Schouten, Janssen & Verspaget, 2020; Brooks., Drenten & Piskorski, 2021). Based on the previously cited follower statistics, both Ronaldo and Messi qualify as celebrities in the traditional sense. However, with a combined following of over 800 million on Instagram alone, they equally qualify as social media influencers.

However, celebrity endorsements are not without critique. The biggest risks include perception issues of the endorsing celebrity (Muda, Musa & Putit, 2017), the potential mismatch of celebrities and the endorsed brand (Lee & Thorson, 2008) and the risk of celebrities overshadowing the sponsoring brand (Thieme, 2017). In most recent papers, the latter has been widely named the vampire effect (Kuvita & Karlíček, 2014). The vampire effect describes a state of brand recall, which is lower when the brand is endorsed by a celebrity versus an unknown person. Previous research has proven the existence of the vampire effect (Erfgen, Zenker & Sattler, 2015) and further moderating impacts on the vampire effect. These include the brand-endorser relationship, which is impacted by the brand – endorser congruence and brand – endorser cognitive link. The first relates to the congruency of the recall domain, or the non-competing state of information. As such, one would consider Nike and Michael Jordan to be a highly congruent brand – endorser relationship, as both relate to the domain of sports and within that the domain of Basketball (Simmers et. al., 2009). The brand-endorser cognitive link describes the cognitive familiarity of an endorser with the endorsing brand. George Clooney's long term Nespresso endorsement might serve as an example (Khamis, 2012). Though the initial congruency is rather unrelated, the long-lasting duration of the sponsored partnership has positively shaped the cognitive matching of Clooney with Nespresso and his signature phrase "Nespresso – what else?". According to Erfgen, Zenker & Sattler (2015), higher states of congruency and cognitive matching lower the risk of the vampire effect.

Thus, whilst the vampire effect has been proven to exist, no study was identified to relate scientific research and theorems to a current and so prominent case as the sponsored campaign by Louis Vuitton. Whilst the real campaign performance, apart from observable vanity metrics remains only known the brand, next to the cost of the campaign, this research project attempts to re-create the existence of the vampire effect for this very campaign, next to the extent of the vampire effect. The latter serves as a ground for discussion on the likely cost-benefit ratio of this campaign, considering alternative forms of advertising.

It must be noted that this research project does not intend to defame the discussed Instagram post(s), nor the individuals and brands involved, but merely stipulate the focus of academics and the academic body of knowledge towards contemporary practitioner-lead discussions. In order to close the academic practitioners' gap, its existence must not only be acknowledged (Jedidi et. al., 2021), but efforts made to actively close it. Not just by refocusing research, but by the active and contextually relevant dissemination of research findings. This very thought served as the inspiration of this research project.

2 Research

The research setup for this project followed the established narrative of Erfgen, Zenker & Sattler (2015), which got adapted to suite set research objectives.

2.1 Setup

GazeRecorder was selected as a cost effective, low-technology webcam based and most importantly not censored eye-tracking solution in China. GazeRecorder has been employed by various other studies (Othman et. al., 2020; Mahadas et. al., 2021) and proved, within the pre-test, reliable for the context of this study. The online survey tool www.wenjuan.com was employed for pre- and post-eye tracking survey and recall-data collection.

2.2 Sampling

The sampling for this research project was impacted by 0-Covid policy of China at the time of research, November 2022, and the unfunded nature of this project due to the author's recent transition to the Chinese academic community and thus unfamiliarity with funding procedures. As a result, a demographic qualified convenience sample of SZTU students was recruited for this project. Sampling shortfalls have been acknowledged in the study's limitations. To qualify for the sample, students had to fulfil three qualifying objectives. First, students had to be physically available to participate in the supervised eye-tracking study. Second, students had to know Ronaldo and Messi to avoid a regional celebrity bias on the study and lastly, students had to be unaware of the research-focused Louis Vuitton sponsored Instagram campaign featuring both stars. Pre-qualifications was done via a www.wenjuan.com participation survey via WeChat. In total, 136 students were recruited. 79 (58%) met the qualification criteria and 71 (52%) chose to participate in the study. 42 (59%) were female, 29 (41%) male. The average age was 19.3 years. According to datareportal.com, the sample recruited represents a good Instagram demographic fit.

