Management for Professionals

Felix van de Sand
Anna-Katharina Frison
Pamela Zotz
Andreas Riener
Katharina Holl

User Experience Is Brand Experience

The Psychology Behind Successful Digital Products and Services

Springer

Management for Professionals

The Springer series *Management for Professionals* comprises high-level business and management books for executives. The authors are experienced business professionals and renowned professors who combine scientific background, best practice, and entrepreneurial vision to provide powerful insights into how to achieve business excellence.

More information about this series at http://www.springer.com/series/10101

Felix van de Sand • Anna-Katharina Frison •
Pamela Zotz • Andreas Riener •
Katharina Holl

User Experience Is Brand Experience

The Psychology Behind Successful Digital Products and Services

Springer

Felix van de Sand
COBE GmbH
München, Bayern, Germany

Pamela Zotz
COBE GmbH
München, Bayern, Germany

Katharina Holl
COBE GmbH
München, Bayern, Germany

Anna-Katharina Frison
Technische Hochschule Ingolstadt
Ingolstadt, Bayern, Germany

Andreas Riener
Technische Hochschule Ingolstadt
Ingolstadt, Bayern, Germany

ISSN 2192-8096 ISSN 2192-810X (electronic)
Management for Professionals
ISBN 978-3-030-29867-8 ISBN 978-3-030-29868-5 (eBook)
https://doi.org/10.1007/978-3-030-29868-5

Original German edition published by Springer Fachmedien Wiesbaden GmbH, Wiesenbaden, Germany, 2017

Cover illustration: eStudio Calamar, Berlin

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

Preface

Customer preferences and values are going through severe changes: A recently published study named "*Enabling The Good Life*" (SB Insights & Harris Poll, 2017) reveals a shift in consumer values, which affects product designers and marketers alike. The results of the study show that while for more than half a century consumer behavior has been driven by the pursuit of status, consumers have now grown increasingly aware that excessive consumption is not the key to leading a happy life. Becoming more and more emancipated from producers and advertisers, customers are developing higher expectations of a brand: Their purchasing behavior should benefit their physical and psychological health, their communities, and their social and ecological environment.

What does this mean for brands? The answer is simple: Brands need to connect with customers on a deeper level in order to reach market success. Emphasizing the technological or status-related features of a product or service alone cannot convince the emancipated consumer anymore. A high functional and aesthetic quality of digital products and services has become a mere precondition for market success. Neither of these qualities can be regarded as a distinguishing feature anymore. In order to be relevant, differentiating, and thus eventually successful, digital products and services need to additionally connect with their users on an emotional level. Brands that cannot manage to create meaningful connections with their customers will lose their market position: The "*Enabling The Good Life*" study describes that about a third of US-American customers do not purchase goods or services that do not harmonize with their values.

Brands that do meet the values of their customers, however, are rewarded with strong customer loyalty: The majority of respondents of the conducted survey state that they would be loyal to brands that support their living of a *Good Life*, and a relevant share of participants would actively advocate for the brands they are choosing to support. Still, there is some space to fill: Two-thirds of respondents cannot name a brand that actually helps them living a good life in the sense of given definition, and in many categories none of the brands assessed by the study perform well. Hence, the study indicates the important mission arising for brands: They must keep a close eye on their customers' values—and design their products and services accordingly.

But how can brands achieve this? This book provides the reader with all the necessary information on how this important task can be done, be it scientific or practice-related. From the basics of the human perception and information processing to hands-on insights such as methodological recommendations for your very own design process, this book covers the most important aspects of systematic value-based user experience design. Since high functional and aesthetic quality can be achieved with existing methods, frameworks, and design systems, the book focuses on the so-called hedonic quality of digital products and services, i.e., the degree in which the users' needs are fulfilled through interacting with a product or service. Only with the help of hedonic quality a strong and sustainable emotional connection between a digital product or service and its users can be established and maintained.

With its broad, but well-chosen scope of insights, this book is a unique and valuable instrument for beginners who need a guided introduction into the design process, as well as for professionals who wish to enhance their existing knowledge and optimize their design processes. It offers practitioners a systematic and consistent method to direct design processes in a structured manner. It also addresses those who are interested in the academic background knowledge of value-based design, while for practitioners, it gives hands-on examples. Although we might focus on people's experience with digital products and services, the knowledge we provide here can also be applied to traditional product and service fields in the analog world.

To develop a systematic understanding of designing experiences, Chap. 1 gives an introduction to why it is important for brands to catch the attention of consumers, and why it is especially difficult for brands to get consumers hooked in the age of information overflow. Chapter 2 dives deeper into the topic by giving scientific knowledge about how human beings process information physically, followed by Chap. 3, which provides a complementary understanding about attention processes. This chapter ends with a section about unconscious information processing, which is especially important in brand perception and, hence, for designing positive experiences. Having laid out the basis of customers' perception by explaining the cognitive and sensory aspects of information processing, these chapters are followed by Chap. 4, which is concerned with the role of needs and values. This should help us to understand what consumers look for in an experience: After successfully perceiving a brand, how do we decide which brand we like or not? What is the link between user needs and brand values? We learn here that, in order to reach customers, brands need to fulfill the customers' needs with the experience they provide. But when we talk about experience—what do we mean? To connect these dots, Chap. 5 illustrates the relation between customer experience (CX), user experience (UX), and brand experience (BX), explaining why it is important to align all three in a holistic way. Until this point, we have gained a deep understanding of how customers perceive and experience brands and their products. Chapter 6 summarizes this knowledge to finally apply it to the practice of designing experiences: We learn that with their specific visual or tactile features, products send signals, which are then decoded by consumers. By making sure to choose these signals in alignment with the values a brand aims to convey, we can actively

influence how our product is perceived. How this can be done in design practice is illustrated by Chap. 7: It introduces the user experience identity method (UXi), which helps to derive a design language from brand values. After this method has been explained in its single steps, Chap. 8 describes research and validation methods that support the UXi process. With the last, concluding chapter, the book summarizes the learnt knowledge and gives an outlook into to what can be expected next in research and practice.

Attentive readers will notice that in this book, we use different terms to describe people as subjects. These terms vary in accordance with the context: When we are concerned with cognitive properties and processes, we speak of *humans*, and when we talk about the purchase of products and services, we speak of *consumers*, while we choose the term *customers*, when explaining about markets and prices. We call them *users*, when we write about the interaction with digital products, and when assessing the work of agencies and designers, we involve the term *clients*. By this, we intend to support the understanding of the different perspectives we must take on target groups and stakeholders in order to fully comprehend value-based UX design.

In the end, we hope that practitioners as well as researchers in the field of UX design find useful information for their very own engagement with the design of beautiful experiences. With that, we aim to provide a deeper understanding of why and how to design experiences—not only to share our knowledge, but also to inspire both researchers and practitioners to test our method and engage in further discussions about it.

Münich, Germany
July 2019

Felix van de Sand
Anna-Katharina Frison
Pamela Zotz
Andreas Riener
Katharina Holl

Acknowledgment

We would like to especially thank Dr. Katharina Grimm for her essential contribution to the book, Julia Reibel who supported the evaluation method development with her bachelor thesis, COBE and the TH Ingolstadt for their support, Adrian Pavic for the illustrations, Benedikt Matern for the photographs, and everyone else who helped us with this project.

Contents

List of Figures

List of Tables

Abbreviations

API	Application Programming Interface
Approx.	Approximately
AR	Augmented Reality
B2B	Business to Business
BX	Brand Experience
CNBC	Consumer News and Business Channel
CEM	Customer Experience Management
CEO	Chief Executive Officer
CX	Customer Experience
CI	Corporate Identity
ERP	Event-Related Potential
EU	European Union
HCI	Human–Computer Interaction
HIP	Human Information Processing
HMI	Human–Machine Interaction
HQI	Quality of Identification
HQS	Quality of Stimulation
HUD	Heads-Up Display
HVB	HypoVereinsbank
IAT	Implicit Association Test
IoT	Internet of Things
ISO	International Organization for Standardization
LTM	Long-Term Memory
MDI	McKinsey Design Index
RAM	Random Access Memory
SEEV	Salience – Effort + Expectancy + Value
SOA	Stimulus Onset Asynchrony
STM	Short-Term Memory
STSS	Short-Time Sensory Store
SUV	Sport Utility Vehicle
TRS	Total Returns to Shareholders
UAI	Uncertainty Avoidance Index
UCD	User-Centered Design

UI	User Interface
UPA	Usability Professionals Association
USP	Unique Selling Point
UX	User Experience
UXi	User Experience Identity
UXPA	User Experience Professionals Association
VR	Virtual Reality

The Battle for Attention

1

We live in a world of constant availability and endless opportunities to interact (see also Sect. 2.1.4). We are well aware of the fact that our attention is continuously jumping from one notification to the next, from our feed update to our e-mail inbox, on to (fake) news. Nowadays, the potential contact points between corporations and consumers are more diverse than ever and cutthroat competition to attract consumers' attention is in full swing. Increasing overstimulation leads to fragmented attention and calls for new ways of customer communication in order for a brand to still make an impact (Beber, 2018).

We experience a steadily increasing number of consumers perceiving the majority of marketing campaigns as bored, disinterested, or skeptical observers. In such an atmosphere, it is difficult for marketers to motivate consumers to invest their scarce resources in a specific product. The majority of consumers experience an effect of learning and habituation—and emancipation: Consumers perceive marketing actions as such, no matter if these actions appear aggressive or subtle. Consumers grow increasingly aware of the intended aim, becoming critical and emancipated observers, rather than receptive targets. Today, companies often bemoan the low involvement that follows this development: Their conventional campaigns do not find their way to the customers' attention anymore.

Considering that all consumers in industrialized free market economies are confronted with an intense information flow in their everyday life, low involvement should be no surprise. Information satiation and the fact that time and attention have become scarce resources lead to reduced engagement with single products and brands. In addition to news about politics, sports, and lifestyle, consumers are continuously confronted with marketing actions. Due to limited time resources and personal interest, consumers are forced to prioritize potential areas of attention.

Therefore, it is one of the most important tasks of marketing experts to ensure a proper introduction and long-term establishment of a brand, product, or service,

This chapter was written by Felix van de Sand.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_1

while facing the unattainability of the emancipated consumer. It is equally important for management and marketing representatives to close the gap between a well-defined brand strategy and the establishment of a successful market position. According to Harvard Business School professor Clayton Christensen, each year more than 30,000 new consumer products are launched and 95% of them fail (Christensen, 2011). Failure rates vary among industries, ranging between 35% for health care and 49% for consumer goods (Castellion & Markham, 2013), but the message is clear: Marketers find themselves in the midst of a consumption-based Darwinism.

Even though this applies to all products and services, this consumption-based Darwinism appears to affect the digital world particularly strongly: In January 2017, Apple's App Store offered more than 2.2 million apps. This impressive number indicates that the share of apps that one single person uses regularly must be rather small, compared to the number of available products in the market. Considering that users learn to distribute their time in the digital world more effectively, a larger supply of apps does not lead to a more intense usage. Much more, the top-tier apps (the best ranked apps) continuously increase their numbers of users, while the majority of the apps remain in the market as *zombie apps* (i.e., apps that do not make it to the top list in at least a third of the days available and which can only be found when specifically searched for) in the unlimited vastness of the app stores.

To reach long-term market success, digital products and services have to fulfill certain quality standards. One of them is a clear added value for the users, and another one is a convincing user experience and customer experience.

► *Customer experience* is the inner, subjective reaction of the consumer to a direct or indirect contact with a brand. A direct contact may occur during the purchase of a product or the use of a service and is usually initiated by the consumer. Indirect contact comprises often spontaneous encounters with the display of products or services, and may take the form of word-of-mouth recommendations, advertising, news, reviews, and so on (Meyer & Schwager, 2007).

User experience is defined as the dynamic, context-specific, and subjective interpretation of a human–machine interaction (Olsen, ACM Digital Library, & ACM Special Interest Group on Computer-Human Interaction, 2009). Chapter 5 offers a more in-depth examination of the subject, especially in relation to brand experience.

Due to the fast and disruptive spread of digital media, marketers are able to use a much larger variety of potential touchpoints between brands and consumers than ever before. This is both a chance and a challenge at the same time: experiences and encounters occur in several contexts, for example, on social media platforms like Facebook, Twitter, and Instagram, where companies get directly involved in an open dialogue with their (potential) customers. More and more, this dialogue takes place within the frame of digital products, e.g., apps and websites, and requires devoted planning, adjustment, and implementation.

Yet, in a worst-case scenario, the aforementioned information overload (see also Chap. 2) leads to inactivity, indifference, and unreflecting consumption. Only the measures implemented by psychologists and product managers at Silicon Valley tech companies, being well educated in the discipline of behavior design, manage to get us *hooked* (Eyal & Hoover, 2014), i.e., to get us on the psychological hook of using certain products as often as possible. The *fear of missing out* amplifies the feeling of hardly being capable of handling the incoming amount of information, of not being able to assess which information is true or false, helpful or useless. This is due to the particular social and technological conditions of our times, which we call the *information economy*. This term defines our day and age as a time, in which information can be considered the most relevant commodity for social and economic welfare. However, the rise in relevance of information resulted in specialized businesses and technology, such as the Internet, which has made access to information omnipresent, easy, and cheap—and paved the way for a new era.

1.1 The Rise of the Attention Merchants

With the rise of digital media, new platforms for finding, exposing, and exchanging information have emerged, and as we spend time on these platforms, our attention becomes attractive for advertisers. Media platforms reach larger audiences than ever before and offer a futile ground for presenting products—and companies know how to use this as a means to make money: Users are given access to information—in exchange for a share of their valuable attention. Wu (2016) describes "*the capture and commercialization of human attention* [as] *the defining industry of our time*." He explains two dominating ways of commercializing attention: first, the charge of admission, i.e., the selling of a product or access to a service, and second, the reselling of attention, which is the business model of so-called *attention merchants*, i.e., companies such as Facebook or Google, whose businesses are based on "*harvesting the attention*" of their users and selling it to the highest bidder of the advertising industry, who then places ads all along the personal path of the user journey (Wu, 2016). In an article for the *Economist*, Ian Leslie states:

> The emails that induce you to buy right away, the apps and games that rivet your attention, the online forms that nudge you towards one decision over another: all are designed to hack the human brain and capitalize on its instincts, quirks and flaws. The techniques they use are often crude and blatantly manipulative, but they are getting steadily more refined, and, as they do so, less noticeable. (Leslie, 2016).

However, consumers are becoming increasingly aware of these companies' commercial interests—and so skepticism arises. Despite offering smarter instruments such as personalized advertising, consumers' trust in the *attention merchants* erodes.

Not only users but also the creators of *attention harvesting* corporations have begun to officially raise concerns about their creations. Ex-Facebook executive

Chamath Palihapitiya told CNBC that "*The tools that we have created today are starting to erode the social fabric of how society works*" (Lovelace, 2017). Sean Parker, founding president of Facebook, stated about the social network that "God only knows what it's doing to our children's brains" (Allen, 2017). The engineer who invented Facebook's *like*-Button reportedly quit the social network (Lewis, 2017). Tim Cook, CEO of Apple, also addressed the negative impact of social media on children: "*I don't have a kid, but I have a nephew that I put some boundaries on. There are some things that I won't allow; I don't want them on a social network*" (Gibbs, 2018).

In the face of the societal, political, and ethical impact of the *Attention Merchants*' business, creators of services and products find themselves torn apart between the need to win the fight for attention and an increasing urge to act according to morals, since "*not everything that is technologically possible is personally and socially desirable*" (Diefenbach & Hassenzahl, 2017). With changing needs (while *needs* being defined as the feeling of a deficit and the urge to compensate for it; see also Chap. 4) and the increasing awareness of the *attention merchants'* business mechanics, however, the sensitivity for sustainable products is on the rise.

1.2 Enabling the Good Life

Today, *attention merchants* must dig deeper to find effective ways to gain consumers' attention and loyalty, as customer preferences and values are going through severe changes: A recent study "*Enabling The Good Life*" reveals a shift in consumer values, which affects product designers and marketers alike (SB Insights & Harris Poll, 2017). As the study describes, for more than half a century, consumer behavior has been driven by the pursuit of status, i.e., by buying products and using services that mark our social status. In this, our identity as consumers outshone our identity as citizens, neglecting responsibilities toward the world that surrounds us. Recently, however, consumers have grown increasingly aware that excessive consumption is not the key to leading a happy life. Reconnecting with the responsibility of (today: global) citizens, customers have grown emancipated from producers and advertisers, developing higher expectations of a brand. It is shown that consumers have become more and more convinced that purchasing behavior should benefit their physical and psychological health, their communities, and their social and ecological environment.

The *Good Life* study was conducted in order to help brands understand these new expectations. Consequently, more than 2000 US-American adults were asked about their definition of a fulfilled life. The study revealed four essential pillars of a "*Good Life*." Listed according to their priority, these are "*balanced simplicity*," i.e., "*living a simpler, healthier life*"; *"meaningful connections,"* i.e., connections "*to people, community and the environment*"; "*money and status,"* i.e., "*having money and the ability to spend it*"; "*personal achievement"* in "*career and level of education*."

But what does this mean? Let us take a closer look by illustrating the example of "*balanced simplicity*." In the *Good Life* study, this term describes preferences for

services and products that make our life easier and healthier, for example, by helping us reducing our stress levels. Consumers are more often opting for products with fewer and more natural ingredients, which is why this value cluster offers opportunities especially for the food industry, and here, for brands such as Whole Foods. Other, more conventional brands react to these consumer trends with strategic decisions like buying organic food brands, as illustrated by the example of Campbell buying Plum Organics. Another industry offering products and brands matching the values of this cluster is the sharing economy, consisting of companies like Lyft and Uber, which offer resource-friendly mobility service solutions. Conventional companies have tapped into the market as well, by simply enhancing their product portfolio by a sharing solution, e.g., Ford offering a bike sharing service.

What does this mean for brands? The answer is simple: Brands need to connect with customers on a deeper level in order to reach market success. Emphasizing the technological or status-related features of a product or service alone cannot convince the emancipated consumer anymore. Yet, the good news is that these new values are equally relevant for groups of different demographics, i.e., ages, gender, political views, and so on. The brands that do respect their (potential) consumers' values will, as the study suggests, be successful in the market. Those, however, who cannot manage to create meaningful connections with their customers will lose their market position: The study describes that, for US-American customers, 29% do not purchase goods or services that do not harmonize with their values.

For marketers, this marks an extremely difficult task, since advertising alone is not enough: According to the *Good Life* study, 16% of customers inform themselves about a brand prior to purchasing a product or service from it. Those brands that meet the new values, however, are rewarded with strong customer loyalty: 80% of respondents state that they would be loyal to brands that support their living of a *Good Life*, and 21% of customers would actively advocate the brands that support this lifestyle. Still, there is some space to fill: Two-thirds of respondents of the study cannot name a brand that actually helps them living a *Good Life*, and in many categories, none of the brands assessed by the study perform well. Hence, the study indicates the clear mission for brands: They must keep a close eye on the "*evolving aspirations*" of their customers and apply these new insights to their products, services, and marketing strategy.

> ► Rather than the pursuit of money, status, and personal achievement, humans are collectively beginning to seek balance and simplicity, along with greater connection to family, community, and the environment as foundations of a life well lived. In order to be successful today, this trend needs to be taken into consideration when designing products and services.

However, recent studies show that there has not always been a strong awareness among companies that products address their customers' values at all times, i.e., every interaction with a brand or its products causes emotions. So, apart from current shifts in consumer preferences, how does a company design and present its products

in a way that they really have a positive impact on consumers' lives? As Gaggioli, Riva, Peters, and Calvo (2017) describe, the concept of *positive technology* addresses this question both academically and practically: Deduced from the concept of *positive psychology*, which is concerned with the question about which conditions make life worth living, *positive technology* deals with all aspects that make a certain technological system contribute to the psychological well-being of its users, and thus improve their life quality. Accordingly, *positive design* deals with the special case of product (and experience) design improving the psychological well-being of users.

It is important to note that psychological well-being, as the authors point out, by no means only comprises positive feelings like happiness and joy. As the paradigm of *positive design* argues, these emotions are "*not sufficient to address support for overall psychological well-being*" (Gaggioli et al., 2017, p. 491). The feelings of "*autonomy*" and "*independence*" serve as illustrative examples for emotions that are not necessarily positive, but contribute to an overall, sustainable psychological well-being. Desmet (2013) highlights this aspect by pointing out that the "*designers' focus on 'pleasurable use' ignores the wealth of pleasant and unpleasant emotions that may be experienced during product use*" (Desmet, 2013, p. 13). He underlines that brands should aim to provide their consumers not simply with a pleasant but with a meaningful and rich experience, as negative emotions might enhance the richness of an experience (take for example the excitement that comes with a scary horror movie scene; see also Chap. 6). We can thus deduce that in order to help consumers to live a *Good Life*, brands do not need to only trigger positive emotions like happiness in a consumer; exposing them to information about the bitter truth of climate change might make consumers feel uncomfortable; however, they might also feel addressed in their values, needs, and motifs, and perceive the contact with a brand as an emotionally rich experience.

The aim of effective design, as Desmet (2013) puts it, should therefore be to

> "*design for emotion*," which he defines as "*products, services, technologies, or systems that evoke intended (or desired for) emotional responses either directly, via the design [. . .], or indirectly, by activities and interactions facilitated by the design.*" (Desmet 2013, p. 5)

To achieve this, brands have to carefully take into consideration the specific and complex needs of the target group: While the *Good Life* study illustrates conglomeratic trends in consumer preferences, individual preferences within a target group might differ or even conflict. Desmet (2013) illustrates this with the help of the example of a "*playful wheelchair*," which is used by a disabled child sitting in it and the child's parents, who are regularly pushing the wheelchair. The assessment of both user groups' preferences shows that the child's parents wished for large handles to comfortably push and control the wheelchair, while the child associated large handles with dependency and other negative emotions. Completely restructuring the conventional wheelchair design, the group of product designers concerned with the case equipped the wheelchair with a large push bar, which can be moved behind the seat, remaining unseen for the child. This case illustrates that brands need to take a close look at their consumers' needs and values (in this example, parents aim for

control and the child aims for independence) in order to offer a "*good*" experience for the affected users and, thus, stand out among competitors.

We learn here that with *positive design*, a paradigm has emerged that actively aims at improving the consumers' well-being and life quality. However, practitioners experience it to be a highly complex and demanding goal to achieve, especially when, as was shown for the case of the multiuser-affected wheelchair, product design has to leave conventional patterns behind in order to address the needs of the consumer. Today, several methods in innovation management, among them user-centered design and design thinking, aim at a need-based *thinking outside the box* to ensure a rich and meaningful experience.

Putting Users into the Center of Attention: User-Centered Design and Design Thinking

To effectively meet the needs and expectations of users, several methods and concepts have emerged over the last few decades. A very common concept is *user-centered design* (UCD): Originating in the early 1990s and having been applied predominantly to the context of (digital) interfaces, the concept puts the needs and skills of the human being into the center of the design process in order to achieve a high level of product quality (i.e., functional and hedonic quality) and a positive user experience. In UCD, four different phases (specification of context of usage, requirement specification, creating design solutions, and evaluation) are repeated in iteration, until a satisfying result is reached. Even though these four phases are considered essential, there is no further specification in methods: Research or prototyping methods as well as the team composition should be chosen in accordance with the specific product. However, the involvement of users and multidisciplinary experts are key features.

Design thinking takes the user-focused perspective even further: By asking participants to critically question the status quo of current products, services, and other solutions, the iterative process of design thinking aims at the development of innovative and creative solutions for complex problems. It fosters the rapid development and early testing of ideas of all kinds of needs and demands. In the context of design thinking, a solution is characterized as *good* when it is beneficial for the consumer, technically feasible, and economically efficient. There are no limits to the variety of problems that can be solved with the help of design thinking: be it new products, services, or even solutions to social or political problems. Consequently, design thinking is suitable for a broad range of application, always starting with the problem or need of a target group.

Companies use user-centered strategies like these to make sure their products are relevant to the user. Mastering the effective use of these methods has become a critical factor for market success.

Nir Eyal, inventor of the aforementioned "*hooked*" model, recently stated that Apple and Google started introducing features in their digital products that help users to monitor their screen time (Nir & Far, 2018). Given the assumption that more user screen time equals more revenue, the introduction of such features seems irrational in the first place. But according to Eyal, "*Apple and Google don't want you to get addicted. Addiction is a compulsive harmful behavior. Rather, they'd prefer you form healthy habits with your digital devices*" (Nir & Far, 2018). It seems that the big technology companies have also sensed the sociocultural trend toward "*Balanced Simplicity*" and "*Meaningful Connections*."

Concurrent with the upcoming need for a *balanced simplicity* lifestyle, the once traditional one-way communication from brands to customers turned into a permanent dialogue via different media channels. Brands have become flexible and reactive in their communication but remain essentially constant and recognizable in their interactions (Shillum, 2016). The increasing establishment of Customer Experience Management (CEM) in companies shows that the concerted and real-time management of these interactions becomes more and more important.

1.3 The Value of User Experience Design

Hence, these are stormy times for marketers and product developers. According to a study conducted by Forrester Research, we live in the "*age of the customer*" (Forrester, 2016). Customer Experience Management and a strategic focus on design both tend to become major success factors. Another study conducted by Walker Information suggests that "*Customer experience is going to become the driving factor by 2020, outstripping price as the main product differentiator by this time*" (Walker, 2013). Research by Watermark Consulting corresponds with the authors' experience in their field of profession: It shows quantitative results for the success of companies that put customer experience into the center of their strategic considerations (Watermark, 2019). They compare the value-based performance of company shares of so-called "*customer experience leaders*" with those of "*customer experience laggard*s."

CEM leaders and laggards groups consist of the Top 10 and Bottom 10 stock exchange-listed companies based on rankings put together by Forrester Research and Temkin Group. Among the leaders we find companies like Amazon and AT&T, the group of laggards contains companies like United Airlines and Wal-Mart. The Watermark study draws a clear picture: CEM leaders' market value has reached a plus of 183.8% within the last 11 years. Not only do these companies beat the laggards group, which has only reached 63.1%, but also outplay the S&P 500 Index, whose companies gained an average 138.7% within the same time frame (see Fig. 1.1). The fact that CEM leaders were able to reach a higher growth in share value can be explained by two central factors: firstly, the interplay of a stronger loyalty of their customers, a weaker price sensitivity of their customers, and a more frequent positive recommendation by their customers. Secondly, CEM leaders have lower advertising costs and, due to a lower rate of complaints, have to invest smaller

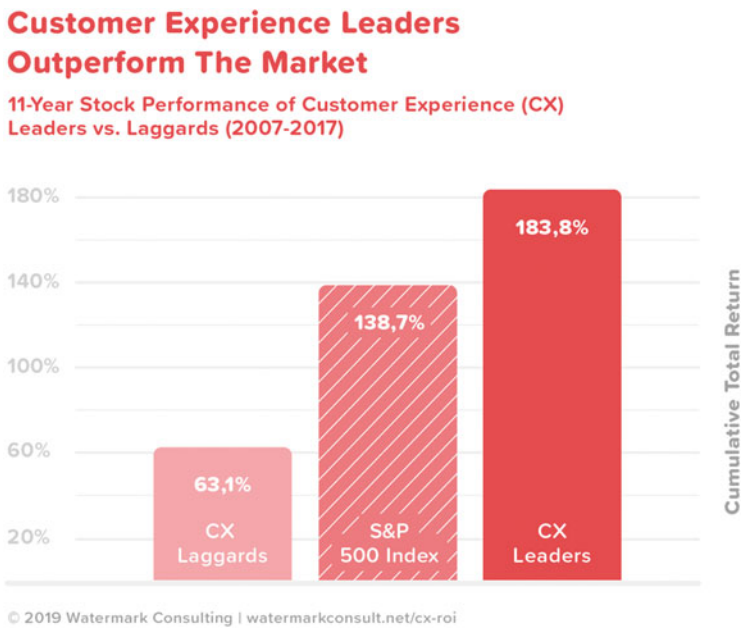


Fig. 1.1 Watermark customer experience ROI study (source: http://www.watermarkconsult.net/cx-roi)

resources in service costs. The CEM laggards suffer from their customers' dissatisfaction and the consequences of their frustration, e.g., negative word-of-mouth recommendations and high costs of operation to compensate for these. Hence, companies without a strong customer experience strategy grow more slowly and less sustainably. A solid customer experience brings positive long-term effects, for consumers as well as for investors. The competitive advantage that can be achieved with the help of CEM is tempting: Reality proves that product innovations are being imitated shortly after entering the market. Technological advantages are being copied and cost leadership is hard to reach or maintain. An extraordinary customer experience and an ecosystem that fosters such can generate high strategic and economic benefit for companies, which is hard to copy by competitors.

A study conducted by McKinsey complementarily illustrates the role of design as an important part of the customer experience (Sheppard, Sarrazin, Kouyoumjian, & Dore, 2018). The *McKinsey Design Index* (MDI) consists of 300 publicly listed companies, tracked over a 5-year period in multiple countries and industries. The MDI shown in Fig. 1.2 rates companies by how strong they are at design and how that links up with the financial performance of each company. Quite similarly to the Watermark study, the MDI shows that design-driven companies outperform industry-benchmark growth by as much as two to one.

McKinsey summarizes the key findings of their study as follows:

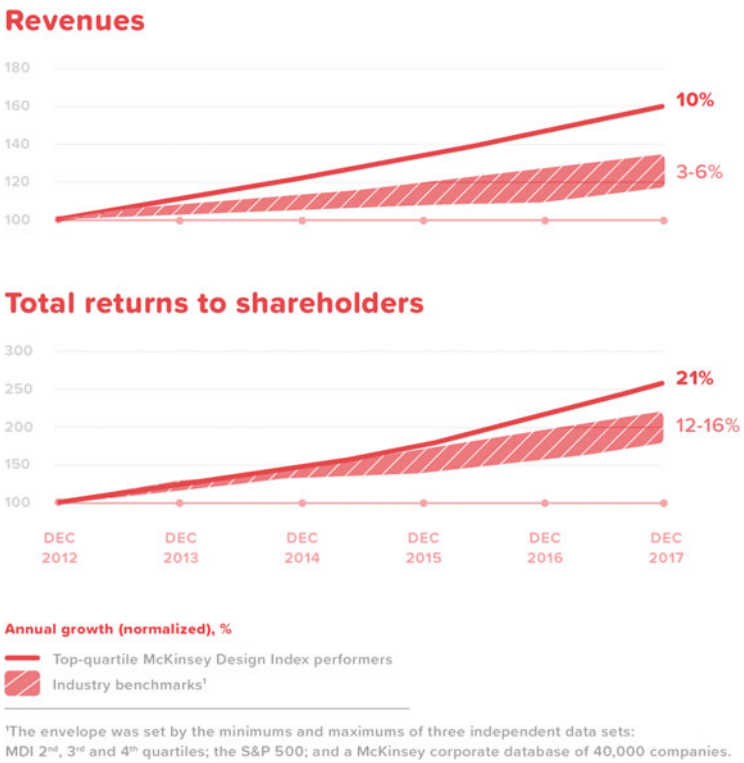


Fig. 1.2 McKinsey—The business value of design 1 (source: "The business value of design," October 2018, *McKinsey Quarterly*, www.mckinsey.com. Copyright © 2019 McKinsey & Company. All rights reserved. Reprinted by permission)

1. "We found a strong correlation between high MDI scores and superior business performance. Top-quartile MDI scorers increased their revenues and total returns to shareholders (TRS) substantially faster than their industry counterparts did over a 5-year period—32% points higher revenue growth and 56% points higher TRS growth for the period as a whole.
2. The results held true in all three of the industries we looked at: medical technology, consumer goods, and retail banking. This suggests that good design does matter whether your company focuses on physical goods, digital products, services, or some combination of these.
3. TRS and revenue differences between the fourth, third, and second quartiles were marginal. In other words, the market disproportionately rewarded companies that truly stood out from the crowd" (Sheppard et al., 2018) (see Fig. 1.3).

High growth rates and high margins result in market attractiveness, which again results in better market performance. Thanks to the spadework of the pioneers of this index, and other design-driven companies like Dyson and Samsung, consumers have

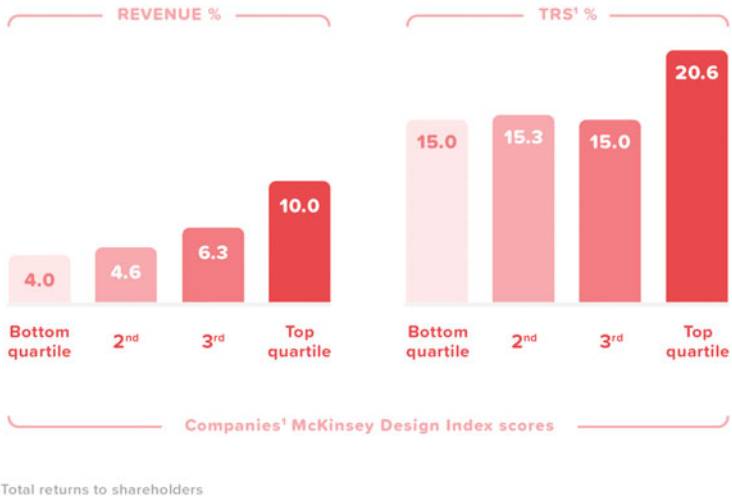


Fig. 1.3 McKinsey—The business value of design 2 (source: "The business value of design," October 2018, *McKinsey Quarterly*, www.mckinsey.com. Copyright © 2019 McKinsey & Company. All rights reserved. Reprinted by permission)

a higher willingness to pay for high-quality user experience design. This does not only apply to traditional consumer goods but also to fields like public services or B2B marketing, which have long not been considered ambitious in offering aesthetic products and services within their customer experience.

From IBM to Uber, decision makers have started to understand the huge impact of customer experience and design, here especially user experience design, on the commercial success of a firm. The spread of digital interfaces as side products of services and solutions makes UX design one of the most significant and increasingly important design disciplines. More and more companies have launched programs in the field of design thinking and UX Design or have built their own in-house design teams—even in areas such as financial services, where omni-channel experiences have not yet played an important role in strategic agendas.

When fighting for users' attention, another challenge is that the relationship between brands and their customers today is more unsettled and less rigid. Another McKinsey study "*Brand success in an era of Digital Darwinism*" (Bughin, 2015) underlines the importance of the targeted use of digital channels for the success of companies and their brands:

- "Competition amongst brands is steadily increasing as branding channels and messages proliferate.
- As consumers become more digitally empowered, brand messages lose their impact, and the likelihood of conversion (i.e., a consumer's purchase choice), on average, decreases.

- The brands most likely to convert digitally jaded consumers into purchasers offer the strongest array of digital experiences. These successful players seem to be pulling away from less robust digital brands and gaining further momentum as they build up positive word of mouth on social media" (Bughin, 2015).

Digitization is steadily becoming the main pathway for consumer journeys. The number of digital touchpoints is increasing by 20% annually, as more offline consumers shift to digital tools and younger, digitally oriented consumers enter the ranks of buyers (Bughin, 2015).

The number of digital consumer touchpoints has risen as steeply as the number of their users. Today, for example, contact with a bank probably takes place more often via a website or mobile banking apps than within the local branch of the bank, public advertisements, or a hotline. Digital tools have become ubiquitous and, in addition, younger, digitally oriented consumers have increasing purchasing power at their disposal.

Users, however, do not think in touchpoints. For them, watching a TV advertisement, receiving a service in a bank's local branch or from the customer hotline, or by using a banking app is equally perceived as a brand experience. As Nielsen Norman put it:

> Most people can't differentiate how they feel about a brand from how they feel about the experiences they have with that brand. [. . .] UX can be part of—or all of—the reason a customer chooses to engage with a company or its products (Kaplan, 2016).

As users do not think in touchpoints, every direct or indirect interaction with a brand results in a brand image. On the other hand, the experience with a single touchpoint can not only have an impact on the customers' attitude (see also Chap. 2 and Sect. 5.3) toward a brand associated with this touchpoint, but toward a whole group of similar touchpoints, technologies, and products. One illustrative example is the impact that Tesla's self-driving cars' accidents have on the image of autonomous driving as a technology. Hence, designing a touchpoint can have an impact on whole technologies or business models, which makes it even more important to conceptualize them carefully. However, while these might be the largest possible consequences of an unpleasant experience with a touchpoint, a negative image of the brand responsible for designing the touchpoint is a guaranteed consequence.

User experience as an essential driver of decisions to use or buy products and services has grown to be a severe challenge: The mere product quality in terms of functionality (the so-called *pragmatic quality*; see also Sect. 5.1), even in terms of aesthetics, has lost meaning as a differentiator for market success (Brakus, Schmitt, & Zhang, 2014). Thanks to the market dominance of Apple, Google, and others, high-quality UX has become a mere precondition for usage. While at the beginning, Apple's colorful, friendly, and intuitive mobile system software iOS was a clear distinguishing feature, competitors like Google with their Material Design System (Google, 2019) have now set new standards for modern, sophisticated interfaces themselves.

> Since both a high pragmatic and aesthetic quality have become a precondition for market success, digital products nowadays need to also connect with their users on an emotional level in order to differentiate themselves from the competition. This can be reached with a high *hedonic quality*, which will be described in Sect. 5.1. A high pragmatic and aesthetic quality can be ensured by applying existing and established methods such as UCD or design thinking, and by using design systems like Google Material Design. Thus, the *UXi* method, which is introduced in this book, focuses on the hedonic quality of digital products.

Whole industries are disrupted by start-ups like Uber in mobility services, Airbnb in renting accommodations, or PayPal in the field of financial transactions. All these companies share the characteristic of having a strong focus on high-quality UX. Compared to these companies, competitors whose digital products offer an insufficient UX seem to have severe disadvantages.

Even though users do not *consciously* (see also Chap. 3) differentiate between their experiences with single touchpoints, they expect that their needs are properly understood and addressed at any of the potential touchpoints, and that they are offered an authentic and personal dialogue with a brand at any time. Hence, digital products need to offer a convincing user experience in order to overcome the problem of low involvement, reach consumers, create sustainable enthusiasm for products, and make users become loyal with the brand. Seeing digital products not only as carriers of functions and information, but as brand ambassadors, which intend to trigger certain *unconscious* associations and emotions (see also Chap. 3), is hence an important precondition to winning the battle for the consumers' attention.

What kind of possibilities do product designers (analog and digital) and marketers have to develop new ideas within this already versatile and very creative atmosphere? How can they actually find new paths in order to make their product and marketing strategies stand out among competitors? Traditional marketing and selling strategies have all been done before. There are only very few niches that manage to grip consumers. If a marketer really wants to go new ways, it takes more than just to follow or refine existing paths. After all, even an evolution does not offer something really new, and consumers might only be excited for only a short period of time. To ensure future market success, brands need to take on more creative methods than ever before. Marketers need to find and install revolutionary approaches to establish a true connection with the consumer.

The basis of this approach should be the aim to create a sustainable emotional connection between the user, the specific digital product, and the brand behind it. Consequently, a brand has to orient itself toward the needs of the users, then integrate its brand values into its digital products and services, and make these come to life with every interaction. By brand values we mean the guiding principles that a brand would like to represent and that influence its product development, advertisement, and other forms of behavior. They mark the specific character of a brand and make them unique (see also Chap. 4). Therefore, it is necessary to understand how attention processes function (see also Chap. 2) and what the motives and aims of

users really are. Only with the help of this knowledge, brand experience (BX), customer experience (CX), and user experience (UX) can be harmonized with each other. And only then, digital products and services can be created that call for the right extent of attention at the right time, touch and inspire users, and finally succeed in the market.

Only if digital products and services are designed to engage their users at the right time, with the right type and amount of information, if they offer an added value for their users on a functional and on an emotional level, without unnecessarily stealing their attention, they can be successful. The UXi method (see also Chap. 7) provides an approach to achieve exactly that. This method follows the mission of Sarah Diefenbach and Marc Hassenzahl: "*We want to make people happy—by understanding their needs and taking them seriously*" (Diefenbach & Hassenzahl, 2017). This does not necessarily contradict economic interests. Much more, a convincing customer and user experience, as is shown throughout the following chapters, is one of the most critical factors for market success.

Conclusion

The motives and aims of people are changing—from status-driven dogmas to "*balanced simplicity*" and "*meaningful connections.*" At the same time, the number of digital touchpoints and thus the opportunities to interact are rising sharply. For many consumers, the digital world has become overly complex, even confusing. Reflecting on this circumstance, they begin to devote their attention to digital products and services more selectively. Hence, the attention of users is intensively fought over. It is more valuable than ever since it has become a scarce resource. Those companies who attract and bind the users' attention continuously and sustainably with the help of good Customer Experience Management are more successful in the market. Thereby the users' experience of digital (and analog) products and services is an essential part of the customer experience of a company. Given the aforementioned developments, attention should no longer be regarded as a mere trading good. Only if digital products and services are designed to engage their users at the right time, with the right type and amount of information, if they offer an added value for users on a functional and on an emotional level, without unnecessarily stealing their attention, they can be successful.

References

Allen, M. (2017). *Sean Parker unloads on Facebook: "God only knows what it's doing to our children's brains."* Retrieved July 3, 2019, from https://www.axios.com/sean-parker-unloads-on-facebook-god-only-knows-what-its-doing-to-our-childrens-brains-1513306792-f855e7b4-4e99-4d60-8d51-2775559c2671.html

Beber, H. (2018). *4 Ways to break through the noise and capture consumers' attention*. Retrieved July 3, 2019, from https://www.adweek.com/brand-marketing/4-ways-to-break-through-the-noise-and-capture-consumers-attention/

Brakus, J. J., Schmitt, B., & Zhang, S. (2014). Experiential product attributes and preferences for new products: The role of processing fluency. *Journal of Business Research, 67*(11), 2291–2298.

Bughin, J. (2015). *Brand success in an era of Digital Darwinism*. Retrieved July 3, 2019, from https://www.mckinsey.com/industries/high-tech/our-insights/brand-success-in-an-era-of-digital-darwinism

Castellion, G., & Markham, S.K. (2013). *Myths about new product failure rates*. Retrieved July 3, 2019, from https://newproductsuccess.org/white-papers/new-product-failure-rates-2013-jpim-30-pp-976-979/

Christensen, C. (2011). *Clay Christensen's milkshake marketing*. Retrieved July 3, 2019, from http://hbswk.hbs.edu/item/clay-christensens-milkshake-marketing

Desmet, P. (2013). *Positive design*. Inaugural lecture, TU Delft, Faculty of Industrial Design Engineering. 24 May 2013. Retrieved July 3, 2019, from http://www.academia.edu/6085124/Faculty_of_Industrial_Design_Engineering_Inaugural_lecture

Diefenbach, S., & Hassenzahl, M. (2017). *Psychologie in der nutzerzentrierten Produktgestaltung: Mensch-Technik-Interaktion-Erlebnis*. Berlin: Springer.

Eyal, N., & Hoover, R. (2014). *Hooked: How to build habit-forming products*. Princeton, NJ: Princeton University Press.

Forrester. (2016). *Age of the customer*. Retrieved July 3, 2019, from https://go.forrester.com/age-of-the-customer/

Gaggioli, A., Riva, G., Peters, D., & Calvo, R. A. (2017). Positive technology, computing, and design: Shaping a future in which technology promotes psychological well-being. In M. Jeon (Ed.), *Emotions and affect in human factors and human-computer interaction* (pp. 477–502). San Diego, CA: Elsevier Academic Press.

Gibbs, S. (2018). Apple's Tim Cook: "I don't want my nephew on a social network". *The Guardian*. Retrieved July 3, 2019, from https://www.theguardian.com/technology/2018/jan/19/tim-cook-i-dont-want-my-nephew-on-a-social-network

Google. (2019). *Material design*. Retrieved July 3, 2019, from https://material.io/design/

Kaplan, K. (2016). *Brand is experience in the digital age*. Retrieved July 3, 2019, from https://www.nngroup.com/articles/brand-experience-ux/

Leslie, I. (2016). *The scientists who make apps addictive*. Retrieved July 3, 2019, from https://www.1843magazine.com/features/the-scientists-who-make-apps-addictive

Lewis, P. (2017). "Our minds can be hijacked": The tech insiders who fear a smartphone dystopia. *The Guardian.* Retrieved July 3, 2019, from https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia

Lovelace, B. (2017). Chamath Palihapitiya: Social media confuses truth and popularity. Retrieved July 3, 2019, from https://www.cnbc.com/2017/12/12/chamath-palihapitiya-social-media-confuses-truth-and-popularity.html

Meyer, C., & Schwager, A. (2007). Understanding customer experience. *Harvard Business Review*. Retrieved July 3, 2019, from http://www.dlls.univr.it/documenti/Avviso/all/all999201.pdf

Nir and Far. (2018). *Apple and Google want you hooked, not addicted*. Retrieved July 3, 2019, from https://www.nirandfar.com/2018/06/google-apple-less-phone-use.html

Olsen, D. R., ACM Digital Library, & ACM Special Interest Group on Computer-Human Interaction. (2009). *Proceedings of the 27th international conference on Human factors in computing systems.* New York, NY: ACM. Retrieved July 3, 2019, from http://dl.acm.org/citation.cfm?id=1518701

SB Insights & Harris Poll. (2017). *Enabling the good life*. Retrieved July 3, 2019, from https://s3.amazonaws.com/sbweb/docs/SB-Report-The-Good-Life.pdf

Sheppard, B., Sarrazin, H., Kouyoumjian, G., & Dore, F. (2018). *The business value of design | McKinsey*. Retrieved July 3, 2019, from https://www.mckinsey.com/business-functions/mckinsey-design/our-insights/the-business-value-of-design

Shillum, M. (2016). *Brands as patterns*. Retrieved July 3, 2019, from https://medium.com/method-perspectives/brands-as-patterns-b265d10ee7c7

Walker. (2013): *Customers 2020: A progress report*. Retrieved July 3, 2019, from https://www.walkerinfo.com/knowledge-center/featured-research-reports/customers-2020-a-progress-report

Watermark. (2019): *The customer experience ROI study*. Retrieved July 3, 2019, from https://www.watermarkconsult.net/blog/2019/01/14/customer-experience-roi-study/

Wu, T. (2016). *The attention merchants: The epic scramble to get inside our heads* (1st ed.). New York: Alfred A. Knopf.

The Role of Information Processing for Product Perception

2

2.1 Fundamentals of Information Processing

Humans perceive their surroundings with their senses and, if attracted by something (e.g., in the light of this book, a digital product or service), pay attention toward it. Marketing campaigns and sales promotions are aiming at triggering attraction. In recent years, however, stimulus satiation caused by the myriad of information arriving at almost the same time to our information processing system has been the originator for cognitive overload and is also the reason for a gradually decreasing attention span (Gausby, 2015). One consequence is that the product advertising may not reach the customer. In this part, we discuss the underlying theories and show how to recover the customer through multimodal stimulation. We further link this to the value system of different generations of users.

2.1.1 Perception and Attention

Perception

Perception can be defined as *"the process to organize or interpret the information that is provided by the sensory systems"* (Hagendorf, Krummenacher, Müller, & Schubert, 2011, p. 5; translated to English by the authors). The human being has no direct influence on what will be perceived and what cannot be perceived. Many environmental stimuli are filtered and categorized as neutral or dangerous before

This chapter was written by Andreas Riener and Katharina Holl. Parts reprinted from Emotions and Affect in Human Factors and Human-Computer Interaction, Andreas Riener, Chap. 19—Subliminal Perception or "Can We Perceive and Be Influenced by Stimuli That Do Not Reach Us on a Conscious Level?", Pages 503–538, 2017, ISBN 9780128018514, https://doi.org/10.1016/B978-0-12-801851-4.00019-7, with permission from Elsevier.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_2

they come into awareness (Hagendorf et al., 2011). This means that there is no cognitive control over actively noticing the stimulus or not, and the perception is separated from other cognitive processes such as thinking or memorizing (Fodor, 1983; Hagendorf et al., 2011). *Perception* is a continuously ongoing process in which the sequences may vary or come into different orders, but the process itself never comes to a standstill. The level of accuracy of the human perception can, for now, only be replicated by technical devices in special cases. For example, fingerprints help giving filtered access to buildings instead of depending on ID card checks. However, when it comes to security checks at the airport, e.g., explosive detectors can support the security checks, but the final work of scanning the bodies for potentially dangerous objects is done by human beings.

Attention

"*Attention refers to processes with which we select information that is relevant to current actions or deselect irrelevant information. Selection influences perception and action planning as well as action execution and vice versa.*" (Hagendorf et al., 2011, p. 8; translated to English by the author). To understand the difference between *perception* and *attention*, the well-known *cocktail party effect* by Colin Cherry provides a basis. You probably know the situation at a party, where you are surrounded by the sound of music, laughter, and people talking to each other, but you filter those noises to fully concentrate on the person talking to you. This means that you do not pay attention to the noises that are surrounding you. However, if somebody would call your name, you would be very likely to pay your attention to the person who called your name. You would at least like to know who called your name or start listening to what this person is talking about you behind your back. During this time span, you were not able to pay attention to your actual conversation. This example shows how the brain is constantly perceiving its environment, but only meaningful stimuli, such as hearing your own name, are paid attention to (Cherry, 1953).