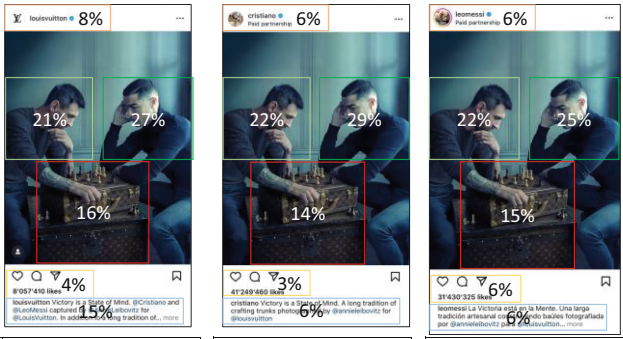
2.3 Methodology

To achieve set objectives, the research methodology was setup as follows. All survey participants were given a pre-eye-tracking survey to measure their cognitivebrand bias towards Ronaldo and Messi as well as an unaided luxury brand recall. Following, participants were split into 3 groups. Each group got exposed to five images for 8 s, following the setup of Erfgen, Zenker & Sattler (2015), but adding extra time to account for the English - Chinese language barrier. Four images represented random Instagram luxury fashion posts, while one image was either the original Instagram post by Louis Vuitton, Ronaldo, or Messi. That way, learning effects and image bias could be actively avoided. All participants were tasked to use their own computing equipment to which the eye-tracking study link was submitted. Lighting and other conditions were controlled and remained constant. Following the eye-tracking experiment, all participants were yet

again given a www.wenjuan.com survey to test their unaided recall on three of the five post they were exposed to, including their groups' respective Louis Vuitton campaign post.

3 Findings

Overall, the findings of this study fundamentally support the findings of Erfgen, Zenker & Sattler (2015), acknowledging the existence of the vampire effect, based on the distribution of attention and further the missing cognitive and congruence link between the endorsing celebrities and the brand. In every test-instance, the two football stars received between 47% and 51% of viewers' total dwell time, see Fig. 1.



Group Label	Louis Vuitton (LV)		Cristiano Ronaldo (CR)		Lionel Messi (LM)		LV	CR	LM
# Participants	m: 9	w: 14	m: 10	w: 14	m: 10	w: 14	21	24	24
Dwell time LV	17%	16%	13%	14%	13%	17%	16%	14%	15%
Dwell time CR	27%	27%	26%	31%	28%	23%	27%	29%	25%
Dwell time LM	26%	18%	23%	21%	27%	18%	21%	22%	22%
Dwell time Account	6%	9%	7%	6%	5%	6%	8%	6%	6%
Dwell time Likes	4%	4%	3%	3%	5%	6%	4%	3%	6%
Dwell time Description	13%	17%	7%	6%	4%	8%	15%	6%	6%
Dwell time others	7%	9%	21%	19%	18%	22%	8%	20%	20%
Recall pre-study	11%	28%	10%	36%	20%	42%	21%	25%	33%
Recall post-study	33%	57%	10%	42%	20%	50%	48%	29%	38%
Brand lift	200%	104%	0%	17%	0%	19%	141%	10%	11%

Fig. 1. Eye-Tracking and Brand-Recall measure results summary

It must be noted, that neither of the two football stars, nor Louis Vuitton scored high in terms of brand-endorser congruency in the pre-eye-tracking survey. Participants related non-sport celebrities, such as actors, models, and musicians to the brand, while both football players were rather related to brands within the sporting goods sector. Equally, cognitive brand to endorser ratings were non-existent. The latter does not come as a surprise as particularly Ronaldo is known to endorse anything from cars, shoes, fast-food and even facial cleaners in Asia. Looking at his Instagram profile, though irrelevant as a moderator on participants' perception in China, reveals an equally large spread of endorsed products. This very much supports the previously stated findings of Erfgen, Zenker & Sattler (2015).

Unaided brand-recall measures pre-study ranked Dior, Chanel and Bvlgari on top, whilst LV was mentioned by 27% of participants. Post-eye-tracking recall measures showed an overall lift to 38%. It needs to be mentioned that the sample surveyed were

students belonging to the Gen-Z, with less than 3 students claiming to have had any luxury fashion purchase experience. Further, particularly Gen-Z's display a growing preference towards local brands (Wouters & Sham, 2021), which might dilute overall recall findings. However, the group exposed to the LV post, which displayed the highest dwell time on the post description area of 15% vs. 6% and 6%, showed an overall recall-lift of 141%. This is largely attributed to the fact, that brand-recall was positively moderated by participants active perception of both the brand name and visual brand artefacts.