Selective attention is very important to focus only on the stimuli that are relevant for the current motivations and personal goals. According to Hagendorf et al. (2011), this makes it possible to think logically and behave in an appropriate way. The question is: how we can create products or services so that the consumer pays attention to exactly what we want to communicate?

The theoretical background of *selective attention* is important when it comes to creating digital products. It is always necessary to clarify which elements of the digital product can be categorized into selective attention and which elements are not perceived consciously (Van de Sand, 2017; see Chap. 3 for details). Various studies have proven that the elements, which ask for an active interaction, receive selected attention. The phenomenon that the brand message can be well communicated through elements, which are not perceived consciously, but work as implicit elements, is important when it comes to building a consistent brand image via multiple digital touchpoints. The following section will describe what exactly implicit elements are and how cognitive processes work.

2.1.2 Cognitive Overload and Its Effect on Product Attachment and Brand Experience

With the proliferation of the Internet, the ubiquity of social networks, and the always-on mentality, information (about products, brands, services) is everywhere and merely a click away. On the one hand, this is a good thing, but it also can overburden the user's brain. *Information overload* or, more accurately, *cognitive overload* (because the brain can process vast amounts of information) (Tartakovsky, 2016) results in a limited perception of information, our environment, and also products or brands and its individual values. Further on, the way customers experience products has significantly changed in recent times. Customers' expectations of products and services have increased as competition in the marketplace intensified (Muda, Musa, & Putit, 2017), and the simple attraction of consumers is not enough—the attention toward a product or service needs to be transformed into favorable *attitudes* (i.e., high user experience; see also Chap. 1 and Sect. 4.1) in order to achieve high satisfaction for the customer or penetration into the market. Due to the "*[..] omnipresence of information technology, the supremacy of the brand and the ubiquity of communications and entertainment*" (Schmitt, Brakus, & Zarantonello, 2014, p. 728), functional features and benefits, as well as product quality and a positive brand image, are (expected to be) given, according to Schmitt et al. (2014). What customers now want are "*products, communications, and marketing campaigns that dazzle their senses, touch their hearts, and stimulate their minds*" (Schmitt et al., 2014, p. 728)—experiences are the major factor affecting whether or not a product or brand will be successful on the market. Exemplarily discussed for the advertising industry, Muda et al. (2017) confirm that consumers will be immune to advertising as a normal outcome of saturation of marketing messages. Our technology-centered life and the always-on paradigm results in a drop of our ability to focus our attention on specific objects (Gausby, 2015), and this negatively affects our well-being (Huber et al., 2011). Results include mental disorders, such as burnout or depression, according to BKK Dachverband. Information overload might result in oversight, misperception, or frustration in different areas of life and, thus, also in a wrong perception of product or brand qualities.

► We, thus, hypothesize that cognitive overload has a verifiable negative influence on brand perception and experience or product attachment.

As a consequence, and in order to counteract this, suppliers must find a unique way to break through the information clutter and provide the audience with sufficient motivation to pay attention and engage in the higher order processing of advertisements. At the end of the day, it is suggested that the *cognitive workload* required is lowered to use or interact with a product or service to keep satisfaction, joy of use, or brand relationship high. To achieve this, the skills and capabilities of users need to be considered, so that complications at the user-product relationship

can be avoided (Diban & Gontijo, 2015)—and this requires the understanding of how humans perceive, process, and interpret information arriving in different sensory channels.

2.1.3 Multisensory Experience and Crossmodal Matching

In Schmitt (2012), the author identifies the key brand constructs related to consumer psychology and integrates them into a comprehensive model. The model addresses consumer perceptions and judgments as they relate to brands in five dimensions (identifying, experiencing, integrating, signifying, and connecting). The experiencing process, which includes "*sensory perceptions of brand, brand affect, and the participatory experiences that a consumer may seek with a brand*," is of particular relevance for the actual work (Schmitt, 2012, p. 10). Most of our everyday (pleasant) experiences including a consumer's product or brand experiences are multisensory (Spence, 2012). According to Schmitt (2012), brands provide multisensory stimulation through the different sensory channels, including visual, auditory, olfactory, haptic, and gustatory senses (for details on sensory perception see, e.g., Wolfe et al., 2014). Historically, the visual perception was considered the dominant part of humans' perception, meaning that objects that are visualized are perceived as dominant in our perception. Information will be first processed separately for each system and stimuli. Afterward, information is put together in order to consciously sense the object (Hagendorf et al., 2011). When consumers are engaged with a brand in a functional way, they consequently pick up the multisensory stimuli of a brand. For example, evaluating a new car involves at least sight (the visual appearance), sound (engine noise), smell (leather interior), and haptics (touching controls, steering wheel, among others).

The question is, which channels are dominant, when multiple senses give controversial information. The so-called *McGurk effect* describes a phenomenon where a compromise between two controversial auditory and visual stimuli is made. McGurk and Macdonald (1976) found out that the visual information is not necessary for processing auditory information, but it can be used as supportive information. Recent research has also found that visual and tactile perception is influenced by olfactory cues and that, for example, the crispness of a product (e.g., potato chips) is mainly not determined by the feeling in our mouth, but is much more a matter of what we hear when we crunch. Product experiences can thus be enhanced by ensuring that, for example, its sound symbolism as well as any shape symbolism (labeling, packaging, etc.) sets up the right, congruent product-related sensory expectations in the mind of the consumer. Consequently, it is highly important to consider the multisensory experience in order to achieve high product or brand quality for the customer. This means that, if the different sensory attributes of a product (or its packing or typical application area) match in a crossmodal way, this might have a positive impact on the overall consumer experience.

► These findings are especially relevant when it comes to creating multiple digital touchpoints, which should be perceived on all levels of senses.

The general rule is that human senses are far from being perfect, but, nevertheless, they are our window to the world and determine or limit what we can perceive. The limitations together with the impossibility to extend sensory perception should make it clear that we have to put more effort into multisensory experience and crossmodal matching. To be able to do so, product or brand designers need to have at least a basic understanding of how humans detect and process information.

Furthermore, the consumer-brand relationship is, according to Robins, Caspi, and Moffitt (2000, p. 200), influenced by the personalities of the partners involved. Besides that, affordance design (Norman, 1988) of a product, i.e., how it can be used (as well as how it should not be used), helps to reduce workload or information overload. Complementary to the above, it is hypothesized that stronger product or brand relationships result in lower cognitive workload. Diban and Gontijo (2015) found out that product quality could indeed facilitate the intuitive comprehension by the user (rather than the reflexive one), reducing the complexity presented by the product. Product quality also goes hand in hand with reported relationship (or customer satisfaction) (Cruz, 2015), which relieves the mental workload from unnecessary efforts on focusing the attention to misbehaving, misdesigned components. Simple, intuitive (affordable) products further contribute to lessen the cognitive workload involved.

2.1.4 Cognitive Resources: The Case of Generations Y and Z

Technology adoption (e.g., the prevalence of Smartphones) has made information and the capability for interaction available all the time (see also Chap. 1). Perception starts with a stimulus that arises from the environment. Two categories of stimuli can be defined: First, the stimuli that exist can potentially be perceived. When we make a selection and decide to pay attention to a stimulus, these stimuli can be called the attended stimuli. Second, a stimulus can be sensed, but not consciously paid attention to. After consciously or unconsciously attending a stimulus, a neural process starts: The sensory receptors are activated and can transmit the neural activity to our brains. After receiving and organizing the information in our brain, it will be interpreted. This means the information will be categorized with the help of learned patterns and *mental concepts* (see detailed description below). This procedure is called *top-down process.* The process ends with an action. This action is dependent on the interpretation of the stimulus (Goldstein, 2015).

Continuous distraction and task switching between a *primary task*, e.g., working, studying, or learning, leisure activities, and (digital) *secondary tasks* (media consumption or social media use on the phone) are one of the reasons why the *attention span* (i.e., the ability to remain focused on a single task) has decreased from 12 s in 2000 to only 8 s in 2015 (Gausby, 2015). This means that, on average, we can focus

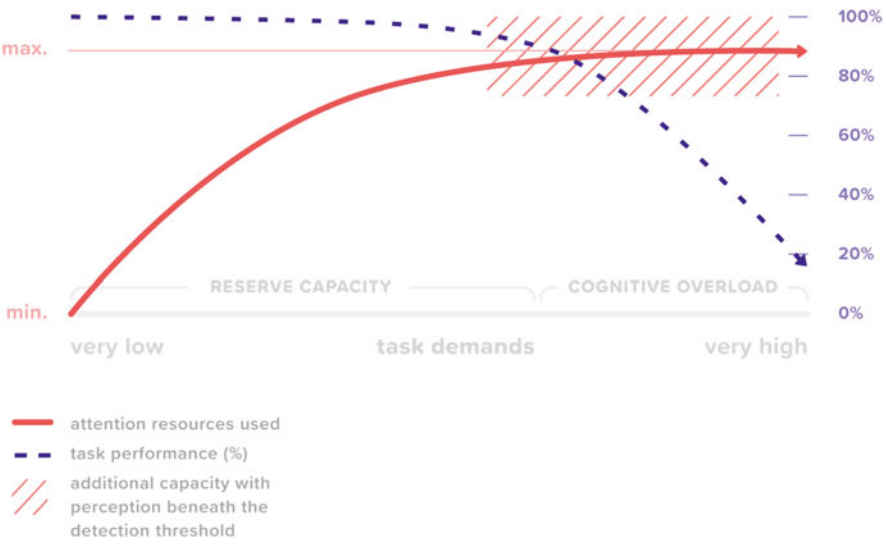


Fig. 2.1 Cognitive resources and their relationship to task performance. The hatched area is critical in a sense that *cognitive overload* might appear. The application of *unconscious perception* might help to reduce the effect of decreasing task performance (source: adapted from Patten, 2007, p. 59f.)

our attention on the desired source and avoid distracting influences of competing information sources for only 8 s.

The process of *task switching* (i.e., multitasking between Smartphone and primary activity) requires continual reallocation of both attentional foci (Wickens, 1992), which increases cognitive workload. The consequence is a declining task performance (as shown in Fig. 2.1; dashed line) and the main reason for increased reaction times (Reimer, Mehler, Coughlin, Godfrey, & Tan, 2009). The same level of task demand consumes more attentional resources or, as a converse argument, only lower demanding tasks could be completed. Possible long-term effects of information overload include, among others, burnout or depression and mainly affects Generation Y.

On the other hand, Generation Z behaves very differently. They like to strictly separate work and private life and want their privacy. They further do not strive for leadership and do not want to be reminded of their responsibility at work after 5 pm (Scholz, 2014). As for shopping and brand relationship, Generation Z is also very different to previous generations. Generation Z values real-world retail for experience and the opportunity to discover new products (about 74% of the participants of a study mentioned to look forward to shopping in-store when having enough time (Criteo, 2017, p. 11). Generation Z loves everything that is personalized and is in a crucial period where they develop lifelong brand loyalties—if they are going to buy, they want to experience it first (Criteo, 2018). Consequently, the multisensory experience (see also Sect. 6.3) of Generation Z has to be satisfied, including tactile

perception, smell, visual appearance, among other things (embedded into an overall positive environment) (Hulten, 2017).

Each generation (1960s: Baby Boomers; ca. 1965–1980: Generation X; ca. 1980–1995: Generation Y; ca. 1995–2010: Generation Z) has its very special value system and lifestyle—which has a tremendous impact on consumer behavior and brand attachment. As for the way of working, Generation X-born consumers are typically workaholics, while Generation Y is characterized by the preference of a well-structured work–life balance, and Generation Z lacks the willingness to commit itself to a company, and it stands for work–life separation (e.g., does not accept home office) (Scholz, 2014). For Generation Z, family and leisure time is more important than employment status (Iorgulescu, 2016). Generation X loves fast food, while Generation Z likes slow food and organic products. The behavioral and value-related disparities of different generations need to be taken into account to develop specific products or services for the right target group.

2.1.5 Consequences

Based on the discussions above, it should be clear that understanding brand attachment (or refusal) requires looking at the relationship between the user and the product from a holistic point of view. It can not only be explained and discussed through thought, experience, control of your own cognitive processes, and environmental perception with our senses. In addition, remembrance, emotions and mental state, values, and physiological conditions, among other things, should also be considered when designing brands. As described above, there is also a link between *cognitive workload*, *information overload*, and *perceived* product quality or *brand experience*. To better understand this relationship, we would like to discuss basic concepts of human information processing (for a comprehensive introduction, see Lindsay & Norman, 1977). In the following, we will thus have a look at how humans process information and how to improve workload use by designing for multisensory experiences.

► The aim of the rest of this chapter is to provide a better understanding of humans' information processing chain (sensory perception, processing, and decision making) and its relation to or expectations concerning brands in order to help to design better products and services in the future.

2.2 Lessons Learned from HCI Research and Their Implications for Brand Development

From a global point of view, consumer brand or product attachment can be interpreted and explained at the same level as human–computer or human–machine interaction (HCI, HMI). In the tradition of HMI research, the user is an abstraction

for every person (potentially) interacting with a system—be it a young child, an adult, or an elderly person, female or male gender, and of any nationality or culture (even though we know that inter- and intrapersonal differences play an important role, see also, for example, Sect. 3.2.3). With the advent of *user-centered design* (UCD), an approach to design and development that involves, by definition, users in every phase throughout the design and development process (Stone, Jarrett, Woodroffe, & Minocha, 2005), and related research fields such as *user interface design*, which concentrates on the interface side (Opperman, 2002), *human-centered design*, which is a (software engineering) approach focusing on the user at all stages (including the design process of the system) (Giacomin, 2012), and *participatory* or *interaction design* (Greenbaum, 1993), which puts focus on a wider scope than just the computer and more emphasis on cognitive and experiential factors than traditional human factors and ergonomics, basic personal characteristics, such as age, gender, cultural background, or ethical heritage, are now incorporated in the design of more effective (e.g., in terms of usability, interaction performance, and perceived workload) user interfaces. These initiatives acknowledge that users are different, i.e., might be more or less skilled, have differing degrees of background knowledge, varying willingness to use an interface, variable familiarity with technology, or a different value system.

To further acknowledge human individuality, a huge number of sets of standards and rules have been proposed over time and employed at different levels of design or different domains of application. TC 159/SC 4 Ergonomics of human–system interaction specifies the main principles and essential activities for human-centered design to achieve a better usability of systems. ISO 9241 is one of the main standards under the responsibility of TC 159/SC 4. It is a multipart standard covering the ergonomics of human–system interaction, including recent topics such as tactile and haptic interaction (ISO 9241-910). Another standard in the field of human factors and ergonomics is ISO 10075 *Ergonomic principles related to mental workload.* Besides these and many other standards, interface designers also accept and follow guidelines or principles such as *Shneiderman's 8 Golden Rules* (Shneiderman, Plaisant, Cohen, & Jacobs, 2009), *Norman's 7 Principles* (Norman, 1988), or *Nielsen's 10 Usability Heuristics* (Nielsen, 1994). Dix, Finlay, Abowd, and Beale (2007) tried to combine and group all these principles to provide a superior system of rules. Last but not least, researchers in this field are supported by the Human Factors and Ergonomics Society (HFES), a society whose "*[. . .] mission is to promote the discovery and exchange of knowledge concerning the characteristics of human beings*" (Human Factors and Ergonomics Society, 2019; HFES Europe Chapter, 2019).

Unfortunately, following all the aforementioned procedures, standards, and guidelines, the individual user in its entirety is still *out of the loop* and the line of action remains unsatisfactory, as it leaves out of consideration the personality and variability of subjects. Humans with some commonalities, such as age, gender, or cultural origin, are normally treated as one and the same subject within these systems, but they are in fact individuals with different capabilities, behavior, and attitudes toward or experience of life (i.e., *personality*). Furthermore, situations and

context (Dey, 2001) are perceived differently by all of us—as they depend a lot on our memories (Broek, 2013). Finally, it has to be substantiated that an individual might further behave differently based on his or her mental health and the spur of the moment (behavior may vary a lot depending on emotional condition or mood; see also Sect. 4.2.2), and evolves over time (experience or *brain plasticity*, age-related physical limitations, etc.). *Brain plasticity* is the ability of our brain to change over time, based on experiences and continuous development. It means that our brain has the ability to rewire and form new capabilities throughout the course of your life and this finally allows us to adapt both to new or changing situations (Gausby, 2015).

Another problem is the representation of the sensory system. While human sensory processing is typically multisensory (Schmitt, 2012; Spence, 2012) and affected by various cross-channel interactions (Nishida, 2006), the whole sensory system is commonly modeled more simply as an aggregation of independent channels. The simplification also applies to the information processing models discussed in this work—stimuli are considered as to excite only associated receptors, for example, light brightness innervates only retinal photoreceptor cells, odors are perceived through olfactory receptors in the nose, and vibrations are detected solely by mechanoreceptors in the skin. The consideration in an isolated manner does not, however, match the reality.

The entire discussion about individuality (personality and variability), brain plasticity, or *multisensory perception* for HMI/HCI research should also be considered when designing products and services with an appealing user experience that also meets brand-related expectations. If we understand the value and importance of color, typography, hierarchy, transitions in interfaces (of apps), and so on (see also Sect. 3.2.2), we should be able to deliberately design for the desired target group.

To better understand human memory operation, several models have been developed and used to interpret how we make decisions, react on external stimuli, perceive a product, service, or situation, or why we refrain an action due to overlooking information. Before discussing these models more thoroughly, we will first look at the basics of information processing.

2.3 Modeling Human Information Processing

Information processing in humans is measured in terms of time units (seconds) and information units (bits). The information unit *1 bit* is allocated to each decision in a dichotomous partition on a *yes/no* or *true/false* basis (Lehrl & Fischer, 1988). The grand information processing capacity of the human mind has the potential to handle about 11 million bits/s (Norretranders, 1997) (Fig. 2.2), but due to the inherent physical limitations of information processing, the number of bits processed consciously is much lower. Norretranders (1997) proposes a rather optimistic maximum of about 50 bits/s, but the exact number of bits to be processed explicitly (or consciously) actually depends on the task. Our explicit information processing speed can be reduced to as little as 45 bits/s when reading silently, 40 bits/s while using spoken speech, 30 bits/s when reading aloud, and 12 bits/s when executing

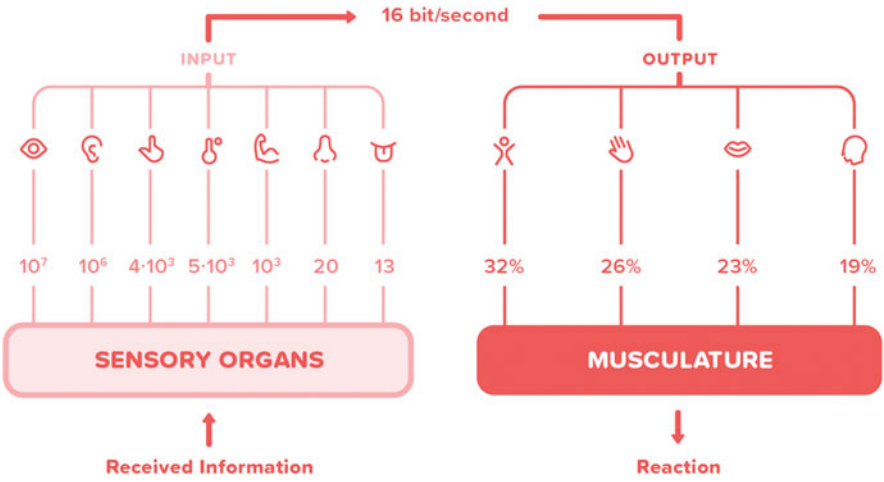


Fig. 2.2 Information flow in humans. From a total of about 11 million bits/s, only around 16 bits are perceived consciously (source: authors' illustration)

calculations in our head (Hassin, Uleman, & Bargh, 2005). Tactile information is processed at approximately 2–56 bits/s (Mandic, Harvey, & Kolonic, 2000). According to Overgaard and Timmermans (2010), "*we may not even be able to experience all that we perceive*" (p. 501). This coincides with our own observations in user studies, where we found that race car drivers (or other highly experienced drivers) are likely to be better equipped to process information and adapt steering behavior using a minimum of cognitive resources than less trained, regular drivers (Riener, 2010).

Compared to our total theoretical capacity, consciously processed information constitutes only a small fraction of all incoming information. The remainder is apparently processed without active awareness. The availability of such a large pool of processable information and the high speed at which information is processed further motivate us to explore making vital information unconsciously accessible in cognitive workload-sensitive settings.

2.3.1 Short-Term Memory Limits and Relation to Reaction Time

Triggs and Harris (1982) mention that the human reaction time depends almost linearly on the number of possible alternatives that can occur. As a result, cognitive activity is also limited to a small number of items at any one time. Testa and Dearie (1974) discovered that this number is between five and nine and that human beings respond by grouping, sequencing, or neglecting items if more are present. More recently, Cowan (2001) found the limit between three and five chunks. The limited capacity of information absorption for humans was already identified earlier, in George Miller's work "*The magical number seven, plus or minus two"* (Miller,

1956). He found that people could rapidly recognize approximately pieces of information at one time and hold them in short-term memory. The evidenced correlation between information items to be perceived and the reaction time that is needed for it, together with our knowledge about the huge amount of information passing by when performing complex tasks, underpins the presumption that a lot of information must be gathered outside conscious awareness. Consider for example, the process of steering a car through a busy city: a huge amount of information passes by the driver without being actively minded, but the driver might afterward have some abstract imagination of what was going on.

2.3.2 Memory Models

There is evidence that we have attention limits (Kahneman, 1973) and our limited capacity to select and attend to information influences task performance, in particular when we do more than one activity at the same time. In this situation, all attention resources are used to capacity, which results in cognitive overload and degraded task performance (Fig. 2.1). Learning effects may occur as well when the resources, which are needed for the tasks, can be reduced and therefore the capacity is sufficient to successfully perform the tasks (Eysenck, 2004). Looking deeper in human information processing makes clear why humans have problems performing two or more tasks at the same time. It is because the human information processing system performs each task in serial order and, depending on the underlying model, somewhere in the system exists a component that filters out information not selected for further processing (e.g., *short-time sensory store*; *STSS* in the *HIP model* (Wickens & Carswell, 2012); see Fig. 2.3 left).

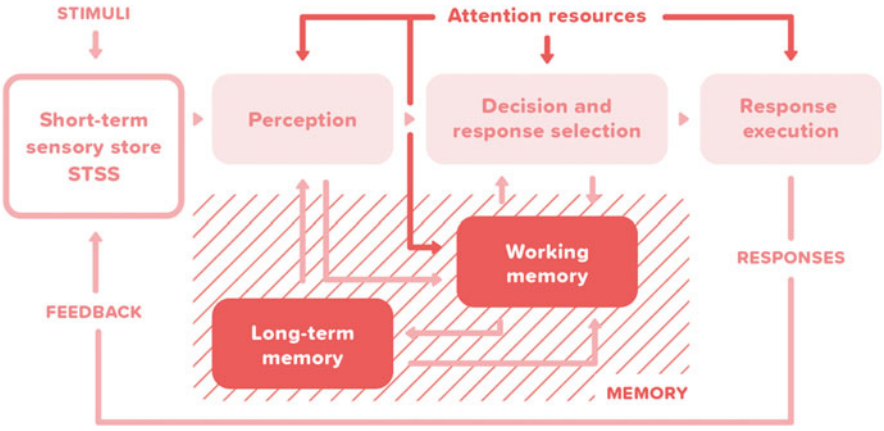


Fig. 2.3 Human Information Processing Model (HIP) (source: Wickens & Carswell, 2012; image remodeled in accordance to http://www.hf.faa.gov/Webtraining/Cognition/CogFinal008.htm; last accessed October 14, 2019)

Brands should ideally be perceived without conscious awareness (i.e., *unconsciously*, see also Chap. 3) and lead to positive experience without active attention. To better understand the underlying processes, also memory models and theories of attention should be looked at in more detail. We will address this in the upcoming sections.

Modal Model

One of the first and most influential memory models is the *Modal Model* by Atkinson and Shiffrin (1968), which helps to better understand the processes that are part of our memory, starting with sensory input characterized by different modalities, such as seeing, hearing, or feeling (haptics). All the information perceived from the environment is registered in sensory stores, and after a short time of 1–2 s forwarded to the *short-term memory* (*STM*) store, where relevant information is stored and everything else discarded. Atkinson and Shiffrin (1968) refer to memory capacity as we know from *random access memory* (RAM) in computers: We receive a lot of information every second (c.f., Fig. 2.2) and if information were not discarded after a short amount of time, we would run out of memory. STM has limited capacity—Miller (1956) suggests that we can remember about 7 ± 2 information chunks, others, e.g., Cowan (2001), found a more precise limit between three and five chunks (for a detailed discussion about memory limits, see Cowan, 2001). To conserve information in STM, it needs to be (continuously) rehearsed (similarly to dynamic memory, where the information eventually fades unless the capacitor charge is refreshed periodically). For example, if a friend gives you his or her phone number, but you have nothing to write with and your Smartphone is not in your pocket, then you have to repeat the number to yourself several times. If you rehearse the number too infrequently, it might get lost (i.e., discarded from *short-term memory)*, and if you rehearse it for a longer time, it might get stored in the permanent memory store (or *long-term memory, LTM*). According to Atkinson and Shiffrin (1968), LTM works similarly to a hard disk drive in a computer. Information is stored in LTM for a long time (minutes up to years) but cannot be accessed directly. Instead, it needs to be moved to STM (analogy to RAM memory) before becoming accessible.

Model of Attention

Kahneman (1973), as well as Lachman, Lachman, and Butterfield (1979), proposes an attention model based on the idea of cognitive or mental efforts. The underlying foundation is that we have limited processing power at our disposal and that the total capacity is divided between competing tasks in a time slice model (in computer science known as *Round Robin* approach). According to Kahneman (1973), the capacity limit is flexible and varies depending on the environment, the task (s) performed, as well as individual's conditions (e.g., level of arousal, level of expertise on a task). Even though some tasks come with a high information load, they might be relatively automatic (in that they make few demands in terms of mental effort), for example, steering a car through a complex traffic situation, if you are a skilled driver. Depending on how demanding the processing of a particular input might be we can carry out (i.e., paying attention to) more or fewer tasks at a

time (as long as the available capacity is not exceeded). The simplification of Kahneman (1973) to the existence of a central processor that operates a central allocation policy, which constantly evaluates the demands made by each task and adjusts attention accordingly, has been, however, criticized. It is suggested that it is impossible to accurately judge the limits or capacity of the processing system.

Wickens' HIP Model

Wickens' human information processing (HIP) and memory model (Wickens, 1992) is much more detailed, including attention resources, decision-making strategies, and response execution. The model further defines a visual-manual system and an audio-verbal system. Moreover, the existence of additional systems is very likely. A notable difference to the modal model by Atkinson and Shiffrin (1968) is that in the HIP model, short-term memory (STM) is replaced by *working memory (WM)*. This accounts for short-term memory having a more active role in information processing (i.e., our mental workbench). Associations between external stimuli and memory store are basically similar (but described in much more depth) to the model of Atkinson and Shiffrin (1968).

Wickens' introduces attention resources and relates them to external stimuli received at the *short-term sensory store (STSS)*. As we are continuously exposed to a great number of stimuli, we selectively focus on and attend to specific stimuli that are most relevant to our purpose (i.e., conscious perception) and disregard all the rest. According to Wickens' model, the amount of stimuli that can be taken in by our short-term sensory system is considered to be unlimited, but our attention determines which information is ultimately transmitted to the working memory. The interpretation of sensory information requires retrieval of information from and interaction with long-term memory. Our prior experience and knowledge, emotional state, and value system (including prejudices) determine our perceptions of the external world and our response to these perceptions (i.e., motor actions, feedback). The amount of information that can be held in working memory is, as before, limited to four (Cowan, 2001) or 7 ± 2 information chunks (Miller, 1956). Working memory, therefore, creates a bottleneck for incoming information (Fig. 2.4). Feedback results in changed stimuli, which are sensed again, and thus *closes the loop*. To better understand the relationship of these memory components, in a classical computer architecture STSS would be represented by a level 2/3 cache, WM corresponding to working memory, and LTM similar to a hard disk storage.

Humans are selective in choosing the information that should be processed. We consciously pay attention to particular information sources and easily get distracted by more attractive information. For example, a scholar sitting in class welcomes information from social network services (Facebook, Twitter) to get distracted from a lecture. The filtering process is carried out by mechanisms of human attention, represented by three modes: *selective attention* (see also Sect. 2.1.1) characterizes *what* to process, *focused attention* is about efforts required to avoid distraction, and *divided attention* describes our multitasking ability, i.e., the ability to process more than one information source at a time (Wickens & Carswell, 2012).

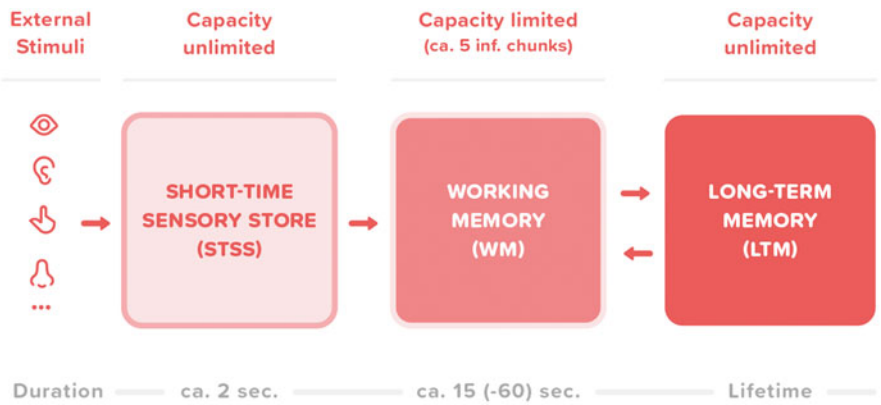


Fig. 2.4 Capacity and duration of memory components. Working memory is a "bottleneck" with the purpose to filter out irrelevant stimuli. According to Cowan (2001), WM can hold up to 4, according to Miller (1956), 7 ± 2 information chunks (source: adapted from Wickens, 1992)

SEEV Model

The *SEEV model* of (visual) attention allocation (Wickens, Goh, Horrey, Helleberg, & Talleur, 2003) can further be used to describe processes related to selective attention. According to this model, the allocation of *attention* in dynamic environments is driven by bottom-up attention capture of salient events, is inhibited by the effort required to move attention (as well as the effort imposed by concurrent cognitive activity), and is also driven by the expectancy of seeing valuable events at certain locations in the environment or $P(Attend) = Salience - Effort + Expectancy + Value$. (The first letters of each of the four terms make up the name of the SEEV model.)

Good design should try to reduce the four components to only two by making valuable information sources salient and by minimizing the effort required to assess valuable and frequently used expected sources (Wickens & Carswell, 2012). The SEEV model gives us the opportunity to predict what will receive attention, but in contrast stands the problem of attentional or change blindness. For example, for the automotive domain, several studies have shown that a heads-up display (HUD) is a viable alternative for the delivery of (conscious) information (Charissis, Papanastasiou, & Vlachos, 2009; Wittmann et al., 2006). The HUD opens up new possibilities, because it reduces the number and duration of drivers' sight deviations from the road (toward the dashboard), and drivers can receive information without taking their eyes off the road. Consequently, driver distraction is estimated to decrease since a driver is primarily focused on the traffic scene and not on the dashboard instruments. Nakamura et al. (2005) observed that information presentation via the heads-up display resulted in reduced workload, decreased response times, more consistent speed, and increased driving comfort.

Overall, a good strategy to improve perception (potentially also user experience) while avoiding cognitive efforts or attention resources is to present information on

the device (or display) or via the sensory channel that is already in use. To give an example, when using a smartphone or tablet computer, it would be the best strategy to use this device to present information (ready signal of washing machine) or warning messages (take over request in an automated car (Schartmüller, Riener, & Wintersberger, 2018) to the user. This way, required attention resources can be kept low and the reported user experience (hedonic quality) is significantly better compared to traditional information displays (Schartmüller et al., 2018). Returning to the HUD example, however, it has been reported that by overlaying additional information to the primary field of view, the driver might overlook important information on the road, e.g., a child jumping into the road (Levin & Baker, 2015). This phenomenon is known as *change blindness* and attributed to people's poor ability to detect changes in a visual stimulus (change blindness reflects limitations of our perceptual system; the lack of focused attention is responsible for this (Rensink, 2009)).

Conclusion

Humans continuously perceive sensory impressions from the outer world. As the total amount of information (ca. 11 million bits/s) is way too high to be processed and perceived consciously, we focus our mind on just specific information junks and, by that, limiting our attention actively. This is actually not only working for information perceived consciously. Information perceived beneath the level of consciousness is also filtered in our brain (see also Chap. 3).

In this chapter, we discussed the fundamentals of human information processing to provide insights into the human way of information perception and processing. People are perceiving their environment via multiple sensory channels, such as vision, touch, audition, smell, and taste.

For a long time, it was supposed that we process information in a unimodal way. However, studies in neuroscience (Macaluso & Driver, 2005), psychology (Calvert, Spence, & Stein, 2004), and neuromarketing (Hulten, 2011; Spence & Gallace, 2011) have recently proven that human sensory processing is typically multisensory and affected by various cross-channel interactions. Another fallacy is the representation of the sensory system simply as an aggregation of independent channels. This means that stimuli are considered to excite only associated receptors, for example, that light brightness innervates only retinal photoreceptor cells, or odors are perceived solely through olfactory receptors in the nose. The consideration in an isolated manner does, however, not match reality (which actually is represented by a crossmodal correspondence between single modalities).

The way humans perceive and process information has already been broadly made use of in the field marketing. With technological progress, this knowledge is now slowly being adapted also to the perception of (digital) products and services, i.e., to the field of product design. Theories, principles, and findings from studies in other fields can now also be applied to the user experience domain.

References

Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. W. Spence & J. T. Spence (Eds.), *The psychology of learning and motivation* (Vol. 2, pp. 89–195). New York: Academic Press.

BKK Dachverband. (n.d.). Krankheitstage durch das Burn-out-Syndrom in Deutschland nach Geschlecht in den Jahren 2004 bis 2016 (AU-Tage je 1.000 BKK-Mitglieder). *Statista*. Retrieved July 3, 2019 from https://de.statista.com/statistik/daten/studie/189542/umfrage/anzahl-der-krankheitstage-durch-das-burnout-syndrom-seit-2004

Broek, E. L. (2013). Ubiquitous emotion-aware computing. *Personal and Ubiquitous Computing, 17*(1), 53–67. https://doi.org/10.1007/s00779-011-0479-9.

Calvert, G., Spence, C., & Stein, B. E. (2004). *The handbook of multisensory processes*. Cambridge, MA: MIT Press. isbn:978-0262033213.

Charissis, V., Papanastasiou, S., & Vlachos, G. (2009). Interface development for early notification warning system: Full windshield head-up display case study. *Human-Computer Interaction. Interacting in Various Application Domains*, 683–692. https://doi.org/10.1007/978-3-642-02583-9_74.

Cherry, E. C. (1953). Some experiments on the recognition of speech, with one and with two ears. *The Journal of the Acoustical Society of America, 25*(5), 975–979. https://doi.org/10.1121/1.1907229.

Cowan, N. (2001). The magical number 4 in short-term memory: A reconsideration of mental storage capacity. *The Behavioral and Brain Sciences, 24*(1), 87–114.

Criteo. (2017). *The Shopper Story 2017 – A global study of the changing nature of retail from the viewpoint of nearly 10,000 shoppers.* Retrieved July 3, 2019 from https://www.criteo.com/wp-content/uploads/2017/10/TheShopperStory_US_Final.pdf

Criteo. (2018). *Gen Z report – based on the Criteo Shopper Story*. Retrieved July 3, 2019 from https://www.criteo.com/wp-content/uploads/2018/05/GenZ-Report.pdf

Cruz, A.V. (2015). *Relationship between product quality and customer satisfaction.* Doctoral Thesis. Walden University.

Dey, A. K. (2001). Understanding and using context. *Personal Ubiquitous Computing, 5*(1), 4–7. https://doi.org/10.1007/s007790170019.

Diban, D. O. N., & Gontijo, L. A. (2015). The complexity of ergonomic in product design requirements. *Procedia Manufacturing, 3*, 6169–6174. https://doi.org/10.1016/j.promfg.2015.07.909.

Dix, A., Finlay, J. E., Abowd, G. D., & Beale, R. (2007). *Human computer interaction*. Upper Saddle River, NJ: Prentice Hall.

Eysenck, M. W. (2004). *Psychology: An international perspective*. Hove: Psychology Press.

Fodor, J. A. (1983). *The modularity of mind: An essay on faculty psychology*. Cambridge, MA: MIT Press.

Gausby, A. (2015). *Attention spans*. Microsoft Canada Head Office, 1950 Meadowvale Blvd., Mississauga, ON, L5N 8L9: Consumer Insights, Microsoft Canada.

Giacomin, J. (2012). What is human centred design? In *10th Conference on Design Research and Development (P&D Design 2012),* Sao Luis, Maranhoa, Brazil.

Goldstein, E. B. (2015). *Wahrnehmungspsychologie: der Grundkurs*. (K. R. Gegenfurtner, Ed., K. Neuser-von Oettingen & G. Plata, Trans.) (9th ed.). Berlin: Springer.

Greenbaum, J. (1993). A design of one's own: Towards participatory design in the United States. In D. Schuler & A. Namioka (Eds.), *Participatory design - principles and practices* (pp. 27–37). New Jersey: Lawrence Erlbaum.

Hagendorf, H., Krummenacher, J., Müller, H.-J., & Schubert, T. (Eds.). (2011). *Wahrnehmung und Aufmerksamkeit: Allgemeine Psychologie für bachelor*. Berlin: Springer.

Hassin, R. R., Uleman, J. S., & Bargh, J. A. (Eds.). (2005). *The new unconsciousness*. New York: Oxford University Press.

HFES Europe Chapter. (2019). *The human factors and ergonomics society*. Retrieved July 3, 2019, from https://www.hfes-europe.org/

Huber, M., Knottnerus, J. A., Green, L., van der Horst, H., Jadad, A. R., Kromhout, D., et al. (2011). How should we define health? *BMJ, 343*. https://doi.org/10.1136/bmj.d4163.

Hulten, B. (2011). Sensory marketing: The multi-sensory brand-experience concept. *European Business Review, 23*(3), 256–273.

Hulten, B. (2017). Branding by the five senses: A sensory branding framework. *Journal of Brand Strategy, 6*(3), 1–12.

Human Factors and Ergonomics Society. (2019). *What is human factors/ergonomics?* Retrieved July 3, 2019, from https://www.hfes.org/about-hfes/what-is-human-factorsergonomics/

Iorgulescu, M. (2016). Generation Z and its perception of work. *Cross-Cultural Management Journal, 187*(1), 47–54.

Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, NJ: Prentice-Hall.

Lachman, R., Lachman, L., & Butterfield, E. C. (1979). *Cognitive psychology and information processing: An introduction*. London: Routledge.

Lehrl, S., & Fischer, B. (1988). The basic parameters of human information processing: Their role in the determination of intelligence. *Personality and Individual Differences, 9*(5), 883–896.

Levin, D., & Baker, L. (2015). Change blindness and inattentional blindness. In *The handbook of attention* (p. 199). Cambridge, MA: MIT Press.

Lindsay, P. H., & Norman, D. A. (1977). *Human information processing: Introduction to psychology* (2nd revised ed.). New York: Academic Press.

Macaluso, E., & Driver, J. (2005). Multisensory spatial interactions: A window onto functional integration in the human brain. *Trends in Neurosciences, 28*(5), 264–271. https://doi.org/10.1016/j.tins.2005.03.008.

Mandic, D. P., Harvey, R., & Kolonic, D. H. (2000). On the choice of tactile code. In *IEEE international Conference on Multimedia and Expo (ICME 2000)* (Vol. 1, pp. 195–198). https://doi.org/10.1109/ICME.2000.869577.

Mcgurk, H., & Macdonald, J. (1976). Hearing lips and seeing voices. *Nature, 264*(5588), 746–748. https://doi.org/10.1038/264746a0.

Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *The Psychological Review, 63*, 81–97.

Muda, M., Musa, R., & Putit, L. (2017). Celebrity endorsement in advertising: A double-edged sword. *Journal of Asian Behavioural Studies, 2*(3), 21–32. https://doi.org/10.21834/jabs.v2i3.188.

Nakamura, K., Inada, J., Kakizaki, M., Fujikawa, T., Kasiwada, S., Ando, H., et al. (2005). Windshield display for safe and comfortable driving. In *SAE World Congress on Intelligent Vehicle Initiative (IVI) Technology 2005, Advanced Controls and Navigation Systems*.

Nielsen, J. (1994). Enhancing the explanatory power of usability heuristics. In *Proceedings of the SIGCHI conference on human factors in computing systems: Celebrating interdependence* (pp. 152–158). Boston, MA: ACM. https://doi.org/10.1145/191666.191729.

Nishida, S. (2006). Interactions and integrations of multiple sensory channels in human brain. In *2006 IEEE International Conference on Multimedia and Expo (ICME 2006)* (pp. 509–512).

Norman, D. (1988). *The design of everyday things*. New York: Basic Books.

Norretranders, T. (1997). *Spüre die Welt*. Reinbek: Rowohlt.

Opperman, R. (2002). User interface design. In H. H. Adelsberger, B. Collis, & J. M. Pawlowski (Eds.), *Handbook on information technologies for education and training* (pp. 233–248). Berlin: Springer.

Overgaard, M., & Timmermans, B. (2010). How unconscious is subliminal perception? In D. Schmicking & S. Gallagher (eds.), *Handbook of phenomenology and cognitive science* (pp. 501–518). Dordrecht: Springer Science+Business Media. Retrieved from https://doi.org/10.1007/978-90-481-2646-0_26

Patten, C. J. D. (2007). *Cognitive workload and the driver: Understanding the effects of cognitive workload on driving from am human information processing perspective.* Doctoral Thesis. Department of Psychology, Stockholm University, Sweden.

Reimer, B., Mehler, B., Coughlin, J. F., Godfrey, K. M., & Tan, C. (2009). An on-road assessment of the impact of cognitive workload on physiological arousal in young adult drivers. In *Proceedings of the 1st International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI'09)* (pp. 115–118). Essen: ACM. https://doi.org/10.1145/1620509.1620531.

Rensink, R. A. (2009). Encyclopedia of consciousness. In W. Banks (Ed.), *Encyclopedia of consciousness* (Vol. 1, pp. 47–59). New York: Elsevier. https://doi.org/10.1016/B978-012373873-8.00006-2.

Riener, A. (2010). *Sensor-actuator supported implicit interaction in driver assistance systems (1st January 14, 2010)*. Wiesbaden: Vieweg+Teubner Research.

Robins, R. W., Caspi, A., & Moffitt, T. E. (2000). Two personalities, one relationship: Both partners' personality traits shape the quality of their relationship. *Journal of Personality and Social Psychology, 79*(2), 251–259.

Schartmüller, C., Riener, A., & Wintersberger, P. (2018). Steer-by-WiFi: Lateral vehicle control for take-overs with nomadic devices. In *Adjunct Proceedings of the 10th International Conference on Automotive User Interfaces and Interactive Vehicular Applications* (pp. 121–126). Toronto, ON: ACM. https://doi.org/10.1145/3239092.3265954.

Schmitt, B. (2012). The consumer psychology of brands. *Journal of Consumer Psychology, 22*(1), 7–17. https://doi.org/10.1016/j.jcps.2011.09.005.

Schmitt, B., Brakus, J., & Zarantonello, L. (2014). The current state and future of brand experience. *Journal of Brand Management, 21*(9), 727–733. https://doi.org/10.1057/bm.2014.34.

Scholz, C. (2014). *Generation Z – Wie sie tickt, was sie verändert und warum sie uns alle ansteckt*. Weinheim: Wiley-VCH.

Shneiderman, B., Plaisant, C., Cohen, M., & Jacobs, S. (2009). *Designing the user interface: Strategies for effective human-computer interaction* (5th ed.). Boston: Addison-Wesley Computing.

Spence, C. (2012). Managing sensory expectations concerning products and brands: Capitalizing on the potential of sound and shape symbolism. *Journal of Consumer Psychology, 22*(1), 37–54. https://doi.org/10.1016/j.jcps.2011.09.004.

Spence, C., & Gallace, A. (2011). Multisensory design: Reaching out to touch the consumer. *Psychology & Marketing., 28*(3), 267–308.

Stone, D., Jarrett, C., Woodroffe, M., & Minocha, S. (2005). *User interface design and evaluation* (1st ed.). Amsterdam: Morgan Kaufmann.

Tartakovsky, M. (2016). *Overcoming information overload*. PsychCentral. Retrieved July 3, 2019, from https://psychcentral.com/blog/overcoming-information-overload/

Testa, C. J., & Dearie, D. B. (1974). Human factors design criteria in man-computer interaction. In *ACM 74: Proceedings of the 1974 Annual Conference* (pp. 61–65). New York, NY: ACM. https://doi.org/10.1145/800182.810380.

Triggs, T.J., & Harris, W. G. (1982). *Reactions time of drivers to road stimuli* (Human factors report no. HFR-12). Department of Psychology, Monash University, Victoria: Human Factors Group, Monash University (Accident Research Centre). Retrieved July 3, 2019, from https://www.monash.edu/muarc/archive/our-publications/other/hfr12

Van de Sand, F. (2017). *User experience identity: Mit Neuropsychologie Digitale Produkte zu Markenbotschaftern machen*. Wiesbaden: Springer-Verlag.

Wickens, C. D. (1992). In L. Yardley (Ed.), *Engineering psychology and human performance* (2nd ed., pp. 449–471). New York: HarperCollins.

Wickens, C. D., & Carswell, C. M. (2012). Information processing. In *Handbook of human factors and ergonomics* (pp. 117–161). Hoboken, NJ: Wiley. https://doi.org/10.1002/9781118131350.ch5.

Wickens, C. D., Goh, J., Horrey, W. J., Helleberg, J. H., & Talleur, D. A. (2003). Attentional models of multi-task pilot performance using advanced display technology. In *Human factors* (Vol. 45, pp. 360–380).

Wittmann, M., Kiss, M., Gugg, P., Steffen, A., Fink, M., Pöppel, E., et al. (2006). Effects of display position of a visual in-vehicle task on simulated driving. *Applied Ergonomics, 37*(2), 187–199. https://doi.org/10.1016/j.apergo.2005.06.002.

Wolfe, J. M., Kluender, K. R., Levi, D. M., Bartoshuk, L. M., Herz, R. S., Klatzky, R. L., et al. (2014). *Sensation and perception* (4th ed.). Sunderland, MA: Sinauer Associates.

Unconscious Brand Messaging and Perception Beneath the Detection Threshold

3

3.1 Understanding Perception

Human perception (see also Sect. 2.1) can be partitioned into explicit (conscious) and implicit (unconscious) perception, with the latter contributing up to 95% to the overall human perception. In this section, we discuss what it means to make decision outside conscious awareness, and we explain the difference between explicit (conscious) and implicit (unconscious) learning as an example. Further on, we provide a link to basic mental models and concepts such as *priming* or *nudging*. We conclude with an overview of methods to measure consciousness on the objective and subjective level.

3.1.1 The Potential of Unconscious Information for Brand Perception

More and more people are nowadays overstrained from the rapid pace of change (e.g., new means of interaction), they are absent-minded, daydreaming, or inattentive (fatigue, uninterested, or even cognitively overloaded), and all this can have a negative impact on people's ability to concentrate or direct their attention consciously to a certain matter. Information overload, as an example, can lead to impulsive buying decisions, followed by post-rationalization with degrees of

This chapter was written by Andreas Riener and Katharina Holl. Parts reprinted from Emotions and Affect in Human Factors and Human-Computer Interaction, Andreas Riener, Chap. 19—Subliminal Perception or "Can We Perceive and Be Influenced by Stimuli That Do Not Reach Us on a Conscious Level?", Pages 503–538, 2017, ISBN 9780128018514, https://doi.org/10.1016/B978-0-12-801851-4.00019-7, with permission from Elsevier.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_3

impaired freedom of choice (Brierley, 2017). As for customer loyalty, this might result in dissatisfaction and, thus, should be avoided.

Psychologists have suggested that as much as 85–95 % of decision making occurs outside our conscious awareness (Liu, Albright, & Zamir, 2016), and it is important to understand how these unconscious[1] processes actually work. Accordingly, we are interested in the potential of unconscious information to improve product perception, brand attachment or experience, and finally brand equity. Research in the field of implicit cognition has already confirmed that information perceived unconsciously can generate behavioral effects (in an experimental context) (La Rosa & Mir, 2014) and that the effects might be increased with situational factors (Bustin, Jones, Hansenne, & Quoidbach, 2015). According to the theories as discussed in the preceding chapter, it should not be possible for information perceived beneath the level of consciousness to induce a change in the human mind, attachment, or decision making. On the other side, however, these models are only abstractions of the reality, and there are plenty of studies confirming that unconscious information indeed has the potential to result in a change of behavior, i.e., improved response time, increased buying power, higher customer attraction, and greater brand attachment (Elgendi et al., 2018).