4 Conclusion

This study has proven, albeit some limitations, that the current practitioner's discussion relating to the sponsored endorsement of Louis Vuitton by Ronaldo and Messi has been at least partly mislead by the posts' vanity metrics of 80 million Likes and its viral nature. Considering only a fraction of viewers' attention was received by the sponsoring brand, while the vast majority was received by the endorsing celebrities, supports much the notion of the vampire effect at work. This should lead to a discussion of campaign's true brand salience effect, particularly in relation to assumingly high budgetary constraint caused by engaging Ronaldo and Messi. Although even at eye-tracking brand-attention levels, the post has likely exceeded the average brand post by a factor of 100 in terms of engagement. Though for any meaningful evaluation of the campaigns' performance, knowledge about its budgetary impact is inevitable.

Nevertheless, this study provides ample of learnings for academics and practitioners alike. First, brands might benefit from by shifting the attention of celebrity endorsements to their own accounts to increase viewer's exposure to brand artefacts and thus maximize brand lift. Second, brands should anticipate the potential of the vampire effect to calculate the estimated celebrity caused extra-cost of expected brand lift vs. alternative advertising vehicles. Thirdly, practitioners are reminded to avoid a judgment dilution by vanity metrics. The latter also calls upon the academic community to actively engage in both practitioners-oriented research and further the information dissemination via an active participation within the wider practitioners' community. This thought guides to provide an alternate perspective to often social media infused perception bubble.

4.1 Limitations

Compliant with the scientific thought of transparency and rigor, this study needs to highlight three limitations. First, cultural biases have not been assessed and cannot be excluded. Second, the methodology used, and eye tracking technology deployed was based on the need for a low cost, time efficient setup. Results might thus not meet the standards of highly professional and normed eye tracking equipment. Lastly, the studies sample was somewhat based on a convenience sample basis due to the technical and 0-COVID based restrictions at the time of conducting this very study in 2022 in China.

4.2 Further Research

This study has not only re-affirmed previous research, such as that of Erfgen, Zenker & Sattler (2015), but extended academic findings, rigor and interest to a hot and contemporary topic within the marketing practitioners' community. It thus calls for further academic work to support the marketing practitioners' community with fact-based bridge building research to avoid a further dilution of the body of applied marketing knowledge through the loudest voice on social media, but not necessarily the most knowledgeable. Academics need to actively engage in social media lead discussions to spread academic knowledge and thus positively impact the marketing practitioners' community discourse-based body of knowledge.

References

Brooks, G., Drenten, J., Piskorski, M.J.: Influencer celebrification: how social media influencers acquire celebrity capital. J. Advert. **50**(5), 528–547 (2021)

Erdogan, B.Z.: Celebrity endorsement: a literature review. J. Mark. Manag. **15**(4), 291–314 (1999)

Erfgen, C., Zenker, S., Sattler, H.: The vampire effect: when do celebrity endorsers harm brand recall? Int. J. Res. Mark. **32**(2), 155–163 (2015)

Frimayasa, A., Nasution, I.H.: The influence of social media, celebrity Endoser, and brand image on consumer purchase decisions at Tokopedia. ULIL ALBAB: Jurnal Ilmiah Multidisiplin **1**(3), 541–550 (2022)

Hussain, S., Melewar, T.C., Priporas, C.V., Foroudi, P., Dennis, C.: Examining the effects of celebrity trust on advertising credibility, brand credibility and corporate credibility. J. Bus. Res. **109**, 472–488 (2020)

Jedidi, K., Schmitt, B.H., Ben Sliman, M., Li, Y.: R2M index 1.0: assessing the practical relevance of academic marketing articles. J. Market. **85**(5), 22–41 (2021)

Khamis, S.: Nespresso: branding the" ultimate coffee experience. M/C J. **15**(2) (2012)

Kuvita, T., Karlíček, M.: The risk of vampire effect in advertisements using celebrity endorsement. Central Eur. Bus. Rev. **3**(3) (2014)

Lee, J.G., Thorson, E.: The impact of celebrity–product incongruence on the effectiveness of product endorsement. J. Advert. Res. **48**(3), 433–449 (2008)

Mahadas, S., Semkewyc, C., Suresh, S., Hung, G.K.: Scan path during change-detection visual search. Comput. Biol. Med. **131**, 104233 (2021)

McCracken, G.: Who is the celebrity endorser? Cultural foundations of the endorsement process. J. Cons. Res. **16**(3), 310–321 (1989)

Muda, M., Musa, R., Putit, L.: Celebrity endorsement in advertising: a double-edged sword. J. Asian Behav. Stud. **2**(3), 21–32 (2017)

Othman, Y., Khalaf, M., Ragab, A., Salaheldin, A., Ayman, R., Sharaf, N.: Eye-to-eye: towards visualizing eye gaze data. In: 2020 24th International Conference Information Visualisation (IV), pp. 729–733. IEEE, September 2020

Schimmelpfennig, C., Hunt, J.B.: Fifty years of celebrity endorser research: support for a comprehensive celebrity endorsement strategy framework. Psychol. Mark. **37**(3), 488–505 (2020)

Schouten, A.P., Janssen, L., Verspaget, M.: Celebrity vs. influencer endorsements in advertising: the role of identification, credibility, and product-endorser fit. Int. J. Advert. **39**(2), 258–281 (2020)

Simmers, C.S., Damron-Martinez, D., Haytko, D.L.: Examining the effectiveness of athlete celebrity endorser characteristics and product brand type: the endorser sexpertise continuum. J. Appl. Sport Manag. **1**(1), 35 (2009)

Thieme, W.M.: Luxusmarkenmanagement. Springer, Wiesbaden (2017). https://doi.org/10.1007/978-3-658-09072-2

Wang, S.W., Scheinbaum, A.C.: Enhancing brand credibility via celebrity endorsement: trustworthiness trumps attractiveness and expertise. J. Advert. Res. **58**(1), 16–32 (2018)

Wouters, I., Sham, K.: The new faces of Chinese luxury shoppers. Oliver Wyman (2021)

Traditional Brands vs. Born-Digital Brands: The Case of the Fashion Industry

Liliana Ribeiro[1,2(✉)] and Amanda Maués[3]

[1] Marketing and Strategy, School of Accounting and Administration, University of Aveiro, Aveiro, Portugal
lilianasimoesribeiro@ua.pt
[2] NECE- Research Center in Business Sciences, University of Beira Interior, Covilhã, Portugal
[3] Fashion Branding, Faculty of Design, Technology and Communications, European University, Lisbon, Portugal

Abstract. For a long time, the big fashion companies did not see Born-Digital Brands as an effective and possible competitor or business ally. However, especially after the COVID-19 pandemic, the game has changed, and currently, the fashion market is aware of the power that these brands have, mainly through social networks. Through a qualitative analysis, this work sought to understand the relationship strategies of "DNVB's" with their audience, and how them can help in the reinvention of practices of fashion companies considered traditional, which had to adapt to the online environment.

Through content analysis and surveys, it was found that Born-Digital Brands can be an excellent reference in the domains of digital language, e-commerce and innovation and can inspire traditional brands to improve their performance in the online environment. However, the market increasingly demands that both types of business models reinvent themselves; that is, it is not about having a better brand than the other, online, or offline, but working to create an increasingly efficient, organic, personal, and omnichannel market.

Keywords: Branding · digital · Born-digital Brands · Brand communities

1 Introduction

The popularization of the internet has allowed it to become a very common channel of distribution of the most varied types of products and, consequently, a mechanism fundamental to the dissemination of fashion trends, brands, and products (Martins, 2019). The accelerated democratization of digital channels, both in the field of e-commerce and social, has streamlined processes and significantly reduced the time spent by consumers on the knowledge of brands and demand for products.

The arrival of new prosumers (producers + consumers) and influencers also allowed brands with fewer resources to grow faster. It is in this aspect that the dichotomy between the management model and creativity - not only of the image, but of elements of differentiation, increasingly based on mood, attitude, and details of products and communication - gains new importance (Bell et al., 2020).