3.1.2 Implicit Versus Explicit Perception

Pilot and Autopilot

To understand how the process of fully paying attention to one specific stimulus (selective attention; cf. Sect. 2.1.1.2) on the one hand, and only perceiving information on the other hand works, Kahneman (2012) introduced the *pilot-autopilot model.* The model explains how the tremendous amount of stimuli continuously reaching the brain (Norretranders, 1997) are managed with the help of two modes, *autopilot (system I)* and *pilot (system II)*.

Pilot (system II) includes all cognitive and emotional processes which are controlled and work consciously. The pilot is, thus, in charge of slow but well sorted out decisions, which can include future plans. When we solve complex mathematical problems, actively decide to quit smoking, or choose to not buy very expensive fashion items, because we checked our bank account before, the *pilot* is active (Scheier, 2012). These processes require a high amount of energy and brain capacity because they try to include all information available and happen on a conscious level. As already mentioned in Sect. 2.3, the human brain has only limited capacity to process certain stimuli. The pilot is highly energy consuming, which is the reason

[1] In psychology, different terms like unconscious, subconscious, nonconscious, subliminal, etc., are used simultaneously to refer to the same: perception outside conscious awareness. For now, we use the term unconscious as suggested by Sigmund Freud. This suggestion is followed by most of the professional literature where mental functioning is concerned (including not just psychoanalysis but also psychiatry, psychology, and neuroscience, among others) (see also Miller 2016). Later, in Sect. 3.1.3, a broader discussion of these terms and the relationship to each other will follow.

why it is only used in situations where it is definitely required, for example, studying for an upcoming exam. Here, the decision to study for the exam was made actively, and the learning process happened on purpose. Everything that is learned on purpose is called *explicit learning*. The functioning of the pilot further needs high concentration—factors such as fatigue or focusing on other tasks can thus lead to a poor output of the desired task.

Autopilot (system I) works intuitively and is rapid, efficiency oriented, and emotional. The autopilot can make quick decisions, and performs economically, which means that it operates in an energy-saving mode. As mentioned above, our brain constantly perceives information but consciously pays attention to only very few stimuli. In a reverse conclusion, the autopilot has almost unlimited capacity and works in an unconscious way. It includes everyday tasks such as riding a bike or walking down a street. Anything we do repeatedly is done in the autopilot mode in order to save energy and resources. Throughout our lives, we are constantly learning and adapting. Everything that will be learned passively and not on purpose is called *implicit learning*. The process of implicit learning takes place every time we perceive information from the environment. It is thus a requirement for the functioning of the autopilot.

The implicit learning process is the reason why we get reminded of our childhood and feel certain emotions, when for example, eating a vanilla pudding by this one specific brand that used to be served at our grandmother's table. With the help of implicit learning, our brain creates mental concepts. The brain learns implicitly when and by whom certain products in our culture are usually used and how society and media evaluate these products. Consequently, the autopilot is especially relevant when it comes to brand perception since it is active when the brain creates associations with the brand, recaps stereotypes, or perceives a brand image.

Basic Mental Concepts

The human brain can be seen as lazy—it functions under the law of minimal effort, which is the reason why the autopilot is mostly preferred. In order to save energy and react faster to the environment, the brain uses the implicitly learned information (which then can be processed by the autopilot). Implicitly learned information is stored as patterns and will be used as cognitive shortcuts. These patterns and social rules are put into mental concepts, which then function as codes (see also Sects. 6.2 and 7.4).

The most important patterns are implicitly learned until the age of seven. This means for marketers that it can be helpful to analyze which products and brands were used in certain situations in the customers' childhood in order to understand the customers' implicit codes (Scheier, 2012). As a consequence, to better understand how customers perceive our digital products and services, the mental concepts of the customers need to be analyzed first (for details, see also Chap. 7).

Heuristics

When a situation or object has to be evaluated in the fastest and most efficient way, as described above, the autopilot is active. The autopilot then unconsciously uses *heuristics*. Heuristics can be defined as rough procedures that help to make a decision or find an easy solution to solve a problem (Tversky & Kahneman, 1974). Heuristics are used in situations of time pressure, low priority problems, or when the quantity of information is too high to be completely evaluated. When heuristics are used in situations in which it is not appropriate to use them, mistakes in the decision-making process are likely to occur. Gladwell (2005) mentions the *"dark side of thin-slicing,"* which describes situations where prejudices influence conscious decisions. The author mentions the example of Warren Harding, who is said to have been elected due to *"looking presidential"* but is now widely seen as one of the less successful presidents in U.S. history (Gladwell, 2005).

There are various heuristics that are used daily by the human brain in order to react to the environment in the most efficient way.

Priming is one example of heuristics and especially relevant for marketers when it comes to building a strong brand. Priming can best be described by the example of the following request: "*Please fill out the blanks of the word 'S.p'.*" This might be a little hard, but when you read the words *food* and *eat* before accomplishing the task, you will be more likely to give the answer *Soup* very fast (Kahneman, 2012). This example describes the phenomenon of processing and interpreting a certain stimulus that is influenced by a preceded stimulus. The preceded stimulus (in this case the words *food* and *eat*) has activated mental concepts (see also Sect. 7.1) from the implicit learning memory, which are associated with the preceded stimulus.

One of the most well-known effects of priming is the so-called *Florida Effect* by Bargh, Chen, and Burrows (1996). In this experiment, students were separated into two groups (Group A and Group B). Each student, no matter which group they belonged to, had to build sentences with given words. Group A had given words, which, in the USA, are associated with older people such as *Florida*, *grey, wrinkles*. Group B had given random words that are not associated with old people. Afterward the students were asked to walk a hallway into an office. It was found that the students in Group A took significantly longer to walk the hallway. This example shows two priming effects: First, the words were associated with *old*, although this word has never been mentioned in the presence of the students. Second, the associations with *older people* also prime the students' behavior when walking through the hallway.

Quite a few studies have confirmed that situational factors, such as thirst or fatigue, can also increase people's sensitivity to advertisements outside conscious awareness (e.g., the choice of a coke over a bottle of water). Bustin et al. (2015) found that dispositional factors (in this case, the level of sensation seeking of participants) could have the same potentiating effect. For example, they found that exposing individuals to the brand name of Red Bull without them being aware of it meaningfully increased intention to drink Red Bull for participants that were high in sensation seeking, whereas this priming had no effect on participants that were low in sensation seeking. The authors concluded that personality needs to be taken into

account in unconscious persuasion research. In another experiment, Smarandescu and Shimp (2015) conducted three studies to test the effects of priming. Results suggest that it can indeed affect behavioral intentions and brand choice in situations where familiar brands are involved, and a familiar brand is pitted against a market leader. Interestingly, the effect was only significant when the dependent measures are presented in temporal proximity to the priming procedure, but not after a time delay of >=15 min.

Another concept that is often used in this context is called *nudging* (Thaler & Sunstein, 2009). Nudging describes a slight change in the environment which leads to a big change in the behavior (Thaler & Sunstein, 2009). When, for example, the cafeteria places fruit closer to the cashier desk than the sweets, people will eat more fruit, just because they are more convenient to pick up. McDonald's uses this technique when asking *"Would you like to have fries with that?*," expecting you to agree, although you did not intend to eat fries. Nudging can also help to design the environment in a way that mistakes can be eliminated. Thaler and Sunstein (2009) mention the example of writing a mail with the sentence "*see file attached"* via Gmail but forgetting to actually upload a file in this mail, a notification will pop up asking whether the user intended to send an attachment with the mail. By this, a reminder to upload a file is given and the probability of errors can be minimized.

These examples show how a certain behavior can unconsciously be manipulated by thoughts and imaginations (Kahneman, 2012). The fact that priming is present in almost every situation in daily life suggests that it is important to be considered when it comes to creating a successful user experience. Certain elements in the interface are likely to prime users' behavior, attitude, and expectations. Every transition, color shade, picture, or icon can unfold certain mental concepts (see also Sect. 3.1.2) in the human brain and will communicate in a certain way. The goal is to use priming to your advantage, to successfully communicate your brand's values in order to address the right users' needs and expectations (Budiu, 2016).

3.1.3 Conscious Versus Unconscious Perception

The terminology around conscious, subconscious, unconscious, subliminal, among others, is somewhat ambiguous, underpinned, for instance, by Rosalind Picard's statement that "*the term consciousness refers to a complex morass of many things [. . .]*" (Picard, 1997, p. 73). Furthermore, Calvin and Ojemann (1994) remark that different mental activities (which normally do not have a single origin) are all mapped to the single word consciousness, which makes it particularly tough to classify and understand what conscious should exactly be (see also Hudlicka & Fellous, 1996; Minsky, 1999).

The terminology as used in this book is grounded in neuroscience and mainly based on Dehaene's theories (Dehaene, Changeux, Naccache, Sackur, & Sergent, 2006) as well as Kahneman's (2012) *pilot* and *autopilot* modes, and the comparative analysis of the body of recent work by Hassin (2013). Before explaining the neuroscience behind perception without conscious awareness and the taxonomy as

used in this work, we need to address the general confusion surrounding the concept of perception outside conscious awareness, i.e., beneath the detection threshold.

During conscious perception, the stimulus triggers intense neural activations in the brain—humans (e.g., users of a product or system) are actively aware of the stimuli and can verbally report it. In the words of Kahneman (2012), this refers to the pilot (system II). During unconscious perception, i.e., autopilot (system I) according to Kahneman (2012), the stimulus is perceived by the brain, and the depth of the resulting neural activations depends on task, sensory channel, masking strength (the speed of projection of the stimuli in the case of visual stimuli) (Del Cul, Baillet, & Dehaene, 2007), and top-down attention.

What Is Conscious Perception Then?

In this work, we state that humans are consciously perceiving a stimulus if they are fully aware and able to identify the given stimulus. To give an example, the visual overlay of a brand logo (or any other advertisement) in a television program would be consciously perceived by the audience. However, if this visual symbol is projected very quickly, let us say at a frequency of 100 Hz (a symbol every 10 ms), then we can state that the viewers have not perceived this symbol consciously (due to confirmed limitations of our visual spatial resolution, i.e., neurological properties of conscious perception). Del Cul et al. (2007) experimented with visual stimuli to cross the threshold to consciousness (visibility). It is generally accepted that exactly this threshold is the border between conscious and unconscious perception, thus the point at which awareness of a stimulus is reported or at which unreported awareness has a measurable effect on some subsequent behavior. In their studies, Del Cul et al. (2007) substantiated the existence of such a threshold and that it is in the order of magnitude of 50 ms for the visual channel. The technique used to project a given stimulus below this threshold of awareness is called *subliminal priming* (Chalfoun & Frasson, 2008) (see also Sect. 3.1.2), and means behavior outside of awareness (Egermann, Kopiez, & Reuter, 2006; Elgendi et al., 2018). According to the imprecise usage of the term subliminal in the past, e.g., by Pratkanis and Greenwald (1989) and the fact that it carries a negative connotation (e.g., due to James Vicary's marketing joke "*Drink coke, eat popcorn*" in the 1950s (Karremans, Stroebe, & Claus, 2006)), we suggest to use—similar to Miller (2016)—the term *unconscious* instead of subliminal for expressing information delivered below the level of conscious perception.

Today, research provides a way of testing whether conscious and unconscious processes are (as supposed) fundamentally different from one another. However, providing evidence for an impact of this type of stimuli is apparently not easy and has caused some confusion in the past. Does a particular stimulus, when presented unconsciously, have different effects than when it is presented so that people are consciously aware of it? In addition, and more relevant in the context of this book, presenting stimuli outside conscious awareness should allow us to rule out demand or other active strategies on the part of experimental subjects as alternative explanations for their effects (Smith & McCulloch, 2012).

Perception Versus Persuasion

In this context, we would further like to point to the difference between perception and persuasion. *Subliminal perception* refers to the awareness of stimuli presented at a speed or visual level that is below the conscious threshold. This should not to be confused with *subliminal persuasion*, which is said to be unethical and aims to change the behavior or influence the decisions of individuals toward a goal without their knowledge. Therefore, subliminal persuasion necessitates that the subliminally presented stimuli have some effect on individuals' attitudes or behaviors (Smarandescu & Shimp, 2015). One example is the case of audio tapes used to coerce people into spending to achieve wealth, fame, and self-esteem. According to Brierley (2017), genetic *instincts*, of which the conscious mind is not aware, also play a role in consumer behavior.

3.1.4 Measuring Consciousness

Along with the discussion of the terminology goes the selection and definition of acceptable methods for detecting and measuring consciousness.

When humans communicate with humans, a lot of information is exchanged on the unconscious level, derived from facial expressions (Rigato & Farroni, 2013), intonations of the voice, gestures, body posture, or language, and it is also agreed on that in human social life actions are tightly linked with emotions (Ferri et al., 2013). In interpersonal conversation, humans are able to use implicit situational information, or context (Dey, 2001), to increase the conversational bandwidth. This sort of information is normally not accessible or measurable and the same holds true for other information transferred below the threshold, mainly due to conflicting results of previous studies or unavailable technology.

There are two basic types of measures: *objective* and *subjective*. Their applicability was discussed, for instance, by Zehetleitner and Rausch (2013). Measures of consciousness are considered objective, if a subject's state of awareness is determined on the basis of task performance (i.e., if a subject is able to discriminate a stimulus, it is assumed that he or she is conscious of it, as opposed to a chance level performance on a discrimination task. Such a test is considered a reliable indicator of the absence of conscious awareness). The boundary between consciousness and the absence of conscious awareness is typically identified by varying the stimulus onset asynchrony (SOA) between stimulus (prime) and mask. This recent technological advance has made it possible for the first time to take objective measures and quantify the social nature of humans. Examples include tracking habits, determining capabilities, detecting emotions and linking it to behavior, applying ERP to measure brain activity (Nedelko et al., 2017), etc., to the point of reverse engineering of (parts of) the human brain or decoding the human genome (Vinciarelli, 2012).

Objective measures stand in contrast with subjective measures (e.g., verbal reports), which are proposed to operationalize consciousness. These include confidence ratings by study participants, asking subjects about the reason for choosing a particular response, or questioning the observers to judge their visual experiences

directly, for instance, on a Likert scale (Del Cul et al., 2007). The validity of the measures used in the latter category has been questioned from an empirical science point of view. The debate whether these measures are valid for empirical science is ongoing because they might be corrupted by uncontrolled changes of the response criterion.

We suggest using both objective and subjective measures, to increase validity of results—as applied, for example, in Riener and Thaller (2014). As researchers, we have now everything at our disposal to start researching the effects caused by information perceived inattentively, outside conscious awareness, or unconsciously.

3.2 Unconscious Brand Messaging

As introduced above, a product or a brand image will mainly be perceived outside conscious awareness, i.e., via the implicit system or system I (autopilot), according to Kahneman (2012). But how does the process of brand perception and, in the end, the actual product purchase actually take place? We will discuss the neuroscience behind in the following section.

3.2.1 The Power of Unconscious Information

From previous research on unconscious communication, we have learned that, for instance, ambient scents can improve brand memory (Morrin & Ratneshwar, 2003). Unconsciously perceived odors connect directly to neuroscience because of the body of work showing strong links between smell and working memory, attention, reaction times, mood, and emotion (Brewster, McGookin, & Miller, 2006). There is also evidence in marketing that the use of (not attentively perceived) odor can increase sales, for example in perfumery, or by attracting customers to coffee houses (Bradford & Desrochers, 2009). More specifically, olfactory cues influence human perception and can induce behavioral responses (Parma, Tirindelli, Bisazza, Massaccesi, & Castiello, 2012). Research further suggests that smell can be used as a support measure, for example, to aid recall (Brewster et al., 2006) (e.g., the smell of a specific perfume or from a rose reminds you of your first girlfriend or boyfriend). On the other hand, however, scents will not work for everyone (this is known as *anosmia* or the inability of persons to smell one or more specific odors (Brewster et al., 2006)) and, more problematic, the emotional state of healthy subjects has a clear effect on olfactory sensitivity (Pollatos et al., 2007).

To summarize, olfaction has a share on the overall product and brand perception, but it is often not clearly quantifiable. Similar effects and limitations are known for the other sensory channels. Just this example should make it clear that product perception and brand experience cannot be easily captured in numbers and is not at all steady.

3.2.2 Impact on Brand Equity and Buyer's Decisions

The four main dimensions contributing to brand equity are brand awareness, brand association, brand loyalty, and perceived quality, but there are other factors (such as convenience to buy, taste, flavors, price, and packaging) that influence a consumer's decision to buy and use a product from a certain brand (Oke, Kamolshotiros, Popoola, Ajagbe, & Olujobi, 2015). In addition, brand reputation is another asset, which is considered as the equity of a company and as the most valuable component for business. Another study by Siddiqua (2018) confirms that affection, a facet of brand attachment, has a significant effect on brand equity.

All these assets are rather intangible and abstract, so that it is hypothesized in research related to brand perception that information perceived outside conscious awareness (i.e., unconsciously) has a great influence on brand attachment and can lead to disconnectedness. To investigate the effect of unconscious information on brand association, Nedelko et al. (2017) applied the event-related potential (ERP) method using a N400 evoked potential. Within their experiment, the authors were able to show—for the first time—the possibility of applying ERP to identify the strength of brand associations (i.e., strong and weak associations of a customer on a certain brand can be reflected in brain activity). This way, it should be possible to quantify effects of unconscious awareness of products and use this as another option to improve brand perception.

As already discussed throughout this book, multisensory stimulation is expected to have a positive influence on brand experience and brand loyalty. Just recently, this was confirmed in a study by Moreira, Fortes, and Santiago (2017), who found out that proper multisensory stimulation produces an increase on customers' brand experience and on brand equity, which, in turn, have a positive impact on intentions to purchase products and services of that brand. Of course, the findings from the study conducted in the catering market cannot be generalized to just any product or brand, but it underpins at least the positive influence of multisensory stimulation on brand experience and brand equity.

Colors, shapes, typography, animations, among other things, have a significant impact on how a particular brand is perceived by the customer (Lundin, 2018). It is common knowledge in marketing that archetype cues are used to convey a certain brand image (in an unconscious way). Examples include warm/round (e.g., circles and ovals) and sharp/edgy (squares, triangles) shapes or warm (e.g., a shade of pink) and cold (blue, black) colors. They can be compared to different brand archetypes, like *the caregiver* and *the ruler*. Typically, warm cues are used to convey empathic and cold cues to convey strength of a brand (Mark & Pearson, 2001). However, Hess and Melynk (2016) found that this is not always true. The results of this research suggest that marketers of brands with established high competence should consider integrating subtle warm cues to highlight their empathy, such as round shapes, low contrasts, or warm colors in their marketing communication. In contrast, marketers of companies that are not (yet) perceived as competent (e.g., new companies) would benefit from using sharp and cold cues in their marketing communication.

In addition, the territory of origin plays, according to Bliadze (2018), a crucial part in the formation of customers' brand perception (cf. the *country of origin effect*, e.g., Italian coffee, Austrian sweets, or Swiss chocolate). It is suggested that a company, when implementing a territorial strategy, receives many long-term strategic advantages over competitors, who do not implement such a strategy.

Another aspect showing the potential of perception on the nonconscious level is product placement in, for example, movies. While not fully unconsciously, this is also something that affects (movie) viewers' ability to later recognize brands or products and might have an influence on buying decisions—even though they are often not being perceived with full (conscious) awareness. This means that brand logos are indeed visible, but the plot distracts the viewer's attention. To emphasize the effect, it is a matter of fact that the provider normally receives some payment or incentives in return for its inclusion. Further on, broadcasting agencies, etc., are legally obliged to indicate whether or not product placement is used in media. Even more, advertisement on the unconscious level is illegal in many countries (Bustin et al., 2015).

Hansson and Mattsson (2017) investigated the effect of congruent and incongruent placement on audience acceptance. Participants of their study found that the brands that were more connected to the plot were congruent, while the incongruent placement was not. According to the participants, congruent placements led to affective outcomes such as associations and memories, while the incongruent placement did not. Furthermore, the authors identified five factors (annoyance, familiarity, lack of excitement, unnecessary, and iconic) that generate brand recognition in (Hollywood) movies (this only worked when the recognized brands were international or global). The final conclusion of Hansson and Mattsson (2017) is that the five factors, i.e., annoyance, familiarity, lack of excitement, unnecessary, and iconic, can contribute to the generation of brand recognition in movies or media in general. Furthermore, to gain audience acceptance regarding product placement in movies, it should be made sure that a product placement fits with the movie setting, is connected to the plot, relevant, and that the product category is expected. This is in line with the results of previous work, which has shown that (unconscious) priming (see also Sect. 3.1.2) is especially effective when the prime is goal-relevant, that is, when the prime is related to something people need or want to achieve (Karremans et al., 2006). Further on, Scheier (2012) suggest that the act of purchasing will only take place when the brand image is evaluated as positive and rewarding.

A study conducted by Linna (2018) on the relationship between digital advertisement and perceived brand image revealed a clear positive correlation between digital content and perceived brand image. The authors further mentioned that it is still somewhat unclear what type of content actually works in leveraging brand image and what type of content does not.

As a consequence, product placement and brand representation should not be planned in isolation—it has to fit into the overall *stage setting* (e.g., digital media, window dressing, color scheme in the shop, charisma of sales staff, among others) to

induce the positive effects as highlighted before. As a prerequisite, the brand values need to be in alignment with the consumers' values (see also Chap. 4).

3.2.3 Cultural Differences

This section makes clear that perception of products and brands is influenced by the individual expectations, experiences, needs, values, and emotions (Bruner & Goodman, 1947). Many of the factors discussed before are influenced by cultural background and social status. To investigate this, the *implicit association Test* (IAT) was developed to measure implicit associations regarding social groups that differ in gender and skin color among other things (Banaji & Greenwald, 2013; Wittenbrink & Schwarz, 2007). In the IAT, participants are asked to rapidly classify stimuli such as pictures, symbols, or words into groups. The time needed for answering is measured, and it is assumed that categories, which are closely associated, will be answered faster. (The test is open to everybody and can be accessed at *www.implicit.harvard.edu*, last retrieved on July 3, 2019).

As already pointed out in Sect. 3.1.2, the most important patterns are learned until the age of seven. This way, children's development differs strongly, depending on their cultural background. The patterns learned in the early childhood are hard to break and define the values, stereotypes, and rules of etiquette (Scheier, 2012). The culture consists of different layers which are often compared with the layers of an onion, where the outer layers consist of symbols, heroes, and rituals, and the core builds the culture's values. Symbols can occur in forms of logos, monuments, or colors. Heroes are life figures like politicians or fictional characters such as Batman. The third layer, rituals, is repeated events, which shape the unconscious mind. This could be, for example, celebrating Independence Day (Hofstede, n.d.). Defining the values as the core of a culture demonstrates its high relevance. The topic of values was already discussed by Schwartz (2012) and will be explained in detail in Chap. 4. The importance of cultural differences in a business context is generally well accepted and has been proven in one of the most comprehensive studies on how culture influences values at the workplace by Hofstede (2003). After empirical research with IBM employees in over 50 countries, Hofstede (2003) defines six cultural dimensions that should be considered. The first dimension, *power distance index*, defines to what extent hierarchical orders are preferred over equalizing the distribution of power. *Individualism vs. collectivism* is the second dimension. Individual-dominant societies expect the individual to take care of themselves only or of their closest family. In contrast to this, in *collectivism,* people's self-image is defined as *we* instead of *I*. *Masculinity vs. femininity* marks the third dimension: Whereas *masculinity*-driven societies are ego-oriented and consider materialistic goods as important, *feminism* is defined as relationship-oriented and the quality of life as well as the well-being of people is important (Hofstede, 2003). The *uncertainty avoidance index* (UAI) questions how society deals with uncertainty about the future. Societies with a low UAI prefer practice over principles; an example for a low *uncertainty avoidance index* is the USA. *Long-term orientation vs. short-term*

normative orientation is the fifth dimension. *Long-term orientation* is characterized by virtues that result as rewards in the future, perseverance is highly important, and more respect is shown to older people. Japan is seen as long-term oriented: The Japanese life is guided by virtues and practical good examples. *Short-term normative* cultures prefer quick decisions and results, and leisure time is seen as very important. The dimension *indulgence vs. restraint* deals with the question as to which extent strict social norms are desired over natural human drives (Hofstede, 2003).

When trying to understand the customer's perception process, it is thus important to consider these cultural dimensions. A very relevant question for marketers is how the presented information is perceived, depending on the customers' cultural background. As pointed out above, symbols are seen as the outer layer of a culture, but they are highly important when it comes to building successful user experience design. Understanding the meaning of colors and logos in different cultures is therefore essential. One of the most common examples for the symbolistic features of colors and their meaning in different cultures is the color white. In many cultures, the bride wears a white dress at a wedding, and the color symbolizes *purity* and *truth*. The *white dove* is, especially for Christians, a symbol of *peace*, and as in the bible, it declares the end of the big flood to Noah. The *white elephant* is sacred in Buddhism, and it stands for *wisdom* and *long memory* (Yu, 2014). In China, on the other hand, white represents *autumn* and is associated with *death* (Yu, 2014).

To give another example, voice-based user interfaces become constantly more relevant for interactions in our daily lives. Phoneme discrimination is an important topic that needs to be taken into consideration when designing voice UIs. It is a matter of fact that children have a different phoneme discrimination than adults. The phonemes /l/ and /r/ do not exist in Japan, which means that adults have problems differentiating them. Studies, for example by Kuhl, Williams, Lacerda, Stevens, and Lindblom (1992), have shown that Japanese children do not have difficulties in differentiating between them. When growing up they start to adjust to their mother tongue and start to unlearn these phonemes, which do not exist in their first language. This example shows very well how the ability of perception also strongly depends on learning processes and cultural backgrounds.

Conclusion

In this chapter, we have discussed the potential and feasibility of information perceived on the *unconscious* level (cf. *system I, autopilot* according to Kahneman (2012)) rather than presenting information actively, attentively, or in a *conscious* fashion (cf. *system II, pilot*).

The history and progress of this field have raised the question whether communication through unconscious information processing might in fact work.

Perception outside conscious awareness is still a controversially discussed topic. Recent empirical research suggests that unconscious techniques induce a positive effect (Elgendi et al., 2018), for example by reducing the workload of sensory channels. To summarize findings from this type of research, studies have shown that advertisement on the unconscious level is capable of influencing consumers under ideal lab conditions (e.g., when brand choice closely follows

exposure to the primed words and when hypothetical rather than real brands are used). According to La Rosa and Mir (2014), the current state of research suggests that behavioral effects resulting from the unconscious perception of certain brands may be quite specific.

However, these results are challenged by other researchers claiming that unconscious perception does not, or even cannot, work. Even though results from numerous experiments show different levels of performance with and without inattentively perceived information, in the end it is difficult to judge whether the difference can be attributed to unconscious perception. Technological advance now enables us to take objective measures, e.g., of brain activity (Nedelko et al., 2017), and quantify effects of unconscious perception. To determine the impact of messaging outside consciousness on customers, empirical studies with large(r) samples have to be conducted, including participants with different cultural backgrounds. If the goal is to reach a worldwide audience as in product or brand placement in Hollywood movies (Hansson & Mattsson, 2017), studies (i.e., effectiveness analysis) need to be repeated in different countries.

On the other hand, however, many marketers and brand designers are not fully aware of the relevance of unconsciously presented messages and their effect on consumer behavior (Atrees, 2015). Also, additional research is needed to determine whether this effect is also verifiable under more realistic marketplace conditions (Smarandescu & Shimp, 2015). Last but not least, it is important to mention that brand designers must consider the ethics of the profession and the consumer culture when using unconscious messages in brand design (Atrees, 2015). To account for this, unconscious promotional techniques are banned by a number of regulations. However, unconscious marketing is not prohibited under the Consumer Protection from Unfair Trading Regulations (2008) (UK Parliament, 2008).

► The potential of unconscious information (either sensory channel) should be known by any marketer, product developer, or brand designer in order to better understand the relationship between appearance, perception, and the crossmodal interplay of sensory channels and thus improve the perception of products or the attachment to a brand.

► We hope that this chapter has provided useful basic formalization with the approach of unconscious perception, and we hope it has shown that it can be used to improve brand perception and product attachment and enhance customer loyalty. We further hope that this work will help to advance research in the field of unconscious perception in the marketing domain. Even if this technique does not work for everyone and in every situation, it remains worth pursuing this exciting research.

References

Atrees, F. F. (2015). The concept of subliminal messages in brand design. *International Design Journal, 5*(1), 23–28.

Banaji, M. R., & Greenwald, A. G. (2013). *Blindspot: Hidden biases of good people*. New York: Delacorte Press.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology, 71*(2), 230–244. 15.

Bliadze, I. (2018). *The country of origin effect and its influence on consumers' perception of product quality and purchasing intentions* (Bachelor thesis). JAMK University of Applied Sciences, Jyväskylä, Finland. Retrieved July 3, 2019 from https://www.theseus.fi/bitstream/handle/10024/151650/Bliadze%20Iuliia.pdf?sequence=1

Bradford, K. D., & Desrochers, D. M. (2009). The use of scents to influence consumers: The sense of using scents to make cents. *Journal of Business Ethics, 90*(2), 141–153. https://doi.org/10.1007/s10551-010-0377-5.

Brewster, S., McGookin, D., & Miller, C. (2006). Olfoto: Designing a smell-based interaction. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 653–662). Montreal: ACM. https://doi.org/10.1145/1124772.1124869.

Brierley, G. L. (2017). *Subconscious marketing techniques: The implications for consumer regulations and the marketing profession*. Doctoral Thesis. Cardiff Metropolitan University, Cardiff, UK. Retrieved July 3, 2019 from https://repository.cardiffmet.ac.uk/bitstream/handle/10369/8781/FINAL%20Thesis%20Submission_Brierley%20%28002%29.pdf?sequence=1&isAllowed=y

Bruner, J. S., & Goodman, C. C. (1947). Value and need as organizing factors in perception. *The Journal of Abnormal and Social Psychology, 42*(1), 33–44. https://doi.org/10.1037/h0058484.

Budiu, R. (2016). *Priming and user interfaces*. Retrieved July 3, 2019 from https://www.nngroup.com/articles/priming/

Bustin, G. M., Jones, D. N., Hansenne, M., & Quoidbach, J. (2015). Who does red bull give wings to? Sensation seeking moderates sensitivity to subliminal advertisement. *Frontiers in Psychology, 6*(825), 6. https://doi.org/10.3389/fpsyg.2015.00825.

Calvin, W. H., & Ojemann, G. A. (1994). *Conversations with Neil's brain – The neural nature of thought & language*. Boston, MA: Addison-Wesley.

Chalfoun, P., & Frasson, C. (2008). Learning and performance increase observed in a distant 3D virtual intelligent tutoring system when using efficient subliminal priming. In C. J. Bonk, M. M. Lee, & T. Reynolds (Eds.), *Proceedings of world conference on e-learning in corporate, government, healthcare, and higher education 2008* (pp. 2543–2547). Las Vegas: AACE. Retrieved July 3, 2019 from http://www.editlib.org/p/30027

Dehaene, S., Changeux, J.-P., Naccache, L., Sackur, J., & Sergent, C. (2006). Conscious, preconscious, and subliminal processing: A testable taxonomy. *Trends in Cognitive Sciences, 10*(5), 204–211. https://doi.org/10.1016/j.tics.2006.03.007.

Del Cul, A., Baillet, S., & Dehaene, S. (2007). Brain dynamics underlying the nonlinear threshold for access to consciousness. *PLoS Biology, 5*(10), 2408–2423. https://doi.org/10.1371/journal.pbio.0050260.

Dey, A. K. (2001). Understanding and using context. *Personal Ubiquitous Computing, 5*(1), 4–7. https://doi.org/10.1007/s007790170019.

Egermann, H., Kopiez, R., & Reuter, C. (2006). Is there an effect of subliminal messages in music on choice behavior? *Journal of Articles in Support of the Null Hypothesis, 4*(2), 29–45.

Elgendi, M., Kumar, P., Barbic, S., Howard, N., Abbott, D., & Cichocki, A. (2018). Subliminal priming-state of the art and future perspectives. *Behavioral Sciences (Basel, Switzerland), 8*(6), 54. https://doi.org/10.3390/bs8060054.

Ferri, F., Ebisch, S. J., Costantini, M., Salone, A., Ebisch, D., De Berardis, D., Mazzola, V., et al. (2013). Binding action and emotion in social understanding. *PLoS One, 8*(1), 1–9. https://doi.org/10.1371/journal.pone.0054091.

Gladwell, M. (2005). *Blink: The power of thinking without thinking*. London: Penguin Books.

Hansson, I., & Mattsson, L. (2017). *Product placement: A study of audience perception on brand recognition and congruence* (Bachelor thesis). Lulea University of Technology, Lulea, Sweden.

Hassin, R. R. (2013). Yes it can: On the functional abilities of the human unconscious. *Perspectives on Psychological Science, 8*(2), 195–207. https://doi.org/10.1177/1745691612460684.

Hess, A. C., & Melynk, V. (2016). Pink or blue? The impact of gender cues on brand perceptions. *European Journal of Marketing, 50*(9/10), 1550–1574. https://doi.org/10.1108/EJM-11-2014-0723.

Hofstede, G. (2003). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

Hofstede, G. (n.d.). *National culture*. Retrieved July 3, 2019 from https://www.hofstede-insights.com/models/national-culture/

Hudlicka, E., & Fellous, J. M. (1996). *Review of computational models of emotion (Technical report no. 9612)*. Arlington, MA: Psychometrix Associates, Inc..

Kahneman, D. (2012). *Thinking, fast and slow*. London: Penguin Books.

Karremans, J. C., Stroebe, W., & Claus, J. (2006). Beyond Vicary's fantasies: The impact of subliminal priming and brand choice. *Journal of Experimental Social Psychology, 42*(6), 792–798.

Kuhl, P., Williams, K., Lacerda, F., Stevens, K., & Lindblom, B. (1992). Linguistic experience alters phonetic perception in infants by 6 months of age. *Science, 255*(5044), 606–608. https://doi.org/10.1126/science.1736364.

La Rosa, A. O., & Mir, J. R. (2014). The application of cognitive psychology to the area of the (implicit) psychology of the consumer: Results and perspectives. *Papeles Del Psicólogo, 35*(2), 210–214.

Linna, T. (2018). *The effects of digital advertising on brand image* (Bachelor thesis). Turku University of Applied Sciences, Turku, Finland. Retrieved July 3, 2019 from https://www.theseus.fi/bitstream/handle/10024/144832/The_Effects_of_Digital_Advertising_on_Brand_Image-Tuuli_Linna.pdf?sequence=1

Liu, J., Albright, K., & Zamir, H. (2016). The role of the unconscious in information retrieval: What user perception tells us. In *Proceedings of the 2016 ACM on conference on human information interaction and retrieval (CHIIR'16)*. New York: ACM. https://doi.org/10.1145/2854946.2854986.

Lundin, K (2018). *The psychology of logo design: How fonts, colors, shapes and lines influence purchasing decisions*. Retrieved July 3, 2019 from https://www.crowdspring.com/blog/logo-design-psychology/ (online 17 July 2018).

Mark, M., & Pearson, C. S. (2001). *The hero and the outlaw—Building extraordinary brands through the power of archetypes*. New York: McGraw-Hill.

Miller, M. C. (2016). *Unconscious or subconscious?* Retrieved July 3, 2019 from https://www.health.harvard.edu/blog/unconscious-or-subconscious-20100801255

Minsky, M. (1999). The emotion machine: From pain to suffering. In *Proceedings of the 3rd conference on creativity & cognition (C&C '99)* (pp. 7–13). Loughborough: ACM. https://doi.org/10.1145/317561.317563.

Moreira, A. C., Fortes, N., & Santiago, R. (2017). Influence of sensory stimuli on brand experience, brand equity and purchase intention. *Journal of Business Economics and Management, 18*(1), 68–83. https://doi.org/10.3846/16111699.2016.1252793.

Morrin, M., & Ratneshwar, S. (2003). Does it make sense to use scents to enhance brand memory? *Journal of Marketing Research, 40*(1), 10–25.

Nedelko, A., Lupova, O., Gorin, A., Kuznetsova, A., Klucharev, V., & Shestakova, A. (2017). *An analysis of brand association perception using N400 evoked potential (p. 17)*. Moscow: Department of Strategic Marketing, National Research University Higher School of Economics.

Norretranders, T. (1997). *Spüre die welt*. Reinbek: Rowohlt.

Oke, A. O., Kamolshotiros, P., Popoola, O. Y., Ajagbe, M. A., & Olujobi, O. J. (2015). Consumer behavior towards decision making and loyalty to particular brands. *International Review of Management and Marketing, 6*(S4), 43–52.

Parma, V., Tirindelli, R., Bisazza, A., Massaccesi, S., & Castiello, U. (2012). Subliminally perceived odours modulate female intrasexual competition: An eye movement study. *PLoS One, 7*(2), 8.

Picard, R. W. (1997). *Affective computing*. Cambridge, MA: The MIT Press.

Pollatos, O., Kopietz, R., Linn, J., Albrecht, J., Sakar, V., Anzinger, A., Schandry, R., & Wiesmann, M. (2007). Emotional stimulation alters olfactory sensitivity and odor judgment. *Chemical Senses, 32*(6), 583–589. https://doi.org/10.1093/chemse/bjm027.

Pratkanis, A. R., & Greenwald, A. G. (1989). In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 22, pp. 245–285). San Diego, CA: Academic Press.

Riener, A., & Thaller, H. (2014). Subliminal visual information to enhance driver awareness and induce behavior change. In *Proceedings of the 6th international conference on automotive user interfaces and interactive vehicular applications* (pp. 6:1–6:9). Seattle, WA: ACM. doi:https://doi.org/10.1145/2667317.2667328

Rigato, S., & Farroni, T. (2013). The role of gaze in the processing of emotional facial expressions. *Emotion Review, 5*(1), 36–40. https://doi.org/10.1177/1754073912457225.

Scheier, C. (Ed.). (2012). *Codes: Die geheime Sprache der Produkte* (2nd ed.). Haufe-Lexware: Freiburg i.Br.

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture, 2*(1), 11.

Siddiqua, A. (2018). *Evaluating the impact of brand attachment on brand equity: A study on selected brands of smart phone handsets* (p. 45). United International University. Retrieved from http://dspace.uiu.ac.bd/handle/52243/542

Smarandescu, L., & Shimp, T. A. (2015). Drink coca-cola, eat popcorn, and choose powerade: Testing the limits of subliminal persuasion. *Marketing Letters, 26*(4), 715–726. https://doi.org/10.1007/s11002-014-9294-1.

Smith, P. K., & McCulloch, K. (2012). Subliminal perception. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (2nd ed., pp. 551–557). Amsterdam: Elsevier. https://doi.org/10.1016/B978-0-12-375000-6.00350-5.

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth and happiness*. London: Penguin Books.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124.

UK Parliament. (2008). *The consumer protection from unfair trading regulations 2008, no. 1277* (London 2008). Retrieved July 3, 2019 from http://www.legislation.gov.uk/uksi/2008/1277/contents/made

Vinciarelli, A. (2012). *The social signal processing network (SSPNET) – A European network of excellence in social signal processing*.

Wittenbrink, B., & Schwarz, N. (Eds.). (2007). *Implicit measures of attitudes*. New York: Guilford Press.

Yu, H.-C. (2014). A cross-cultural analysis of symbolic meanings of color. *Chang Gung Journal of Humanities and Social Sciences, 7*(1), 49–74.

Zehetleitner, M., & Rausch, M. (2013). Being confident without seeing: What subjective measures of visual consciousness are about. *Attention, Perception, & Psychophysics, 75*(7), 1406–1426. https://doi.org/10.3758/s13414-013-0505-2.

Human Needs and Values as Guideline for Brands and Their Products

4

4.1 Background

In Chap. 3, we learned that unconscious information has a strong influence on human's perception. Thus, it seems to have an impact on user experience as well. ISO 9241-210:2010(en) (International Organization for Standardization, 2010) defines *user experience* as:

► *"person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service."*

An experience per se is also something that is mostly unconscious (Hassenzahl, Diefenbach, & Göritz, 2010). However, after perceiving a product, having an experience, which factors determine if we like or dislike a product? Why do people prefer an Apple iPhone over a Fairtrade phone? Both products from two very diverse brands convey different values.

The answer to this question is based on users' individual reflection and probing. Forlizzi and Battarbee (2004) describe this as *"constant stream of 'self-talk'"* (p. 263). We continuously assess if our goals are met by a certain activity. Thus, McCarthy and Wright (2004) postulate that experiences seem to be *"shot through with values, needs, desires and goals"* (p. 85), which is in coherence with theories from psychology (Sheldon, Elliot, Kim, & Kasser, 2001). Thereby, emotions are the core of experiences and both constructs are inseparable. Emotions are responsible for how we interpret and evaluate the outcome of an experience. Hence, a positive or negative feeling in a certain moment affects if we continue with an activity, e.g.,

This chapter was written by Anna-Katharina Frison and Katharina Holl.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_4

using a product or not (Desmet & Hekkert, 2002; Forlizzi & Battarbee, 2004; Kahneman, Diener, & Schwarz, 2003).

Based on this, Hassenzahl et al. (2010) establish need fulfillment as a basis for a positive experience with technology and therewith users' assessment of a product quality. Users want to represent and communicate themselves by selecting a certain brand or product (Hassenzahl, 2005). The values of the user have to be in coherence with the values a brand stands for. Thus, we have to understand what a brand's users' needs and values are in order to be able to fulfill this by representing coherent values in all touchpoints of a product. While one part of users feels represented by a sparkling gold iPhone they can show to their friends, others' needs are fulfilled by a Fairtrade phone without any special UI or industrial design characteristics, which expresses their environmental awareness (Meschtscherjakov, Wilfinger, & Tscheligi, 2014). It would not make sense to put real diamonds on a Fairtrade phone, while it is possible to buy an iPhone in solid gold for 11,000 EUR. This might be an extreme example, however, even in more unobtrusive touchpoints like the animations of a user interface or the behavior and appearance of a service employee, users' needs have to be regarded. Thus, it is not surprising that bank employees are always best dressed to convey competence, thus fulfilling a customer need to feel safe and in good hands.

Especially in the practice of a human-centered design process, *user needs* is an often-used term to regard users' desires to be able to derive requirements for product development. In marketing, *brand values* are used to develop strong brands, which attract the desired target group of customers (De Chernatony, 2010). In the following chapter, we aim to elaborate underlying theories from psychology about what *needs* and *values* really are, and how their fulfillment and coherence impact the quality of an experience. We think an understanding of these psychological basics will help practitioners in design and marketing to develop a unique positive brand experience and user experience.

4.2 From Human Needs to User Needs

Thinking about *user needs* started when product development changed from solely regarding the user interface to further involving the context of use in order to increase acceptance. Thereby, understanding users' needs helps to inform the design process (Kujala, Kauppinen, & Rekola, 2001), and insure a certain level of quality of a product (Bevan, 1999). In the following section, we explain what needs are from a psychological perspective, and why their consideration is essential for designing good products.

4.2.1 Needs, Motivation, and Attitude Definitions

Zentes and Swoboda (2001) define *needs* as a subjective feeling of deficiency and the urge to eliminate this feeling. Ryan and Deci (2001, p. 74) describe it as *"an*

energizing state" that either leads to *"well-being,"* if needs are fulfilled, or *"ill-being"* if not. Thus, when we talk in our daily UX projects about how to fulfill users' needs, our goal is to create well-being by giving the users what they consciously or unconsciously desire (see also Chap. 3). Our goal is to eliminate any negative feelings caused by deficiency while using a product.

Motivation arises when needs have to be satisfied. Looking at the human needs from a business' perspective, needs are defined as the motivators to which extent a consumer is willing to perform a certain behavior (Kroeber-Riel & Weinberg, 1999), for example, consuming a certain product, sharing a post, or tagging their friends to receive rewards in exchange. A motivated behavior can be based on several basic psychological needs, which need to be fulfilled. How much a user is motivated depends on the category of a certain need (Maslow, 1943).

Users' *attitude* (see also Chap. 2), which is closely related to motivation, has to be considered as well. *Attitude* is defined as an evaluation in terms of whether something (objects, humans, situations) is good or bad (Solomon, 2016). The suitability of an object for satisfying a certain motivation will be determined through evaluating its appearance according to its value (Schwartz, 2012). For example, there are differences in how motivated and unmotivated students perceive their teachers, which has an impact on their learning progress (Liu, 2014). This can also be assumed for a consumer's attitude toward using a product of a certain brand. If users feel a need that has to be fulfilled, the suitability of the brand or product for satisfying this need will be evaluated (Kroeber-Riel & Weinberg, 1999). Thus, on the one hand, we need to understand the appearance of the brands we are designing for, but on the other hand we need to understand the nature of the basic needs that lead to motivation and attitude. Further, we need to know how we prioritize users' needs, if more than one need fulfillment is lacking. Need and motivation theory with the goal of deriving a set of universal human needs was a focused topic in the field of psychology during the last century. Knowing about these can already help to gain valuable insights for the design process.

4.2.2 Universal Basic Human Needs

One of the most popular theories is Maslow's hierarchy of needs (Maslow, Frager, Fadiman, McReynolds, & Cox, 1970), introducing universal human needs, where appetence is dependent on prior fulfilled needs. This means, firstly, physiological needs such as sleep, hunger, thirst, and sexuality have to be satisfied, before the needs for safety and security, followed by love and belonging, esteem and self-actualization become relevant. Human values change according to the acquired needs that have to be fulfilled or satisfied. According to Maslow (1943), needs are not per se perceived unconsciously; however, in most cases unconscious needs have a higher impact on human motivation (see also Chap. 3) (Fig. 4.1).

While Maslow's theory is still present and universal needs in content confirmed, the hierarchical contemplation has been replaced by considering the fulfillment of certain needs such as individual prioritization in specific situations (Diefenbach &

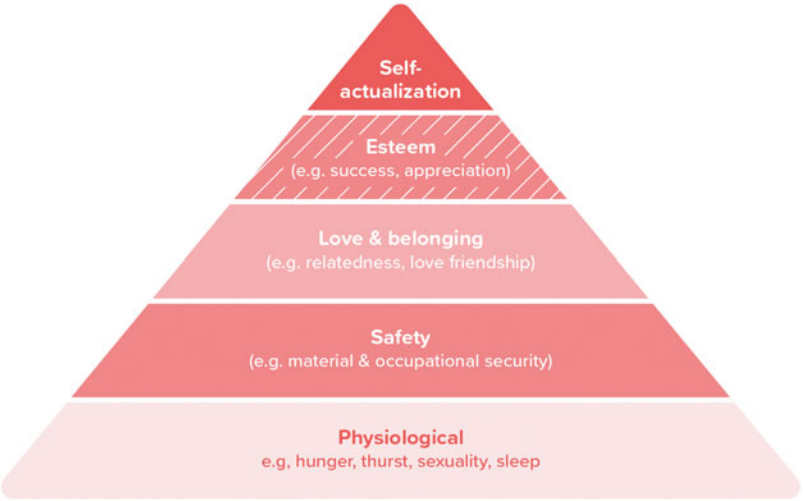


Fig. 4.1 Maslow's need hierarchy (source: Maslow, 1943)

Hassenzahl, 2017). Ryan and Deci (2000) postulate three independent universal basic psychological needs: *competence*, *relatedness*, and *autonomy*. *Competence* describes the experience of mastery and being in control of your actions and outcomes. *Relatedness* is defined as the will to be connected, being appreciated for your work, and given *attention* by others. *Autonomy* implicates the urge to live a self-determined life and to live in harmony with your true self. Humans try to adapt the fulfillment of these needs to their physical and sociocultural environment. Thereby, a motivation for a certain behavior is dependent on the fulfillment of one of these needs.

> While personality traits (Big Five/OCEAN model) are stable individual differences in human thinking, feelings, and behavior (Major et al., 2000), states (affect and emotions) are varying dependent on temporal and situative aspects (e.g., need fulfillment). According to Maslow (1943, 1970), the resulting behavior makes up a personality. According to Ryan and Deci (2000), needs are no personality traits; however, traits are more acted out when they support need fulfillment.

Diefenbach and Hassenzahl (2017) agree with these postulated needs by Ryan and Deci (2000); however, they criticize the selection of three basic needs as too fundamental for covering all possible aspects of an experience. While there are only a few reasons why a product usage is perceived as positive, need fulfillment can be experienced in many different ways. Diefenbach and Hassenzahl (2017) see the diversity of an experience more represented by Sheldon et al. (2001). As many motivation and need theories exist, Sheldon et al. (2001) investigated which

Table 4.1 Universal psychological needs

Need	Description
Autonomy–independence[a]	Feeling like you are the cause of your own actions rather than feeling that external forces or pressures are the cause of your actions.
Competence–effectance[a]	Feeling that you are very capable and effective in your actions rather than feeling incompetent or ineffective.
Relatedness–belongingness[a]	Feeling that you have regular intimate contact with people who care about you rather than feeling lonely and uncared for.
Self-actualization–meaning[a]	Feeling that you are developing your best potentials and making life meaningful rather than feeling stagnant and that life does not have much meaning.
Security–control[a]	Feeling safe and in control of your life rather than feeling uncertain and threatened by your circumstances.
Money–luxury	Feeling that you have plenty of money to buy most of what you want rather than feeling like a poor person who has no nice possessions.
Influence–popularity[a]	Feeling that you are liked, respected, and have influence over others rather than feeling like a person whose advice or opinions nobody is interested in.
Physical thriving–bodily	Feeling that your body is healthy and well-taken care of rather than feeling out of shape or unhealthy.
Self-esteem–self-respect	Feeling that you are a worthy person who is as good as anyone else rather than feeling like a "loser."
Pleasure–stimulation[a]	Feeling that you get plenty of enjoyment and pleasure rather than feeling bored and understimulated by life.