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 298–304, 2023.
https://doi.org/10.1007/978-3-031-31836-8_29

A radical change in the paradigms of communication, in which digital exhibits a set of massive amplification tools, with almost infinite possibilities of producing the most appropriate message for everyone, instantly reaching larger and heterogeneous audiences (Mingione & Abratt, 2020). Being a traditional large brand has its advantages, but only small brands can handle most of the trendy topics in an authentic way. Large brands demand many processes and bureaucracies, and have so much to lose, that most of the time they cannot get the freshness of small brands by investing in these initiatives (Audrezet et al., 2020).

In this context, many micro, small, and medium-sized enterprises (SMEs) have emerged on the Internet, that is, they are native to the digital environment (DNVB - Digital Native Vertical Brand), and mainly use e-commerce channels for interaction, transaction, and storytelling and rely heavily on their loyal customer base and user-generated content for dissemination (de Regt & Barnes, 2019). The inherent promise of the DNVB model is to put the consumer back at the heart of the value proposition, offering a shopping experience as memorable as the product. Being in touch with the community allows these companies to better know who buys and even create or adapt products according to what consumers need (Moghaddam & Esfidani, 2022; Rossolatos, 2021). In fashion, the contact between those who produce, and the customer may be close, but the world of social networks has managed to multiply this in the speed of posts, stories, likes, and directs, especially when brands are native digital (Loureiro, Serra and Guerreiro, 2019). By understanding that native digital brands are becoming increasingly fundamental, especially in the fashion area, it is necessary to understand how these companies have started to use social media as a tool of sale and entertainment simultaneously.

This work aims to understand the relevance of small native digital fashion brands to the current fashion market.

2 Online Brand Strategies and the New Consumer Journeys: Brand Communities and Digital Native Vertical Brands (Born-Digital Brands)

Understanding the consumer's journey allows companies to better understand the profile of those who are interested in the products and services offered: what are their motivations, desires, problems, and frustrations. Although most purchases are still made offline, the media and the information that guides these purchases are increasingly online. And the complexity of potential decision-making has grown considerably (Wichmann et al., 2022). While we have more people consuming more content, the consumption days are becoming more complex and organic (Rennie et al., 2020). In this sense, it is not possible to identify only one purchase model. The same consumer can have many journeys (Brotto & Melo, 2021). In this model, the total of a buyer's experiences and impressions creates a backdrop of exposure, covering brands, products, and more (Rennie et al., 2020).

Despite the scenario of transformations in the traditional fashion market during the pandemic, many young and independent brands have thrived (Balchandani et al., 2020). These niche brands are willing to test and hear what their consumers want, forcing the

market to be more creative. There was, then, the rise of players in the fashion world with consumer-centric business models and digital technologies, such as DNVBs (Digital Native Vertical Brands). This term was first used in 2016 by entrepreneur Andy Dunn, co-founder of men's clothing brand Bonobos, to feature companies that were born on the internet (cited by Berghem et al., 2020).

This concept is mainly a market concept, but as expressed by Meyer (2018) "*(…)the rise of an exotic new species called the "digitally native vertical brand"—vertically integrated consumer retailers that live exclusively on the web without a physical store presence*" similar to other by Mingione and Abratt, (2020), "born-digital startup corporate brand" used to name companies as Facebook or Airbnb.

DNVBs offer an idea, and a purpose and share knowledge. They create an experience that begins with unconditional delivery to rightly embrace the consumer at all stages of the relationship with him. That is, from communities, DNVBs generate insights and co-create solutions. Many built their communities organically through blogging and then migrated to social networks, specifically Instagram (Loureiro et al., 2019). For DNVBs, the internet allows them to listen to the consumer, develop the product, collect feedback, and then present more items. For fashion companies, this consumer feedback is essential in creating more assertive and personalized collections (Lorenzo-Romero et al., 2019). On social media, DNVBs also show their most vulnerable side. This vulnerability enables the brand to connect with its followers or potential consumers. (Alcântara, 2019).

3 Methodology

A qualitative methodology was used. One part of this research was the analysis and comparison of content published by native digital brands and traditional fashion market brands on Instagram, including tools such as stories and reels. The content analysis was based on Bardin's methodology (Bardin, 2009).

The sample for this study was nonprobabilistic. Were chosen 4 fashion brands, being 2 digital natives (Miti and Really Me), and 2 brands with more traditional and well-known business models in the Brazilian fashion market (Arezzo and Morana). To ensure the existence of an online community was defined that the profiles of the chosen brands should have a minimum number of 10,000 followers on Instagram to be inserted as a possibility of analysis in the search, a minimum amount of 500 posts made in the profile, in addition to the need to act in the sale of the same category of products, to get a close clipping. To have access to the material, it was necessary to follow the profile of the brands on Instagram and "print" the content posted in the stories daily for a month (14/04/2021 to 14/05/2021), at the same time of the day defined, from 20h (Brasilia time), following order of analysis. 10 categories were defined to be observed in the collected material (based on Alcântara, 2019 and Li, 2021).

Questionnaires were also conducted with representatives of the 4 brands. A structured questionnaire with 18 closed and open questions. In the consumer sample, it was considered that all selected brands have a female audience, with ages ranging between 20 and 40 years, that is, consumers of Generations X, Y, and Z. Thus, were observed the comments made on Instagram. Through these comments, it was possible to identify the consumers who engaged with the brand. Several followers were approached through messages on Instagram, to check availability to participate in the study.

4 Instagram Profiles Analyse

The analysis of content was performed according to 10 defined categories and the elements of these categories were classified: Cat.1 Number of Contents: Cat.2 Type of Publication Cat. 3 Number of Interactions, Cat.4 Profile engagement rates; Cat. 5 Valencia of comments; Cat.6 Response to followers; Cat. 7 Publication frequency: Cat. 8 Who or who appears in the image, Cat. 9 Post content; Cat.10 Follower Intervention.

The analysis was extensive and not all the results will be presented here, but only the ones considered to be more relevant will be highlighted. It is noted that there is a close relationship between consumers and the brand since they talk openly about the collections, and their experiences and are not afraid to recommend the products through the comments.

It is possible to observe that, especially *Miti*, directs its communication strategy to the stories, focusing on creating a spontaneous dialogue with its followers. *Arezzo* has a more balanced strategy between feed posts and stories. *Really Me* also invests more in stories and a more spontaneous and humanized communication strategy. *Morana*, on the other hand, bets more on publishing photos than reels or stories, which already demonstrate a certain rigidity in its content.

Following a standard messaging protocol seems to be the normal approach in traditional and larger brands on the market. *Morana* likes positive feedback and answers the questions of its consumers, using standard protocols and answers to the most frequently asked questions. All negative comments found during the period of this analysis received a public response from the brand. *Miti* and *Really Me* try to replay positive feedback whenever they can and answer consumer questions. There are no standard answers, and all clients are answered in a unique and personal way, enhancing two-way and humanized communication. However, because they are smaller companies with reduced staff, brands are not always able to respond to all the comments they receive.

Regarding the publications in the stories, it is possible to notice that what appears in the images are the products of the brands. However, there are differences in how these images are presented. *Morana*, for example, presents its products exposed under some surface but does not show how the piece looks in a model. *Really Me* already presents the product in both ways. This feature can be associated with the human side that the brand likes to highlight and can also help consumers to realize how the piece would look on their body, since the brand does not have a physical store. Can also see that native digital brands (*Miti* and *Really Me*) do not use large digital influencers in their campaigns. In the case of *Miti*, for some time the brand has not worked with influencers anymore. They prefer to use their consumers' publications about the brand as an influence for new customers.

It is also noteworthy that brands publish mostly photos of their products in the feed, that is, it works as a catalog. All brands analyzed are careful to keep the feed organized and visually appealing. This concern reflects the care of companies with details and to send a message clearly and with credibility. *Miti* and *Really Me* show more of their backstage and make their production processes clear. *Morana* and *Arezzo* are not transparent in this regard and, as mentioned earlier, transparency is an essential resource to deepen the brand's connection with its audience. Unlike traditional brands, digital natives don't use news feed to promote commemorative date campaigns. They use stories more since

the celebrations are momentary. Thus, they ensure more authenticity, and the news feed remains uniform, true to the purpose of the brand, and without changing its identity according to seasonal campaigns.