Source: Sheldon et al. (2001)
[a]Selected by Hassenzahl et al. (2010) as relevant for UX

psychological needs are the most fundamental. To derive a set of need candidates, they used Ryan and Deci's (2000) self-determination theory as a foundation, and further drew from Maslow et al.'s (1970) theory of personality. By comparing these two models, which we described before, and adding constructs from other frameworks (e.g., Epstein, 1991), a total of ten psychological needs are presented to summarize the many need theories of the last century: *autonomy, competence, relatedness, physical thriving, security, self-esteem, self-actualization, pleasure-stimulation, money-luxury,* and *popularity-influence* (see also Table 4.1). Several studies showed a correlation between a positive affect and need fulfillment. As a component analysis revealed relative independence between all needs, we can assume that a satisfying event is perceived as positive due to the fulfillments of particular needs. Hence, dependent on an activity, different needs have to be prioritized.

There are different quantitative and qualitative approaches to assess whether and which psychological needs are fulfilled. Sheldon et al. (2001) created a need scale with subscales for each psychological need, utilizing a Likert-Scale.

(continued)

This scale is often used in UX studies (see also Sect. 4.2.3). Further, qualitative in-depth interviews using the laddering technique are another way to reveal not only the *what* but also the *why* behind individual need fulfillment. Gutman (1982) postulates a relationship of consequences of product aspects on personal values and needs. As it is easy for people to evaluate a feeling, but difficult for them to explain it, Reynolds and Gutman (1988) developed the laddering technique, which reveals the underlying psychological need by "*why*" probing (continue to ask "*why*" till the underlying need is revealed). A content analysis, as applied in Frison, Wintersberger, Liu, and Riener (2019), which includes coding participants' statements according to universal psychological needs (Sheldon et al., 2001), can reveal inspiring insights for UX design. Lallemand, Koenig, and Gronier (2014) created a set of UX cards, describing psychological needs with mood images and quotes. This method is also based on Sheldon et al. (2001). These cards can be used, e.g., in focus groups to discuss with participants their need fulfillment (applied in Distler, Lallemand, & Bellet, 2018).

4.2.3 Utilizing Needs for UX Design

This set of ten basic psychological needs were confirmed for UX, and a selection of seven needs were adopted as guidance to create positive experiences (Hassenzahl et al., 2010; see also Chap. 5). Thereby, the term *user needs* is not only a buzzword anymore, it relies on real psychological theories, which can be utilized in a meaningful way in UX design. Hassenzahl, Wiklund-Engblom, Bengs, Hägglund, and Diefenbach (2015) proved that there are activity-based need profiles. During watching TV, for example, people felt most related, while during listening and playing, users felt more stimulated. Partala (2011) investigated need fulfillment in virtual life, as in contrast to real life. The results show that autonomy, physical thriving, and money-luxury were needs that were more fulfilled in virtual life, while in daily life competence, relatedness, security, and popularity played a major role. To create UI concepts for highly automated driving, Frison et al. (2019) investigated which psychological needs have to be fulfilled in different driving scenarios, while driving with a highly automated vehicle. Their findings reveal that users' need for autonomy is least fulfilled in any driving scenario, while the need for safety/security is most fulfilled on a highway, however, with losses in the fulfillments of the need of stimulation. Based on the identified need profiles, the authors suggest intelligent user interface, which supports particular need fulfillment in specific scenarios. Eckoldt, Hassenzahl, Laschke, and Knobel (2013) also utilize this set of psychological needs to explore the design space of a car, showing that almost all of them are apparent in car-related practices. Based on these concepts of fulfilling different needs, e.g., information about points of interest is presented with a pointer, which links these to the passing landscape aims to satisfy users' need for stimulation. Klapperich and Hassenzahl (2016) showed how a redesign of an automated coffee grinder to an

automatic coffee grinder, which still requires a meaningful interaction of a user but increases users' efficiency, can balance the deficiency regarding the needs of autonomy, competence, and meaning. Frison, Wintersberger, Riener, and Schartmüller (2017) confirmed the same effect in the context of highly automated driving. Need profile for the context of the automated vehicle was quite similar to the need profile of the automatic coffee grinder.

Regarding basic human needs to derive *user needs* supports a real human-centered perspective and avoids a feature-driven approach. The psychological needs do not tell us what the solution for the user looks like; however, it tells us what the real problem is that we have to look at. This gives designers the opportunity, in the manner of a double diamond approach, to think broader and beyond existing solutions. While basic human needs already play an important role in the design process (Diefenbach & Hassenzahl, 2017), we think, also brands that want to convey values to reach a certain target group have to consider which psychological needs they want to fulfill in all touchpoints of users' brand experience. By this, reasons for customers' motivation and *attitude* can be revealed and used in a meaningful way to build up, in cooperation with UX designers, strong brands.

4.3 From Values to Brand Values

Brand values and *user needs* have both also become a buzzword in marketing and business strategy departments. Values are a code or standard, which is persistent over time (Kluckhohn, 1962), and humans learn to act in conformity to values of the society they are part of. Hence, *"values are a powerful force influencing the behavior of people"* (De Chernatony, 2010, p. 137), i.e., also consumer behavior (Gutman, 1982). This is the reason why they have become a tool to activate consumer motives.

4.3.1 Value Definition

A number of definitions of the term *value* can be found in the literature (Hildebrandt, 1983). Generally, values can be defined as *"concepts of the desirable"* (Kroeber-Riel & Gröppel-Klein, 2013). An important definition is the one by Kluckhohn (1962); he defines a value as:

► *"a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action."* (p. 395)

Thereby, also values as well as needs and motives can appear consciously and unconsciously. Values combine thereby a cognitive and affective dimension. They are used to evaluate your own behavior as well as evaluating the environment

(Kroeber-Riel & Gröppel-Klein, 2013). Another important definition is by Rokeach (1973), who defines values as:

> *"an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence."* (p. 5)

Values occupy a central position in the personality of a person and in their cognitive system. Rokeach (1973) differentiates between instrumental values, which define values for human behavior (e.g., ambitiousness), and terminal values. These can be categorized into personal values (which is the scale for one's individual design of existence, e.g., deliverance) and social values. They depend on the sociocultural group and imply social expectations and standards, toward society and institutions/organizations/companies (e.g., world peace). Just like needs, there is only a small set, which can be considered universal, while yet taking various forms for each individual.

4.3.2 Universal Human Values

The theory about the conception of values (Schwartz, 2005, 2012; Schwartz & Boehnke, 2004) is inter alia based on established value theory (Kluckhohn, 1962; Rokeach, 1973). Here, six main general features about values are postulated:

1. Values are beliefs linked inextricably to affect.
2. Values refer to desirable goals that motivate action.
3. Values transcend specific actions and situations.
4. Values serve as standards or criteria.
5. Values are ordered by importance relative to one another.
6. The relative importance of multiple values guides action.

Based on this, Schwartz (2005, 2012) has identified a cultural-independent set of ten motivational different types of universal values. Actions based on specific values have consequences, which might be in conflict with other values. This defines the relation between different values: The closer values are represented in the circle of *basic human values* the more similar is the underlying motivation. They differentiate between two dimensions, in which *openness to change* stands opposite to *conservation* and *self-enhancement* to *self-transcendence* (see also Fig. 4.2). For example, parents and children show a high conformity regarding traditional values (relatedness and acceptance of customs), however, not for conformity (restricting actions and impulses to social expectations and norms). Hedonism (pleasure and sensual reward for yourself) correlates to both dimensions while being closer to openness than to self-enhancement. The Schwartz value scale (Schwartz, 1994) is a way to qualitatively measure values in the form of a questionnaire, which represents in its items the ten types of values.

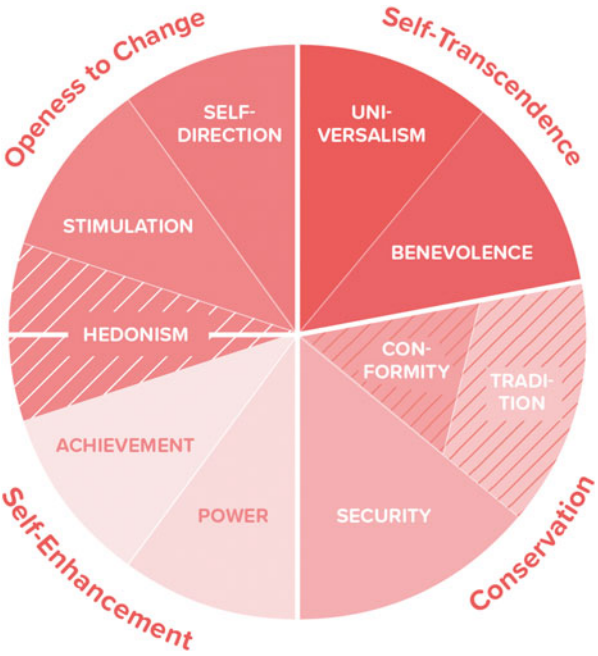


Fig. 4.2 Theoretical model of relations among ten motivational types of values (source: Schwartz, 2012)

4.3.3 Connection Between Needs and Values

While in the traditional need theory, e.g., Maslow et al. (1970), needs and values are regarded as the same, Rokeach (1973) differentiates by arguing that values are something that is human-specific, while needs are not. He describes values as a cognitive representation of human psychological needs, biologically derived, which are formed by the environment and social norms concerning the possibility to fulfill those, e.g., the values of love or of intimacy are based on the original physiological need of sexuality. Values per se are developed by interactions with the environment (Rounds & Armstrong, 2005). Johnston (1995) confirms the assumption that the individual's development within the hierarchy of psychological needs influences the perception of different values. Schwartz (2012) builds on this and sees thereby universality of his set of ten basic value types confirmed as all values *"are grounded in one or more of three universal requirements of human existence"* (p. 4): (1) needs of a human as biological organism, (2) precondition of coordinated social interaction, and (3) survival and welfare needs of groups. Thereby, *"values are the desirable concepts used to present these goals mentally and the vocabulary used to express them in social interaction"* (p. 4).

In the point of defining the goals and explaining the derivation from human needs, we see overlaps in Schwartz' (2012) description of his value set (see also Table 4.2) with previously discussed need theories from Maslow et al. (1970), Ryan and Deci (2000), and Sheldon et al. (2001). Why people behave in a certain way, e.g., buying a product from a particular brand, is dependent on their attitude.

Table 4.2 Human basic values

Value type	Defining goal	Derivation from human needs
Self-direction	Independent thought and action-choosing, creating, exploring	Derives from organismic needs for control and mastery, and interactional requirements of autonomy and independence
Stimulation	Excitement, novelty, and challenge in life	Derives from the organismic need for variety and stimulation in order to maintain an optimal, positive, rather than threatening, level of activation.
Hedonism	Pleasure or sensuous gratification for oneself	Derives from organismic needs and the pleasure associated with satisfying them.
Achievement	Personal success by demonstrating competence according to social standards	Competent performance that generates resources is necessary for individuals to survive and for groups and institutions to reach their objectives. As defined here, achievement values emphasize demonstrating competence in terms of prevailing cultural standards, thereby obtaining social approval.
Power	Social status and prestige, control or dominance over people and resources	To justify this fact of social life and to motivate group members to accept it, groups must treat power as a value. Power values may also be transformations of individual needs for dominance and control.
Security	Safety, harmony, and stability of society, of relationships, and of self	Derives from basic individual and group requirements. Some security values serve primarily individual interests (e.g., clean), others wider group interests (e.g., national security).
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms	Derives from the requirement that individuals inhibit inclinations that might disrupt and undermine smooth interaction and group functioning.
Tradition	Respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides	Symbolizes the group's solidarity, expresses its unique worth, and contributes to its survival.
Benevolence	Preserving and enhancing the welfare of those with whom one is in frequent personal contact (the "in-group")	Derives from the basic requirement for smooth group functioning and from the organismic need for affiliation.
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature	Derives from the survival needs of individuals and groups. But people do not recognize these needs until they encounter others beyond the extended primary group and until they become aware of the scarcity of natural resources.

Source: Adapted from Schwartz (2012)

However, an attitude is only an evaluation about whether or not a product or brand is good. The reason why they rate it good or bad is dependent on their underlying values, which are the representation of their needs. If a product promotes the attainment of a goal customers value, they will evaluate it as positive and be more willing to use it. For example, the iPhone user might have a better attitude toward Apple as toward Fairtrade products. The reason might be that they value power and achievement more than universalism, while for the Fairtrade phone user, it might be the other way around.

4.3.4 Utilizing Values for Branding and UX Design

As values are the reasons for customers' attitude toward a product or entire brand, which is based on *human basic needs*, it becomes obvious why values are described as a powerful force in influencing customer behavior (Gutman, 1982).

Attributes of a brand have an impact if a customer's *attitude* toward a certain product of a brand is positive or negative. This is based on the means-end chain model, already postulated in the beginning of the 1980s (Gutman, 1982; see also Fig. 4.3). Hence, strong brands aim to understand the values of their desired target group and define coherent brand values to create a brand personality. For a holistic brand personality, brand values need to be conveyed in all possible touchpoints between customers and a brand. This includes the products of a brand and their attributes, but also advertisement and customer service. The friendliness of customer support on the telephone has a similar impact as the visual and interaction design of a product. All touchpoints need to convey the defined brand values: Only by doing this, they are in coherence with customers' values. This emphasizes the importance of a harmonized brand experience and user experience design (see also Chap. 7).

While buying a certain smartphone is a long-term decision and dependent on general values, buying e.g., beer from a certain brand can be situation-dependent. The attributes of a beer (e.g., strong vs. light) and its consequence are considered. Being out with friends, the value of stimulation and hedonism might be valued higher; being out with the boss, the value of conformity will be valued higher and the customer will select the brand with the light beer (De Chernatony, 2010). Choosing a cluster of brand values (see also Sect. 7.2 for semantic map), based on an understanding of customers' values in certain situations, and designing based on them creates the personality of a brand, which helps to differentiate from other competitors.

Besides marketing, the discipline of design also utilizes human values as a source of inspiration. Thereby, it is important to differentiate between *value-sensitive design* and *value-centered design*. Friedman et al. (Friedman, Kahn, Borning, & Huldtgren, 2013; Friedman & Kahn Jr, 2007) established the term *value-sensitive design* and defines the term in a broader way, focusing on human well-being, dignity, justice, welfare, and human rights. This approach has its roots in moral and ethical considerations. Contrarily, Cockton (2004) speaks about value-centered design and later (Cockton, 2006) about worth-centered design. He regards values as a

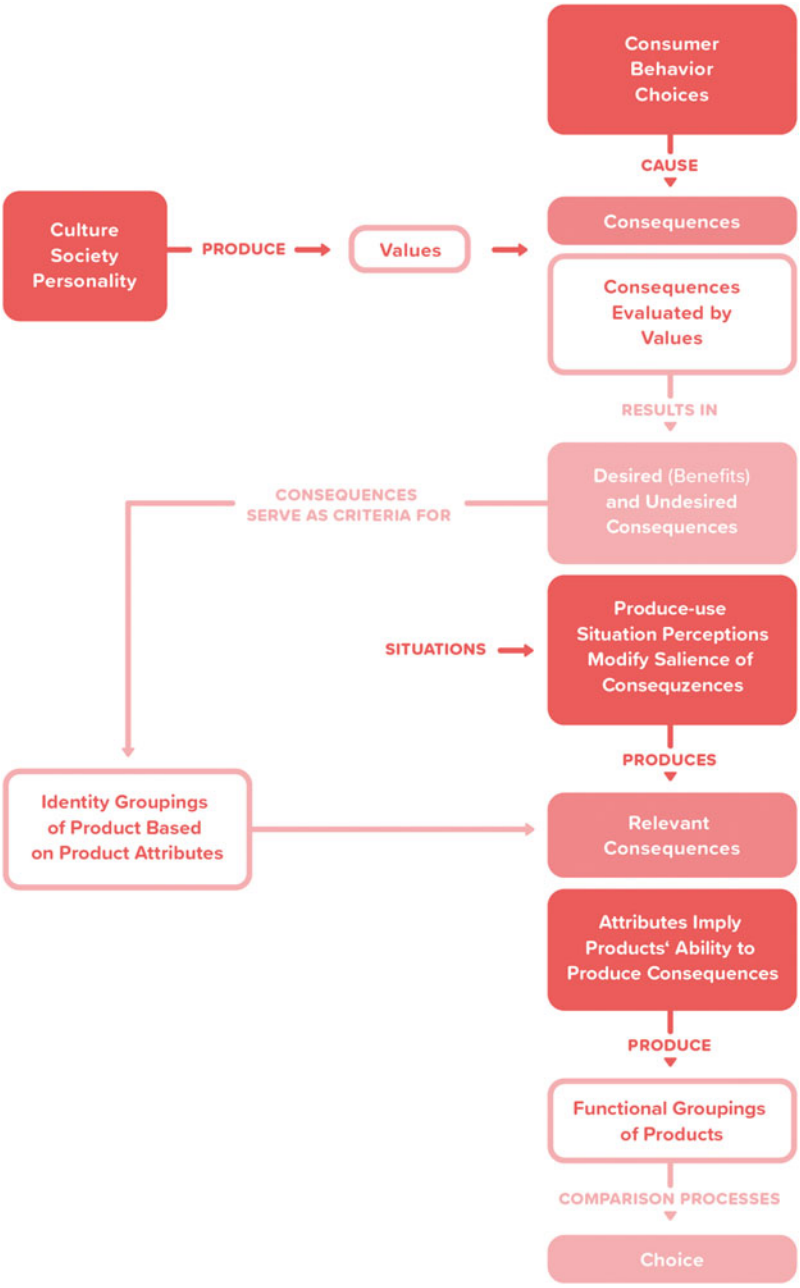


Fig. 4.3 Conceptual model for means-end chain (source: Gutman, 1982)

"unifying concept for design" (p. 165) and a human motivator. This operationalization provides common ground for all stakeholders (users as well as project sponsors). But consequently, methods and techniques are needed. His framework shows how values can help to identify product opportunities and how to install and operate them. This concept is closely related to the concept of creating a brand personality based on brand values. A value-centered approach helps to define attributes of a product for a positive user experience as a design is based on users' values.

Combining both worlds, UX design and branding, helps to create a harmonized brand and user experience. On the one hand, this supports creating strong brands, while on the other hand it helps to design desirable products with which users can identify themselves.

Conclusion

Experiences are per se subjective, dynamic, and context-dependent (Law, Roto, Hassenzahl, Vermeeren, & Kort, 2009), and sometimes they are unconscious. However, there are reasons why we like or dislike something, having a good or a bad experience. Humans consciously or unconsciously (see Chap. 3) evaluate whether a product is in coherence with their personal values in order to satisfy their basic needs. Thus, it seems to be an obvious requisite to firstly understand the needs of the target group, before being able to design something for them in a meaningful way. For branding, marketers need to conduct proper market research to create a brand personality that appeals to the customer. For UX design, UX researchers need to conduct comprehensive user research in order to understand user needs to be able to derive requirements for design and development. However, as a brand personality is experienced in all attributes of a product, all departments of a company, i.e., marketing, support, development, and design, need to work closely together. Only by doing so, users will have a positive user, brand, and customer experience. In the following chapter, we will have a closer look at these concepts to show similarities and differences and elaborate which aspects practitioners have to consider concretely in their daily work.

Although there is a clear benefit of utilizing needs and values for UX design and branding, we want to emphasize the responsibility of designers and marketers to use their knowledge carefully by considering ethical aspects. Experts should be aware of the power of manipulating customers and users. While the presented approach is value-centered, an additional value-sensitive mindset in departments, companies, and agencies is necessary to be a good role model in fostering the universal value of universalism (see Table 4.2).

References

Bevan, N. (1999). Quality in use: Meeting user needs for quality. *Journal of Systems and Software, 49*(1), 89–96.

Cockton, G. (2004). Value-centered HCI. In *Proceedings of the third Nordic conference on human-computer interaction* (pp. 149–160). ACM.

Cockton, G. (2006). Designing worth is worth designing. In *Proceedings of the 4th Nordic conference on human-computer interaction: Changing Roles* (pp. 165–174). ACM.

De Chernatony, L. (2010). *Creating powerful brands*. London: Routledge.

Desmet, P. M., & Hekkert, P. (2002). The basis of product emotions. In W. Green & P. Jordan (Eds.), *Pleasure with products, beyond usability* (pp. 60–68). London: Taylor & Francis.

Diefenbach, S., & Hassenzahl, M. (2017). *Psychologie in der nutzerzentrierten Produktgestaltung: Mensch-Technik-Interaktion-Erlebnis*. Berlin: Springer.

Distler, V., Lallemand, C., & Bellet, T. (2018). Acceptability and acceptance of autonomous mobility on demand: The impact of an immersive experience. In *Proceedings of the 2018 CHI conference on human factors in computing systems* (p. 612). ACM.

Eckoldt, K., Hassenzahl, M., Laschke, M., & Knobel, M. (2013). Alternatives: Exploring the car's design space from an experience-oriented perspective. In *Proceedings of the 6th international conference on designing pleasurable products and interfaces* (pp. 156–164). ACM.

Epstein, S. (1991). Cognitive-experiential self-theory: An integrative theory of personality. In R. C. Curtis (Ed.), *The relational self: Theoretical convergences in psychoanalysis and social psychology* (pp. 111–137). New York, NY: The Guilford Press.

Forlizzi, J., & Battarbee, K. (2004). Understanding experience in interactive systems. In *Proceedings of the 2004 conference on designing interactive systems processes, practices, methods, and techniques – DIS'04* (p. 261). Cambridge, MA: ACM Press. https://doi.org/10.1145/1013115.1013152.

Friedman, B., Kahn, P. H., Borning, A., & Huldtgren, A. (2013). Value sensitive design and information systems. In N. Doorn, D. Schuurbiers, I. van de Poel, & M. E. Gorman (Eds.), *Early engagement and new technologies: Opening up the laboratory* (pp. 55–95). Dordrecht: Springer.

Friedman, B., & Kahn, P. H., Jr. (2007). Human values, ethics, and design. In *The human-computer interaction handbook* (pp. 1223–1248). CRC.

Frison, A.-K., Wintersberger, P., Liu, T., & Riener, A. (2019). Why do you like to drive automated? In *Proceedings of the 24th international conference on intelligent user interfaces – IUI'19* (Vol. Part F1476, pp. 528–537). New York: ACM Press.

Frison, A.-K., Wintersberger, P., Riener, A., & Schartmüller, C. (2017). Driving hotzenplotz: A hybrid interface for vehicle control aiming to maximize pleasure in highway driving. In *AutomotiveUI' 17 Adjunct, September 24–27, 2017* (p. 6). Germany: Oldenburg.

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *The Journal of Marketing, 46*(2), 60–72.

Hassenzahl, M., Diefenbach, S., & Göritz, A. (2010). Needs, affect, and interactive products–facets of user experience. *Interacting with Computers, 22*(5), 353–362.

Hassenzahl, M., Wiklund-Engblom, A., Bengs, A., Hägglund, S., & Diefenbach, S. (2015). Experience-oriented and product-oriented evaluation: Psychological need fulfillment, positive affect, and product perception. *International Journal of Human-Computer Interaction, 31*(8), 530–544.

Hassenzahl, M. (2005). The thing and I: Understanding the relationship between user and product. In M. A. Blythe, K. Overbeeke, A. F. Monk, & P. C. Wright (Eds.), *Funology: From usability to enjoyment* (pp. 31–42). Dordrecht: Springer Netherlands.

Hildebrandt, L. (1983). *Konfirmatorische analysen von modellen des Konsumentenverhaltens*. Berlin: Duncker & Humblot.

International Organization for Standardization. (2010). *Ergonomics of human-system interaction - Part 210: Human-centred design for interactive systems* (Standard). Geneva.

Johnston, C. S. (1995). The Rokeach value survey: Underlying structure and multidimensional scaling. *The Journal of Psychology, 129*(5), 583–597.

Kahneman, D., Diener, E., & Schwarz, N. (2003). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation.

Klapperich, H., & Hassenzahl, M. (2016). Hotzenplotz: Reconciling automation with experience. In *Proceedings of the 9th Nordic conference on human-computer interaction* (p. 39). ACM.

Kluckhohn, C. (1962). Values and value orientation in the theory of action. In T. Parsons & E. Shills (Eds.), *Toward a general theory of action* (pp. 391–436). Cambridge: Harvard University Press.

Kroeber-Riel, W., & Gröppel-Klein, A. (2013). *Konsumentenverhalten* (10th ed.). München: Verlag Franz Vahlen.

Kroeber-Riel, W., & Weinberg, P. (1999). *Konsumentenverhalten* (7nd ed.). München: Verlag Franz Vahlen.

Kujala, S., Kauppinen, M., & Rekola, S. (2001). Bridging the gap between user needs and user requirements. In *Advances in human-computer interaction I (Proceedings of the Panhellenic Conference with International Participation in Human-Computer Interaction PC-HCI 2001)* (pp. 45–50). Typorama Publications.

Lallemand, C., Koenig, V., & Gronier, G. (2014). How relevant is an expert evaluation of user experience based on a psychological needs-driven approach? In *Proceedings of the 8th Nordic conference on human-computer interaction: Fun, fast, foundational* (pp. 11–20). ACM.

Law, E. L.-C., Roto, V., Hassenzahl, M., Vermeeren, A.P., & Kort, J. (2009). Understanding, scoping and defining user experience: a survey approach. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 719–728). ACM.

Liu, Y. (2014). Motivation and attitude: Two important non-intelligence factors to arouse students' potentialities in learning English. *Creative Education, 05*(14), 1249–1253. https://doi.org/10.4236/ce.2014.514140.

Major, B., Cozzarelli, C., Horowitz, M. J., Colyer, P. J., Fuchs, L. S., Shapiro, E. S., et al. (2000). *Encyclopedia of psychology: 8 volume set*. Oxford: Oxford University Press.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370.

Maslow, A. H., Frager, R., Fadiman, J., McReynolds, C., & Cox, R. (1970). *Motivation and personality* (Vol. 2). New York: Harper & Row.

McCarthy, J., & Wright, P. (2004). Technology as experience. *Interactions, 11*(5), 42. https://doi.org/10.1145/1015530.1015549.

Meschtscherjakov, A., Wilfinger, D., & Tscheligi, M. (2014). Mobile attachment causes and consequences for emotional bonding with mobile phones. In *Proceedings of the 32nd annual ACM conference on human factors in computing systems* (pp. 2317–2326). ACM.

Partala, T. (2011). Psychological needs and virtual worlds: Case second life. *International Journal of Human-Computer Studies, 69*(12), 787–800.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11–31.

Rokeach, M. (1973). *The nature of human values*. New York, NY: Free Press.

Rounds, J. B., & Armstrong, P. I. (2005). Assessment of needs and values. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 305–329). Hoboken, NJ: Wiley.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*(1), 141–166.

Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues, 50*(4), 19–45.

Schwartz, S. H. (2005). Robustness and fruitfulness of a theory of universals in individual values. In A. Tamayo & J. Porto (Eds.), *Valores e Trabalho* (pp. 56–85). Brasilia: Editora Universidade de Brasilia.

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture, 2*(1), 11.

Schwartz, S. H., & Boehnke, K. (2004). Evaluating the structure of human values with confirmatory factor analysis. *Journal of Research in Personality, 38*(3), 230–255. https://doi.org/10.1016/S0092-6566(03)00069-2.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 80*(2), 325.

Solomon, M. R. (2016). *Konsumentenverhalten* (11th ed.). Hallbergmoos: Pearson.

Zentes, J., & Swoboda, B. (2001). *Grundbegriffe des marketing: marktorientiertes globales management-wissen* (5th ed.). Stuttgart: Schäffer-Poeschel Verlag.

5 The Intersection of User Experience (UX), Customer Experience (CX), and Brand Experience (BX)

5.1 The Challenge of Creating Positive Experiences

To be able to create strong brands and a positive user experience, marketers and UX designers have to understand users' needs and values (see also Chap. 4). The challenge now is about how these needs and values can be transferred into a positive experience. Which aspects do we have to regard as practitioners? What is thereby the difference between *user experience* (UX), *customer experience* (CX), and *brand experience* (BX)?

To answer these questions, we need to elaborate on what user experience means and how it can be defined and evaluated. In the daily work of design, marketing teams, and CEOs, UX is a regularly mentioned term, often used as synonym for something "cool," "special" or "visually appealing," or "usability" and "user-centered design" (Hassenzahl, 2008). While UX has become a buzzword, multiple initiatives, having their scientific background in HCI (Hassenzahl, 2008; McCarthy & Wright, 2004; Norman, 2004), have tried to establish a unique understanding as it has always been discussed as hard to gain agreement on the scope and nature of UX (Law, Roto, Hassenzahl, Vermeeren, & Kort, 2009; Pettersson, Lachner, Frison, Riener, & Butz, 2018). In the following section, established approaches will be discussed in the framework of the ISO Norm (International Organization for Standardization, 2010), trying to clarify uncertainties.

This chapter was written by Anna-Katharina Frison and Pamela Zotz.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_5

5.2 UX Definitions and Theories

The most popular definition is provided by the International Organization for Standardization (2010). Experts from both industry and academia still agree on it, even though it is continuously criticized for not being detailed enough and for lacking depth in explanation (Law et al., 2009; Mirnig, Meschtscherjakov, Wurhofer, Meneweger, & Tscheligi, 2015). However, till now, it still seems to be the lowest common denomination, with room for interpretation. Although we have already mentioned this important definition before (see also Chap. 4), we will have a more detailed look at it and try to explain its components:

User Experience:

► *Person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service.*

Note 1 to entry: User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviors, and accomplishments that occur before, during, and after use.

Note 2 to entry: User experience is a consequence of brand image, presentation, functionality, system performance, interactive behavior and assistive capabilities of the interactive system, the user's internal and physical state resulting from prior experiences, attitudes, skills and personality, and the context of use.

Note 3 to entry: Usability, when interpreted from the perspective of the users' personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be used to assess aspects of user experience.

5.2.1 UX Is Subjective and Dynamic

ISO Norm 9241–210:2010(en) defines *user experience* as:

► *"person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service."*

UX is per se subjective. It is not only restricted to products but also to whole systems and services with everything that belongs to the user journey creating a user experience, before actually using a product or system. Expectations, e.g., built by the opinion about a certain brand, influence how users perceive a product, system, or service. This is in coherence with the sense-making process described by Wright, McCarthy, and Meekison (2003): They describe user experience as something constructed which changes over time and is affected by users' anticipation. Karapanos (2013) emphasizes the importance of regarding the temporality of UX, and here, especially the anticipation of how an experience impacts users' expectations. Thereby, we experience and judge a product many times in a single

unit, speaking of micro-temporality. Here, our experience changes over time from orientation to incorporation or identification.

5.2.2 UX Means Emotion

Moreover, according to ISO Norm 9241–210:2010(en):

► *"Note 1 to entry: User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use."*

Hence, a product can not only be regarded in an isolated way; users do not have experiences only in the moment of using it. The service around a product and the whole system of a product impacts users' perception as well. Again, the temporality of an experience is emphasized. Thereby users' emotions are mentioned first of all in the list. This emphasizes the importance of emotions as component of an experience, as emphasized by Mahlke and Thüring (2007). Also Hassenzahl (2008) defined *"UX as a momentary, primarily evaluative feeling (good-bad) while interacting with a product or service"* (p. 2). Desmet and Hekkert's (2007) model of product emotion describes users' concern of using a product and the product itself leads to an appraisal, which results in particular emotions. Further, Desmet (2012) has identified 25 emotions that can be experienced in human–product interactions. Norman (2004) defines different levels of processing: the visceral (initial impact, e.g., appearance), the behavioral (total experience using a product), and the reflective level (thoughts afterward about how it made a person feel). All these steps lead to positive or negative affect. The UX framework by Kort, Vermeeren, and Fokker (2007) utilizes the sense-making process of McCarthy and Wright et al. (2003) and describes a user experience as something constructed that changes over time (anticipation, connecting, interpreting, reflecting, appropriating, recounting, cf. Karapanos, 2013). During the sense-making process, particular aspects of design elements like meaning, functionality, and aesthetics of a product are perceived, processed, and reflected and trigger emotions.

5.2.3 UX Is the Consequence of Tangible and Intangible Aspects

The ISO Norm 9241–210:2010(en) further writes:

► *"Note 2 to entry: User experience is a consequence of brand image, presentation, functionality, system performance, interactive behaviour and assistive capabilities of the interactive system, the user's internal and physical state resulting from prior experiences, attitudes, skills and personality, and the context of use."*

Several intangible and tangible aspects of a product affecting UX are listed in ISO definition. Intangible aspects relate to the user's diversity and their environment. Karapanos, Wensveen, Friederichs, and Martens (2008) relate the phenomena, why one user likes something and the other does not, to the difference between perceived diversity, which is based on forming an assessment of the quality of product features, and the evaluative diversity, which is based on the quality of perception. As users disagree on the importance of a certain quality, which is dependent on users' individual needs and values (see also Chap. 4), the product itself (Jordan & Persson, 2007), the context (Hassenzahl, 2008), and temporality (Karapanos, 2013), their overall assessment might differ. Hence, UX designers have no influence on these intangible aspects which affect a user experience; however, understanding these helps to better tangible aspects of design.

As tangible we define aspects on which UX designer can actually have an impact, like presentation (e.g., visual appeal), functionality, system performance, interactive behavior (e.g., reliability and usability of a product), and assistive capabilities of the interactive system. Hassenzahl (2005, 2008) developed the concept of pragmatic (do-goals) and hedonic quality (be-goals). *Pragmatic qualities* (see also Sect. 6.1.2, concept of fluency) of a product are mainly related to the usability of a product defined in DIN EN ISO 9241-11 (International Organization for Standardization, 1998):

► *"[The] extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use."*

While practitioners from academia and industry still discuss whether UX and usability are the same, different constructs, or whether usability is a part of user experience (e.g., UPA vs. UXPA as a name for the professional association), the ISO Norm 9241–210:2010(en) provides a clear mandate:

► *"Note 3 to entry: Usability, when interpreted from the perspective of the users' personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be used to assess aspects of user experience."*

By means of the hedonic qualities of a product, the users and their needs are the foundation of a product interaction. This quality characteristic is divided into the quality of stimulation (HQS) and identification (HQI). On the one hand, humans want to develop themselves and extend their knowledge and capabilities (HQS), e.g., an innovative new product can achieve a higher hedonic quality of stimulation. On the other hand, it is also important for humans that other humans perceive them as a person in the way they see themselves (HQI). A product of a certain brand with a design that represents brand values with which users identify themselves and feel properly represented can achieve a higher hedonic quality of identification. Also, brand image is mentioned in the ISO norm. Users' general attitude toward a brand,

based on an existing brand image, which has already been developed by marketing material, recommendations by friends, public discussions on media, has effects on later experiences. Thereby, we see again a clear connection to the temporality of an experience and the impact of users' anticipation and expectations (Karapanos, 2013).

All these hedonic aspects are related to the users themselves and their needs. So, according to Hassenzahl (2008):

▶ *"A good UX is the consequence of fulfilling the human needs for autonomy, competency, stimulation (self-oriented), relatedness, and popularity (others-oriented) through interacting with the product or service (*i.e.*, hedonic quality* [be-goals]*)."*

However, both concepts are interconnected, as the *"pragmatic quality* [do-goals] *facilitates the potential fulfillment of be-goals."* Several studies (Hassenzahl, Wiklund-Engblom, Bengs, Hägglund, & Diefenbach, 2015; Tuch & Hornbæk, 2015; Tuch, Trusell, & Hornbæk, 2013) confirm a direct correlation to the fulfillment of psychological needs (see also Chap. 4), positive affect as indicator for a positive experience, and the interplay between the hedonic and pragmatic quality. Hence, the overall perceived attractiveness of a product, which is an indicator of the overall quality of an experience, is dependent on both dimensions, the level of pragmatic and hedonic quality.

5.2.4 Designers' Goals but Users' Perceptions

Hence, for a positive user experience, it is designers' goal that the intended product character creates appeal, pleasure, and satisfaction. From a user perspective, qualities are perceived, evaluated, and experienced in the particular context of usage, which ideally leads to appeal, pleasure, and satisfaction (see also Fig. 5.1). However, this can be only achieved by a certain level of pragmatic and hedonic qualities. Content and functionality of a product need to be reasonable and useful. Interactions need to be easy to understand and smooth. Presentation has to be appealing, pleasurable, and in coherence with the brand personality. This raises the question: Which aspects are more important to consider?

Based on Maslow's (1943) need hierarchy (see also Chap. 4), Jordan (2002) was inspired to postulate a hierarchy of consumer needs that need to be satisfied. He positions the usefulness of a product on the very base, followed by usability and pleasure. Thereby, no pleasurable product is imaginable that is neither useful nor usable. Diefenbach and Hassenzahl (2017) question Jordan's hierarchy. They argue that, of course, a minimal level of usable functionality is necessary. However, for a pleasurable experience, users also forgive problems, e.g., a playful animation which needs more time than a pure transition to the next screen. The importance of different qualities of a product is dependent more on contextual factors (Hassenzahl, 2006). Nevertheless, Tuch and Hornbæk (2015) were able to show that the pragmatic quality of a product is a *hygiene factor* for user experience. This means, it is a

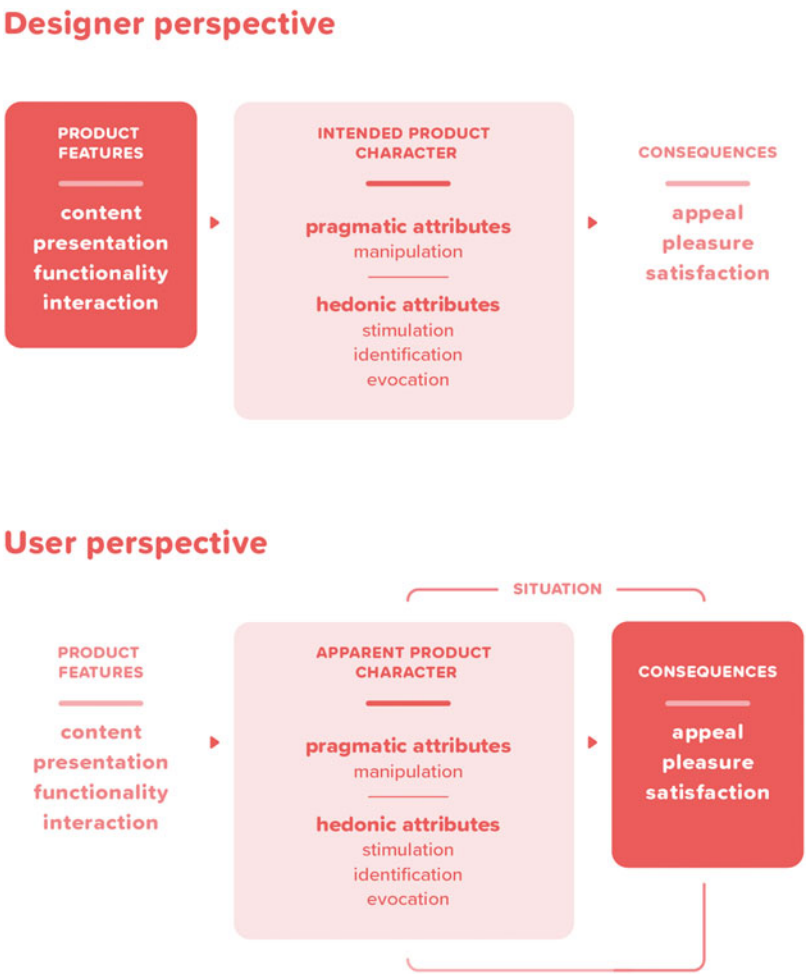


Fig. 5.1 Model of user experience from designer and user perspective (source: Hassenzahl, 2005)

prerequisite only recognized by users when it is lacking. However, in contrast to hedonic quality, a pragmatic quality alone is not able to lead to positive emotions.

All definitions, theories, and approaches differ slightly, but also complement each other. The ISO standard (International Organization for Standardization, 2010) tries to combine different holistic and reductive approaches. Nevertheless, although this standard exists, researchers and practitioners are still discussing the definition and application of the concept of UX (Mirnig et al., 2015; Pettersson et al., 2018).

UX evaluation is a focused topic in HCI research and many evaluation methods have been developed over the years, e.g., UX curve (Kujala, Roto, Väänänen-Vainio-Mattila, Karapanos, & Sinnelä, 2011), AttrakDiff (Hassenzahl, Burmester, & Koller, 2003), or the UEQ (Laugwitz, Held, & Schrepp, 2008). However, there is still a debate about which method to use in which case, and it seems *"naive and simplistic to assume that a fuzzy concept such as experience can be readily reduced and measured"* (Pettersson et al., 2018, p. 461). Although there is a bench of methods out there,[1] specifically developed to measure and study UX-related constructs, Pettersson et al. (2018) revealed that most researchers use traditional methods like self-developed questionnaires and interviews in their UX studies. Thereby, many UX studies that are reported in academic papers regard UX as a general construct and do not differentiate between measuring users' emotions, need fulfillment, and product quality assessment. Further, the topic is mostly regarded with focus on the pragmatic quality and pure usability issues of products. As UX is a multidimensional construct (see above), there is no all-in-one method. Only by sophisticated triangulation approaches, mixing quantitative (e.g., questionnaires, activity logging, psychophysiological measures) and qualitative methods (e.g., interviews, observations, probes) can unfold the different levels of an experience and reveal inspiring insights for product design and development.

5.3 Are Customer and Brand Experience a Part of UX?

Besides UX, there further exist the terms *customer experience* (CX) and *brand experience* (BX), all of them focusing on *customers'* experience in the context of product system usage or service usage. Since even the ISO standard (International Organization for Standardization, 2010; see above) mentions brand image as an impact factor for UX, the question raises if UX, CX, and BX are potentially the same.

5.3.1 Customer Experience (CX)

The concept of customer experience was introduced by Pine and Gilmore (1998) as a strategy to bind loyal customers. It can be defined by Klaus and Maklan (2013) as:

► *"The customer's cognitive and affective assessment of all direct and indirect encounters with the firm relating to their purchasing behavior"* (p. 227).

[1] https://www.allaboutux.org/

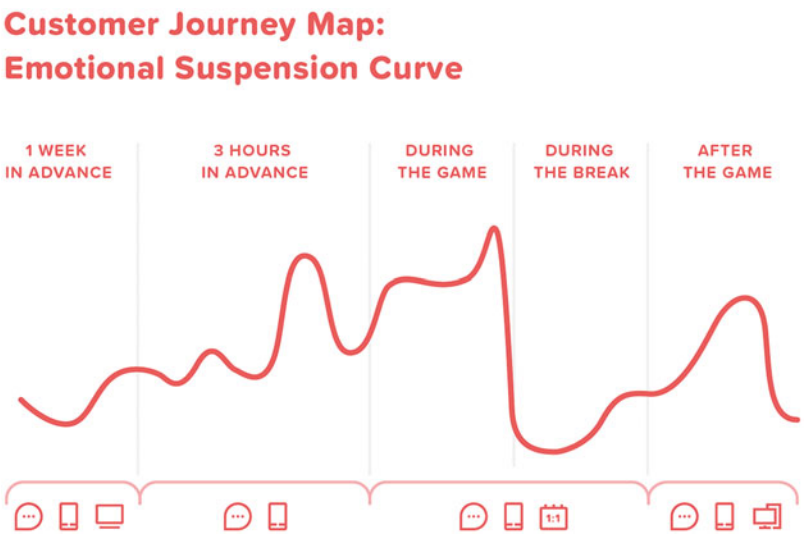


Fig. 5.2 Customer journey map: an example of a football game (source: Authors' illustration)

We perceive a brand not as several single strategies and products; we experience a brand, mostly unconsciously (see also Chap. 3), as something holistic. Thereby, a positive customer experience leads to a positive overall impression of a company, increases customer loyalty, and is therewith an important factor for a company's success. Nevertheless, whether or not our overall impression is positive is dependent on whether our needs and values (see also Chap. 4) are satisfied during single experiences at all different touchpoints (Van de Sand, 2017). The process of a customer during all touchpoints is called *customer journey*. For example, the customer journey of a bank customer involves among others the online banking website and app, the ATM, the service personnel at the counter, as well as the promotion material. An active design and development of positive experiences at all these touchpoints of a customer journey is the task of Customer Experience Management. Thereby, the overall goal is to achieve a holistic positive experience by an intensive emotional attachment between provider, product, and customer.

An important tool to identify users' customer experience is customer journey map, which is a visualization of all touchpoints a user can potentially experience with a company, based on empirical data from focus groups, expert and customer interviews, observations, and, e.g., Google Analytics data. The customer journey map helps to analyze users' needs within the overall structure of an organization and aims to derive recommendations (Aaker, Stahl, & Stöckle, 2015; Bruhn & Hadwich, 2012; Steiner, Kindsmüller, & Thomaschewski, 2017). Figure 5.2 illustrates this for the example of a customer journey during a football game by showing the emotional suspension curve of game visitors before, during, and after the match. In addition, the figure shows the digital touchpoints being used at different points of time.

While user experience design is based on a user-centered design approach, customer experience management is related to customer-oriented company processes (Robier, 2015). A harmonious and coherent experience at all touchpoints between a customer and a company can only be achieved by an interdisciplinary collaboration of the departments responsible for branding, advertising, service design, sales, and product development (Lachner, Naegelein, Kowalski, Spann, & Butz, 2016). Thus, this also includes user experience design in all relevant touchpoints for a positive perception resulting from the use or/and the anticipated use of all involved products, systems, and services.

5.3.2 Brand Experience (BX)

The term *brand experience* defines all touchpoints between a customer and a brand or touchpoints that have a great impact on the brand. In contrast to customer experience, the focus here lies on the brand itself and not on the company.

Brakus, Schmitt, and Zarantonello (2009) conceptualize brand experience as:

> *"subjective, internal consumer responses (sensations, feelings, and cognitions) and behavioral responses evoked by brand-related stimuli that are part of a brand's design and identity, packaging, communications, and environments"* (p. 53).

Brand stimuli (e.g., colors, shapes, typefaces, designs, slogans, mascots, and brand characters) evoke sensory, affective, intellectual, behavioral, and social experiences. For example, a brand color (e.g., a clean visual design of a mobile banking app) can evoke sensory and emotional but also intellectual experiences (Brakus et al., 2009). Customers feel safe and intelligent through means of the design if the brand they chose seems trustworthy. Each brand stimuli or touchpoint tells a story (see also Chaps. 1 and 7), and hence, it is important that all touchpoints tell the same story to create a unique brand identity and image (Van de Sand, 2017). Just like customer experience, a brand experience impacts customer satisfaction and loyalty.

Individual brand experiences vary in their strength and intensity, in their valence, which means that some experiences can be better than others. They also vary in their type of occurrence: While some occur spontaneously without any reflection, others are long lasting. A brand experience is in contrast to a brand attitude not evaluative, which means that it is not only about whether someone likes or dislikes a brand. Brand experience is more about customers' brand-related feelings, which may lead to an overall judgment. Further, a brand experience occurs not based on needs and values that motivate customers to engage with a brand. It can occur at any direct or indirect interaction with a brand, even when customers are not interested in a brand. However, brand attachment can develop over time by brand experiences (Brakus et al., 2009).

Hence, all experiences users have with a brand should be consistent (Roto, Lu, Nieminen, & Tutal, 2015). In practice, it is often challenging, as different departments of a company are responsible for design-related tasks with sometimes different brand designs (Esch, 2014). In a usual product development process, UX

researchers and psychologists identify users' needs and values to derive requirements, while designers and engineers design and develop features and design characteristics. Marketing and branding departments define advertisements. Ideally, these departments work not separately but interlinked (Lachner et al., 2016).

Especially Apple is a positive example for having a harmonious brand and user experience, and shows how strong both concepts are connected (Meschtscherjakov, Wilfinger, & Tscheligi, 2014).

5.3.3 The Brand Construct in UX

The importance of the brand construct for users' experiences was already mentioned by Jordan (2002), who emphasized the need for a consistent approach of design and brand image in order to build customer loyalty. He refers to Dieter Rams' minimalist design and its influence on the brand Braun. Further, he describes the usage of colors as a means of establishing brand identity. Hence, the formal property of the color red at Ferrari becomes part of the experimental property and thereby of the value *"high-performance."* Thus, socio- (*"enjoyment derived from the company of others"*) and ideo-pleasure dimensions (*"pleasures derived from 'theoretical' entities such as books, music and art*" (Jordan & Macdonald, 1998, p. 265) already influence users' expectations of a product. For example, you expect to get entertained by Disney products, and if your expectations are not met, the overall user experience is impaired (Roto et al., 2015).

This is also picked up by Jetter and Gerken (2007) and Jetter (2006), who postulate that users' product perceptions go beyond functionality and usability. Especially attractiveness and the successful communication of the brand proposition play an important role. In their simplified model of UX, they emphasize that subjective values of all stakeholders (of the user but also of the organization) have to be considered in UX design.

Roto and Rautava (2008) investigated how the brand promise of Nokia *"Connecting people through very human technology"* can be supported by self-defined experience goals. Therefore, they combined existing UX elements, identified by UX theory (e.g., utility, usability for the pragmatic quality, and stimulation and identification for the hedonic quality; see above), and UX elements identified by Nokia UX, market and brand experts and tried to map them. With their strategy, they emphasize the benefit of easy evaluation of each UX goal, as these rely on UX theory, and hence lightweight evaluation methods like questionnaires exist. Aagesen and Heyer (2016) could show that brand personality can be expressed by particular attributes of interactivity, i.e., interaction aesthetics (Lenz, Diefenbach & Hassenzahl, 2013). Thus, a continuous versus a discrete flow of an interaction is related to different brand traits (see also Chap. 7).

To define experience goals for a harmonized BX and UX in all touchpoints, Roto et al. (2015) presented a work-in-progress state of a strategy about enabling consistent experiences for Fastems (Finnish metals and engineering industry company). Here, they argue that on the pragmatic side, there are universally applicable experience goals like usability and utility [cf. user needs hierarchy (Jordan, 2002)], while

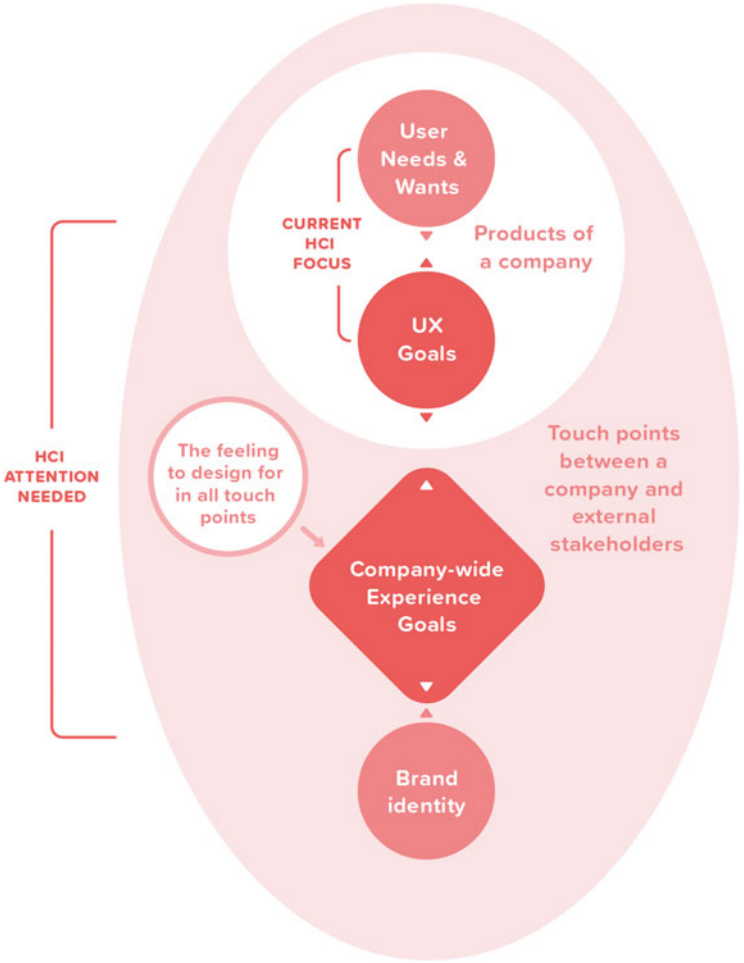


Fig. 5.3 Company-wide experience goals, derived from brand identity, in experience design in all touchpoints (source: Roto et al. 2015)

on the emotional/hedonic side, each company has to identify individual experience goals based on their brand promise. In a workshop, they analyzed the alignment of the defined experience goals and existing products with company representatives.

Although there existed a management approval, Roto et al. (2015) complain about the difficulty to motivate project teams to follow them. UX is often mentioned in company strategy; however, it is still related to usable and aesthetically user interfaces only. They postulate, "*True experience companies provide not only good UX but unique UX—experiences of which the company is known of*" (p. 2281). User experience goals need to have the right abstraction level (not too limited but should still help to ideate unique features) and all departments should be involved while defining them. Only by doing so, everybody will support them. Further, they are relevant for all touchpoints, not only for the products of a company (Fig. 5.3).

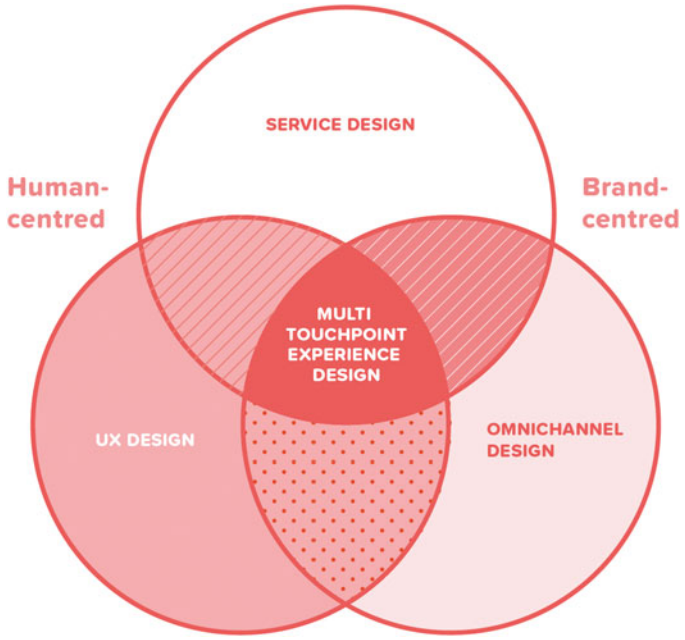


Fig. 5.4 Multi-touchpoint experience combining a human- and brand-centered perspective (source: Roto et al. 2016)

User experience goals need to have the right abstraction level (not to limited but should still help to ideate unique features) and all departments should be involved while defining them. Only by doing so, everybody will support them. Further, they are relevant for all touchpoints, not only for the products of a company (Fig. 5.3).

Later, Roto, Väätäjä, Law, and Powers (2016) summarized the strategy of multi-touchpoint experience design derived from brand identity and values (Fig. 5.4). They argue that UX is not restricted only to technical challenges and UI, but is based on the satisfaction of user needs and values. They relied on the temporality of UX (Karapanos, 2013) and the relevance of customers' journey with multiple touchpoints. Cross-platform UX is emphasized with multiple devices embedded in services. Their approach combined a brand-centered and human-centered perspective by mixing service design (design), omnichannel design (marketing), and UX design (HCI). The overall goal was to be able to define experience goals that address customer as well as company needs. Roto, Wiberg, and Sarkola (2018) propose in their work about "*branded interaction aesthetics*" to define the link between interaction aesthetics and brand experience goals early in the process to facilitate evaluation against each other. For the evaluation of a case study (web site) they utilized the interaction attributes from Lenz et al. (2013) and the measurement instrument of perceived web site aesthetics proposed by Lavie and Tractinsky (2004), however, they bemoan in their discussion the lack of a tool which evaluates both, visual and interaction aesthetics in combination.

Thus, needs, values, and interests that motivate a consumer to interact with an object are essential for companies, but also for users, as they aim to fulfill their needs. However, explicit methods to evaluate the level of coherence of BX and UX are still rare (Roto et al., 2018).

5.3.4 UX and BX in a Service Design Context

Service design is a well-known and often applied discipline which aims to connect BX factors and UX factors in order to achieve a holistic CX. We want to elaborate on its status and actual influence on UX design. As a process of organizing different touchpoints, mediators, and stakeholders of a service offering (Steen, Manschot, & De Koning, 2011), service design has to take into consideration UX design as an essential component as well. As Cook et al. (2002) suggest, the human factor within service design is of strong relevance: The service organization, the customer, and the contact personnel at all service touchpoints have to work hand in hand in order to deliver the best experience of the provided service for all parties (Cook et al., 2002). A designed service offering should be able to bring well together various benefits, e.g., a better relationship between the service provider and the customer, as well as an increased loyalty of customers and users (Steen et al., 2011). To achieve this ultimate loyalty, different aspects have to be regarded: Again, the basic human needs and emotions play an important role in this context, and, consequently, the following three concepts of customer behavior were observed by previous researchers (Cook et al., 2002). Especially the flow of service experience (what) and the flow of time (how long) are equally important to the counterfactual reasoning in judging the encounter performance (what, at a later point of time). To sum up the influence of the three concepts, it can be said that an overall good service experience can be achieved, when pleasure sequences of an experience outrun the painful sequences, when the hedonic content of an experience is so dominating that the user is able to disregard the time spent, and when the user can rationalize his or her (good) experiences after the actual interaction (Cook et al., 2002). So even though a service offering is much more abstract and sometimes more complex than a sole good or a sole app, service providers can reach their consumers on an engaging level, if they can trigger an emotional bonding with the consumer while interacting with the service offering (Zotz & Walcher, 2016).

Belk (1988) already pointed out that people define themselves through the items and products they possess. Human beings have an unconscious urge to shape their identity in an iterative process. Starting in their teenage times, they want to differentiate themselves through different actions, types of behavior, moral beliefs, and mindsets. The products they possess also have a huge impact on this identity-shaping process. With this knowledge in mind, it is a logical implication that the interaction with services, brands, and all their touchpoints also have a great impact on the sense of a person's self (Belk, 1988). The term of the extended-self shaped by consumer marketing has to be regarded when designing services and digital interactions: The involvement of the feeling of the extended self as well as

subsequent emotional bonding to a product or service increases, when consumers also invest a part of themselves in the object or service they intend to buy. When the brand behind the product or service is able to communicate their brand values via all touchpoints, there is a higher chance of emotional bonding. This can already be achieved through storytelling within a customer journey in the service design process. When, for example, concept brand stores enable their visitors to experience a whole new world, while being able to leave their daily lives behind, they help consumers to emotionally invest into this idea and add to the concept of psychological ownership. When this happens, customers are deeply involved into the activities of a service or product: They write reviews and give recommendations and are therefore more likely to purchase it (Payne, Storbacka, & Frow, 2008).

5.4 The Functional Demand of UX and BX Within Technological Trends

When regarding UX and BX for different products, the challenge to design a holistic experience is increasing with the amount of uprising touchpoints and contexts. As already stated, a multi-touchpoint experience can be optimized, when the UX design is based on human needs and the company's brand values (Roto et al., 2016). Looking at this complex topic, it can be said that every product is also part of a service offering: Consumers do not only perceive a sole product (either digital or analog), but a system of knowledge-intensive solutions, which contains a combination of products and services—all for the purpose of fulfilling the consumers' complex needs (Morelli, 2002). Adding technological advantages and innovation, which shape our abilities to interact with people, the approach of intentional holistic design becomes even more important.

5.4.1 Voice User Interfaces

With the service design background as a holistic basis, it is time to move forward to different trends, which can or will be upcoming touchpoints within this system. Voice assistants and voice technology in general are one of the most important technical developments in recent years, which will shape our interaction with digital products immensely. In 2019, an increase in market coverage is expected, with 63% and about 250 million installed voice devices worldwide by the end of the year (Lee, 2018). This seems reasonable when thinking about the projected adoption of various international languages like Chinese, Spanish, Italian, and Japanese. Even though these new interaction tools have not yet settled into the majority of households, their benefits are quite promising: With the integration of various languages, this technological innovation can help to include blind people and those suffering from analphabetism more effectively into society. Especially for business-related use cases, the voice technology is of high interest as well. One example is the bedside button, which is a standard installment in every hospital room: It would be much

more efficient if all patients could articulate their specific need via voice so that either a nurse or a doctor could drop by for a visit, depending on the patient's need (Lee, 2018).

Although there are many promising use cases for future scenarios, at this point of time the most urgent need for voice technology is an improvement of its applicable utility: Currently, people are mostly using voice devices for the weather forecast, jokes, and playing music. These use cases are mostly seen by the users as trendy and fun interaction, with which they can impress guests at home and kill spare time. In general, voice assistants try to hook the user with repetitive usage patterns like other technologies or apps, e.g., Facebook and Instagram. The users need to get clarity about their uncertainty about a specific matter (news or weather forecast), which makes them ask the voice assistant over and over again (Eyal, 2017). Therefore, the designers of those technologies should always take into account which kind of true value this technology can bring to the user, and which kind is just a vicious cycle of lost time. Sometimes, there is only a small utilitarian benefit in these actions compared to the possibilities. Only when people can get a real added value out of their interaction with a voice assistant will they be willing to use this touchpoint more frequently (Lee, 2018).

With all these functional and technological assumptions for a voice technology boom in the near future in mind, an important question arises: How important will brand visibility be during the interaction with a voice assistant as third-party mediator, compared to the product's own app or website? With Alexa, Google, Cortana, and Siri as big players within this industry, it becomes clear that voice assistants can differ in character. When asking each of them the very same question, the user can observe a slight difference in the answers of each of these assistants, even though the informative output is the same: There can be differences in length, depth of information, degree of savviness, or sarcasm. Therefore, a solution to the brand positioning could be to partner up with either one of these big players in order to promote and position the very own product as first choice for the voice mediators' listings.

Another solid strategy for spreading voice technology can be observed in the providers trying to license their voice skills to different companies and their product development departments, so that their technology increases its market share among different voice providers. If brands go along with this strategy, they can ensure that they are not missing out on the voice touchpoint as the current technological trend. However, they have to be cautious when handing over the communication for their products and brand to a third-party provider. With this scenario, brands have (almost) no chance to differentiate themselves from competitor brands. Another advantage, however, is that with mass integration of voice technology devices, big sets of voice data can be gathered and further analyzed. Companies will be able to learn about their customers' tone of voice, or about when they interact with the assistant in different contexts or different moods. The human emotional component will play an increasingly bigger role for this kind of interaction (Cherian & Pounder, 2017). Hence, brands need to decide for themselves if it is a bigger asset to develop their own voice skill right away or if it is more efficient to just take advantage of the existing application programming interface (API). Scientific studies in the field of

neuroscience can already give an indication about a deeper emotional bonding with a brand or product, when interacting with voice instead of messaging: Hearing the spoken brand name shows a higher brain activity compared to seeing a written brand name (Cherian & Pounder, 2017).

With voice as an increasingly important touchpoint for brand interaction and brand experience, companies should not underestimate the need to represent their brand at this touchpoint. Even though there are different use cases for either spoken or written interaction—depending on the circumstances—the users should experience the product, service, or brand in the very same way with every touchpoint: They will be more likely to identify themselves with the brand and its vision, mission, and values. Consequently, companies should carefully analyze their product and service customer journey in order to see which touchpoints are best suitable for which type of interaction. Brands should design their voice user interfaces uniquely, if they want their voice skill to have a brand shaping character. Predefined characters and skills like the ones from the market leaders cannot provide that benefit (Cherian & Pounder, 2017).

5.4.2 The Internet of Things (IoT) and Smart Objects

The voice assistant as one of the most important tech trends in 2019 is also a smart object as it can be integrated in smart speakers in a smart home environment. When looking at the bigger picture, this is only a small piece of the big field called Internet of Things (IoT).

Smart Home, Smart City, IoT and various other terms within this field are often viewed as buzzwords by the majority of people. These terms have been used over and over again to be proclaimed as *the next big thing* within technological trends in the future. Even though there was never a specific point of time, at which all of a sudden these technologies have settled into mass market, it is a fact that both the technology behind the mediating objects and the purposeful use cases for this field are advancing over time and will become more and more important in the future.

Despite the lack of market acceptance and visibility, it is projected that companies will invest more than 300 billion USD on IoT each year by 2020. Moreover, in that year, companies will have achieved a spread of technology with more than 26 billion connected devices for both individual households and business use cases (Springwise Editorial Team, 2018). Also, from a user perspective, the predictions seem simply overwhelming: Zukunftsinstitut proclaims that a person will interact with smart objects about 4800 times a day in 2025 (Zukunftsinstitut GmbH, 2018).

But how is this new buzzword IoT even defined? Some people might perhaps think about refrigerators that will order fresh milk when detecting that the old carton is almost empty. Others might go further to smart production sites, where robots are interconnected with each other and with their leads.

There are different definitions of IoT captured in the literature. The baseline of all of them is that objects have to be integrated into a network in order to be able to communicate with each other. Consequently, the underlying information and

communication systems should be embedded in our human environment, so that it is not visible for the people interacting with it. It is furthermore important that sensors, actuators, computational elements, and displays are interconnected with the physical world in order to fuel the connecting system (Gubbi, Buyya, Marusic, & Palaniswami, 2013). A more specific definition was given by Gubbi et al. (2013):

> *"Our definition of Internet of Things for smart environments is the interconnection of sensing and actuating devices providing the ability to share information across platforms through a unified framework, developing a common operating picture for enabling innovative applications. This is achieved by seamless large scale sensing, data analytics and information representation using cutting edge ubiquitous sensing and cloud computing."* (Gubbi et al., 2013, p. 4)

As our society is moving from the World Wide Web era with mostly static web pages to a 2.0 version of websites, where social networking is the main purpose, it will now go forward to the 3.0 version of websites, where ubiquitous computing becomes reality. A better understanding for the users, their situation, and the surrounding appliances are crucial for the further development of IoT. Gubbi et al. (2013) suggest that there are three components which are necessary for a seamless integration of ubiquitous computing (*ubicomp*). The first component is hardware, i.e., the object users are supposed to interact with, but with integrated sensors and actuators, which allow regular objects to become smart. Only the second component, the middleware, makes this possible, as it provides the demand storage and computing tools for data analytics, which are supposed to make sense of the data. The last component is the presentation itself which should be a visualization that is easy to understand and interpretable (Gubbi et al., 2013). These three components seem to be the most obvious ones. However, designers and developers should never forget to consider the human interaction component. Even though technically the IoT systems will be usable with the three components described by Gubbi et al. (2013), it is not guaranteed that people will actually use it, try it, or even stick to it. When designing IoT systems and smart objects, the product team needs to find patterns by which users interact with those specific objects and in a specific context. They need to make sure that users will get an actual added value out of the usage and interaction. Even the installation process of the IoT systems needs to be very simple and has an ease of use so that people can at least master the initial challenge to be able to use the product. In a best-case scenario, product developers will learn from human behavior patterns and can apply those in combination with the brand personality to create not only a smart object but a smart character, with which people actually want to spend time, and have fun doing so.

That being said, another critical point for IoT is security and the issues that might arise with it. With IoT developing at a great pace and providing increasingly more data for the networks and providers to handle, security is a major concern with large scalability. As has been observed in the past, there are various ways for systems to be hacked, e.g., by disabling the availability of the network itself, by pushing flawed data into the system, by accessing personal information, and so on (Gubbi et al.,

2013). The case of Target in 2013, where 40 million credit card numbers have been stolen, is only one example. Despite the company's efforts to secure their systems, they have not been able to prove their success yet (Springwise Editorial Team, 2018). Consumers being unsure about the technology and not trusting it is a logical result. Data security has to be an ensured factor, if we want the technology to spread on a massive scale. If the basic need of security cannot be provided soon, there might be bigger ethical questions arising, e.g., with the potential of IoT developing toward a mass surveillance system. As humans can only think in a linear way, whereas technology is developing exponentially, it is almost impossible for people to think about long-term consequences when introducing something as big as hundreds of times larger than our common Internet right now (Leonhard, 2018).

5.4.3 Virtual (VR) and Augmented Reality (AR)

The fields of virtual (VR) and augmented reality (AR) shall be the last ones to be elaborated in this section about relevant current technological trend and their importance toward UX and brand perception. Both have some very similar characteristics, but also differ from each other when it comes to use cases, availability, application, and perception.

In order to create a simulating environment for virtual reality, computing power and an underlying network is the sheer basis. In addition to the currently most attracted human sense—*vision*—and now with voice technology following sense *hearing*, VR allows companies to take advantage of other senses like *touch* or even *smell* (see also Sect. 2.1.3). With this, VR enables the user to have a 3D virtual world experience: a kind of new media consumption that is only in its very first developmental steps (Kostin, 2018). Still, VR is already another trend buzzword on the market with a huge potential for future development. For VR, there are already numerous tools, fun gadgets, and more elaborated gaming use cases available. The uniqueness for its users is the ability to experience a fully different world by being surrounded by a different environment, in which it is possible to conduct activities while consuming content. Often, the VR experience is described as positive, when users can find themselves in a state of flow, where they can lose their sense of time and pursue an activity that is neither boring nor overstressing them.

In order to achieve this, VR's three key features, often described as immersion, presence, and interactivity, have to function on their own and in dependence of each other. They make up the corresponding experience in a certain way; however, their interdependent abilities are still not clearly defined, even though the technology itself can be traced back to 1960 (Joschka, 2018).

A common definition of VR is:

> *"The sum of the hardware and software systems that seek to perfect an all-inclusive, immersive, sensory illusion of being present in another environment."* (Biocca & Delaney, 1995, p. 63)

When VR leads the user into a completely new world with all its own functionalities and characteristics, AR is somehow related to that, but also differs radically in perception: AR takes virtual parts of the experience and combines them with the real world. The space a user enters is not entirely virtual anymore. There are real-world elements integrated into the digital and virtual experience. Hence, it can be described as a bridge between two worlds by ensuring a synchronous interaction. In most use cases, the AR tool records part of the real world with a camera and then connects virtual objects with certain target point in order to then analyze and interpret the results (Yilmaz, 2018). To be more precise, AR can be defined as follows:

► *"Augmented Reality is taking digital or computer generated information, whether it be images, audio, video, and touch or haptic sensations and overlaying them in a real environment."* (Kipper & Rampolla, 2012, p. 1)

These two trends being closely related in various aspects have different focal points in their applications and use cases. VR can already be found within the gaming industry. Also, in the film industry, in the travel industry, for social empathy, or even journalism, VR is an increasingly popular tool. Julia Leeb, for example, uses VR technology to capture moments in crisis areas and situations to help the recipient experience more empathy with other people and cultures. Her portraits of people in countries all around the world, among them North Korea and Lebanon, excite her recipients and make her an advocate for those communities (Leeb, 2019). Despite the huge potential of VR, its hype comes and goes in waves, depending on the launch and publicity of new tools in the respective fields. In 2019, it seems that AR got more publicity with several new apps that were launched during 2018. Now companies seem to push AR technology harder than before: a currently quite popular trend is AR collaboration, for example, with Spatial, a communication and collaboration tool for the workplace (Spatial, 2019). For both fields and especially for VR, there is huge potential for the user experience: The technology itself might be well developed, and the look and feel of it, in many cases, seems to be outdated. Designers are now able to create more specific standards for this matter: They are moving forward from a desktop and mobile perspective toward a holistic VR experience (Bardi, 2018). The design for a holistic and brand-driven UX in those fields opens up a whole lot more opportunities for the design and combination of UX factors. Whereas factors like color scheme and animations are probably the most important influential factors for the design perception in the field of web and mobile design, 3D interactions and the addressing of other senses like touch and smell are the opportunity for differentiation within those new technology fields. The more senses a company can address with one touchpoint, the bigger the opportunities for companies to present themselves according to their own brand values and the user's needs.

With this in mind, VR and AR have the chance to become more than just tech-trends and funny gadgets. While the ever-improving technology is the baseline, the ability to design both experiences according to the user's needs will make this technology understandable and easy to use and, most importantly, ensure addressing

the user on an emotional level. With these prerequisites, VR and AR can become touchpoints for everyday life interactions and add real value.

Conclusion

Based on the related work and underlying theoretic concepts, we conclude that there is a direct relationship between brand positioning and user product experience. While user experience is clearly related to products, systems, and services and has its foundation in HCI, there are still many overlaps between UX, BX, and CX.

Especially user brand experience plays an important role for user experience in all different touchpoints of the user journey. Digital products are an essential part of how users experience a brand. Especially the development of future technologies offers an even higher potential to create an exceptional user experience, as there are new UX factors coming up, and the possibility to address more human senses arises. How positive an experience is is dependent on the satisfaction of user needs. As values are representations of basic human needs, and the fulfillment of psychological needs determines the quality of a UX, we take this causality as a starting point to develop an evaluation strategy.

References

Aagesen, P. T., & Heyer, C. (2016, May). Personality of interaction: Expressing brand personalities through interaction aesthetics. In *Proceedings of the 2016 CHI conference on human factors in computing systems* (pp. 3126–3130). New York: ACM.

Aaker, D., Stahl, F., & Stöckle, F. (2015). *Marken erfolgreich gestalten: Die 20 wichtigsten Grundsätze der Markenführung*. Wiesbaden: Springer.

Bardi, J. (2018). *5 Top augmented reality and virtual reality technology trends for 2019*. Retrieved July 3, 2019, from https://www.marxentlabs.com/trends-augmented-reality-virtual-2019/

Belk, R. W. (1988). Possessions and the extended self. *The Journal of Consumer Research, 15*(2), 139–168.

Biocca, F., & Delaney, B. (1995). Immersive virtual reality technology. In *LEA's communication series. Communication in the age of virtual reality* (pp. 57–124). Lawrence Erlbaum Associates: Hillsdale, NJ.

Brakus, J. J., Schmitt, B. H., & Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? *Journal of Marketing, 73*(3), 52–68.

Bruhn, M., & Hadwich, K. (2012). *Customer experience: Forum dienstleistungsmanagement*. Wiesbaden: Springer.

Cherian, E., & Pounder, J. (2017). *Speakeasy*. Retrieved July 3, 2019, from https://www.mindshareworld.com/sites/default/files/Speakeasy.pdf

Cook, L. S., Bowen, D. E., Chase, R. B., Dasu, S., Stewart, D. M., & Tansik, D. A. (2002). Human issues in service design. *Journal of Operations Management, 20*, 159–174.

Desmet, P. M. (2012). Faces of product pleasure: 25 positive emotions in human-product interactions. *International Journal of Design, 6*(2), 1–29.

Desmet, P., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design, 1*(1), 57–66.

Diefenbach, S., & Hassenzahl, M. (2017). *Psychologie in der nutzerzentrierten Produktgestaltung: Mensch-Technik-Interaktion-Erlebnis*. Berlin: Springer.

Esch, F.-R. (2014). *Strategie und Technik der Markenführung* (8th ed.). München: Vahlen.

Eyal, N. (2017). *Here's how amazon's Alexa hooks you.* Retrieved July 3, 2019, from https://medium.com/behavior-design/heres-how-amazon-s-alexa-hooks-you-1b46ee9c92f6

Gubbi, J., Buyya, R., Marusic, S., & Palaniswami, M. (2013). Internet of things (IoT): A vision, architectural elements, and future directions. *Future Generations Computer Systems, 29*(7), 1645–1660.

Hassenzahl, M. (2005). The thing and I: Understanding the relationship between user and product. In M. Blythe, A. Monk, C. Overbeeke, & P. Wright (Eds.), *Funology: From usability to enjoyment* (pp. 31–42). Dordrecht: Springer.

Hassenzahl, M. (2006). Hedonic, emotional, and experiential perspectives on product quality. In *Encyclopedia of human computer interaction* (pp. 266–272). Hershey, PA: IGI Global.

Hassenzahl, M. (2008). User experience (UX): Towards an experiential perspective on product quality. In *Proceedings of the 20th Conference on l'Interaction Homme-Machine* (pp. 11–15). ACM.

Hassenzahl, M., Burmester, M., & Koller, F. (2003). AttrakDiff: Ein Fragebogen zur Messung wahrgenommener hedonischer und pragmatischer Qualität. In G. Szwillus & J. Ziegler (Eds.), *Mensch & Computer 2003* (pp. 187–196). Vieweg+ Teubner Verlag.

Hassenzahl, M., Wiklund-Engblom, A., Bengs, A., Hägglund, S., & Diefenbach, S. (2015). Experience-oriented and product-oriented evaluation: Psychological need fulfillment, positive affect, and product perception. *International Journal of Human-Computer Interaction, 31*(8), 530–544.

International Organization for Standardization. (1998). *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 11: Guidance on usability (standard)*. Geneva: ISO.

International Organization for Standardization. (2010). *Ergonomics of human-system interaction - Part 210: Human-centred design for interactive systems (standard)*. Geneva: ISO.

Jetter, H.-C. (2006). Die MCI im Wandel: User experience als die zentrale Herausforderung? In *Mensch & computer* (pp. 65–72).

Jetter, C., & Gerken, J. (2007). A simplified model of user experience for practical application. In *2nd COST294-MAUSE* (pp. 106–111).

Jordan, P. W. (2002). *Designing pleasurable products: An introduction to the new human factors*. Boca Raton, FL: CRC Press.

Jordan, P. W., & Macdonald, A. S. (1998). Pleasure and product semantics. In M. A. Hanson (Ed.), *Contemporary ergonomics* (pp. 264–268). London: Taylor & Francis.

Jordan, P. W., & Persson, S. (2007). Exploring users' product constructs: How people think about different types of product. *CoDesign, 3*(S1), 97–106.

Joschka, M. (2018). The three pillars of virtual reality? Investigating the roles of immersion, presence, and interactivity. In *Proceedings of the 51th Hawaii International Conference on System Sciences* (pp. 1407–1415). Hawaii.

Karapanos, E. (2013). User experience over time. In *Modeling users' experiences with interactive systems* (pp. 57–83). Berlin: Springer.

Karapanos, E., Wensveen, S., Friederichs, B., & Martens, J.-B. (2008). Do knobs have character?: Exploring diversity in users' inferences. In *CHI'08 Extended Abstracts on Human Factors in Computing Systems* (pp. 2907–2912). ACM.

Kipper, G., & Rampolla, J. (2012). *Augmented reality: An emerging technologies guide to AR*. Waltham, MA: Syngress.

Klaus, P., & Maklan, S. (2013). Towards a better measure of customer experience. *International Journal of Market Research, 55*(2), 227–246.

Kort, J., Vermeeren, A., & Fokker, J. E. (2007). Conceptualizing and measuring user experience. In *Towards a UX manifesto* (pp. 57–64).

Kostin, K. B. (2018). Foresight of the global digital trends. *Strategic Management, 23*(1), 11019.

Kujala, S., Roto, V., Väänänen-Vainio-Mattila, K., Karapanos, E., & Sinnelä, A. (2011). UX curve: A method for evaluating long-term user experience. *Interacting with Computers, 23*(5), 473–483.

Lachner, F., Naegelein, P., Kowalski, R., Spann, M., & Butz, A. (2016). Quantified UX: Towards a common organizational understanding of user experience. In *Proceedings of the 9th Nordic conference on human-computer interaction* (p. 56). ACM.

Laugwitz, B., Held, T., & Schrepp, M. (2008). Construction and evaluation of a user experience questionnaire. In *Symposium of the Austrian HCI and usability engineering group* (pp. 63–76). Springer.

Lavie, T., & Tractinsky, N. (2004). Assessing dimensions of perceived visual aesthetics of web sites. *International Journal of Human-Computer Studies, 60*(3), 269–298.

Law, E. L.-C., Roto, V., Hassenzahl, M., Vermeeren, A. P., & Kort, J. (2009). Understanding, scoping and defining user experience: A survey approach. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 719–728). ACM.

Lee, P. (2018). Smart speakers – Growth at a discount. *Deloitte Insights*. Retrieved July 3, 2019, from https://www2.deloitte.com/insights/us/en/industry/technology/technology-media-and-telecom-predictions/smart-speaker-voice-computing.html

Leeb, J. (2019). *Julia Leeb – journalistic portrait*. Retrieved July 3, 2019, from http://www.julialeeb.com/

Lenz, E., Diefenbach, S., & Hassenzahl, M. (2013, September). Exploring relationships between interaction attributes and experience. In *Proceedings of the 6th international conference on designing pleasurable products and interfaces* (pp. 126–135). New York: ACM.

Leonhard, G. (2018). *Technology vs. Humanity - Unsere Zukunft zwischen Mensch und Maschine*. Munich: Verlag Franz Vahlen.

Mahlke, S., & Thüring, M. (2007). Studying antecedents of emotional experiences in interactive contexts. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 915–918). ACM.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370.

McCarthy, J., & Wright, P. (2004). Technology as experience. *Interactions, 11*(5), 42. https://doi.org/10.1145/1015530.1015549.

Meschtscherjakov, A., Wilfinger, D., & Tscheligi, M. (2014). Mobile attachment causes and consequences for emotional bonding with mobile phones. In *Proceedings of the 32nd annual ACM conference on human factors in computing systems* (pp. 2317–2326). ACM.

Mirnig, A.G., Meschtscherjakov, A., Wurhofer, D., Meneweger, T., & Tscheligi, M. (2015). A formal analysis of the ISO 9241-210 definition of user experience. In *Proceedings of the 33rd annual ACM conference extended abstracts on human factors in computing systems* (pp. 437–450). ACM.

Morelli, N. (2002). Designing product/service systems: A methodological exploration. *Design Issues, 18*(2), 3–17.

Norman, D. A. (2004). *Emotional design: Why we love (or hate) everyday things*. New York: Basic Civitas Books.

Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *The Journal of the Academy of Marketing Science, 36*(1), 83–96.

Pettersson, I., Lachner, F., Frison, A.-K., Riener, A., & Butz, A. (2018). *A Bermuda Triangle?* (pp. 1–16). New York: ACM Press. https://doi.org/10.1145/3173574.3174035.

Pine, B. J., & Gilmore, J. H. (1998). Welcome to the experience economy. *Harvard Business Review, 76*, 97–105.

Robier, J. (2015). *Das einfache und emotionale Kauferlebnis: Mit Usability, User experience und customer experience anspruchsvolle Kunden gewinnen*. Springer.

Roto, V., Lu, Y., Nieminen, H., & Tutal, E. (2015). Designing for user and brand experience via company-wide experience goals. In *Proceedings of the 33rd annual ACM conference extended abstracts on human factors in computing systems* (pp. 2277–2282). ACM.

Roto, V., & Rautava, M. (2008). User experience elements and brand promise. In *International engagability & design conference, in conjunction with NordiCHI* (Vol. 8).

Roto, V., Väätäjä, H., Law, E., & Powers, R. (2016). Experience design for multiple customer touchpoints. In *Proceedings of the 9th Nordic conference on human-computer interaction* (p. 146). ACM.

Roto, V., Wiberg, M., & Sarkola, S. (2018, September). Branded online interaction aesthetics: Strengthening brand image via dynamic design. In *Proceedings of the 10th Nordic conference on human-computer interaction* (pp. 385–396). New York: ACM.

Spatial. (2019). Retrieved July 3, 2019, from https://spatial.is/

Springwise Editorial Team. (2018). Internet of things innovation report 2018. *Deloitte*. Retrieved July 3, 2019, from https://www2.deloitte.com/content/dam/Deloitte/de/Documents/Innovation/Internet-of-Things-Innovation-Report-2018-Deloitte.pdf

Steen, M., Manschot, M., & De Koning, N. (2011). Benefits of co-design in service design projects. *International Journal of Design, 5*(2), 53–60.

Steiner, M., Kindsmüller, M.C., & Thomaschewski, J. (2017). Das Zusammenspiel von customer experience und user experience. *Mensch Und computer 2017-usability professionals*.

Tuch, A. N., & Hornbæk, K. (2015). Does Herzberg's notion of hygienes and motivators apply to user experience? *ACM Transactions on Computer-Human Interaction (TOCHI), 22*(4), 16.

Tuch, A. N., Trusell, R., & Hornbæk, K. (2013). Analyzing users' narratives to understand experience with interactive products. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 2079–2088). ACM.

Van de Sand, F. (2017). *User experience identity: Mit Neuropsychologie digitale Produkte zu Markenbotschaftern machen*. Springer.

Wright, P., McCarthy, J., & Meekison, L. (2003). Making sense of experience. In M. Blythe, A. Monk, C. Overbeeke, & P. Wright (Eds.), *Funology* (pp. 43–53). London: Springer.

Yilmaz, R.M. (2018). Augmented reality trends in education between 2016 and 2017 years. In *State of the art virtual reality and augmented reality knowhow* (pp. 81–97). Intech Open. Retrieved July 3, 2019, from doi:https://doi.org/10.5772/intechopen.74943.

Zotz, P., & Walcher, D. (2016). *Service design development – looking at customer values, service dominant logic, product service systems, system thinking, co-creation, psychological ownership and the extended self* (pp. 1–10). DE/RE/SA - Design Research Salzburg, Center for Co-Creation, Salzburg University of Applied Sciences.

Zukunftsinstitut GmbH. (2018). Megatrend Konnektivität. In *Megatrends* (p. 35). Zukunftsinstitut GmbH.

Conceptual Consumption: Why We Consume Based on Mental Concepts

6

Motives, goals, and needs as drivers of decisions to buy or use a product have been described extensively in Chap. 4. But how should products and marketing actions be designed in order to successfully address certain motives and goals? After all, we use the majority of our well-known products without actively thinking about it—we just intuitively know how and when to use them.

There seem to be certain rules for the interaction with products, which we intuitively follow. Take this example: In the office, we tend to use large mugs with a practical handle to enjoy our coffee. When welcoming visitors in our home, however, we choose to pour coffee from a pot into porcelain cups, placed on a matching saucer. Most people find it hard to describe the reasons for this behavior. You just *do* things this way (see also Chap. 3). However, your choice of the right coffee cup is based on the characteristics of this certain cup and of the meaning these characteristics convey for us implicitly. Brands and products send signals, which encode meaning and associations and which can be decoded by our brains. For this, there is a systematic connection between physical product characteristics, also called *signals*, and the underlying mental level (see also Chap. 2).

This phenomenon is illustrated by a well-known experiment conducted at the University of Yale: a group of researchers set up a simulated situation of a job interview. Participants were instructed to conduct a short interview with an unknown person. Afterward, they were allowed to decide whether or not they would hire the applicant. Prior to the interview, the participants were handed either a warm or a cold beverage. The results of the experiment were astounding: those probands who had received a warm beverage judged the unknown interview partner more positively than those who were handed a cold one. Hence, the temperature of the beverage had an effect on how the unknown person was judged (Williams & Bargh, 2008).

This chapter was written by Felix van de Sand.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_6

Zhong and Leonardelli (2008) describe this phenomenon as follows: "*[. . .] People's social experience is not independent of physical and somatic perception*" (p. 840).

Moreover, their experiments "*highlight the idea that metaphors are not just linguistic elements that people use to communicate. [. . .] Physical experience aids people's understanding of more abstract, complex phenomena. Metaphors such as cold and lonely do not seem to be mere accidents—why is social exclusion described as cold but not dirty?*" (Zhong & Leonardelli, 2008, p. 840).

If we reflect on our everyday behavior, especially our language, the relation between the product characteristic *warm* or *cold* and the social judgment of *warm-hearted* or *cold-hearted* becomes clearer. We call a relationship between two people *frosty*, and we say we *warm up* to something, when we become accustomed to it. We use the physical temperature as a metaphor and transfer it into our mental level. Moreover, we call people *softies* or *hard to crack*, because in our brains, there is a direct connection between the tactile sense and certain mental concepts. This phenomenon does not only occur in the case of temperature or texture. In a different study, neuroscientists of the Kyoto University describe the implicit relation between physical characteristics and mental concepts as a general organizational principle of the brain (Yamakawa, Kanai, Matsumura, & Naito, 2009). This study investigated the coupling of physical and mental distance. The subjects were placed in brain scanners and given two tasks: One was to estimate the physical distance between two objects, and the other was to indicate how close they felt to people shown in photos. The research results showed that, no matter the physical characteristics of distance or the mental concept of distance, both are regulated in the same brain area.

No one would question the existence of this mental level, considering the huge impact brands apparently have on our buying decisions. Also, we know decisions are to a large extent made implicitly. After all, a brand, i.e., its image or reputation, is often not mentioned as a reason for purchasing a product. However, research results illustrate an additional, rather essential relation: There is a direct and systematic connection between the physical characteristics of a product and the underlying mental level (Scheier, 2012). The following sections on the phenomenon of conceptual consumption illustrate this connection in different contexts.

6.1 Conceptual Consumption

Renowned behavioral economist Dan Ariely describes the ability of translating physical product characteristics into mental concepts as *conceptual consumption*. This phenomenon is based on the fact that our ancestors had focused on the search and the consumption of food in order to be able to survive. The same urge still drives us today—but is far easier to satisfy. As a consequence, we are constantly looking for opportunities to fulfill this urge on a psychological level by consuming other goods:

> Thus, in some sense, people have switched from consuming food (foraging for nuts) to consuming ideas [. . .]. As basic needs are met with greater ease and celerity, humans find a wide variety of increasingly psychological avenues for quenching their consumption thirst (Ariely & Norton, 2009, p. 476).

► The ability to decode physical product characteristics into mental concepts is specifically human. Humans consume products, and they consume mental concepts via the characteristics of these products. Hence, the term *conceptual consumption* helps to understand what consumption really is: Humans regulate mental processes via products and their physical characteristics (Ariely & Norton, 2009). The configuration of a product determines which of the motives and goals are addressed, and, hence, which products are purchased or used, and which are ignored.

Conceptual consumption helps us understand why some people living in urban regions would prefer to spend more money on consuming mental concepts like *exclusiveness* and *status* by driving SUVs instead of models with more pragmatically beneficial characteristics, or by spending 30 EUR per pound of coffee of the brand Nespresso in order to feel more sophisticated than others. Today extensive research can be found about the influence of concepts on consumers' consumption. Building on Dan Ariely's research on this topic, the classes of conceptual consumption that, in the authors' opinion, are most relevant in the context of user experience will be introduced in the following.

6.1.1 Consuming Expectations

Brands are designed to match a target group's goals and motives. By doing so, brands are charged with emotions and raise corresponding expectations. These expectations heavily influence the value that people assign to a product or service of a brand. If we look at beverage brands as an example, we know that many people stick to either Coke or Pepsi as their brand of choice. Asked for the reason of their choice, they would usually point out the taste of the respective beverage. In blind tests though, they frequently cannot tell one from another. This means that brand positioning and communication have a major impact on the taste experience although not adding to the taste on a physical level.

> Thus, expectations set by associations with advertising and branding can influence and sometimes supersede physical consumption of both products and services. [. . .] People tend to seek confirmation for their beliefs [. . .]. Recent brain-imaging studies show that when people believe they are drinking expensive wine, their reward circuitry is more active than when they think they are drinking cheap wine—even when the wines are identical. Similarly, when people believe they're taking cheap painkillers, they experience less relief than when they take the same but higher-priced pills (Ariely & Norton, 2009, p. 478).

The consumption of expectations especially applies to the digital world with its seemingly unlimited offer of products and services. Like the taste of a beverage has to at least deliver the consumers expectation, the user experience of (digital) products and services also must deliver on users' expectations, which were originally generated by advertising and branding. Today, we even see the pendulum swinging in the other direction: The experience of (digital) products and services can heavily impact the users' image of a brand, be it positive or negative (see also Chap. 7).

6.1.2 Consuming Fluency

Closely related to the consumption of expectations, another form of conceptual consumption that is worth noting is the consumption of *fluency*. As it is defined by Ariely and Norton (2009), this term describes the "*ease with which stimuli are processed and experienced*." Such cognitive comfort is determined by how easy we can process information and turn it into something meaningful. In this form, fluency can influence purchasing behavior in many ways. It is, for example, the reason why we like something that simply looks, feels, sounds, or tastes familiar, causing a strong connection between the things that we know and the things that we like. To a large extent, this can be explained by the desire to avoid conflict or emotions of regret in decision making (Ariely & Norton, 2009). Research conducted by Novemsky, Dhar, Schwarz, and Simonson (2007) proves this point for visual stimuli by illustrating that even for very similar products, the font of product descriptions (hard-to-read font vs. easy-to-read font) has an impact on the purchasing behavior of consumers in the case of buying mobile phones. Another study supporting the importance of consuming fluency is offered by Alter and Oppenheimer (2006): With their empirical study, they showed that stocks with easy-to-pronounce abbreviations performed much better than stocks which had abbreviations that were hard to pronounce. These examples prove that conceptual consumption even reaches far beyond product qualities themselves: In both cases, product descriptions that were not related to the quality of value of the product themselves had severe impact on the purchasing behavior of consumers.

The concept of fluency plays an important role in the pragmatic quality of user experience (see also Sect. 5.2), i.e., usability and utility, since it is a precondition for the success of digital products and services today.

6.1.3 Consuming Regulatory Fit

One of the most relevant classes of conceptual consumption in the given context is consuming according to the so-called *regulatory fit*, i.e., when people *feel right* while being engaged in a task in which their behavior aligns with their motivations (Higgins, 2000). More specifically, this is given when a person's activity, such as buying a product or using a service, feels well aligned with his or her specific goal orientation. This alignment can change the way consumers perceive a product's

value, and hence, motivate them to purchase a product. All of this is highly influenced by the so-called regulatory orientation of consumers, i.e., the motivation that arises from their current interests, concerns, emotions, and needs (see also Chap. 4). In accordance with the specific regulatory orientation, a product or service can be perceived differently in their value—and raise the consumers' willingness to pay or use. As Grant and Higgins (2003) describe, consumers assign a price up to 50% higher for the same product when purchasing this product aligns with their regulatory orientation. Put differently, this regulatory fit enhances the confidence in buying decisions and makes the experience of purchasing products or services, or engaging with a brand, more positive, regardless of the decision-making outcome and the hedonic experience of the engagement (Avnet & Higgins, 2006).

Higgins et al. (2003) use the examples of promotion and prevention as opposing regulatory orientations to test the influence of the regulatory fit: According to their chronic regulatory orientation, participants were divided into two subgroups and told that they could choose between two gifts—a pen or a mug. For this, the researchers framed the choice process of the participants: half of each group was told what they would gain, if they chose either one of the items (consistent with a promotion-based orientation); and half of each group was told what they would lose, if they did not choose either one of them (consistent with a prevention-based orientation). The results, again, proved the increased willingness to pay in situations when regulatory orientation matches the reasoning of purchase: Participants with a promotion-based orientation assigned a higher price to the mug after thinking about what they would win from choosing it, while participants with a prevention-based orientation assigned a higher price to the mug after thinking about what they would lose from not choosing it. All in all, "*[. . .] the experience of consuming fit appears to offer utility—and the lack of fit or conflicting fit, disutility—suggesting that, like fluency, regulatory fit is conceptually consumed*" (Ariely & Norton, 2009, p. 483).

Transferring the concept of regulatory fit to user experience design makes it clear that the design of a (digital) product or service has to be delicately aligned with the users' orientation, i.e., their current state and/or trait (see also Chap. 4). Building on the aforementioned example, users with a more balance-focused orientation will prefer brands and products or services that are designed in a way that allows for prevention-focused decisions. Users with a more promotion-focused orientation would prefer an experience that is tailored accordingly. Since brands usually focus on a specific target group's orientation, it is important to again emphasize that the expectations users have of brand need to be met when they interact with products and services of that brand.

6.1.4 Feature Fatigue

As we learnt from the previously explained aspects of conceptual consumption, consumers try to reduce the chance of conflict and negative feelings arising from making decisions. *Feature fatigue* is a manifestation of the same phenomenon: It describes the tendency of consumers to leave behind feature-rich products after

having purchased them. This behavior can be explained by consumers preferring to buy products with many features before and while buying them but growing more and more disappointed with them over the course of time. This can be due to different reasons: A large set of product features can turn out to be overwhelming, and ultimately useless features get in the way or become distracting and disturbing (Li, Wang, & Wu, 2013b; Rust, Thompson, & Hamilton, 2006; Thompson, Hamilton, & Rust, 2005). This raises the question of why consumers happen to choose more complex and feature-rich products instead of opting for simpler options. As an explanation, studies indicate that consumers are motivated by enhancing their social status through buying feature-rich products (i.e., products which are perceived as technologically advanced) (Thompson & Norton, 2011). However, as satisfaction with feature-rich products seems to decrease in the long run, brands would not benefit from that motivation. Instead, (digital) products and services should be designed with a high pragmatic quality, i.e., with a carefully selected feature set that prevents users from suffering feature fatigue, in order to have any chance to reach long-term success in the market. The motivation for social status should then be addressed via the hedonic quality of the product or service by integrating the brand into the product or service. This way, long-term product satisfaction *and* a successful stimulation of the users' goals and motives can be achieved.