5 Brands and Consumers Analysis

Mitti and *Really M*e have an organic relationship with their consumers on Instagram. *Mitti* maintains the connection and stimulates engagement by being present, through daily publications, and keeps the dialogue open with customers. *Really Me* believes that its difference is the involvement and freedom of consumers at the time of the creation of the collections. It is possible to notice that traditional brands do not have such an organic and close relationship with their consumers. Thus, they do not talk specifically about what they do to maintain a connection with their followers, since this connection can be very subjective.

Really Me states that most customers came through Instagram and remain because of the enchantment generated by the social network because there, they can see some stages of the production process, participate in important decisions, and are always involved with the brand in one way or another. *Arezzo,* despite the great focus on its physical stores, has always been aware of having its networks updated and investing in state-of-the-art technologies since it is a competitive differential to serve its demanding clientele and manage its business. The Arezzo & Co. Group announced in June 2021 the acquisition of *the Baw clothing streetwear brand,* one of the most prominent DNVB and D2C in Brazil today and with a focus on the young audience (Generation Z) (Arezzo & Co, 2021).

Consumers of native digital brands were very available and enthusiastic about the opportunity to report their experiences and opinions about the brands. Since the relationship of native digital brands with their consumers was constant, the consumers answered whether they consider themselves fans or only customers of the brand. All *Really Me* customers reply that they are fans of the brand. On the contrary, all *Morana* consumers have responded that they are customers.

Regarding the interaction with brands, maybe because they are small brands they seem to care more about the consumer and use a more friendly and natural tone of voice and this allows them to feel comfortable making compliments, criticisms, and even outbursts with the brand. With the brands *Arezzo* and *Morana*, the interviewees did not give answers that represented a high level of proximity and relationship with the brands. Since *Arezzo* and *Morana* have been present in the fashion market for many years and are already considered popular, the consumers declared shopping from them for 5 or 10 years. However, when asked if, over all these years, the relationship between them and the brands the majority stated is mostly punctual.

6 Conclusions

This research initially assumed that, on the one hand, traditional retail had existed with several habits rooted for years, such as price competitiveness, the volatile relationship with customers, and the presence of intermediaries in communication and sales. And

on the other side, native digital brands were questioning these characteristics in their business models.

The surveys with *Miti* and *Really Me* presented behind the scenes make a digital native able to unravel data from its audience and produce products considered authentic and assertive by customers, create innovative content that makes a difference in the process of choice, and build a community of fans engaged with the brand. All this without resorting to large, sponsored campaigns, international models, and exorbitant budgets.

The combination of surveys of brands and their consumers and content analytics on Instagram has clarified some challenges faced by digital and traditional business models in the reality we live in today. It is understood that *Miti* and *Really Me* have a different business model from *Arezzo* and *Morana*., since having the consumer at the center of their strategies. Traditional brands are part of a market led by economic and financial issues. Therefore, as mentioned earlier, this paper does not propose that traditional brands copy the business model of the DNVBs and vice versa. But it is believed that they should complement each other.

Brands such as *Arezzo* and *Morana* have great difficulty in relating to the online consumer, reflecting a purpose, and being spontaneous, organic, diverse, human, and creative. Content analysis and consumer surveys have shown that distant brands, do not make innovative content, and cannot guarantee that their large following sits in a branded community.

On the other hand, DNVBs, such as *Miti* and *Really* Me, focus so much on customer relationships, which sometimes find a barrier in the digital itself, as well as the lack of contact of consumers with the parts. In the case of *Miti,* the brand can already guarantee, for consumers in Brasilia and São Paulo an omnichannel experience, but does not yet have a guaranteed structure for other cities in the country. Arezzo has a service like "Miti at Home" so that consumers can try the shoes, but by comments online it was found that the service is not always available.

The truth is that the strategies of the relationship of DNVBs with their audience can be useful for traditional brands as an excellent reference in the field of communication via social networks, e-commerce, innovation practices, and the human side. To adapt to digital, DNVBs use types of photos that show products in real bodies and at various angles, more representativeness, more co-creations with consumers, more transparency about processes, and, finally, more social listening.

Traditional brands have interactions in brick-and-mortar stores, which is a facilitator to creating physical experiences necessary to involve consumers with the brands. Because of the need for complementation, many traditional brands have begun to encompass digital natives to influence their entire production chain and obtain a business adapted to market demands. But this union of forces, to be successful, must respect the nature and expertise of both sides. Management and distribution by the large. Connection with the consumer and own style, of the small.