6.1.5 Negative Physical Consumption

All of the abovementioned examples show how powerful conceptual consumption is as a driving force of consumer behavior. Another example that enriches our understanding of conceptual consumption is the occurrence of *negative physical consumption*, which is the voluntary consumption of products or services that expose consumers to negative feelings such as fear (e.g., watching a horror movie) or even threaten the consumer's life or health (e.g., skydiving). Ariely and Norton (2009) argue that this counter-rational behavior of choosing potentially harmful experiences is also a form of conceptual consumption: While consuming these products and services clearly is a form of negative physical consumption, it still offers an experience of positive conceptual consumption. More practically explained, consumers seem to be motivated by crossing such experiences off their bucket list, and hence they feel especially productive (Keinan & Kivetz, 2008). This way, adding a purpose to an act of negative physical consumption can create a positive experience of conceptual consumption. As mentioned in Chap. 1, "*Customer experience is going to become the driving factor by 2020, outstripping price as the main product differentiator by this time*" (Walker, 2013). Following Ariely and Nortons argumentation, this sociocultural development shows that indeed negative physical consumption (the pain of spending money, as shown by Prelec and Loewenstein (1998), Rick, Cryder, and Loewenstein (2008), or Zellermayer (1996)) can be trumped by a positive conceptual consumption (having an experience that matches the user's goals and motives).

6.1.6 Virtual Consumption as Conceptual Consumption

What does all of this mean for consumption in the digital world? Online shopping for products or services, as well as engaging in social interaction in online platforms, has become a big deal for consumer behaviorists over the course of the past decades, and hence, research has increasingly been concerned with different aspects about purchasing online (e.g., Deighton & Kornfeld, 2009; Hamilton & Thompson, 2007). It becomes clear that here, too, conceptual consumption plays a major role for both positive experience in decision-making processes and subsequent satisfaction with this decision. The importance of conceptual consumption in the digital world can be effectively observed by taking a look at the purchasing behavior in social networks and online games, where users buy virtual goods for real money without being offered any form of physical utility.

An often-cited but in the meantime outdated example is the one of Second Life, a virtual 3D world, mimicking a real-life living environment, in which inhabitants can build a second identity and lead an everyday life via their avatar. Brands, such as Nike, build stores here to sell virtual versions of their clothes and accessories, which can be bought and worn by these avatars. These items have to be purchased by converting real money into the virtual world's own currency. In the case of Second Life, users demonstrated a high willingness to pay for virtual goods with no physical consumption experience or utility. Another popular and more current example is the highly successful business model of Fortnite, a free-to-play online game for multiple platforms, which offers in-game purchase options for merely decorative items such as outfits (so-called skins) for the player's avatar. While entering and playing the game does not require any payment, the game generated 296 million USD in the month of April 2018, almost exclusively via in-game purchases of cosmetic items, which do not affect the actual gameplay (Statt, 2018). World of Warcraft, an open-world online role-playing game, and the first-person-shooter game Counter-Strike offer further examples of the same phenomenon. For the latter, single users reportedly spend up to 60,000 USD for decorating their virtual weapons (Key, 2018).

According to research, reasons for this consumption behavior may vary: On the one hand, the consumption and display of rarely available, expensive, or skill-related items can improve the social status among players and signalize expertise (Oh, Ryu, & Bldg, 2007; Guo & Barnes, 2012), but on the other hand, selecting items allows a player to create and signal a certain identity, which is supported by wearing virtual outfits from certain brands a player associates with, for reasons of self-presentation and attitude (Li, Loh, Evans, & Lorenzi, 2013a; Hamari, 2015). Hence, experiencing a positive (i.e., satisfying) conceptual consumption does not necessarily require physical consumption. For these examples of buying sport shoes for an avatar in Second Life from a brand one associates with, "*this means that forgoing the physical product may detract very little from the enjoyable conceptual consumption that owning a Nike product allows*" (Ariely & Norton, 2009, p. 491).

It is important to note that "*[. . .] much of the bulk of this review is a catalogue of the way that different concepts—from fluency to fit to contamination—serve to shape people's preferences without their awareness*" (Ariely & Norton, 2009, p. 490). The

central finding is: Both the physical product characteristics and the underlying mental concepts are systematically and directly connected with each other. Depending on their physical traits, forms, size, sounds, movements, and behavior, products activate a certain mental level in the brain—and this in a mostly implicit manner. The activated mental concepts have far-reaching effects on our judgment of products, our buying behavior, and our patterns of use.

► People use conceptual consumption to strengthen their self-image, which in turn is based on their goals and motives (see also Chap. 4). "*[. . .] People may [even] choose negative physical consumption experiences precisely because such experiences offer positive conceptual consumption*" (Ariely & Norton, 2009, p. 488). The experience of both brands and their (digital) products and services must therefore be aligned with the goals and motives of the users in order to enable positive conceptual consumption through these channels. Ideally, conceptual consumption of (digital) products and services contributes to strengthening the self-image by serving the goals and motives of a user.

6.2 How Codes Drive User Behavior

As we have learned, every characteristic of a product—be it the smell, the form, haptic qualities, the behavior, or its packaging—provokes an association and activates a related mental level in the brain (see also Chap. 2). Therefore, for example, a freshly brewed cup of coffee can stimulate the representation of family, comfort, and trust, because emotions, memories, and experiences can be associated with a certain smell, which reminds us of family festivities. Physical warmth is translated into the feeling of social warmth, a soft surface encodes softness in a metaphorical sense, washing our hands clean is associated with becoming morally clean as well. While apes mainly organize their social hierarchy with the help of physical duels, most humans today forgo this variant and use status symbols like jewelry or cars to show their social strength. Hence, codes work in both ways: We buy expensive watches to signal our social status and grab a warm drink to compensate social coldness.

Mental concepts implicitly activate an *autopilot*, while the visible and tangible aspects of a product or a brand, also called basic goals, talk to the *pilot* (see also Chap. 3). Successful products and brands communicate with the customer via both ways. Codes serve the function of creating an explicit and ideally also implicit (unconscious) connection to the motives of the consumer, irrespective of whether these are trait or state features (see also Chap. 4). They make up the connection between the product and the motive, and they transfer meanings and representations, helping the customer to learn how to position a product or a brand (Scheier & Held, 2012).

With the help of codes, decision-making and behavior can be influenced effectively. This process is called priming (see also Chap. 3). It describes the capability of

marketers to use targeted communication actions to reach the unconscious level of customers and influence their buying decisions (Scheier & Held, 2012).

- The frontal lobe (lobus frontalis) is responsible for logically derived decision making and anticipation of the consequences of decisions (for details, see also Chap. 2). Research has found that important information processing concerning product choices takes place right here, e.g., choosing a product based on its brand logo or on its sensory qualities (Green & Holbert, 2012; McClure et al., 2004; Singh & Sharma, 2010). Here, the codes unfold their full potential.

However, not every signal that is communicated can be expected to immediately change the behavior of the consumer or activate mental concepts. To actually achieve this, two factors have to be given: The signals must be congruent with the product claim or brand positioning and stimulate the implicit motives in the limbic system. Only then, credibility can be achieved, which is necessary to trigger the intended (buying) behavior (Scheier & Held, 2012). Consequently, the aim of coding signals is to create positive associations and connect them to matching motives (Scheier & Held, 2012) (see also Chap. 4). An illustrative example, which is often cited in the literature, is Beck's Bier, a German beer brewery. Here, a three-masted ship was chosen as a code for adventure and freedom. This imagery is associated with the brand as well. Connecting these special motives with the given codes is consistent with the lifestyle of the addressed target group. The success and the popularity of the brand both reflect its effective brand communication (Scheier & Held, 2012).

For marketers and UX designers, it is important to find relevant and congruent codes that match these specific motives, because the more codes can be found for a product and the communication, the more sustainable the information will be kept in the consumer's brain (see also Sect. 6.3). Since society is undergoing constant change and trends evolve in increasingly short circles, marketers have to continuously check the signals their brand is sending in order to avoid sending an unintended message: As soon as a brand has been exposed to negative associations too often, it becomes difficult to re-create the once positive image of the brand. Studies show that negative stimuli cause higher brain activity than positive ones. This means that the avoidance system has more severe effects than the reward system (Traindl, 2007).

An important aspect for international products and campaigns is the consideration of cultural differences among the regions where the product is planned to be launched. The advancing globalization and the liberalization of the world market require digital products to be designed to meet the diverse cultural needs of different users (Honold, 2000). Every culture has specific mental concepts, and hence, specific codes and meanings (see also Chap. 3) (Scheier, 2012). Consequently, it is important to plan communication carefully. Marketers should first examine the cultural context and the culture-specific codes extensively, prior to all actions.

Defining products by codes can also support decision-making processes. When an agency has developed several potential concepts for a client, the final decision is quite often still based on a mere gut feeling. Here, the precise definition of codes can help. The more signals are set within a campaign or a product concept, the more effective is the unconscious communication with the consumer. This makes it easier to argue in favor or against a certain concept. How this can be done systematically is described in Chap. 7.

6.3 Multisensory Communication

In order to successfully communicate via digital channels, multisensory communication is an effective way to gain relevance, credibility, and differentiation. The human brain is designed to perceive its environment in a multisensory way (see also Sect. 2.3). Everything that the brain consumes via our five senses gets associated with emotions and is memorized—positively or negatively. As a consequence, communication via multiple senses can be considered effective and efficient (Lindström, 2010).

► User experience, in this context the perception of and the interaction with digital products, addresses the sense of vision, the sense of hearing, and the sense of touch. Hence, information is processed with an effectiveness of 80–90% (see also Chap. 2). Consequently, user experience design becomes a valuable tool, which helps transferring brand messages in a sustainable manner.

Hence it is important not only to address primary senses. Physical attributes such as warmth, surface structure, among others, address secondary senses, which are important for the successful communication of a brand, too. These channels can also help to implicitly send messages in the form of codes (Häusel, 2012).

Especially when considering the rise of the *Internet of Things* (IoT), the enormous potential of creating digital identities becomes clear (see also Sect. 5.4.2). Objects are increasingly often equipped with a character: Fridges talk to us and autonomously order food for us; thermostats send us push notifications to tell us that they turn up the heat, since they have noticed we are on the way home. Cars autonomously drive us from A to B and entertain us while doing so. In this context, Ivy Ross, Vice President of hardware design at Google, asks herself: "*If you held Google in your hand, what would it look and feel like*?" Already in 1997, Lars-Erik Janlert and Erik Stolterman stated in their paper "*The character of things*": "*Consistency in character may become more important than ever in the increasingly complex artifacts of computer-supported future*" (Janlert & Solkerman, 1997, p. 297). Designers will be the

(continued)

ones to determine the character of the Internet of Things, just like they will define when objects interact with us, the way they will talk and behave, all based on the positioning of a brand. Future IoT UX concepts will address all sensory communication channels. Taking advantage of super-additivity (see definition below), products will become the literal embodiment of a brand and communicate the brand even more coherently and sustainably than today's screen-based interactions.

If a product or brand communicates with the user via several sensory channels simultaneously (see also Chap. 2), the user's brain reacts with a ten times higher activity compared to traditional communication via bidimensional channels, which only address the senses of hearing and vision. This phenomenon is described by the term of *super-additivity* or *multisensory enhancement* (Häusel, 2012). This effect of enhancement makes the human brain process and memorize patterns more effectively, and hence, lets brand patterns have a larger and more sustainable impact. The small impulse of a code can cause a snowball effect in the human brain: The whole network, including all experiences and emotions associated with a product or a brand, can be activated. The more channels are activated, the more intense and sustainable the communication's effectiveness becomes (Lindström, 2010). User experience design is predestined for the mutual activation of multiple channels.

► If a message reaches our brain via multiple channels at the same time, our brain considers this information particularly relevant—this is what evolution has taught us. As a consequence, sensory impulses do not only add up, but become amplified by certain mechanisms inside our brain. We experience these impulses up to ten times more intensively, compared to how we would have experienced the mere sum of the parts of these impressions (Häusel, 2012). This is what we call *super-additivity*.

The processing of multisensory messages generally takes place in the whole brain. The so-called multisensory neurons, also known as interneurons, simultaneously process impulses coming in from multiple sensory channels (see also Chap. 2). They are located in nearly every part of the brain. A large share of interneurons is concentrated in the area of the Superior Colliculus (Alvarado, Vaughan, Stanford, & Stein, 2007). This part of the brain is responsible for the majority of the processing of impulses. The senses of touch, vision, and hearing, which make 80–90% of the processing of messages in the brain (see also Chap. 2) and hence mark the most influential communication channels, merge right here. All impressions that are captured with senses are processed with the help of the amygdala and the orbitofrontal cortex. They are also responsible to recall stored emotions and associate them with a certain product or brand (Lindström, 2010). This means that every channel has its own area to process messages, while they all merge into a consistent emotion that is recalled from these impulses (Häusel, 2012).

Again, it becomes clear that what is communicated needs to have the same effect on different channels in order to avoid reductions in effectiveness and confusion for the consumer (Scheier & Held, 2012). Knowing which sensory channel should be stimulated first can help to achieve a long-term differentiation for both products and the brand. This marks the key for achieving a unique touchpoint for the consumer.

6.3.1 Embodiment

Next to the opportunities offered by multisensory communication (see also Sect. 2.1.3), there is another method to achieve differentiation from competitors. The fields of *embodied semantics* and *embodied cognition* describe embodiment as a way to trigger mental concepts via the interaction of a product. When using a product, the motoric area is also stimulated, of course, in addition to the already mentioned areas (Scheier, 2012). Perceiving a product in its features lets our brain ask: What is it and what can I do with it? Here, research refers to embodiment, describing the central role of our body in decoding codes (Scheier, 2012). The way we interact with a product, the way we carry it, swipe over its surface—all of these characteristics are implicit (unconscious; see also Chap. 3) codes. They transfer meaning just like the product's color, material, or sound do.

It is not for nothing that Apple has had the interaction gestures patented that are used for the navigation for the iPhone. The handling of the iPhone has something easy, playful to it: We flip through the apps with a soft stroke of our pointing finger, just like we flip the pages of our favorite magazine. This reminds us of relaxing, lightness, and leisure time. This means that using an iPhone encodes the mental concepts *ease*, *lightness*, and *leisure time*, additionally triggered by bright color palette and playful animations (like the shaking of the app icons, when an app is to be moved or deleted). Hence, the look and feel of a product as well as its behavior convey the concepts of *ease*, *lightness,* and *leisure time*, in every form of use (see also Scheier, 2012).

When the product claim and/or brand positioning matches the handling of the product, credibility and trust are generated too (Scheier, 2012). Through intensified neuronal activity, the product becomes increasingly attractive to the consumer. The behavior of the consumer is influenced on an unconscious level. The way we use a product is an essential part of the encoding. Summarized, we find: Products that work via multisensory channels, i.e., address multiple senses at the same time, have a higher expectation to succeed in the market (see also Chap. 2).

6.4 Language

Even if it does not seem too obvious at first glance, language is an essential part of the user experience of a product and must not be neglected. Language can be divided into the spoken and the written word. The spoken word is determined by semantics and prosody, i.e., accent, sound, and melody. This shows that the human brain needs

an intact auditory system to recognize details and differences among the sounds of a language and connect them with emotions from the limbic system, i.e., higher cognitive systems of the human brain.

The same is true for the written word, for example, when reading a book or a newspaper article. The information is transferred via a visual system, which is able to recognize different letters. This information reaches higher cognitive processes, where it gets connected to meaning. Every word can be seen as a module and can, again, be divided into its subparts. These subparts are called morphemes, which consist of single phonemes, i.e., the smallest units that make words different from each other. In written language, these are called graphemes. Syntax (or grammar) defines the order of words. Without it, language would be nothing more than a meaningless mass of words. Hidden information, which can be transferred via elements such as irony or sarcasm, can be conveyed through prosody. Facial expression, gestures, and posture are further, nonverbal elements of language, which contribute to transporting the meaning of what is said (Pritzel, Brand, & Markowitsch, 2003).

For marketers and UX designers, the prosody of a language is of special importance. They have to be aware of the different accents of a culture, the culture-specific sound of words, and melody. Only then, serious and irreversible mistakes in the spreading of brand messages and the meaning of textual content can be avoided. For effective brand communication, this means that it is necessary to combine language with nonlanguage elements (e.g., embodiment), in order to transfer messages effectively (Scheier & Held, 2012).

Kinnereth Yifrah, renowned expert in UX writing, established the term *microcopy* for the "*words or phrases in the user interface that are directly related to the action a user takes*:

- *The motivation before the action*
- *Instructions that accompany the action*
- *The feedback after the user has taken the action*" (Yifrah & Licht, 2017, p. 9)

In her book, she underlines that

> good microcopy changes the connection between the interface and its users into a mutual relationship, a conversation, that can be rich and even moving. Microcopy will create a dialog with your users that is full of character, such that it makes them want to work together with the application and return another day (Yifrah & Licht, 2017, p. 10).

In order to coherently shape this dialog's character, language should always match with the characteristics of a product (and thus the brand positioning), i.e., with its colors, shapes, and further physical attributes. If, for example, the spoken sound of a word is hard (like for the case of a "k" or a "t"), the human brain will assume that the other characteristics of the product are also hard and edgy and vice versa. Hence, the product would lose credibility and brand fit, if its other attributes were soft and sensitive (Scheier & Held, 2012). As Yifrah puts it:

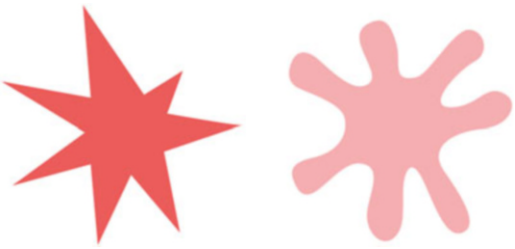


Fig. 6.1 Forms "Kiki" and "Bouba" (source: author's illustration)

> Microcopy written with a full understanding of your brand and target audience highlights the brand's character and differentiates it from other brands (see also Sect. 7.4). [. . .] It will support your vision and the values of your brand, sharpen the key message to your target audience, and create an authentic and unified experience throughout the whole interaction with your audience (Yifrah & Licht, 2017, p. 11).

The following examples illustrate the importance of language, even for UX design. A study conducted by Ramachandran and Hubbard (2001) shows that 95–98% of the study participants associate the word "*Bouba*," which has a rather soft tone to it, with a curvy, organic shape and the word "*Kiki*," having a hard sound to it, with an edgy, jagged form. These findings apply to American college undergraduates just as much as for Tamil speakers in India (Fig. 6.1).

It is especially the spoken language that rises in meaning in the age of the Internet of Things. Companies like Amazon and Apple hire dramaturges and actors to create the characters of their artificial intelligence-based assistants (e.g., Amazon's Alexa, Apple's Siri, or Microsoft's Cortana), in order to shape the way these systems talk to users (Dwoskin, 2016).

The aim of marketers and UX designers should therefore be to not only stimulate the conscious, aware perception of the consumers, but also address their unconscious level of perception (see also Chap. 3) via the powerful channel of spoken and written language.

6.5 Symbolism

The last access to the human brain that should be mentioned in this context is created through the power of symbolism. Symbols are carriers of meaning, which implicitly transport culturally learned messages into our brain—and trigger certain decisions and behavior (Scheier & Held, 2012).

The example of discount symbols, as used in fashion sales, perfectly illustrates this power. Shiningly bright red labels, carrying information about numbers measured in percentage, signal consumers that they could purchase items for lowered prices. Without anyone having spoken a single word or engaging in an explicit exchange of information, the attention of the consumer is caught. By using symbols like a red discount label, the control system in the frontal lobe can be circumvented—or even turned off (Scheier & Held, 2012). Hence, symbols have the

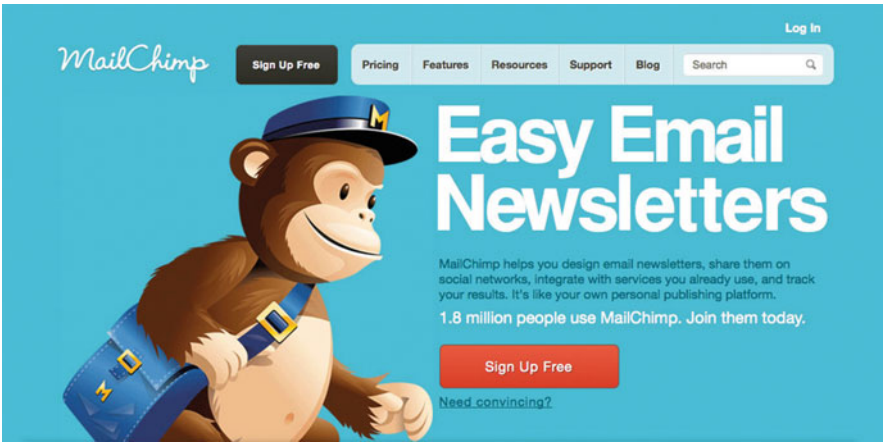


Fig. 6.2 MailChimp landing page (source: www.mailchimp.com; ©2001–2019 MailChimp® All rights reserved)

power to transport messages fast and effectively to the consumer, whose behavior can then be influenced in a certain way. In the given context, this means to emotionalize symbols in such a way that every contact with the product or the brand transfers the intended message (Scheier & Held, 2012). Here we can, again, refer to the example of the three-masted ship in the Beck's Bier commercial: It is a clear-to-understand symbol for *expedition*, *adventure*, and *experience*, which serves the motives of the target group. The meaning of the symbol *three-masted ship* is being implicitly decoded.

► Codes based on symbols that are learned via culture and that are hence easy to communicate work very effectively. Symbols can address the *autopilot* of our brain and directly trigger behavior.

The main challenge in creating a brand-congruent user experience lies in the proper integration of marketing-induced symbols in (digital) products. The newsletter system Mailchimp uses a chimpanzee as a symbol to indicate an easy-to-understand use, communicating that the handling of the product is so simple it could be done by a primate. The ape as an assistant is a redundant symbol throughout the whole user journey. It, for example, congratulates the user after the successful completion of a newsletter. The simplicity of use, which is characteristic for the product Mailchimp, is connected with the user's brain via meaningful and matching symbolism (Figs. 6.2 and 6.3).

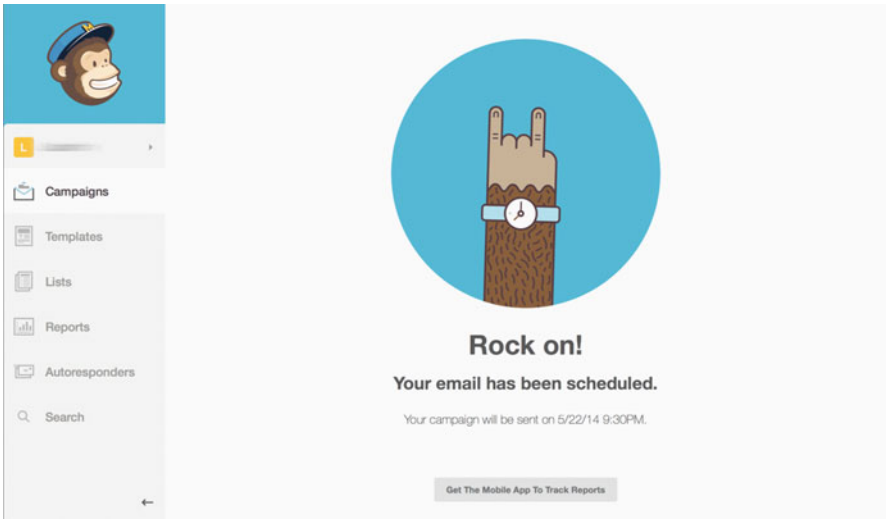


Fig. 6.3 MailChimp newsletter shipping confirmation (source: MailChimp Newsletter Demo, 2018; ©2001–2019 MailChimp® All rights reserved)

Conclusion

Digital products are more than their visual design. Next to the sense of vision, they can also address the sense of hearing and the sense of touch. Hence, designers of successful products should not only address the eyes of their users but also the ears and their haptic senses. The focus should not only be put onto the visual attributes of the product, but also on more deeper levels of product-user interaction, such as multisensory communication, embodiment, language, and symbolism.

User experience should also be considered as a multisensory marketing channel, which can be used in a multisensory matter, allowing a transfer of brand message effectively. Given that mental concepts drive our behavior, physical characteristics and behavior of digital products need to be in line with the users' goals and motives. Decisions concerning UX design concepts can be made on the basis of signals and codes, instead of getting lost in endless discussions about personal taste. The more codes we can find for a product, the more effectively the brain of the consumer can memorize the transported brand and product message.

References

Alter, A. L., & Oppenheimer, D. M. (2006). Predicting short-term stock fluctuations by using processing fluency. *Proceedings of the National Academy of Sciences, 103*(24), 9369–9372. https://doi.org/10.1073/pnas.0601071103.

Alvarado, J. C., Vaughan, J. W., Stanford, T. R., & Stein, B. E. (2007). Multisensory versus unisensory integration: Contrasting modes in the superior colliculus. *Journal of Neurophysiology, 97*(5), 3193–3205. https://doi.org/10.1152/jn.00018.2007.

Ariely, D., & Norton, M. I. (2009). Conceptual consumption. *Annual Review of Psychology, 60*(1), 475–499. https://doi.org/10.1146/annurev.psych.60.110707.163536.

Avnet, T., & Higgins, E. T. (2006). How regulatory fit affects value in consumer choices and opinions. *Journal of Marketing Research, 43*(1), 1–10. https://doi.org/10.1509/jmkr.43.1.1.

Deighton, J., & Kornfeld, L. (2009). Interactivity's unanticipated consequences for marketers and marketing. *Journal of Interactive Marketing, 23*(1), 4–10. https://doi.org/10.1016/j.intmar.2008.10.001.

Dwoskin, E. (2016). *The next hot job in Silicon Valley is for poets*. Retrieved July 3, 2019, from https://www.washingtonpost.com/news/the-switch/wp/2016/04/07/why-poets-are-flocking-to-silicon-valley/

Grant, H., & Higgins, E. T. (2003). Optimism, promotion pride, and prevention pride as predictors of quality of life. *Personality and Social Psychology Bulletin, 29*(12), 1521–1532. https://doi.org/10.1177/0146167203256919.

Green, S., & Holbert, N. (2012). Neuroimaging and marketing research: Hook up, love affair, or happy marriage? In R. J. Kaden, G. Linda, & M. Prince (Eds.), *Leading edge marketing research: 21st-century tools and practices* (pp. 252–272). Thousand Oaks, CA: SAGE. https://doi.org/10.4135/9781452240558.n13.

Guo, Y., & Barnes, S. J. (2012). Explaining purchasing behavior within World of Warcraft. *Journal of Computer Information Systems, 52*(3), 18–30.

Hamari, J. (2015). Why do people buy virtual goods? Attitude toward virtual good purchases versus game enjoyment. *International Journal of Information Management, 35*(3), 299–308. https://doi.org/10.1016/j.ijinfomgt.2015.01.007.

Hamilton, R. W., & Thompson, D. V. (2007). Is there a substitute for direct experience? Comparing consumers' preferences after direct and indirect product experiences. *Journal of Consumer Research, 34*(4), 546–555. https://doi.org/10.1086/520073.

Häusel, H.-G. (2012). *Emotional Boosting: die hohe Kunst der Kaufverführung* (2nd ed.). Freiburg: Haufe-Gruppe.

Higgins, E. T. (2000). Making a good decision: Value from fit. *American Psychologist, 55*(11), 1217–1230. https://doi.org/10.1037//0003-066X.55.11.1217.

Higgins, E. T., Idson, L. C., Freitag, A. L., Spiegel, S., & Molden, D. C. (2003). Transfer of value from fit. *Journal of Personality and Social Psychology, 84*(6), 1140–1153.

Honold, P. (2000). *Interkulturelles Usabilityengineering: Eine Untersuchung zu kulturellen Einflüssen auf die Gestaltung und Nutzung technischer Produkte*. Düsseldorf: VDI.

Janlert, L.-E., & Stolterman, E. (1997). The character of things. *Design Studies, 18*(3), 297–314.

Keinan, A., & Kivetz, R. (2008). Remedying hyperopia: The effects of self-control regret on consumer behavior. *Journal of Marketing Research, 45*(6), 676–689. https://doi.org/10.1509/jmkr.45.6.676.

Key, R. (2018). *Someone actually spent over $60,000 on a counter-strike weapon skin*. Retrieved July 3, 2019, from https://www.gameinformer.com/b/news/archive/2018/01/31/someone-actually-spent-over-60000-on-a-counterstrike-weapon-skin.aspx

Li, E. Y., Loh, S., Evans, C., & Lorenzi, F. (Eds.). (2013a). *Organizations and social networking: Utilizing social media to engage consumers*. Pennsylvania: IGI Global. https://doi.org/10.4018/978-1-4666-4026-9.

Li, M., Wang, L., & Wu, M. (2013b). A multi-objective genetic algorithm approach for solving feature addition problem in feature fatigue analysis. *Journal of Intelligent Manufacturing, 24*(6), 1197–1211. https://doi.org/10.1007/s10845-012-0652-7.

Lindström, M. (2010). *Buy ology: truth and lies about why we buy* (1st ed.). New York: Broadway Books.

McClure, S. M., Li, J., Tomlin, D., Cypert, K. S., Montague, L. M., & Montague, P. R. (2004). Neural correlates of behavioral preference for culturally familiar drinks. *Neuron, 44*(2), 379–387. https://doi.org/10.1016/j.neuron.2004.09.019.

Novemsky, N., Dhar, R., Schwarz, N., & Simonson, I. (2007). Preference fluency in choice. *Journal of Marketing Research, 44*(3), 347–356. https://doi.org/10.1509/jmkr.44.3.347.

Oh, G., Ryu, T., & Bldg, S. (2007). Game design on item-selling based payment model in Korean online games. *Situated play, proceedings of DiGRA 2007 conference*. pp. 650–657.

Prelec, D., & Loewenstein, G. (1998). The red and the black: Mental accounting of savings and debt. *Marketing Science, 17*(1), 4–28. https://doi.org/10.1287/mksc.17.1.4.

Pritzel, M., Brand, M., & Markowitsch, H. J. (2003). *Gehirn und Verhalten: ein Grundkurs der physiologischen Psychologie*. Heidelberg Berlin: Spektrum Akademischer.

Ramachandran, V. S., & Hubbard, E. M. (2001). Synaesthesia — A window into perception, thought and language. *Journal of Consciousness Studies, 8*(12), 3–34.

Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research, 34*(6), 767–782. https://doi.org/10.1086/523285.

Rust, R.T., Thompson, D.V., & Hamilton, R. (2006). Defeating feature fatigue. *Harvard Business Review*. Retrieved July 3, 2019, from https://hbr.org/2006/02/defeating-feature-fatigue

Scheier, C. (Ed.). (2012). *Codes: die geheime Sprache der Produkte* (2nd ed.). Freiburg im Breisgau: Haufe-Lexware.

Scheier, C., & Held, D. (2012). *Wie Werbung wirkt: Erkenntnisse des Neuromarketing* (2nd ed.). Freiburg: Haufe-Lexware.

Singh, D., & Sharma, J. K. (2010). *Neuromarketing: A peep into customers minds*. New Delhi: PHI Learning.

Statt, N. (2018). *Fortnite surpasses PUBG in monthly revenue with $126 million in February sales*. Retrieved July 3, 2019, from https://www.theverge.com/2018/3/21/17148918/fortnite-battle-royale-pubg-monthly-revenue-sales-126-million-superdata-research

Thompson, D. V., & Norton, M. I. (2011). The social utility of feature creep. *Journal of Marketing Research, 48*(3), 555–565. https://doi.org/10.1509/jmkr.48.3.555.

Thompson, D. V., Hamilton, R. W., & Rust, R. T. (2005). Feature fatigue: When product capabilities become too much of a good thing. *Journal of Marketing Research, 42*(4), 431–442. https://doi.org/10.1509/jmkr.2005.42.4.431.

Traindl, A. (2007). *Neuromarketing: die innovative Visualisierung von Emotionen* (3rd ed.). Linz: Trauner.

Walker. (2013). *Customers 2020: A progress report*. Retrieved July 3, 2019, from https://www.walkerinfo.com/knowledge-center/featured-research-reports/customers-2020-a-progress-report

Williams, L. E., & Bargh, J. A. (2008). Experiencing physical warmth promotes interpersonal warmth. *Science, 322*(5901), 606–607. https://doi.org/10.1126/science.1162548.

Yamakawa, Y., Kanai, R., Matsumura, M., & Naito, E. (2009). Social distance evaluation in human parietal cortex. *PLoS One, 4*(2), e4360. https://doi.org/10.1371/journal.pone.0004360.

Yifrah, K., & Licht, J. (2017). *Microcopy: The complete guide*. Haifa: Nemala Microcopy Studio.

Zellermayer, O. (1996). *The pain of paying*. Doctoral thesis. Department of Social and Decision Sciences, Carnegie Mellon University.

Zhong, C.-B., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion literally feel cold? *Psychological Science, 19*(9), 838–842. https://doi.org/10.1111/j.1467-9280.2008.02165.x.

The User Experience Identity (UXi) Method

7

Companies invest large sums in the development and communication of their brands in order to create a perceivable image that generates relevance and credibility among their target group and, ideally, allows the brand to stand out among the competition. A comprehensible and coherent brand image at all contact points generates consumer confidence and creates loyalty. Companies attach great importance to telling the right story with their brands. However, often a company's digital products (this, for us, includes services as well) tell a completely different story than the other channels. Nowadays, digital products are some of the most frequent points of contact between a consumer and a company. Is this not where the identity, history, and message of a brand should be most strongly emphasized?

As already described in Chap. 5, digital products have become an integral and important part of the overall customer experience. Users that interact with a brand and have a disappointing experience, for example, on the customer hotline, and also find the app of mediocre quality, certainly do not like the product because they are impressed by the TV campaign. Every experience with the touchpoint of a brand shapes the overall picture. That is why every digital product has a significant impact on brand experience—user experience is brand experience (see also Chap. 5). Digital products are brand ambassadors that communicate a brand's values to (potential) customers. How they speak to the user, how they behave, and how they look trigger associations. For example, BMW's digital products must feel *dynamic*, and transport BMW's claim *sheer driving pleasure* in order to meet the user's expectations. Similarly, a banking app should ideally convey a feeling of security and transparency in every interaction. The brand character is therefore not only a guideline for TV campaigns, print ads, and all other classic advertising channels. Whether a brand communicates dynamism, empathy, or security must also be noticeable in every single interaction with a company's digital products. Above all, a company's digital products can make a significant contribution to anchoring a brand image in the long term.

This chapter was written by Felix van de Sand and Pamela Zotz.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_7

After all, interfaces are faces. When we interact with people, we automatically try to categorize them and their meanings for us: Are they likable, open-minded, introverted, clever, professional, and trustworthy? We unconsciously judge appearance, gesture, facial expression, and language, and assess the consequences of this behavior, so we can act accordingly. Interaction with interfaces follows the same rules. As soon as a company enters the market with a product, this product communicates, intentionally or unintentionally, on many different channels and levels. The way in which a product is designed, how it *behaves*, triggers certain emotions and associations of the user with every interaction. When we use a digital product, we unconsciously read its appearance, its behavior, and therefore its meaning, its story. We ask ourselves: "*What is this product, what is it able to do, what can it offer to me, how do I interact with it?*" Within a split second, we decide whether a product is relevant and attractive for us or not.

Hence, we learn that what communication psychologist Paul Watzlawick teaches us about humans is true for products as well: They cannot not communicate (Watzlawick, Beavin, & Jackson, 1967, p. 51). Every behavior is a form of communication, and thus, every product tells a story with the way it looks and behaves. This makes it even more important to design digital products in such a way that they trigger specific emotions and associations in the user – that they tell the right story. They must satisfy user needs and convey the values of the underlying brand at the same time.

> Marketing people like to say that a product is more than a physical object. [. . .] A car is more than a car. There's a story that the car represents. A promise. And that's what we're really selling. That's what the brand is made of (Bogusky & Winsor, 2009, p.14).

This brand story, skillfully tailored to the needs and motifs of the target group, has a major impact on the success of the product or service. Thus, it becomes increasingly clear that this story also has to play a role when designing digital products. As Bogusky puts it, the brand story has to be "*baked right into the product*," in order to create a "*product designed with a mission, a product with a story to tell*" (Bogusky & Winsor, 2009, p. 15).

Several studies have shown that functional and even aesthetic product quality have long become hygiene factors and a mere precondition for the usage of a digital product (see also Chap. 5). User loyalty has ceased to work through good looks or a high ease of use, i.e., an appealing aesthetic or high pragmatic quality. Comscore (2017), for example, states that "*even if an app serves a practical need or purpose, many Millennials don't want it on their phone if they don't like the way it looks and represents them*." For a sustainable relationship between user and product, the design of digital products requires above all a high hedonic quality (see also Chap. 5), since it can foster a user's identification with brands and their products.

Especially the research findings concerning conceptual consumption that were introduced in Chap. 6 can be used as a basis to develop products with a high hedonic quality. Briefly summarized, conceptual consumption explains that the way products are shaped affects the mental concepts that are triggered in the users' brains, when

they use a digital product. The product sends signals in the form of colors, layouts, fonts, and other design elements. These signals are unconsciously decoded by the user and create a mental concept (see also Chaps. 2 and 3). This mental concept is then compared to the user's expectations of a brand. In order for a product to create the intended mental concept in a user's brain, a digital product must represent its brand's core values adequately by using appropriate design elements—so-called *digital design codes* (see also Sect. 7.4). If this is achieved, user experience and brand experience support each other naturally, a high hedonic quality is reached, and a digital product thus becomes an effective brand ambassador, which manages to bind the user not only to the product itself, but also to the brand. Thus, conceptual consumption is a determining factor in our decision to either purchase products with soft-sounding brand names or prefer digital products with a cool, reduced color scheme and sharp, precise forms, or products that are easily controlled with a mere gesture of the index finger.

Every interaction with a digital product has the potential to create a lasting emotional relationship between a product, its user, and the brand behind it. When designing for meaningful experiences (see also Chap. 1), it becomes necessary to design in close accordance with the brand values that a brand wants to represent. Digital products are tools to attract the attention of users on a regular and long-term basis and thus anchor brand messages sustainably. UX practitioners need to take advantage of the peculiarities of the conscious and nonconscious perception of users. By using brand values as the basis for user experience design, user experience becomes brand experience.

In order to make a brand-driven approach to user experience design comprehensible not only for designers, but also for strategic decision makers, we developed the *user experience identity* (UXi) method. This method uses research findings in the aforementioned fields to create a congruent perception of a company's brand and digital products, in order to bring the values of a brand to life in every design element, in every interaction, animation, or transition (i.e., the transition between two different states of an interface) of a digital product. The goal of this process is to create more meaningful relationships between products and their users, and thus, by providing a high hedonic quality, to increase their chances of success. The following sections will show you how the UXi method uses the three steps of the *semantic map*, the *empirical knowledge*, and the *digital design codes* to create successful digital products through implementing a high hedonic quality.

Finally, we could not put it in better words than Marc Hassenzahl in his book *Experience Design—Technology for all the right reasons*, who here claims that it is about time to put "*[. . .] experience before functionality and leaving behind oversimplified calls for ease, efficiency, and automation or shallow beautification*" and to finally "*[. . .] make technology more meaningful*" (Hassenzahl, 2010, p. vi).

7.1 Case Studies

Consequently, the following section will give an overview of different mobile applications which were designed with the UXi method and serve as case studies for the explanation of all three steps for its creation and later validation of the UXi method. All apps are carefully selected examples of the finance sector. Despite this, all case studies differ in background, functionality, and their underlying brand personality. The HypoVereinsbank mobile banking app offers an example of an existing and well-established brand. In contrast to that, the other two examples—a prepaid credit card product and the GetOskar app—are products of relatively young brands: The prepaid credit card case tries to reach a young audience and extend its market share, and GetOskar as a start-up case study, which has not been launched yet.

7.1.1 HypoVereinsbank Mobile Banking App

The HypoVereinsbank (HVB) mobile banking app is a standard tool for the HVB's customers to check their bank account status, conduct money transfers, and contact the HVB customer service. Even though these features sound very basic, the usability of the app, which was available in the App Store until the end of 2015, was only mediocre and the look and feel of the app was not able to keep up with the new brand positioning HVB had published in 2014, where *being ambitious* was one of the driving new brand promises of the company. One campaign of that time makes clear that HVB aims for straightforward communication and excellent consulting services in order to serve the newly defined brand value *ambition*, with which they want to address their customer's needs (see also Fig. 7.1). It was especially this new positioning that made HVB customers expect the app—as their most frequently used point of interaction with HVB—to have an adequate quality, better usability, and a higher design standard. In general, people are already used to certain standards for app designs, especially with Apple's *Human Interface Guidelines* and Google's *Material Design* as long-term industry benchmarks. Subsequently, an App Store rating with only 1.5 stars was not surprising, yet unacceptable for such a well-known brand. With the goal of promoting the new HVB brand personality with a multi-channel concept, which affects all possible touchpoints of a user customer journey, the mobile banking app needed to be updated.

Back in January 2014, the former executive board spokesperson of HVB, Dr. Theodor Weimer, announced that about half of the HVB branches would be closed by the end of 2015. With the digitalization of the HVB business model, the company decided to focus their resources on fewer but more attractive and modern branches, which were supposed to serve as flagship branches. The remaining stores should have been designed according to the brand positioning following the principle of *being ambitious* and improve their perceived quality of service on all channels (Maier, 2014).

That being said, reworking the digital contact points with their customers was one of the highest priorities for HVB. Consequently, the bank decided to improve their mobile banking app with the help of the UXi method. With the goal of communicating

Fig. 7.1 HVB campaign 2014 (source: HypoVereinsbank; The ad describes that someone who only says what the recipient wants to hear should better not say anything at all. Straightforwardness. This is how HVB defines excellent consulting: They follow their clients' ambition)

HVB's new brand image to a broad audience, it was very important to set a focus on the newly introduced value of *being ambitious*. This value implies a premium positioning among all similar banking apps, which should be achieved by designing every pixel and every interaction of the app accordingly. The designers intended to achieve a high quality, yet trustworthy impression, when users interact with the digital product. While communicating a certain exclusiveness, it was also important for the bank to be perceived as honest and transparent. All these aspects of HVB's brand personality were transferred into the app with the help of plenty of white space in the app design, broadly positioned interaction elements like list items and buttons, and a straight focus on the essential information—transactions and numbers. Overall, the new HVB mobile banking app (launched in summer 2016) is supposed to be perceived as smart, minimalistic, and exclusive at the same time (see Fig. 7.2).

7.1.2 Case Study of Prepaid Credit Card App

The prepaid credit card app is closely related to the HVB app on a functional level. As a prepaid credit card app for Visa, users can see and conduct transactions, similar to a banking app, but with little less functionalities. The target group and brand positioning of the HVB and this app, however, differ significantly. This case study allows the users

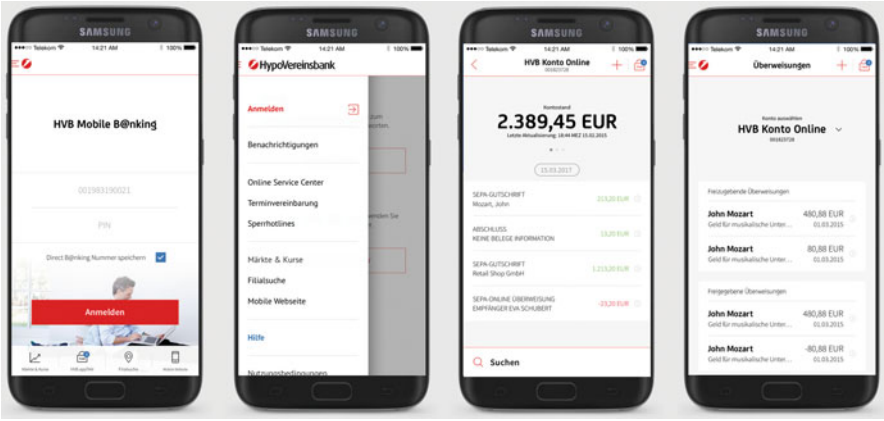


Fig. 7.2 HVB mobile banking app 2016 (source: HypoVereinsbank)

to manage their analog prepaid credit card by tracking expenses over time, defining credit card locks, limits, and topping up money. The app can be used for receiving information about the current balance, topping up the budget of the prepaid credit card, conducting online payment, and cashless payment worldwide. The overall aim of the app is to help young people get familiar with their finances without taking the risk of running into debt. In this, the brand wants to address young people, guiding them through their first financial actions and accompanying them into adulthood. Consequently, the app is designed to address young people's flexible lifestyle, while transparently laying out all financial decisions in order to guarantee a helpful learning curve for financial matters. The main target group comprises young people, i.e., teenagers and young adults of the Generation Z, who are already starting to develop their own financial management skills. With a young target audience like this, maybe unfamiliar with the field of personal financial management and online banking, the interface needed to be simply organized, well-structured, and easy to understand in order to not discourage the inexperienced user. Hence, a simple sign-up and the absence of a multiphase application process keep things easy, while other functionalities like peer-to-peer payment and the possibility of worldwide usage address the specific consumption habits and needs of the young target group—and mark the so-called unique selling point (USP) of the app. The ultimate value proposition is an easy and worldwide usage without any risk.

To bring these functions to life, the app's UX design team had to convey the brand values of this case. They identified three major values representing the unique character of the brand. For this case, the first brand value *flexible* is associated with new freedom that comes through the possibility of global usage. Flexibility creates a smart and inviting atmosphere that adapts to the needs of the users, who can serve their needs easily on the go. The second brand value *transparent* addresses the wish of security in payment. The absence of hurdles and barriers, e.g., in the onboarding process, and in reduced bureaucracy, allows a feeling of full control and insight. The third brand value *young* aims at creating a lively atmosphere, taking into consideration the motives of the target group: The modern prepaid credit card is not a mere bureaucratic instrument, but

a lifestyle product, representing sustainability in consumption. The app design represents all values accordingly: The start screen shows a modern and positive color combination and agile forms (e.g., the half circle), adding a positive connotation to the context of financial management, conveying the value of *young*. The focus point is clearly set on the balance information, which represents the values of transparency: The user has easy and immediate access to the most important information. The credit card overview screen uses a dark ambience to provide a feeling of security and serious reliability. Moreover, the card image creates an optical connection to the haptic feeling of a real credit card, while smooth swipe interactions represent the brand value of *flexible*. In contrast to the powerful and ambitious HVB app, this app offers a youthful, easy-to-use application with globally functioning services, which makes no compromises for usage, and offers an authentic and suitable option for the young target group, which should be addressed with their brand values (Fig. 7.3).

7.1.3 GetOskar Loyalty Program App

The mobile application GetOskar is another product positioned within the sector of financial technology (FinTech); however, it differs in its functionality set from the previous examples. With its new concept of a loyalty program app for credit cards, users are able to track their transactions and get monetary rewards for their shopping activities. Based on a new EU guideline, it is now possible for companies to track their customers' credit card activities, if they allow them to do so. GetOskar uses this possibility, turning it into a fun experience for the user: The brand introduced a new

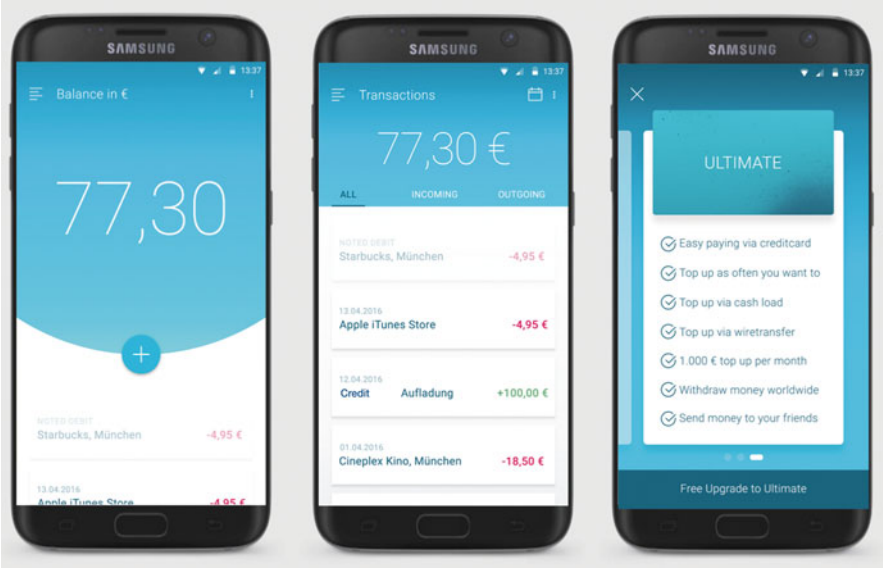


Fig. 7.3 Case study of prepaid credit card app (source: Authors' wireframes)

loyalty program with almost no need for the user to actively take action, offering a concept, which is straightforward and more transparent than the ones already existing in the market. Based on cooperations with Mastercard, Visa, and various shops, smart algorithms track the user's credit card activities and automatically activate rewards and bonuses. This way, the loyalty program is traceable and easier to understand for the user. This *hands-free loyalty program* reduces complex tasks of bureaucracy: Offering less complexity and more transparency, GetOskar aims at improving their users' life quality by making shopping—and benefitting from shopping—more convenient. Rewards appear immediately in monetary value in the form of reduced prices and discounts, which enhances people's trust in the system, as they perceive the real-time benefit from using the app. Moreover, it considers individual user interests: The automatic reward systems work exclusively with the stores that the user chooses. Stores that are not in the permission list will not be tracked. This gives back a feeling of control to the user. GetOskar also includes a gamification concept to get users involved and enrich their experience, e.g., by completing a certain number of purchases or offering a certain monetary reward for trying out new stores that fit their shopping behavior.