It is possible to conclude that the traditional sales model, whether in physical retail or digital, is compromised by social and economic changes. Fashion brands should not be 100% fashion or 100% technology, they should be a smart mix of the two. *Arezzo* and *Morana* are not expected to change their digital communication to a proposal like *Miti*

and *Really M*e, but it is expected that the next crop of brands in the fashion market will not be polarized between digital and traditional and can increasingly offer a shopping experience consistent with people's needs, creative, quality and purposely.

References

Alcântara, B.: Marcas Nativas Digitais (2019). https://www.youtube.com/watch?v=KWRBCpdRd7c

Audrezet, A., De Kerviler, G., Moulard, J.G.: Authenticity under threat : When social media influencers need to go beyond. J. Bus. Res. **117**, 557–569 (2020). https://doi.org/10.1016/j.jbusres.2018.07.008

Balchandani, A., Beltrami, M., Berg, A., Hedrich, S., Rölkens, F., Amed, I.: The state of fashion 2021: In: Search of Promise in Perilous Times. The Business of Fashion McKinsey & Company (2020). https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion

Bardin, L.: Análise de Conteúdo (Edições 70) (2009)

Bell, D.R., Gallino, S., Moreno, A.: Customer supercharging in experience-centric channels. Manage. Sci. **66**(9), 4096–4107 (2020). https://doi.org/10.1287/mnsc.2019.3453

Berghem, L., Dahlemar, A., Grenestedt, S., Ullberg, F., Hallonsten, O.: Den nya (mode) trenden – Digitally Native Vertical Brand, Lund University (2020)

Brotto, V., Melo, S.: Consumo e entretenimento: como e por que o live commerce pode trazer resultados de negócios (2021)

de Regt, A., Barnes, S.J.: V-commerce in retail: nature and potential impact. In: tom Dieck, M.C., Jung, T. (eds.) Augmented Reality and Virtual Reality. PI, pp. 17–25. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-06246-0_2

Li, F.: Social media marketing strategy : definition, conceptualization, taxonomy, validation, and future agenda. J. Acad. Mark. Sci. **49**, 51–70 (2021)

Lorenzo-Romero, C., Cordente-Rodríguez, M., Alarcón-Del-amo, M.D.C.: Open collaboration as marketing transformation strategy in online markets: the case of the fashion sector. Resources **8**(4) (2019). https://doi.org/10.3390/RESOURCES8040167

Loureiro, S., Serra, J., Guerreiro, J.: How fashion brands engage on social media : a netnography approach how fashion brands engage on social media. J. Promot. Manag. **25**(3), 367–378 (2019). https://doi.org/10.1080/10496491.2019.1557815

Martins, C.: Estratégia do Negócio de Moda. In: Marketing Aplicado à Moda Portuguesa (2019)

Meyer, R.: Reflections on " transformative marketing : the next 20 years." J. Mark. **82**(July), 13–14 (2018). https://doi.org/10.1509/jm.82.42

Mingione, M., Abratt, R.: Building a corporate brand in the digital age: imperatives for transforming born-digital startups into successful corporate brands. J. Mark. Manag. **36**(11–12), 981–1008 (2020). https://doi.org/10.1080/0267257X.2020.1750453

Moghaddam, S.A., Esfidani, M.R.: Rise and fall of interactions with brand communities. J. Mark. Intell. Plann. **40**(6), 772–786 (2022). https://doi.org/10.1108/MIP-01-2022-0005

Rennie, A., Protheroe, J., Charron, C., Breatnach, G.: Decoding decisions: making sense of the messy middle (2020)

Rossolatos, G.: The depth of brand engagement funnel: dimensionalizing interaction in social media brand communities. Qualit. Mark. Res. **24**(2), 200–220 (2021). https://doi.org/10.1108/QMR-03-2019-0041

Wichmann, J.R.K., Wiegand, N., Reinartz, W.J.: The platformization of brands. J. Mark. **86**(1), 109–131 (2022). https://doi.org/10.1177/00222429211054073

Author Index

F. J. Martínez-López (Ed.): DMEC 2023, SPBE, pp. 305–306, 2023.
https://doi.org/10.1007/978-3-031-31836-8