However, data tracking still marks a controversial topic, so companies that plan to implement it need to carefully plan and design the users' experience with their products. Just like the prepaid credit card case app, GetOskar named three values to characterize their brand. The brand value *engaging* correlates with the aspect of gamification and is presented in features such as displaying the count-up for rewards since the user's last app visit when opening the app. For the second value, *transparent*, a blue color scheme was chosen for the background, creating a light and limitless atmosphere. Just like in the prepaid credit card case app, the visual focus is put on the most important information, i.e., the reward balance. The third brand value *clever* is underlined by the technological concept of the app itself, i.e., the automatic algorithm-based reward system, as well as by the savvy look and feel of the app: Little big details, e.g., stars, offer subtle aesthetic highlights like a twinkle in the eye. Like in the two apps that have been mentioned before, from a design perspective, it is highly important to display all information in a very transparent way to the user, while the UX design should underline the cleverness and the exciting use case of this app.

These three examples illustrate how important it is in this age to choose the look and feel of digital products not randomly, but based on the positioning of the company's brand, as digital products are the touchpoint via which users interact with a brand on a daily basis. They determine the quality of the customer experience to a large extent. And this means that no company can go without a carefully aimed design of their touchpoints (Fig. 7.4).

7.2 From Brand Values to a Semantic Map

For the UXi method, the brand is the very basis of all further reflections and discussions about the UX design of the corresponding service or product. Certain key questions always come up, no matter how small or big the project will be: What are the brand values of my company? Which attributes can describe my product's

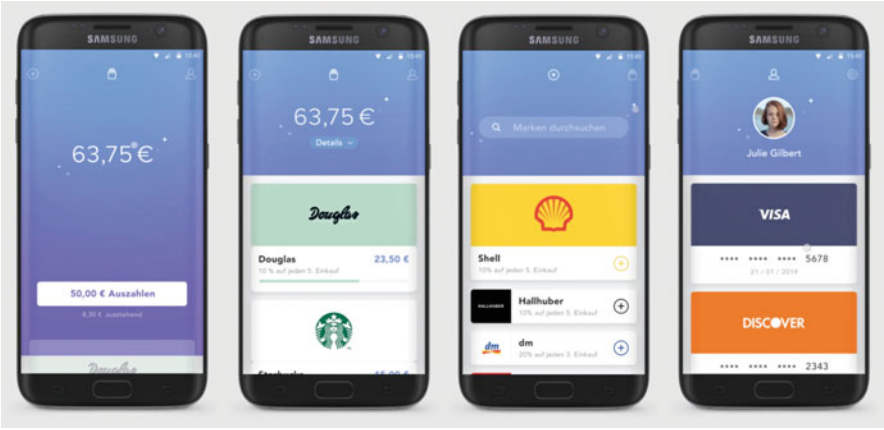


Fig. 7.4 GetOskar loyalty program app (source: GetOskar)

identity in the most specific way? How can my company stand out from competitors, while being appealing and trustworthy at the same time? Which associations do I want my customers to have? The following section will explain how the brand values of a company can serve as this crucial basis for the UXi method and how the method is created. For this matter, the creation of the semantic map is the first step within the UXi. It is a visual mapping tool for brand core values and their related secondary values. All brand values are positioned according to their semantic proximity and correlation within the brand construct.

It all starts with the company, the brand, and its brand values: As already mentioned in Chap. 4, values, in general, can be described as a standard that is relevant and learned by the individual and shaped by culture and society over a certain period of time. In addition, values have the ability to influence behavioral patterns of a single person or a whole group of people (De Chernatony, 2010; Gutman, 1982; Kluckhohn, 1962). As values are a representation of human needs, they can be defined as a motivator for a user's attitude toward a service or product. When defined properly, the brand values of a product are an indirect reflection of underlying user needs. Thereby, a value-adding motivation for product usage can be triggered within the user. With this psychological basis in mind, it seems only logical that customers evaluate their product-personality fit in a conscious and unconscious way: Ultimately, the chosen product should satisfy the customers' needs. Hence, those brand values are very important for the further steps of a UX design.

7.2.1 Semantic Map Creation

Taking this background into account, it is now possible to create a semantic map for a specific brand. Therefore, those brand values that are important in a UX context are mapped out on a semantic grid. There are several steps for a successful and impactful

creation of the semantic map for a company. All relevant marketing and branding material must be reviewed and prioritized according to the relevance of its applicability for digital products. Some of the most important parts of a brand briefing include the following:

- Brand vision statement
- Brand mission statement
- Brand values
- Brand promise and character
- Corresponding brand archetypes (Mark & Pearson, 2001)
- Target group or persona framework
- Market analysis
- Corporate guidelines
- Customer journey

Especially the vision, mission, and values of a brand are of high importance for the creation of the semantic map. The vision statement of a brand should set a very high aim of the contribution of the brand's products and services for the future of society or the world. In contrast to that, the mission statement describes the purpose of the organization itself and how it serves to its target group with a specific objective and actionable items included (Kolowich, 2019).

A good example of a truly ambitious vision statement can be seen with the Swedish furniture brand Ikea:

> Our vision is to create a better everyday life for the many people (Ikea, 2019)

Whereas the sustainable outdoor gear company Patagonia convinces its customers with a combination of business drive and selfless contributors to a better world:

> We're in business to save our home planet. At Patagonia, we appreciate that all life on earth is under threat of extinction. We aim to use the resources we have—our business, our investments, our voice and our imaginations—to do something about it (Patagonia, 2019).

If a company does not have a well-established or even vaguely defined brand yet, there is always the possibility to conduct a brand shaping workshop. With a mixture of creativity techniques, brainstorming sessions, and brand shaping tools, a team of the company's internal stakeholders and external experts can generate a first impression of a future brand. It is recommended to approach brand experts for that matter.

With detailed brand input at hand, the core values for the brand personality can be defined and prioritized due to their relevance for the digital touchpoints of the product. Brand values that relate to the fields of employer branding, the company culture, and other topics that are not relevant in this context have to be filtered and excluded from the summary in order to not disturb the accuracy of the semantic map. This step is followed by the extraction and prioritization of the second layer of the

Fig. 7.5 Core values of HVB 2015 (source: authors' illustration)

semantic map: the deduction of secondary brand values. These are defined by their semantic proximity toward the core value. This means that their semantic or linguistic origin is very close by, e.g., *human* and *empathic*. Both of these values have a very warm and soft character. Depending on the semantic proximity of the core values themselves, it is possible that within the semantic map, there will be developed certain value clusters, which we call *value worlds*. These clusters define different areas of meaning, which are highly important for the later translation of the brand values into the design language. The assortment of secondary values is supposed to define their core value more detailed and give clarity about the brand character in the most specific way possible. The combination of core brand values and secondary values should leave no room for misinterpretation of the brand meaning and how it should be perceived by the customers. See above the example of the core values for one of our case studies (see also Fig. 7.5).

7.2.2 Semantic Map Automation

Within the research for a UXi validation strategy, the development of a so-called *UXi Need Footprint* (see also Chap. 8) was the very first step. Based on the value and need theory (see also Chap. 4), the concept of the UXi Need Footprint relies upon the granted link between psychological needs and the construct of values, as well as on their application in a brand and UX context. A partnering agency collected a list of brand values that are especially important for the digital world and industries in that field. This set of more than 500 different values in German language was evaluated with the Need Footprint by Sheldon (2001), which was adopted for the HMI context by Hassenzahl, Diefenbach, and Göritz (2010) and Sheldon, Elliot, Kim, and Kasser (2001). In this form, it consists of seven psychological needs: *autonomy, competence, relatedness, popularity, stimulation, security, meaning*, which are relevant for the psychology-based view on the human interaction with technology—and, hence, offer a suitable framework for bringing brand values in connection to each other. Consequently, each value of this set has a seven-dimensional footprint for each of the deduced psychological needs. With this value set, a web-based tool was created, which automatically measures the Euclidean distance between all those values. The tool allows us to select a threshold that determines the maximum proximity of the

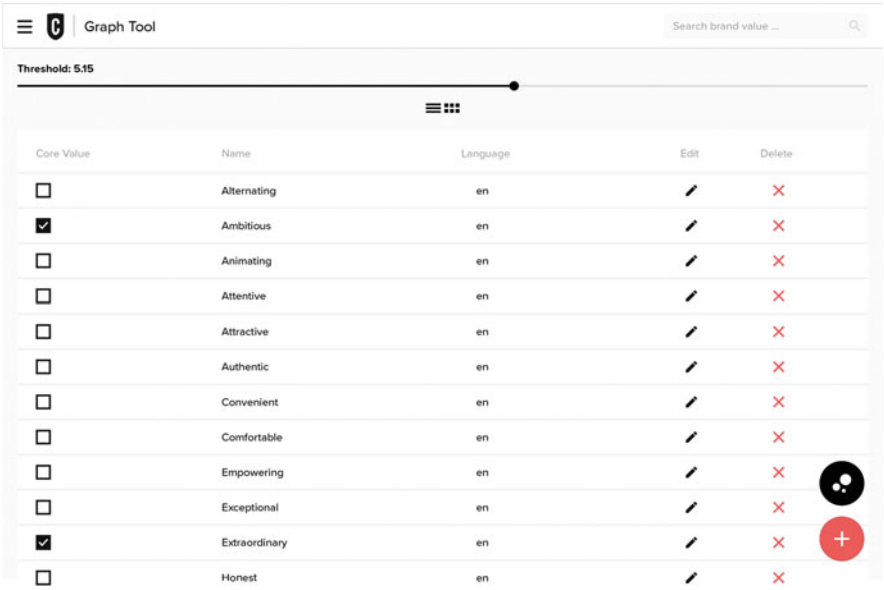


Fig. 7.6 UXi method; step 1: value and threshold selection (source: authors' wireframe)

secondary values to the core values (see also Fig. 7.6). Consequently, we can select the brand core values from the validated set of 500 items and subsequently receive a set of fitting secondary values based on their semantic proximity evaluated with the UXi Need Footprint (see also Fig. 7.7). The automatically created semantic map can then be downloaded with different file formats. The semantic map automation tool is a great opportunity to improve the reliability of the previously hand-crafted semantic map. Despite the quantitative validation of the tool, however, it is recommended to review the automated result with brand experts and adapt the automated semantic map, if necessary. It might be the case that the specific brand character has a slightly different meaning than the suggested automated version. The goal of the semantic map is always to achieve the best possible brand fit according to all briefing documents and brand definitions.

7.2.3 Semantic Map of HVB

When looking at the case study of HVB (see also Sect. 7.1), the semantic map depicts the relationship between its four core values.

Ambition appears as a new theme within the core values of HVB. It redirects the positioning of the company into the premium segment of the finance industry. This ambition is also transferable to the customer service side, as HVB aims to provide a premium service across all touchpoints. HVB is a smart modern bank with a well-known appearance. The new direction of *being ambitious* is supposed to run throughout

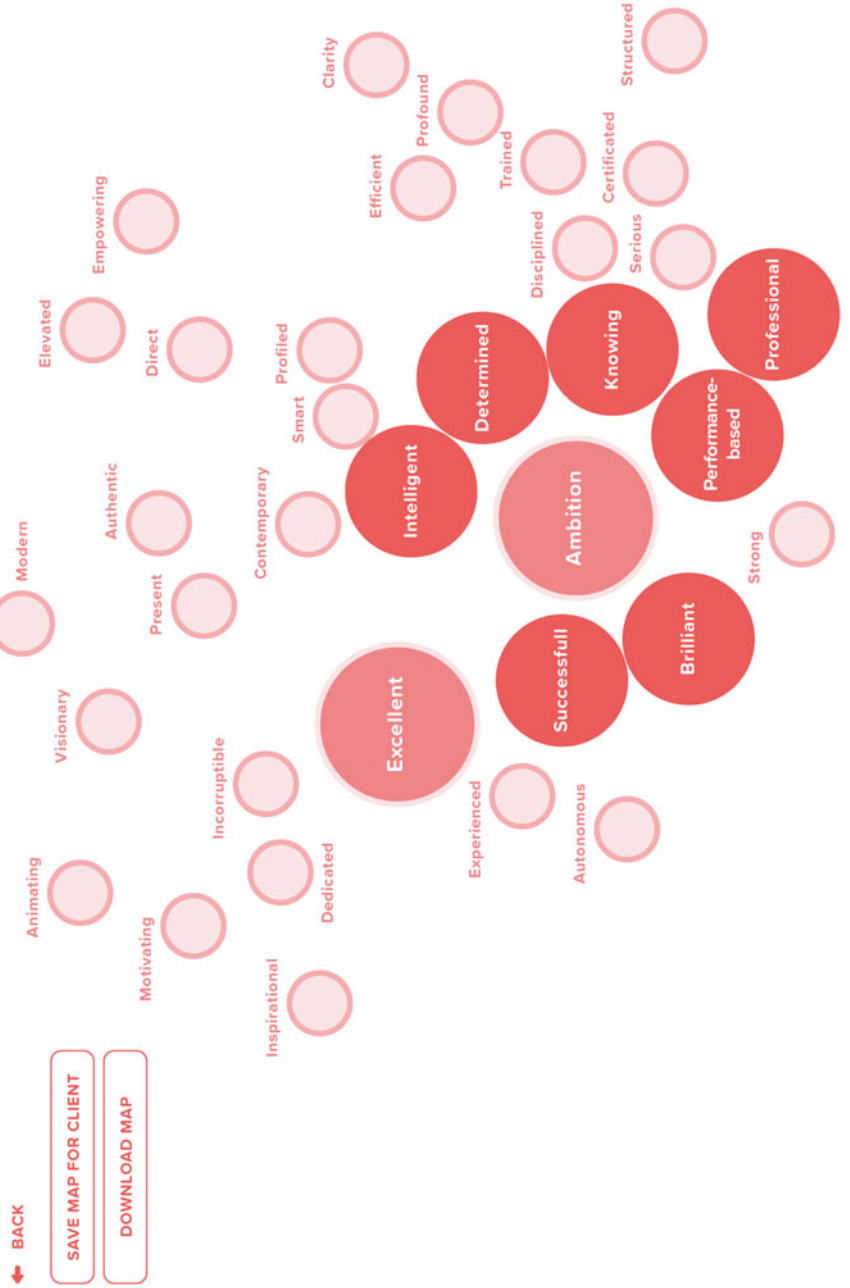


Fig. 7.7 Automated semantic map (source: authors' wireframe)

the company, since HVB wants to improve within multiple areas: The bank shows a great effort to remain a leading benchmark within the finance sector. Thus, displaying the commitment to its users and a performance-oriented focus on all aspects is necessary. HVB has the ambition to strive for the highest quality in customer service and is thereby willing to exclude a certain part of the population within its target group.

HVB can proudly look back on a long and successful history of credibility and competence within the financial sector. The professionalism and the atmosphere of solidity, combined with a self-confident nature, embody the second core value of *sovereignty*.

A clear structure coupled with a sincere and direct action forms the bridge to the third core value of *clarity*. HVB is understandable, clear, and accessible, consequently creating a sense of ease, security, trust, and transparency.

The fourth core value, *empathy*, emphasizes the human aspect of the bank: focusing attention and time on its individuals, while still remaining modern and attentive. HVB employees represent openness, interest, personality, and presence. They are personable and accessible for their customers. HVB is always supportive and proactive in regard to customer service.

- The semantic map with its world of brand values lays out the basis for all the following steps of the UXi method. It is basically a debrief task of the client's brand and need requirements, being discussed and approved in close collaboration with the client, because this value overview is common ground, and serves as a common language for all further discussion about the UXi, concept phase, and design phase. All project team members and stakeholders can always come back to this status in order to see if the brand values have been incorporated into the following working steps of the UXi (definition of *empirical knowledge* mood board, *digital design code*, and the actual design draft). This very first step already serves the goal of the whole method: Making the brand come to life within the UX of a service or digital product—within the visual design, the usability, the information architecture, and also interaction design.

7.3 The Empirical Knowledge for the UXi Method

The process of creating the *user experience identity* for a specific brand consists of three steps, whereas the part *empirical knowledge* is probably the most abstract one. Nevertheless, it helps its recipients to understand the meaning of the given brand values by visualizing it with mood pictures and written context. This second step of the UXi method is also the more detailed attempt to find a common language for the iterative discussion of a design. The empirical knowledge will then be taken to find digital design codes—the third and last step of the UXi creation. The following section will explain the origin of the very abstract naming *empirical knowledge* and the steps that have to be taken for its creation. The last part, again, shows the case study of HVB as an example.

In the beginning of the creation of the *empirical knowledge*, it is necessary to start asking questions about the upcoming design. With the brand values and its visualization within the semantic map in mind, we can get one step closer to the end result. The question "Which signals do we want to send with the UX design of a specific brand?" and the related issue of how to transfer a value or an entire brand character into the digital product can already be answered partially, when the empirical knowledge is created.

7.3.1 The Meaning of Empirical Knowledge

The concept of empirical knowledge is grounded in the theories and psychological basis of the chapters before (see also Chaps. 2–6). In short, the *empirical knowledge* can be defined as visualization of mental concepts that are associated with the brand values. Moreover, they are rooted in a very specific social and cultural context—one of the brand's origin.

The possibility to use this concept is based on our cognition and our brain's ability to perceive and learn patterns implicitly. As already mentioned in Chap. 2, the unconscious part of our brain—the autopilot—can process more than 10 million sensory impulses per second. That is a huge amount compared to the conscious part of our brain. As a very efficient tool, the human brain, however, is not comparable to a hard drive, where every detailed piece of data is saved and takes up space. With cognition, it is able to remember rules and patterns of the environment in an automated way: This is called implicitly learned information (Kahneman, 2012). This learning process is an ongoing procedure starting from the time that we are born and ending with our death. Interestingly, the first 7 years in our lifetime are the most important ones for the implicit learning process, so that our brain can make sense of the majority of sensory input and form mental concepts with it (Scheier & Held, 2012a). As already explained before, everything we perceive with our senses is transferred without filter to our brain at first. At this point, the individual does not see a specific object or hear a defined sound yet. This input arrives at our brain in its single characteristics: forms, colors, shapes, edges, movements, and so on. Only our brain is able to put these single sources of input together and state back the construct of the object itself—the mental concept that we have learned over time. This amazing functionality of the human brain is the basis for empirical knowledge to occur: People can learn constructs like languages, rules of social behavior, the meaning of the objects they interact with, and types of behavior. Hence, for the UXi method, it is very essential to find out which sensory signals are provided in which contexts and what the codes behind the corresponding objects or subjects look or feel like.

Having in mind the enormous amount of information our brain is able to process, the question arises, if every single aspect of an object or subject is important, when later designing a product. The goal of the UXi method is for the user to experience the brand personality within every single pixel of a digital product. However, this does not mean that every single element has to be designed accordingly. Only the

important attributes that will define the character of the product have to be designed consistent with the brand: Only they will shape the meaning of the design and its product. These important attributes are what we call constituting signals. These signals define an object or subject in a prototypical way. For example, an identifying characteristic of a butterfly is its two wings. In order to describe the concept of a butterfly to someone, this prototypical signal cannot be left out. Another example are the four legs of a chair. Even though nowadays it is possible to get other kinds of chairs, the four legs are those signals that everyone will draw for quick comic version of a chair (Scheier, 2012). In the third phase of the UXi process (*digital design codes*; see also Sect. 7.4), the constituting signals serve as a kind of crash barrier for the UX design. Here, with definition of the empirical knowledge, it can be expected to already point in the correct direction and set the baseline for those crash barriers. As a consequence, the constituting signals can help designers to decide which UX factors to design intentionally. With this decision, we allow the possibility for differentiation: How can a good design differentiate itself from similar or even set apart?

With this knowledge in mind, these mental concepts and constituting signals are something humans learn over time within their cultural and social context. It is not possible to simply apply them internationally to any context. The way people develop over time depends to a large extent on their cultural backgrounds. Patterns, rules, and types of behavior are hard to change: Learned values and stereotypes are strongly rooted within everyone's individual character. So, when a product will be launched on multiple markets, the design of the product will be perceived differently in one country, continent, or culture than another (Scheier & Held, 2012b). As already mentioned in Chap. 2, the color white is a popular example for this topic: Whereas white symbolizes purity and truth in Western countries, it is associated with death in China (Yu, 2014). Consequently, when creating the empirical knowledge mood board and text, it is important to examine the cultural context of the product's market (Scheier, 2012).

7.3.2 The Second Step of the UXi Creation Process

The practical aspects of applying empirical knowledge within the UXi method include both an assortment of mood images and a textual description of what the previously defined values mean in the context of the culture and time in which the product is going to be launched. The chosen pictures display those signals and attributes, which we have learned to connect with the specific values within our cultural and temporary context. The semantic map with the brand's core values and the matching secondary values is the crucial basis for this step. This method wants to answer what people connect with these values: Which associations do people have with a certain value? Which emotions come up with it? Which images or impressions are coming to our minds, when thinking about this value? To answer these questions for some values seems pretty easy: For the value *lightness*, people in Western cultures might think about brightness, calmness, reduction, clarity, transparency,

and simplicity, whereas the value *dynamic* might trigger associations like forcefulness, agility, progress, speed, and thereby motion blur. Defining the brand values within the empirical knowledge also in a written way allows the recipient to understand the connection to the core values to each other and in relation to the secondary values in a more transparent way. The written explanation might use semantic descriptions as well as historical and cultural references for transparency. As a result of this step, we can communicate our reflections about the empirical knowledge and what we connect to the brand values. It is perhaps the most difficult step but also essential to finding the previously mentioned common language that we aim to establish in order to communicate about design decisions in a goal-oriented way. The *empirical knowledge* helps designers as well as product managers: They can get a better understanding of how the product should look, feel, and behave. Consequently, the *empirical knowledge* will be directly used for the next step of the UXi method—finding suitable *digital design codes*, which are supposed to show the pure form of a brand-driven UX factor within a UI or UX example.

7.3.3 The Empirical Knowledge of HVB's Brand Values

Again, for a practical understanding of the *empirical knowledge*, the following section will elaborate the learned associations humans have with the four core values of our HVB case study (see Figs. 7.8, 7.9, 7.10, and 7.11).

Fig. 7.8 Empirical knowledge mood board for brand value *ambition* (sources: Lighthouse by Joshua Hibbert via https://unsplash.com/photos/Pn6iimgM-wo; medal by Tim Mossholder via https://unsplash.com/photos/_upET0w5MvM; armor by Samuel Zeller via https://unsplash.com/photos/p3-wctBKKkw; businessman by Michael McAuliffe via https://unsplash.com/photos/QnfePA4j-IQ)

Fig. 7.9 Empirical knowledge mood board for brand value *Sovereignty* (source: Climber by Frantisek Duris via https://unsplash.com/photos/CwKBHjD47bk; bridge by Luca Onniboni via https://unsplash.com/photos/bUpwY7EdrlQ; asphalt bridge by Markus Spisker via https://www.pexels.com/photo/architecture-art-asphalt-bridge-227729/; camera parts by Shane Aldendorff via https://unsplash.com/photos/mQHEgroKw2k; tree by Sitka Spruce via https://unsplash.com/search/photos/sitka-spruce)

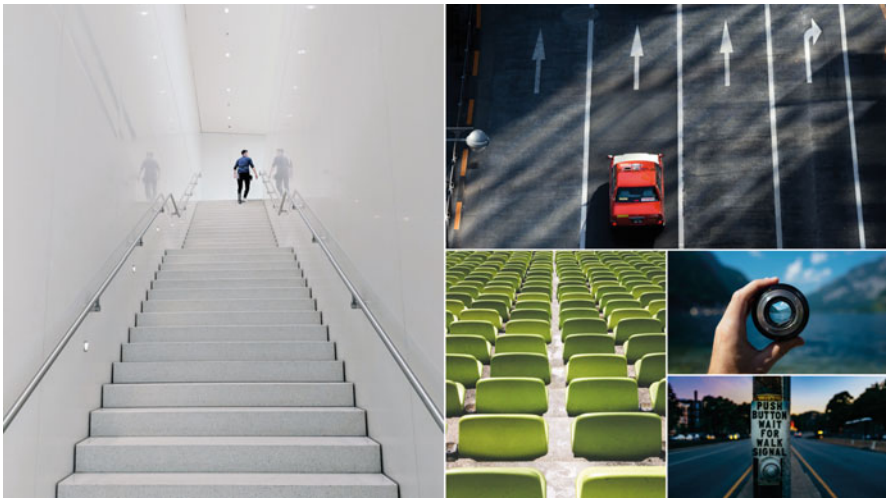


Fig. 7.10 Empirical knowledge mood board for brand value *Clarity* (source: Stairs by Joseph Akbrud via https://unsplash.com/photos/3GX4PJ-qces; street by Ryoji Iwata via https://unsplash.com/photos/LOttIxC3IBA; lens by Paul Skorupskas via https://unsplash.com/photos/7KLa-xLbSXA; stadium my Markus Spiske via https://unsplash.com/photos/kqAG7XVncgI; traffic button by Ashim D'Silva via https://unsplash.com/photos/P_PNZnNd7-Y)

Fig. 7.11 Empirical knowledge mood board for brand value *empathy* (source: Woman with open arms by Benedikt Matern for COBE; couple by Pablo Merchán Montes via https://unsplash.com/photos/_lBDypLbKgY; concert crowd by Anthony Delanoix via https://unsplash.com/photos/hzgs56Ze49s; woman on white by Nicola Fioravanti via https://unsplash.com/photos/i0Ip__W9W4o)

Ambition

The ultimate goal of ambition is to increase the quality of life by finding smart and modern solutions. These premium solutions show a new standard and become a symbol for greatness, of advanced thinking and acting, and of grandeur: the ultimate guiding light for confidence, strength, exclusivity, and charisma. As ambition, we define the willingness of a person to aim for outstanding quality, ready to achieve, and thrive to live up to these expectations, and in some cases, even to exceed them. Ambition is the driving force behind all achievement-oriented actors who are deeply involved with their mission. This value pushes individuals to become a better version of themselves, and, ultimately, to achieve a higher standard for the human being as such. The specific aura of the ambitious is charismatic, determined, and inspiring; their success is rewarded and celebrated. As we look up to them, they ignite a spark inside us, letting us wonder how to unfold our own full potential. With this, ambition has the power to change social structures: It represents an extraordinary, revolutionary, and powerful force, raising bars for all of us, armed to fight for the great standards we deserve. Hence, it requires to be brave enough to take an exclusive position, as it manifests the ability and willingness to stand out of the crowd due to great achievements. It means to take full responsibility for progress; the courage to become a first mover and a leading part in paving the way for the future. The reward for this courage is the chance to serve as a role model for bold dreamers.

Sovereignty

Sovereignty comes along with competence and self-determination, with leadership and pioneering even in difficult terrain. A sovereign actor is credible and reliable, using strength, willpower, and intellectual capability to find advanced solutions for every situation. Skilled and trained, the sovereign is ready to take the lead and maneuver through even the stormiest seas. In times of crisis, the sovereign remains calm and becomes a trusted icon for others: They achieve social acceptance by their reliable performance, earning respect through their competence. Hence, sovereignty comes along with responsibility. By taking the leading role with ease and effortlessness, these trusted partners help keeping things together. Their authority is justified by trustworthiness. The superiority of the sovereign actor's nature creates a soothing atmosphere, while at the same time providing a feeling of stability and being grounded. Stability can be understood as the ability of a system to be resilient against external threats, thus reaching a state of solidness that withstands the test of time. Sovereignty draws strength from maturity, intelligence, and knowledge gained from past experiences. It leaves no room for uncertainty, or structural weaknesses, providing a reliable and safe surrounding for everyone affected. Sovereignty describes the capability of thinking and acting independently. In its unflinching spirit, it has the power to drive the purposeful continuous progress of existing structures autonomously. Sovereign governing creates an atmosphere of consistency and steadiness. This goes hand in hand with professionalism and technical understanding: Intelligent solutions make the sovereign system work autonomously. Grown and matured, sovereign actors stabilize their environment as strong patrons that outlast all circumstances.

Clarity

Clarity gives way to simplicity: The reduction to essential elements helps us to find easy orientation. Clear messages and well-known signs guide the way, as they are easy to understand for everybody. Clarity brings brevity and conciseness into the visual; it uses structure to keep things clear. Striving for clarity is striving for transparency and traceability. A comprehensible logic helps to sort sequences. Patterns appear familiar. This form of simplicity creates an atmosphere of order and predictability. Clarity means to be recognizable and familiar. It gives easy-to-understand and explicit information, and it leaves no room for hidden details that have to be uncovered with great effort. These values encourage a feeling of security and efficiency, being perceived as fair and just. The will to achieve understandability results in comprehensibility. Using precise language and signs makes things perspicuous. The targeted, purposeful, and guided communication aims at establishing a relationship that is characterized by honesty, avoiding misunderstandings and deception, while clear options lead to easier decisions. The avoidance of unnecessary decoration blocks out all forms of distraction: Clarity is confident in what it has to offer. Hence, it appears trustworthy. The concentration on the most important essentials allows the information to be put into focus, making clarity a helpful and honest companion.

Empathy

Empathy is the ability and willingness to understand the thoughts, emotions, and characteristics of another person, as well as being able to give an appropriate response to others' feelings. The impression of openness and approachability arises from this value. In this, empathy creates an atmosphere of authenticity and friendliness, of a form of open-mindedness that welcomes us with a warm smile. Empathy is supportive and attentive: It acknowledges the human as an individual and enables us to recognize a person's fears, wishes, experiences, and preferences. Empathy goes hand in hand with trust and closeness and is crucial for inspiring individuals to feel a sense of belonging within a community. A comfortable feeling of accepting and being accepted leads to close ties and is a basic element of society. A personable atmosphere among individuals paves the way for trust and closeness. Intellectual and emotional participation is welcomed: Empathy gives us an intense feeling of authentic human interaction, making these interactions more personal, exciting, and emotional. Compassion leads to better communication and understanding, breaking down barriers of all kinds. Here, empathy allows us to be honest with others and ourselves, ultimately becoming more humane, as we come together and share emotions with each other. The valuable knowledge we gain through empathy helps us to create solutions and to realize ideas to bring society forward and create better conditions for all of us.

► The *empirical knowledge* is the second and most abstract step within the UXi process. It takes the brand values and their semantically connected secondary values of step one (*semantic map*), explaining the meaning and associations with those values that are based in the relating cultural and social context of the brand. The result of mood pictures and written meaning serves as a basis for the final step of the UXi creation (see also Sect. 7.4) and for a more detailed definition of the common language, which the UXi aims to create in order to better communicate design decisions.

7.4 Digital Design Codes

With the help of the findings from the previous chapters, it is possible to align the perception of brand message and digital products and make them credible messengers of the brand. *Conceptual consumption*, *mental concepts*, the *empirical knowledge*, and the *digital design codes*, which will be introduced in the following sections, help us to "*bake*" the values of a brand into a digital product.

Chapters 2, 3, and 6 have already described the unconscious, learned rules according to which we perceive (digital) products and use them. People consume products and, through the products' characteristics, the mental concepts associated with them. In this way, the shape, texture, size, sound, movement, and behavior of a product have a significant influence on consumers' purchasing and usage behavior.

Physical warmth is translated into social warmth, a soft surface encodes softness in a figurative sense, and washing hands also helps us to be morally clean. Sections 7.2 and 7.3 showed us which mental concepts are associated with certain (brand) values. In this chapter, we will explain how we can use these insights to ensure a high hedonic quality by translating the *empirical knowledg*e into *digital design codes*, which is the central step of the process presented.

In the following section, the mental concept of *distance* (see also Sect. 7.3 Empirical Knowledge and Sect. 7.4.1. Digital Design Codes for brand value *ambition*) will act as the basis for a first exemplary deduction of the digital design codes.

Figure 7.12 illustrates that physical and emotional distance is processed in the same brain area as the mental concept of *distance* (see also Chap. 6). The picture on the left shows two rocks, whose distance to each other can be estimated relatively easily. Most of the test persons would probably estimate a distance of about 50 m here. If we ask the same group of test persons to describe the relationship between the two people in the picture on the right, adjectives such as professional, cool, and distant will be named. Both descriptions aim at the subject of distance, first on a physical level (as an indication of a unit of measurement), and second on an emotional level (as a description of an interpersonal relationship). It is remarkable that the human brain follows the principle of efficiency: It processes both physical and emotional distance in the same brain area. The neurosciences here speak of the *mental concept* of distance (see also Chaps. 3 and 6). This in turn means that physical properties of a subject or object (such as the physical distance between two people) trigger an underlying emotional level. This is why we describe people with whom we maintain a strong emotional bond as *close friends*, although it is by no means the case that they are constantly in our physically proximity. We also associate physical closeness with emotional closeness, since we have learned in our past that both belong together (e.g., when our parents hugged us).

Let us continue to play with the mental concept of distance. Neuroscientists have coined the phrase "*What fires together, wires together*" (Morris, 1999): If emotional distance and physical distance have been perceived together particularly often in the past, this connection has also been strengthened in the form of neuron connections in our brain. So, what else have we learned to associate with physical distance?

Fig. 7.12 Physical versus emotional distance (source: Authors' photos)

Figures 7.13 and 7.14 show two strong examples: Speakers in a parliament usually have as much space as possible between themselves and the audience. At the same time, most queens and kings still sit on a throne that is somewhat physically elevated and leaves as much room as possible between themselves and the people.

Both represent a status of exclusivity, when they stand at the lectern or sit on the throne. All attention is focused on them, and they consciously distance themselves from their environment. Hence, the physical distance between the two subjects and their respective environment can be read as an emotional distance and, thus, as demarcation and exclusivity. There is a systematic connection between the physical properties of an object and a mental level behind it. Physical properties such as form, color, size, or behavior trigger a corresponding mental concept in the users' brain. As soon as we perceive an object, we decode its meaning for us. As Scheier (2012) put it,

> We also use the physical, tangible and perceptible properties of products in a figurative sense. We do this automatically and so intuitively that we are not even aware of the underlying complexity of this process.

Apple products are a good example of this. Positioning the brand in the premium segment is an important part of their marketing strategy. Apple products are usually much more expensive than similar products from other companies, they are of high quality in terms of aesthetics and workmanship, and they give their owners an aura of sublimity (some consumers commit to the brand like to a religion and are willing to wait in long queues for days to be able to buy the newest product). In order to communicate an assumed brand value such as *exclusivity* to the consumer, the

Fig. 7.13 Parliament (source: Photo by Frederic Köberl via https://unsplash.com/photos/x_0hW-KaCgI)

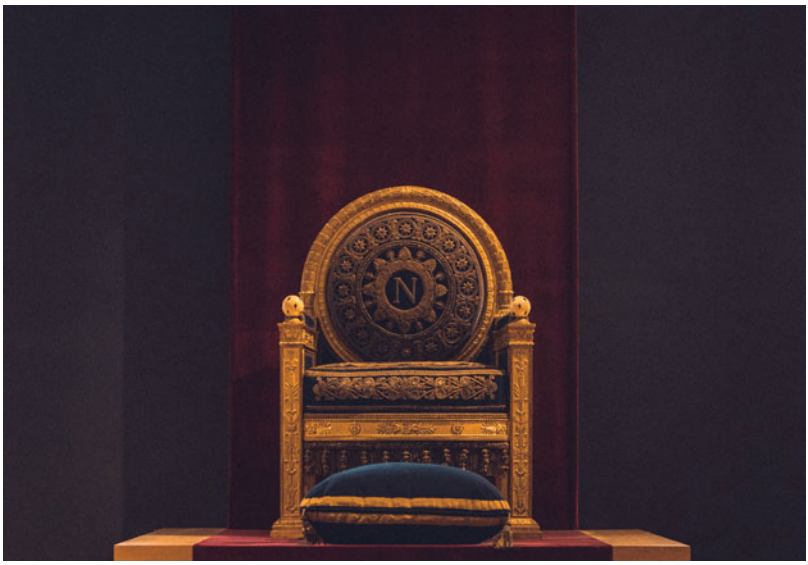


Fig. 7.14 Throne (source: Photo by William Krause on Unsplash via https://unsplash.com/photos/IkYuzPneQWs)

company does not only use the well-known marketing channels. Its digital and analog products, its shop design, and even the behavior of employees in Apple stores are also very consciously and specifically designed (Denning, 2011).

Take the Apple iPhone, for example (Fig. 7.15). The positioning of the logo leaves as much space as possible between the logo and other elements. With the exception of some necessary information in the form of text, no design element distracts the users' eye from the logo or comes too close to it. As already mentioned, we associate the distance between the logo and the environment with distinction and exclusiveness, which fully contributes to Apple's brand positioning. The way the logo is positioned is a signal that our brain decodes and translates into the corresponding mental concept of distance, distinction, and exclusivity (see Fig. 7.16).

But not only the product design of Apple follows this logic. The website is also similarly structured. The landing page usually shows only one or two products, which are granted a maximum amount of white space around it, so nothing gets close to them. Some products may be given a slight drop shadow to make them look more elevated. The mental concept of exclusivity comes into its own with every detail. The same applies to the brick-and-mortar Apple Stores. Here, each product is given the largest possible space between itself and the environment in order to underline the exclusivity of the products (Fig. 7.17). The comparison becomes clearer when one recalls the displays of conventional electronic stores—here, all products sit next to each other very closely due to high sales pressure. For Apple, the brand image enjoys a higher priority than the number of products per square meter. And yet Apple achieves by far the highest turnover per square foot in its Apple Stores (Thomas, 2017).

Fig. 7.15 Apple iPhone (source: www.apple.com; ©Apple®)

Fig. 7.16 Signals and mental concepts (source: Authors' illustration)

Fig. 7.17 Apple store (source: www.apple.com; ©Apple®)

As a result, out of every conceivable point of contact with the Apple brand (i.e., advertising, store design, digital or analog products, among others), consumers create a consistent image of the company that meets their expectations and serves their goals and motives. As we learnt in Chap. 1, this coherent customer experience is a crucial success factor today.

► Given that user experience has become an integral and important part of the customer experience, UX Design can and must be used to bring a brand message to life in every design element, interaction, animation, or transition.

Consequently, the first question must always be: What story should the product tell? What is the product like, what mental concepts does it trigger, and are these mental concepts in line with the brand positioning? Does the product feel heavy or light, soft or hard, proud or humble, dynamic or cautious? Starting from these values of a brand, and the goal of translating these values into individual product characteristics, clear guidelines for the design and evaluation of products emerge.

The fictitious example of a running app shown in Fig. 7.18 illustrates that focusing on different values of a brand must involve different design languages. The decision to underline the dynamically playful (left), powerfully exclusive (center), or empathically accessible (right) part of a brand with the design of an app must be made before even the first rough concept is created.

The design draft on the left in Fig. 7.18 shows how the brand values *dynamic*, *energetic*, and *playful* can be transferred into the design language via mental concepts. We have learned to associate the value *dynamic* with power, speed, and

Fig. 7.18 App design variations (source: Authors' illustration)

movement: Power is needed to be dynamic; objects or subjects that move fast are described as being dynamic. In the example, the dynamically rising line of the start button acts as the code for this. The release of energy is strongly associated with brightness and glow. The choice of colors for the glowing orange is based on this concept and thus encodes the value *energetic*. Furthermore, the value *playful* could be encoded in playful and surprising animations and transitions.

The design language of the middle example shows a very dark atmosphere. The color black is strongly associated with the luxury segment, which is demonstrated by the communication of most luxury brands (see also Scheier, 2012). Thus, the value *exclusive* can be encoded via the color black. For the start button, a bold cut font was chosen, and the distance between the font and the edge of the button (the so-called *padding*) was kept small. The font seems to sit firmly in the button, almost wanting to break out of it with force. Even the seemingly small detail of the start button design, here with a bold font and minimal padding, conveys a message—in this case: the brand story of power, strength, and boldness.

In the last example, the focus is put on values that could appeal to the mass market. The design appears bright and friendly, reduced and simple. The shapes are soft and rounded (e.g., an oblong hole for the start button); the color spectrum comprises human, pastel tones. The codes presented by this app make it appear accessible, simple, and open.

Here, we learn about one of the greatest advantages of the UXi method: There are no discussions about taste. A design discourse on the level of taste can never be effective, because it depicts too many personal opinions that do not always represent the consumer's perception. The method described in this book makes it possible to discuss the design of every pixel, animation, and transition based on a brand value. The discussion about the right digital design codes provides more objectivity and

ultimately leads to high efficiency in the decision-making process in UX design: Decisions are strategically made based on brand values, empirical knowledge, and digital design codes, rather than on the basis of personal taste. In the following section, the concept of digital design codes will be explained in detail.

7.4.1 Exemplary Digital Design Codes for HypoVereinsbank

To illustrate the UXi method, we explained the semantic map and the empirical knowledge with the help of the example of the HypoVereinsbank (HVB) in Sects. 7.2 and 7.3. The digital design codes mood boards presented in Figs. 7.19, 7.20, 7.21, and 7.22 are compiled from existing design examples and serve as guiding examples for a brand-congruent design of the UX of the HVB mobile banking app. They also serve as guidelines for the design of wireframes, UI design, animations/transitions, and the tonality of the copy of all B2C products of HVB. Throughout the course of a project, these guidelines can be used again and again to check whether a

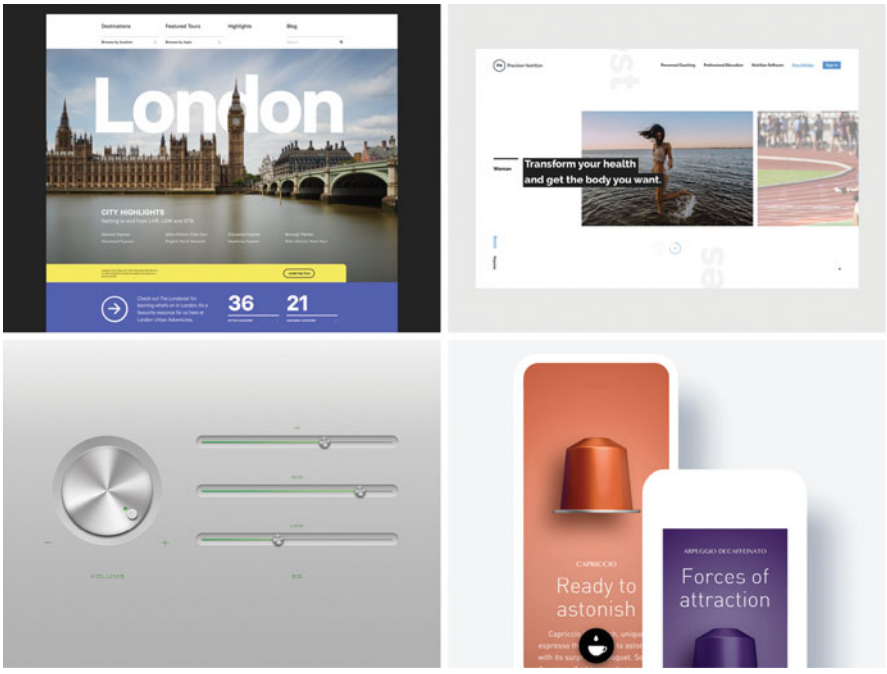


Fig. 7.19 Digital design codes mood board for brand value *ambition* (sources: from left to right: London City Guide by Hrvoje Grubisic on https://dribbble.com/shots/5239970-London-City-Guide, Precision Nutrition Blog by Cedrick Lachot on https://dribbble.com/shots/5346249-Precision-nutrition-Blog, Skeuomorphismmm by Nick Morgan-Jones on https://dribbble.com/shots/2978633-Skeuomorphismmm, Enrich the experience of the Nespresso App by Mehmet Yavuz on https://dribbble.com/shots/5167469-Enrich-the-experience-of-the-Nespresso-App)

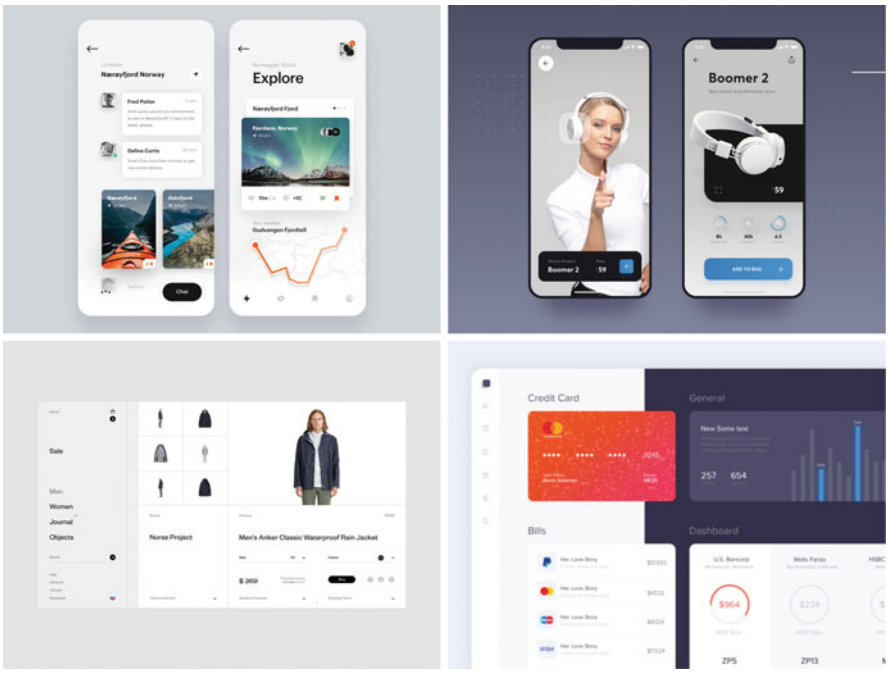


Fig. 7.20 Digital design codes mood board for brand value *sovereignty* (sources: from left to right: Travel App Ø Fjords Guide by Alesia Darsht on https://dribbble.com/shots/5916392-Travel-App-Fjords-Guide-Discover-Norwegian-Fjords, Augmented Reality Similar Product by Aurélien Salomon for Orizon on https://dribbble.com/shots/5670335-Augmented-Reality-Similar-Product, Norse Store Product Card by Rokk Ebol on https://dribbble.com/shots/5082766-Norse-Store-Product-card, Modern Dashboard by Outcrowd on https://dribbble.com/shots/6134230-Modern-Dashboard)

design meets the requirement to strengthen a brand from the UX perspective. The process phases of the semantic map, the empirical knowledge, and the digital design codes will later be summarized in the so-called *UXi Playbook*, which provides the specific guidelines for a brand-congruent design of every digital product and service of a company.

HVB's bold claim of exclusivity and *ambition* is expressed in a generous use of white space. Content is presented on a visual stage, which is created by the use of different layers, and complemented by subtle decorative elements. The appearance of the interface is modern, somewhat progressive, and uses state-of -the-art design approaches. A reduced color scheme and the use of large unique items such as pictures and text elements are here to convey sovereignty. A structured, clean screen allows quick orientation and accessibility. The accentuated and subtle use of materials creates an impression of quality and value. Profound solidity comes to life with the help of order and structure, setting the focus on the most essential functions of the current screen. The reduced use of cooler color tones stands for

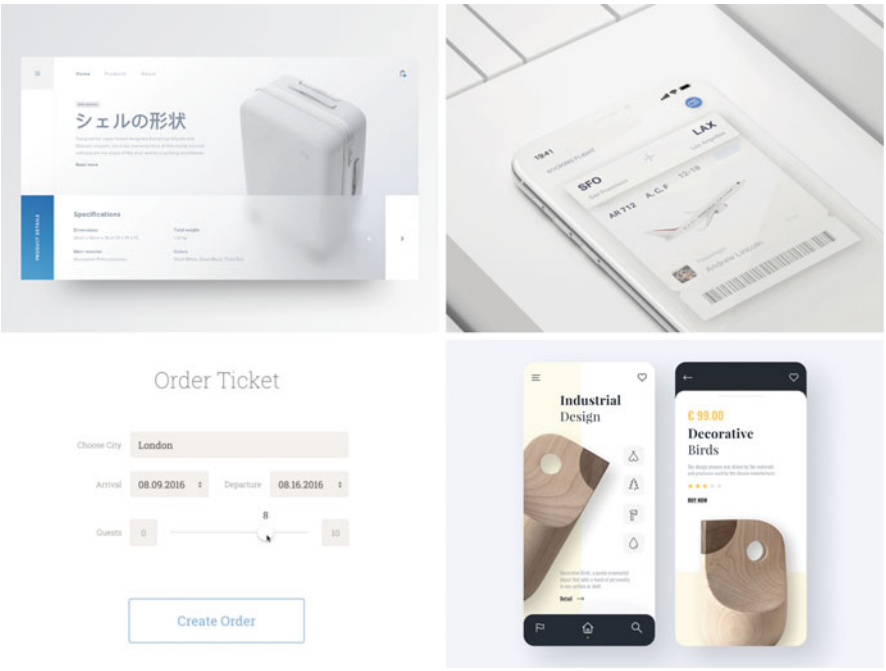


Fig. 7.21 Digital design codes mood board for brand value *Clarity* (sources: from left to right: The Shape Of The Shellby by Alberto Conti on https://dribbble.com/shots/4887033-The-Shape-Of-The-Shell, Cards 3D transition by Gleb Kuznetsov on https://dribbble.com/shots/5346964-Cards-3D-transition, Travel Web Picker by Ramotion on https://dribbble.com/shots/2514015-Travel-Web-Picker, Product App by Afterglow on https://dribbble.com/shots/6208279-Product-App)

confidence and sophistication. Accents break the precise appearance by edgy elements to communicate loftiness, expressiveness, and greatness. The look and feel offers an overall stimulating and blazing atmosphere. As a result, the users' perception of HVB represents a company that stands for confidence and exclusivity, while always being ready to provide expert knowledge at all times.

In order to achieve a sense of *sovereignty*, a thoughtfully reduced and subtle color scheme is used. With only few shades, it embodies dominance and consistency, while at the same time creating a relaxed atmosphere of tranquility and calmness. The extensive but well-balanced use of black and white areas, combined with gray text elements, complements this color scheme harmoniously, and leaves a well-balanced impression. A precise and clean grid is emphasized with the help of fine lines, suggesting accuracy. The use of the unique grid and its clear divisions is supposed to convey reliability. Carefully selected elements and typography reduce the interface of the product to the most essential. For transitions, a sense of security and sovereignty is achieved with the help of powerful, yet unemotional animations. User flows are logical and predictive, avoiding inconvenient surprises. Users always understand

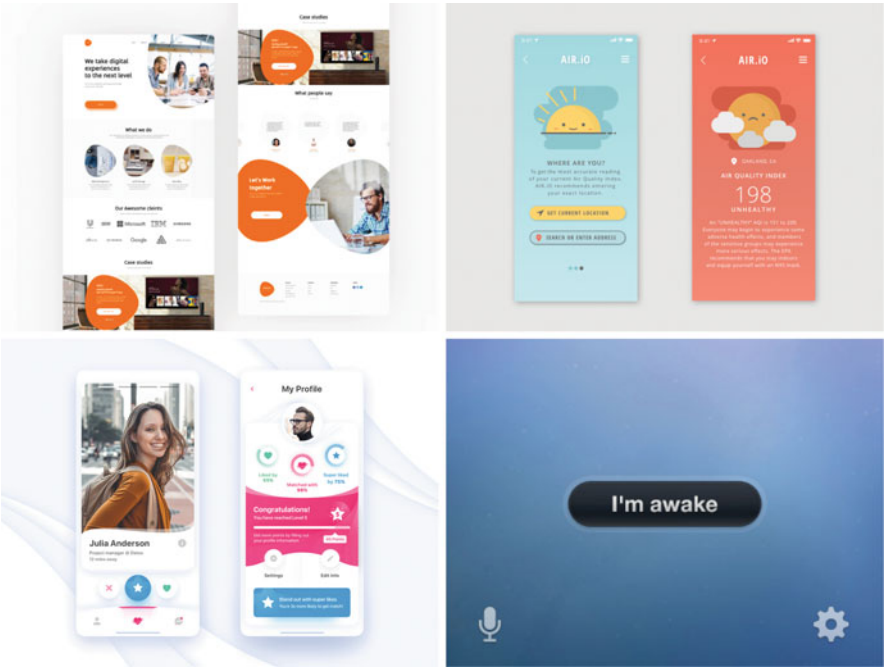


Fig. 7.22 Digital design codes mood board for brand value *Empathy* (sources: from left to right: Empathy Design website design by Leonard Nebtones on https://dribbble.com/shots/4907945-Empathy-Design-website-design, Air Quality Index by Maggi Voong on https://dribbble.com/shots/5555971-088-Air-Quality-Index, Dating-Matching app by Arnold Kokarevich on https://dribbble.com/shots/5837270-Dating-Matching-app, I'm Awake by Fares Farhan on https://dribbble.com/shots/718256-I-m-awake)

exactly why their action has led to a certain outcome, which intends to give them a sense of security and stability. The tone of the copy is concise, determined, and a testament to the expertise and trustworthiness HVB has to offer. This app combines greatness and understatement, resulting in a confident and reliable tool.

The fundamental themes of the HVB user experience convey *clarity*, openness, and accountability by making use of transparency, formal reduction, and an overall clean effect. Clarity in UX Design responds to the intuition of the user and draws the attention to the essentials. The generous use of white space shows the importance of individual design elements and provides both clarity and a visually calm atmosphere. Precision, reliability, and skillful formal reduction of the menu items show a clearly structured screen without opulence. Flashy, glowing color schemes are avoided, while the lighter colors of the HVB color scheme are used. All gestures and movements are based on clarity and transparency, a sense of simplicity and accessibility. Interactions use established interaction concepts, which are inspired by well-known analog interaction patterns (e.g., turning a page). A clean grid provides enough space for the various navigation elements, which are clearly grouped and

allow fast orientation. As few of these elements as possible are displayed simultaneously. The navigation is smooth and intuitive. It gets the user to the desired destination quickly, without any detours. Transitions are clear, understandable, and logical and support the handling of usability. They are not playful but purposeful, reduced, and focused. The decor is generally professional and inviting, while remaining fresh and contemporary. Language communicates in a clear way, a button is, e.g., either on or off, leaving no room for interpretation.

A warm, harmonious, rather pastel color scheme dominates the value of *empathy*. The human warmth we associate with empathy is expressed in warm colors such as yellow and orange. Warmth and friendliness are displayed through a round and soft formal language, e.g., buttons and icons. They appear familiar, concrete, and well known instead of offering abstract and uncommon solutions. The same applies to the grid. It is laid out in a calm, orderly, and symmetrical way, and thus feels familiar and allows quick detection of the different features, instead of communicating progressiveness through asymmetry or unforeseeable interactions. Features are offered proactively. Relating elements are grouped closely together, arranged in a logical manner. Design elements overlap and are closely grouped or connected. This encodes the concepts of connection and proximity, which is an integral part of empathy. Relationships and dependencies between design elements are graphically visible and emphasize the aspect of the partnership on an equal basis. Elements with equal proportions provide visual stability and seem to suggest that each element is working within a harmonious system. Obvious connections and affiliations of UI elements support the interaction and cooperation with the user. The user feels understood and secure. Animations combine individual elements in a comprehensible way. Assisting in the operations, transitions are included to draw the attention of the user to relevant areas. Individual design elements and workflows are connected to each other and arranged in context. Here, the choice of language can also play an important role (see also Sect. 6.4). For example, the status designation "*I'm awake*" appears much more human and thus more accessible than, for example, a technically precise "*Status: On*." Users are addressed in an empathetic way; they are guided during navigation, and *taken by the hand* with the help of Call-to-Action elements, instead of being expected to hold specific prior knowledge.

► The *Florida Effect* as described in Chap. 3 shows that priming via wording can have a heavy influence on a user's condition. For UX designers, this means that the tonality of copies, buttons, and similar elements also has to be carefully aligned with a brand's positioning. A brand that stands for passion and inspiration might want to use more activating and varied language in their digital products, while a brand that stands for safety and consistency might want to use wording that primes the user on stability and calmness.

Animations that represent exclusivity and ambition are short transitions in which elements are quickly transitioned from their initial state to their final state, regardless of whether the elements change in size and/or position or in other aspects. This makes the animation appear precise and purposeful. It also means that only short and quick so-called *ease-in* effects (term for motion that starts slowly and accelerates) and *ease-out* effects (motion that decelerates from a faster phase) are used to keep the transition short overall. In addition, a short *overshoot effect* (i.e., an element going beyond its final state to then snap back to the final state) can be used to express that there is a dynamic behind the movement. At the same time, a lengthy bouncing effect following the overshoot needs to be avoided in order to keep the animation appearing purposeful instead of wasteful. This can be summarized in two exemplary animation timing curves in Figs. 7.23 and 7.24. Apart from the timing, elements can leave the viewport in transitions to symbolize ambition that is not held back by the current boundaries. Similarly, elements moving upward, leaving the status quo behind, convey ambition.

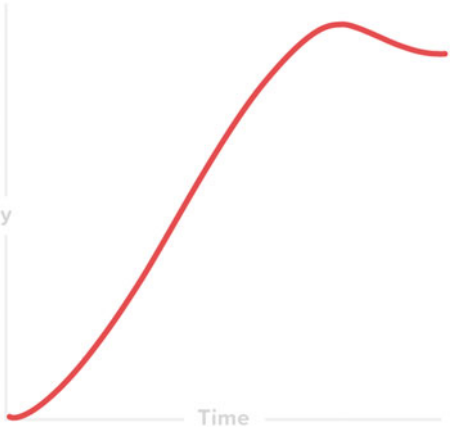


Fig. 7.23 Animation curve "ambitious" (source: Authors' illustration)

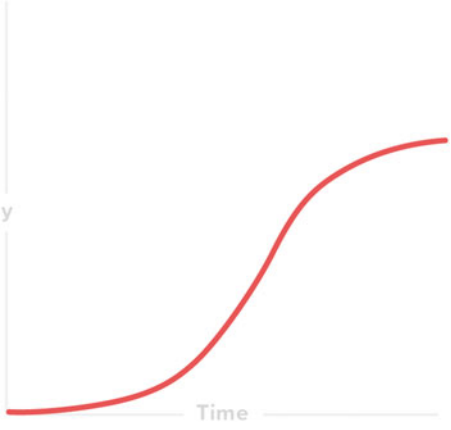


Fig. 7.24 Animation curve "empathic" (source: Authors' illustration)

▶ Designing based on brand values is also essential when it comes to choosing adequate transitions. These are rarely perceived consciously but serve as an important transmitter of codes. If, during navigation within an app, the next page floats in like a sheet of paper, this triggers a completely different mental concept (lightness) in our brain compared to a scenario in which the next page powerfully drives in and locks in like the door of a safe. The latter example would be suitable for a banking app, as it triggers mental concepts such as security and reliability.

Animations that should appear empathic and approachable take more time and use long ease-in effects and ease-out effects in order to slowly guide users from the initial state to the final state to not overwhelm them. Also, with the lengthy ease-out effects, no overshoots should be used. This can be summarized in an exemplary animation timing curve in Figs. 7.23 and 7.24. Apart from the timing, empathic animations can use soft elements based on natural metaphors like droplets. Elements can connect to each other and enclose other elements for the animation to appear approachable and personal. The same effect can be achieved by moving elements closer to the user with background elements blurring as they move out of focus.

Figure 7.25 shows the 2016 version of the HVB mobile banking app, whose UX/UI design was developed using the UXi method. The general appearance of the UX conveys a sophisticated, premium, and trustworthy look and feel, while at the same time having an open and inviting appeal. In order to achieve this, a generous amount of white space was granted and a well-spaced design of elements such as lists and buttons and a general focus on the essentials and simplicity was allowed for. The generous use of white space underlines HVB's self-confident claim of exclusivity. The conscious staging of elements and content (e.g., through stages or levels) and the discreet use of decorative elements reinforce this impression. Generous design creates a feeling of confidence, reliability, and security. The generous use

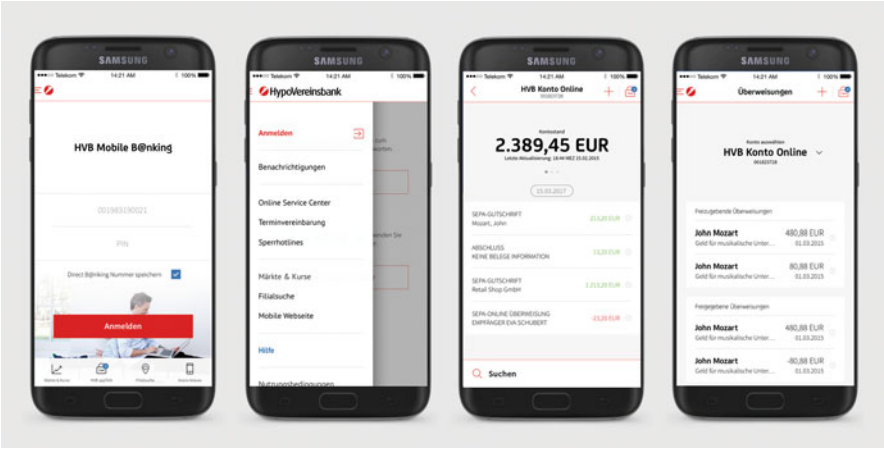


Fig. 7.25 HVB mobile banking app 2016-01 (source: HypoVereinsbank)

of white space additionally creates a feeling of clarity, openness, and transparency. The side menu, for example, is designed with a certain degree of transparency, the navigation thus feels comprehensible and secure, and the overview of the most important information is always guaranteed.

Design of elements like checkboxes, buttons, list elements, and so on use more space than necessary. They deviate from the standard since they are always designed a little bigger (see Fig. 7.26). Icons support spatial orientation, explaining the content efficiently and intuitively. For this reason, it is important that icons are applied in an economical manner. Too many recurring icons within one screen would cause disorientation. A structured, tidy grid adds to this, enabling quick orientation, accessibility, and traceability. It creates an impression of order, reliability, and security.

Content and features are grouped based on a semantic logic. This does not only create order and allows for easy orientation, but also establishes a feeling of comprehensibility and competence for the user, and thus creates trust in the HVB brand. The user is provided with only the essential amount of information on a screen—simple, smart, and contextual. For detailed information, the user is referred to a subpage. It is avoided to display too much information on one screen, since this would not be beneficial for the user's orientation. In addition to that, focus areas with clear borders that are created by outlines, margins, as well as light and dark contrasts between the background and the content area are applied. Information that is not relevant in the current context is displayed desaturated.

High contrasts within typography create clarity and enable orientation within the screen. Headlines are set in bold font style and text bodies in thin font style. The

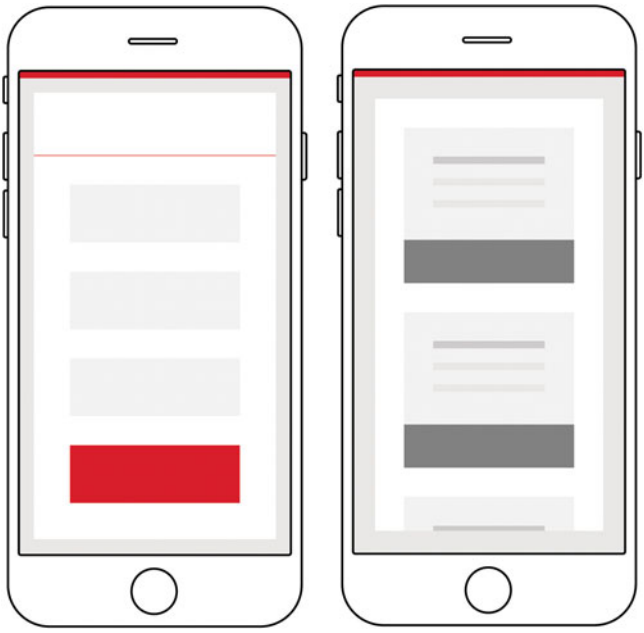


Fig. 7.26 Excerpt from HVB mobile banking app UX style guide (source: HypoVereinsbank)

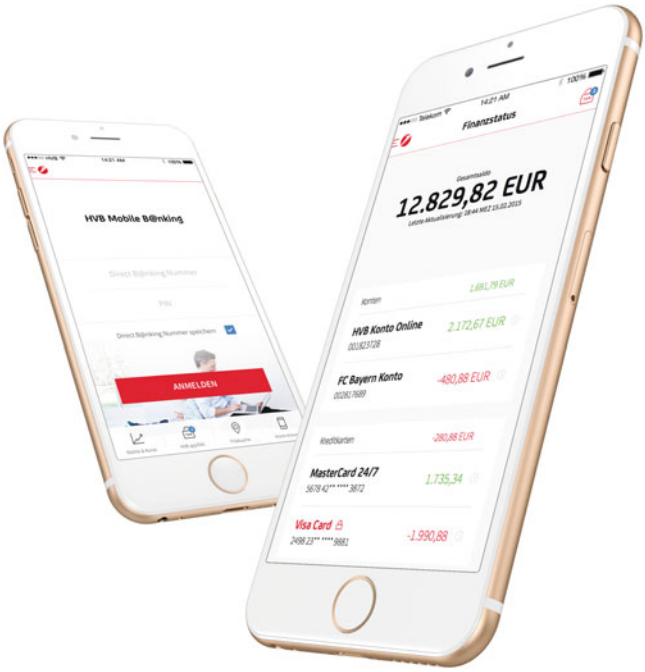


Fig. 7.27 HVB mobile banking app 2016-02 (source: HypoVereinsbank)

reduced color palette and large, clear elements (images, typography), which intuitively guide the user, convey sovereignty. The sparsely used colors are dominated by restrained gray values and the color red. Both communicate a moderate, professional, self-confident, and exclusive attitude. Sharp radii and fine lines underline a precise and high-quality impression.

In order to break the cool, precise impression and emphasizing the accessible and empathetic aspect of the HVB brand, an oblong-hole element with a stronger line, rounded corners, and thus a certain softness was chosen for the date display (see Fig. 7.25). Empathy is also the guiding value for the choice of images. For the login screen, for example (see Fig. 7.27), an image was chosen that shows a father physically close to his son in order to encode empathy and solidarity. Similar rules for the visual language apply in the area of the app where users make contact with their advisor.

► Not all brand values have to be integrated into every single screen and in every single modality (e.g., visual/motion/tonality) of a digital product. As shown in the HVB example, a brand value like empathy might be mainly communicated via images and wording but not necessarily in the visual design of the main screens of the app. It is an important strategic decision which brand value needs to be brought into which part of a digital product.

This example illustrates how important it is today not to design a company's digital products randomly but to derive the design from the intended positioning of a

brand. Digital products are the point of contact at which a consumer or user interacts with a company on a daily basis. This is where the quality of the customer experience is decisively influenced. Today, no company can afford to leave the design of this touchpoint to chance.

- Before the first color scheme is determined, before content is written, even before a wireframe is drawn or a font is selected, the process steps of the semantic map, the empirical knowledge, and the digital design codes have to be completed. Once each of the three steps has been aligned with the stakeholders involved in the design process, the actual design of the product can begin. This way, a jointly agreed basis for argumentation has initially been created in order to guarantee an efficient design process.

The obvious advantage of the method described here is that it gives designers a certain direction but does not restrict them too much. A product does not have to be designed on the basis of the latest design trends, as it might run the risk of being fashionable and soon no longer being contemporary. On the other hand, designers do not have to design according to their mere gut feeling and run the risk of drifting argumentation by personal taste. The deduction of a design language from the brand values of a company provides all involved stakeholders with a common vocabulary. Every design element, be it typography or the speed of an animation, can and should be justified with the derivation of a brand value. Decisions within the framework of a design process can thus be made in a comprehensible and efficient manner.

Conclusion

The perception of interfaces is comparable to that of faces. We read interfaces unconsciously, classifying them according to whether they are relevant to us and whether they address our motives and goals or not. With the help of mental concepts, constituent features, empirical knowledge, and the corresponding digital design codes, it can be ensured that the *story* being told by a digital product is congruent with the story a company tells about its brand on all its communication channels. This is especially important given the findings about the consumption of expectations and regulatory fit. The UXi process offers designers adequate guidelines for the design of brand-defining products, providing all those involved in the design process with a common vocabulary, ensuring an efficient decision-making process. The result is an efficiently designed digital product that represents the values of the brand in every pixel and interaction and, thus, has a high chance of being successful in the market.

References

Bogusky, A., & Winsor, J. (2009). *Baked-in: Creating products and businesses that market themselves*. Chicago: B2 Books.

Comscore. (2017). *The 2017 U.S. mobile app report*. Retrieved July 3, 2019, from http://www.comscore.com/Insights/Presentations-and-Whitepapers/2017/The-2017-US-Mobile-App-Report

De Chernatony, L. (2010). *Creating powerful brands*. London: Routledge.

Denning, S. (2011). Apple's retail success is more than magic. *Forbes Online*. June 17, 2011. Retrieved July 3, 2019, from https://www.forbes.com/sites/stevedenning/2011/06/17/apples-retail-stores-more-than-magic/#369daaf528a2

Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *The Journal of Marketing, 46*, 60–72.

Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. *Synthesis Lectures on Human-Centered Informatics, 3*(1), 1–95. https://doi.org/10.2200/S00261ED1V01Y201003HCI008.

Hassenzahl, M., Diefenbach, S., & Göritz, A. (2010). Needs, affect, and interactive products–facets of user experience. *Interacting with Computers, 22*(5), 353–362.

Ikea. (2019). *This is Ikea*. Retrieved July 3, 2019, from https://www.ikea.com/ms/en_SG/about_ikea/our_business_idea/index.html

Kahneman, D. (2012). *Thinking, fast and slow*. London: Penguin Books.

Kluckhohn, C. (1962). Values and value orientation in the theory of action. In T. Parsons & E. Shills (Eds.), *Toward a general theory of action* (pp. 391–436). Piscataway, NJ: Transaction Publishers.

Kolowich, L. (2019). *17 Truly inspiring company vision and mission statement examples* [Blog]. Retrieved July 3, 2019, from https://blog.hubspot.com/marketing/inspiring-company-mission-statements

Maier, C. (2014). *HypoVereinsbank schließt 300 Filialen*. Oberbayerisches Volksblatt GmbH & Co. Medienhaus AG. Retrieved July 3, 2019, from https://www.ovb-online.de/weltspiegel/wirtschaft/hypovereinsbank-schliesst-filialen-3413538.html

Mark, M., & Pearson, C. S. (2001). *The hero and the outlaw - Building extraordinary brands through the power of archetypes*. New York: McGraw-Hill.

Morris, R. G. (1999). D.O. Hebb: The organization of behavior, Wiley: New York; 1949. *Brain Research Bulletin, 50*(5–6), 437.

Patagonia. (2019). *Patagonia's mission statement*. Retrieved July 3, 2019, from https://www.patagonia.com/company-info.html

Scheier, C. (Ed.). (2012). *Codes: die geheime Sprache der Produkte* (2nd ed.). Freiburg im Breisgau: Haufe-Lexware.

Scheier, C., & Held, D. (2012a). *Was Marken erfolgreich macht: Neuropsychologie in der Markenführung* (3rd ed.). Freiburg: Haufe-Gruppe.

Scheier, C., & Held, D. (2012b). *Wie Werbung wirkt: Erkenntnisse des Neuromarketing* (2nd ed.). Freiburg: Haufe-Lexware.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 80*(2), 325.

Thomas, L. (2017). *Here are the retailers that make the most money per square foot on their real estate*. Retrieved July 3, 2019, from https://www.cnbc.com/2017/07/29/here-are-the-retailers-that-make-the-most-money-per-square-foot-on-their-real-estate.html

Watzlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes* (pp. 48–71). New York: W. W. Norton & Company.

Yu, H.-C. (2014). A cross-cultural analysis of symbolic meanings of color. *Chang Gung Journal of Humanities and Social Sciences, 7*(1), 49–74.

UXi Validation: How to Evaluate if Brand Values Can Be Experienced by Users

8

8.1 A "Need" for an Evaluation Strategy

The *User experience* (UX) of digital products influences how people perceive those products and brands behind them. Apple and Microsoft, for example, are living proof of that (Meschtscherjakov, Wilfinger, & Tscheligi, 2014). Of course, the UX of a product can be perceived as very good even without a decisive brand positioning behind it. However, a unique brand personality can bind customers, and touch users on an emotional level (De Chernatony, 2010). In coherence with this, from a marketing perspective, it is important to position their own digital product based on their brand values. Consequently, as already mentioned in the previous chapters (see also Chaps. 5 and 7), *customer experience* (CX) as well as *brand experience* (BX) are important factors to be considered when designing products with unique features. The existing brand diversity among different products within one field of industry is able to enhance the UX for every single product, if a brand's distinct values are incorporated correctly into its product. Given that users are able to experience the specific brand values of different products, their personal need fulfillment can be supported by an appropriate brand personality, adapted to the particular target group.

8.2 Regarding UX/BX from Different Angles

Complementing the described generative approach (see also Chap. 7), an evaluation strategy to validate whether or not brand values are successfully conveyed by designers in the UX design is still missing. On the one hand, this is important,

This chapter was written by Anna-Katharina Frison and Katharina Holl.

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_8

because only an iterative design process, going back and forth, can optimize all touchpoints of a BX and UX, and, on the other hand, agencies, companies, and brands need to differentiate their designed products according to the individual brand needs and values in each project. Hence, they require tools to prove this fit to their clients or corporate board. We now pick up on that, and will show that it is indeed possible to prove if the individual brand values can actually be experienced by users. For this, also by applying an iterative process of method development, three different methodological approaches have shown to be valid. Based on the psychological perspective on needs and values, and the adoptions for UX design (see also Chaps. 4 and 5), the psychological needs seem to be the link between the general construct of values and their application in BX and UX. Thus, we have developed the concept of individual UXi Need Footprints (Frison, Zotz, & Riener, 2017; see also Chap. 7) for different brands and their values to visualize the origin of diversity. As each single brand wants to represent different values to reach a specific audience, our goal is to reveal what the underlying psychological needs are that a brand has to fulfill due to their brand values by designing appropriate products (Rokeach, 1973). We hypothesized that the brand values can be merged to natural clusters based on the representation of the psychological needs. This is the foundation to deduce approaches to evaluate the harmony of BX and UX.

In the following section, we explain our strategy to evaluate whether or not individual brand values can be experienced by users in the example of three diverse brands at the touchpoint of mobile banking apps: HypoVereinsbank (HVB), a prepaid credit card case, and GetOskar. Although our cases only regard the touchpoint of the visual user interface (UI) design of a digital product, the evaluation strategy and single approaches can also be applied to non-digital touchpoints of a UX/BX.

8.2.1 UXi Need Footprint for Evaluation

Our first approach builds on the usage of an existing, standardized, and established method combined with our UXi Need Footprint. Using standardized methods has the advantage that their validity cannot be contested, as they are already validated. As the UXi Need Footprint is based on the universal psychological needs, identified by Sheldon, Elliot, Kim, and Kasser (2001), and adapted for UX by Hassenzahl, Diefenbach, and Göritz (2010), we utilize Sheldon's Need Scale (Sheldon et al., 2001) to evaluate whether brand values are conveyed to the users at a touchpoint of a UX/BX. This scale consists of several subscales, each for one psychological need. It shows to which extent a need is satisfied in a specific situation, e.g., while using a product, system, or service (Diefenbach & Hassenzahl, 2010).

Humans always want to represent and communicate themselves, which is reflected by special affective experiences. Hence, the hedonic quality is dependent on how much users can identify themselves with a product by need and value fulfillment (Hassenzahl et al., 2010; Hassenzahl, Wiklund-Engblom, Bengs, Hägglund, & Diefenbach, 2015). While brands create their own brand values to

reach a certain audience, we assume that brand experience and user experience can be validated as harmonized, when the defined brand values fit to users' personal values. Hence, we assume a harmony between brand experience and user experience, if the extent to which a brand value is represented by a psychological need is similar to the extent this specific psychological need is satisfied at a specific touchpoint. To show our approach, we set up a study using an actual project (HVB mobile banking app). The brand values of HVBs brand values that are supposed to be applied to the UX of the use case are *ambition*, *sovereignty, clarity*, and *empathy.* We want to validate whether these values are indeed experienced by users.

Application
The app was presented to participants as a video, showing the UX design of the product (visual designs, functionality, usability, transitions, among others). Afterward, participants had to fill in the Sheldon Need Scale (Sheldon et al., 2001). Based on the collected data, we can analyze if the degree of users' need fulfillment is in accordance with the extent brand values are represented by the universal needs. Figure 8.1 shows the results of the survey in relation to the UXi Need Footprint of HVB. A perfect overlap of the HVB banking app and Need Footprint would demonstrate harmony. However, in our use case, visual analytics as well as a statistical analysis revealed several differences between the needs the brand aimed to satisfy and the needs which are actually satisfied at the specific touchpoint of the mobile banking app. We can report differences between the value *ambition* and the need fulfillment while using the app. The need of *competence* is not as fulfilled by the app as it should be, as well as the needs *meaning*, *stimulation*, and *popularity*. Moreover, the need of *relatedness* is not achieved as expected by the brand value of *empathy.* Contrarily, the need of *security* looks harmonic according to *ambition*, *clarity*, and *sovereignty.*

Based on this analysis, results can be used for further design iterations to improve the desired harmony. Iteratively, user experience and brand experience can be adjusted. In this case, designers know now that they have to focus more on the psychological need of relatedness to convey empathy. But also brand management and marketing can scrutinize whether the selected brand values are the right ones. If brand values are too controversial, it is difficult or almost impossible for UX design to convey all brand values in every user interaction. As every single touchpoint affects the overall experience, different brand values can also be individually prioritized in different use case. While it is difficult to convey empathy and conveying sovereignty in a visual design at the same time, the service of a bank employee in a branch bank or on a hotline should be able to perform both values.

Strengths and Weaknesses of the UXi Need Footprint for Evaluation
This method is especially interesting in cases when the harmony of BX and UX has to be evaluated at several touchpoints to prove if a brand has a unique BX, CX, and UX across all touchpoints. Comparing different graphs, one for each touchpoint can show divergences and room for improvements for all aspects of an experience. This

Fig. 8.1 Validation results, showing that a correlation toward a harmonized brand and user experience can be assumed. *Source*: Adapted from Frison et al., 2017

method provides an indirect access to the brand values. By this, on the one hand, the nonconsciousness of needs and values is regarded, while on the other hand, this also leads to uncertainties in regard to how different participants experience a brand value. Also, the Sheldon Need Scale (Sheldon et al., 2001) is quite abstract and participants sometimes have difficulties to answer the questionnaire regarding a specific interaction with a technology.

8.2.2 UXi Scale

To check further possibilities for evaluating BX and UX and using a more direct inquiry of the users' perception of brand values, we again utilized the UXi Need Footprint in order to deduce individual UXi Scales. As it offers the possibility of easy and intuitive decision making (Churchill & Iacobucci, 2006), we decided to develop a scale using the data collection method of the semantic differential. A semantic differential is used in psychology as a tool for evaluating an object, concepts, or companies. Hereby, the connotative meaning can be measured. Connotative is the suggestive significance of a word, apart from the denotative, explicit, and obvious meaning. On a 7-point scale polar adjectives (opposite-meaning terms) are displayed at each end of the scale. Afterward correlations or measures for distances can, for example, give information about the image of the brand compared to its competitor. Furthermore, the delta between the current and the desired image can be measured (Kroeber-Riel & Gröppel-Klein, 2013). The semantic differential can be used for multidimensional cases due to its individually adapting polar adjectives (Churchill & Iacobucci, 2010). We can evaluate the coherence of BX and UX by opposed terms.

Thereby we have to consider that our terms should not be judgmental. For example, for the brand value *clear*, the logical opposite would be *unclear*, which is a negative judgment. If the touchpoint of a brand, e.g., a mobile banking app, does not convey clarity, users do not necessarily have a bad user experience. Studies have shown that participants' threshold for evaluating a product as, e.g., *unclear*, which is a negative connotation, is significantly higher. As a result, participants avoid evaluating a product as negative. Furthermore, negatively connoted adjectives attract more attention than positive connoted adjectives (Kahneman, 2012) (see also Chaps. 2 and 3). These findings explain why the semantic differentials need to be neutral and nonjudgmental, thus, not like the semantic differentials of the AttrakDiff (Hassenzahl, Burmester, & Koller, 2003), e.g., *beautiful—ugly*. For our case, this means that we need neutral opposed term pairs representing the brand values of our examples HVB, the prepaid credit card case, and GetOskar.

Deduction of an Individual UXi Scale

Building on the UXi Need Footprint, we created a tool that delivers semantic differentials that are able to represent certain values. We aimed to create semantic differentials that describe both the hedonic quality of an interactive product (which is based on a specific brand promise; see also Chap. 5) and the individual brand values.

Therefore, we collected 471 possible brand values based on past projects from approx. 50 different brands. The aim was to find suitable item scales that best represent the brand values of the three use cases.

Hence, we deduced the terms for the semantic differential from the maximal Euclidean distance of the cluster analysis (based on our database of 471 collected brand values), which also created the UXi Need Footprint (see above). However, we look for the furthest neighbors of our primary values to retrieve antipoles. Moreover, we used the secondary values (nearest neighbors, identified by the cluster analysis) to create subscales for the individual brand values from our example brands. As the secondary values' maximal Euclidean distance often led to similar opposed terms, we selected the best fitting brand value in the range of the five furthest neighbors by discussions for a consent within an expert workshop. It resulted in a scale with nine subscales, each representing the primary values of the example brands (since *transparent* is a brand value used by two brands, we only involved one subscale). A subscale contains four semantic differentials, one primary value, and three secondary values (cf., Table 8.1). The whole scale is applied with a 7-point semantic differential scale, because we wanted to offer a middle point in order for the data to be not falsified by stopgaps (Table 8.2).

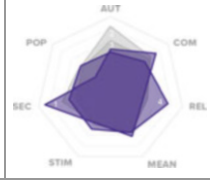
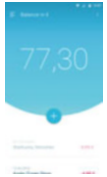
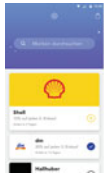
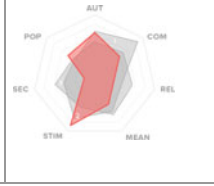
We would like to point out that this UX Identity Scale is not standardized and generally usable for each project. The scale has to be deduced individually based on the particular brand values a brand wants to represent by using the database of brand values and their Euclidean distances. Newly added values may most probably change the semantic differentials (recalculation of Euclidean distances); however, the basic clusters should remain stable.

Application of the UXi Scale

We applied the individual UXi Scale within a user study ($N = 31$) to evaluate whether the respective brand values of HVB, a prepaid credit card app, and GetOskar could be applied at the touchpoint of the mobile banking app. In terms of values, these cases are controversial, and aiming to convey diverse brand values, we are able to calculate differences between them concerning the individual subscales. Hence, we hypothesize that HVB differs significantly from the prepaid credit card app and GetOskar, concerning the brand value subscales in the cluster of *security* (*clear, empathic*), and that the prepaid credit card app and GetOskar differ significantly from HVB concerning brand value subscales in the cluster of *stimulation* (*young, exciting*). However, we do not expect significant differences between the prepaid credit card app and GetOskar. Further, there should also be no significant differences between HVB, the prepaid credit card app, and GetOskar concerning brand value subscales in the cluster of *autonomy* and *competence* (*sovereign, ambitious, flexible, transparent,* and *clever*).

Participants were asked to watch a demo video of each case to reduce impact of usability problems and interaction differences among participants. After each case, they had to evaluate the app by rating the extent to which brand values were presented through the app. Participants were asked to give their answers intuitively without overthinking their choice. As UX and BX are multidimensional constructs, a

Table 8.1 Need footprints of the example brands (HVB, a prepaid credit card case, GetOskar) with their brand values

Brand	App	Need footprint	Primary values (x)[a]	Secondary values (y)[b]
HVB			clear (1) sovereign (2) ambitious (3) empathic (4)	detailed (dx,y 1.158), precise (dx,y 1.166), correct (dx,y 1.212) informed (dx,y 1.179), masterminded (dx,y 1.334), capable (dx,y 1.33) ingenious (dx,y .714), improving (dx,y .911), competent (dx,y .963) collaborative (dx,y .722), harmonic (dx,y .787), sympathetic (dx,y .835)
Prepaid credit card app			flexible (1) young (2) transparent (3)	provoking (dx,y 1.177), innovative (dx,y 1.273), distinct (dx,y 1.448) charged (dx,y .900), casual (dx,y 1.170), surprising (dx,y 1.411) profound (dx,y .865), relevant (dx,y .897), fair (dx,y .907)
GetOskar			clever (1) exciting (2) transparent (3)	high-performance (dx,y .882), technological (dx,y .913), visionary ($dx,y=1.086$) expressive (dx,y 1.000), surprising (dx,y 1.095), spontaneous (dx,y 1.1) profound (dx,y .865), relevant (dx,y .897), fair (dx,y .907)

Colors are representing the logical clusters stimulation (red), security (purple), and autonomy and competence (gray)

[a]Primary brand values are determined by the brands and state how they want to represent themselves

[b]Secondary values are calculated by the Euclidean distance dx,y (nearest neighbors) of the 7 dimensions of the representation by the psychological needs, presented in brackets

Source: Authors' illustration

Table 8.2 UX identity scale with semantic differentials ($n = 35$) based on the maximal Euclidean distance dx,y

HVB				Prepaid credit card app				GetOskar			
Brand value (x)	Antipole (y)	dx,y	Cronb. α	Brand value (x)	Antipole (y)	dx,y	Cronb. α	Brand value (x)	Antipole (y)	dx,y	Cronb. α
Clear	Euphoric	5.94	0.68	*Flexible*[a]	Faithful	6.04	0.61	*Clever*[a]	Influenceable	5.79	0.54
Detailed	Trendy	5.93		Provoking	Together	5.93		High-performance	Comfortable	6.21	
Precise	Social	6.13		Innovative	Conservative	5.40		Technological	Traditional	5.31	
Correct	Erotic	6.63		Distinct	Associated	5.94		Visionary	Local	5.48	
Sovereign	Magic	5.40	0.71	*Young*	Responsible	5.86	0.75	*Exciting*	Secure	7.04	0.61
Informed	Home	5.61		Charged	Familial	5.17		Expressive	Calming	5.98	
Masterminded	Snug	5.09		Casual	Loyal	5.56		Surprising[b]	Reliable	6.51	
Capable	Amusing	5.56		Surprising[b]	Reliable	6.51		Spontaneous	Constant	6.15	
Ambitious[a]	Related	4.96	0.22	*Transparent*[b]	Stylish	4.60	0.71	*Transparent*[b]	Stylish	4.60	0.71
Ingenious	Integrated	4.42		Profound	Adventurous	4.72		Profound	Adventurous	4.72	
Improving	Protected	5.18		Relevant	Sexy	4.95		Relevant	Sexy	4.95	
Competent	Hearty	5.21		Fair	Barefaced	5.12		Fair	Barefaced	5.12	
Empathic[a]	Superior	4.26	0.05								
Collaborative	Free	5.84									
Harmonic	Proper	4.81									
Sympathetic	Decisive	4.60									

The scale is applied using the 7-point semantic differential scale. Cronbach's α values are computed after the user study by averaging all brands' α value
[a]Subscales are excluded for further investigation of brands' diversity because of their weak reliability
[b]Terms are doubled in the table, but only used once in the final scale
Source: Authors' illustration

set of sophisticated mixed-method approaches is necessary for evaluation (Pettersson, Lachner, Frison, Riener, & Butz, 2018). Hence, in addition to the quantitative UXi Scale, we also conducted qualitative interviews to reveal users' reasoning. To receive a better understanding of the participants' behavior, their motives, needs, and values (Kuß, Wildner, & Kreis, 2014; Reynolds & Gutman, 1988), we consequently utilized the laddering technique. Here, retracing the behavior on its individual needs helps to explore the behavior of each participant.

Based on the computed results, we can report that there are significant differences in assessing brand values based on different mobile banking apps. Regarding the subscale *clear*, all mobile banking apps differ significantly from each other. For HVB, the users' evaluation of the app to be *clear* best conforms to the brand value ($M = 1.989$, $SD = 1.005$), while the prepaid credit card app ($M = 3.031$, $SD = 1.439$) and GetOskar ($M = 3.753$, $SD = 1.537$) are evaluated more toward the antipole. Even though there is also a significant difference between the prepaid credit card app and GetOskar, we can confirm that users experience the brand value *clarity* in the app from HVB—in contrast to the other brands. This conforms to the individual Need Footprint of these brands (see Table 8.1). Moreover, for the subscales for the brand values *young* and *exciting,* there exist severe differences, although HVB is evaluated significantly less toward the brand value *young* ($M = 4.978$, $SD = 1.359$) and *exciting* ($M = 5.086$, $SD = 1.248$). Among the prepaid credit card app (*young*: $M = 2.895$, $SD = 1.634$; *exciting*: $M = 3.375$, $SD = 1.393$) and GetOskar (*young*: $M = 2.985$, $SD = 1.306$; *exciting*: $M = 3.065$, $SD = 1.309$), there are significant differences for these brand values. Nevertheless, GetOskar is evaluated as more stimulating than the prepaid credit card app. Users experience the brand diversity concerning the subscales in the cluster of *stimulation*. *Autonomy* and *competence* are represented by the subscales of *transparent* and *sovereign*. Statistical tests also revealed significant differences between the different apps. While for *transparent*, there exists a significant difference between HVB and the prepaid credit card app and GetOskar but no difference between the prepaid credit card app and GetOskar. For *sovereign*, all brands' apps differ significantly from each other. Although the brand value *transparent* belongs to both the prepaid credit card app ($M = 4.073$, $SD = 1.662$) and GetOskar ($M = 4.441$, $SD = 1.425$), HVB ($M = 2.376$, $SD = 1.160$) is evaluated as the most transparent app. With regard to *sovereign*, HVB is again evaluated as best toward this brand value ($M = 2.182$, $SD = 1.063$). This matches the Need Footprint of this brand. The prepaid credit card app ($M = 2.958$, $SD = 1.471$) is evaluated more often as *sovereign* than GetOskar ($M = 3.591$, $SD = 1.505$). Thus, we cannot confirm our hypothesis. While HVB matches very well to its brand value *sovereign*, the prepaid credit card app and GetOskar have problems conveying *transparency*.

Participants' statements within the interview confirm Kahneman and Klein's (2009) statement: While filling the UX Identity Scale, participants were able to make decisions intuitively reliable, but the analytic thought process in the retrospective interview led to uncertainty. Thus, the application of the method of semantic differential in the UX Identity Scale for evaluating BX and UX can be affirmed. Nevertheless, the qualitative retrospective interviews led to interesting insights about

participants' reasons behind their Brand and UX Evaluation. Direct quotes from the interviews are translated from German into English. For the brand values of HVB, the results of the statistical analysis can be confirmed by the retrospective interviews. Participants stated that the app appears *clearer* and *sovereign*, and less *euphoric* and *magic*. *Clear* was connected to the functional attribute of having a good and structured overview and the usage of simple colors in the UI. Thereby, the psychological need of security was mentioned several times. One participant stated: *"This is what an app in the finance sector has to look like, as I am used to it. I feel secure*." Contrarily to *clear*, the brand value *sovereign* was interpreted as a characteristic of the brand (being a banking institution), and not understood as a characteristic of the visual design or functional features of the app. But it was mentioned that HVB appears to be sovereign due to a clear, classic, and non-playful design. Being *magic* as an app in the finance sector would be "*counterproductive*," as another participant stated. The impression of *sovereignty* also leads to the fulfillment of the need *security,* but especially conveys *competence*. The prepaid credit card app was expressed to seem rather *young* than *responsible*. Interaction patterns like *drag & drop* and swipe gestures, playful animations, and the usage of "*fresh and colorful colors*" were mentioned as reasons. However, participants expressed skepticism about trusting a bank that appears young and stated that to be *"young is not important in the finance sector*." At the differential *"transparent-stylish,*" participants were undetermined with a tendency to "*stylish*": *"I would say stylish because the colors are appealing, but I would not say it is not transparent due to the clear structure of the app*." Indeed, the fulfillment of the need of stimulation can be confirmed, though this leads to a reduction of the need of security, which is expected by participants. Also, for GetOskar we can observe a similar effect. Participants experience the app as *exciting* due to a range of features that are not understood immediately and due to a lack of overview. *"I would like to try it once, but in the finance sector, I like it clearer and more structured*." Another participant mentioned: *"If it is something important, like a banking app, suspense is negative for me. If I have an app which is more a gadget, I like it exciting*." Regarding these statements, the quantitative results of the UX Identity Scale can be confirmed. Additionally, we got deeper insights into the participants' analytic evaluation process.

Strengths and Weaknesses of the UXi Scale

The study shows that semantic differentials have to be chosen carefully. In the following section we discuss strengths and weaknesses of semantic differentials.

Evaluating the app with the help of the semantic differentials was easy to conduct for items that had a connection to functional aspects of the app. Those brand values show a connection between hedonic and pragmatic qualities. For example, the item *comfortable* was associated with the functional aspect of an easy handling. Hence, the item *fair* also represents the construct *transparency* in an appropriate way, as a fair design is associated with *"transparency of functionality and activities of the app*". Further, semantic differentials with clear dimensions are easy and intuitive to understand, e.g., *transparent—stylish*, *sovereign—magical,* or *technological—traditional*. In addition to a satisfying Euclidean distance, this is also supported by

participants' verbal confirmation and reasoning. Further, semantic differentials which can be understood in a design context are easily and intuitively usable. An example for this category is *technological—traditional*. *Technological* is associated with *elaborated*, *new*, and *interactive*.

A weakness of several items of the UX Identity Scale is their high emotionality. The adjectives that were used often appear in the description of human characters compared to describing an app design. Examples for these items are *loyal*, *amusing*, *warm,* or *empathic*. Further, there were also antipoles with unclear dimensions. For example, *harmonic—tidy* and *young—responsible* evoke confusion, as these adjectives do not exclude each other. Participants point out that a design or a person can be *young* and at the same time *responsible*. They are able to identify themselves with both the adjectives and therefore do not understand these words as opposite logical dimensions. Those semantic differentials were rated mostly as neutral, which confirms the utility to offer an odd scale. Another weakness is that interpretations of values differ according to the respective antipole. However, this also supports the semantic differential as a valid data collection method because this increases the probability for a unique interpretation of the word by different participants. Further, the qualitative interviews showed that the app evaluations of the three cases were rather based on functional aspects (pragmatic qualities) than aspects of design. In literature, many studies show a correlation between hedonic and pragmatic qualities (Diefenbach & Hassenzahl, 2017; Tuch, Roth, Hornbæk, Opwis, & Bargas-Avila, 2012), which has also been shown in this study. When the evaluation of the app was only based on the functional aspects, the semantic differentials were ranked in the category "*hardly applicable to design context*." This tendency was observable most strongly for the app GetOskar. This app is characterized by pragmatic functions. Studies show that the dimension of evaluation (hedonic or pragmatic) depends on the inherent goal of use or product type (Xu, Lin, & Chan, 2012). The app GetOskar was evaluated as strongly *adventurous* due to its functions, but less because of its adventurous design. Moreover, some adjectives were not only hard to associate with the design of an app but also hard to associate with the design of an app in the finance sector. This means that the adjectives are, again, associated with functional aspects. This was the case for the semantic differential *understanding—decisive*. *Understanding* was defined as an app that respects spending a big amount of money and consequently is seen as *understanding*. A *decisive* app in the finance sector was seen as a motivator for spending money. Both associations focus on functional aspects and ignore aspects of UX design. The chosen set of semantic differentials for this study is only valid for the presented brand examples and their related sets of primary values. When applying this method to other UX projects, new primary and secondary values have to be defined and a different set of semantic differentials has to be extracted. This process needs time as well as the involvement of an expert.

The case of mobile banking showed that brand diversity can be significantly proved by the usage of our evaluation strategy. Additionally, it is possible to uncover where brand values cannot be experienced by users at the touchpoint of the UI design, e.g., *transparency* for the prepaid credit card app and the GetOskar app.

Thus, we conclude that the usage of the semantic differentials, deduced from the Euclidean distances of a database of brand values (assessed by the representation of the seven UX relevant psychological needs), is a valid approach and can be a reliable measure. Nevertheless, the individual creation of the UX Identity Scale is challenging, and in order to show statistical differences, benchmarks are necessary. To get a more holistic picture of UX/BX and the perception of brand values at a specific touchpoint, especially to receive inspirational insights for design iterations, we recommend a mixed-method approach triangulating quantitative and qualitative data.

8.2.3 Card Sorting as Visual UXi Scale

Additionally, to the use of semantic differentials represented as terms, visualizations can also be used to evaluate the harmony between brand experience and user experience. Thereby the mood images of the empirical knowledge catalogue can be utilized (see also Chap. 7). Experts have to choose mood images for a brand's primary values and their antipoles (again based on the Need Footprint). By applying the semantic differentials of the UXi Scale on the mood images, it can be validated whether experts chose appropriate mood images or not.

There are two ways of collecting quantitative data—*binary* and *ordinal* (see Fig. 8.2). *Binary* means that participants only rate whether there is match between a mood image and the current touchpoint of an experience. *Ordinal* means that there is again (see above) a semantic differential scale, however, with images instead of adjectives. Results of an additional study revealed that using visuals instead of only terms brings significant effects for the three mobile banking apps for both data collection methods. Evaluating the method itself, no consistent preference of users for one method could be revealed. However, we recommend the *Visual UXi Scale* method to collect a data set comparable to the *UXi Scale* (ordinal data with similar options).

Strengths and Weaknesses of a Visual UXi Scale

This way of card sorting is an additional possibility to evaluate the harmony between brand experience and user experience in a more subtle and less abstract way than terms. However, it should never be used as the only method. Instead, it should be combined with qualitative methods (e.g., retrospective qualitative interviews in accordance with the laddering technique; Think Aloud) to understand participants' reasoning. While mood images are not supposed to present content but a certain mood (and, in our case, empirical knowledge), many participants were not able to differentiate among mood sets. For example, a mood image showing many different shirt buttons to convey diversity was associated with a screen including a functional UI button. Just like the UXi Scale, the card-sorting scale is no standardized method: It should be individually created for each brand by choosing mood images for the semantic differentials of the brand values with the help of the Need Footprint of the

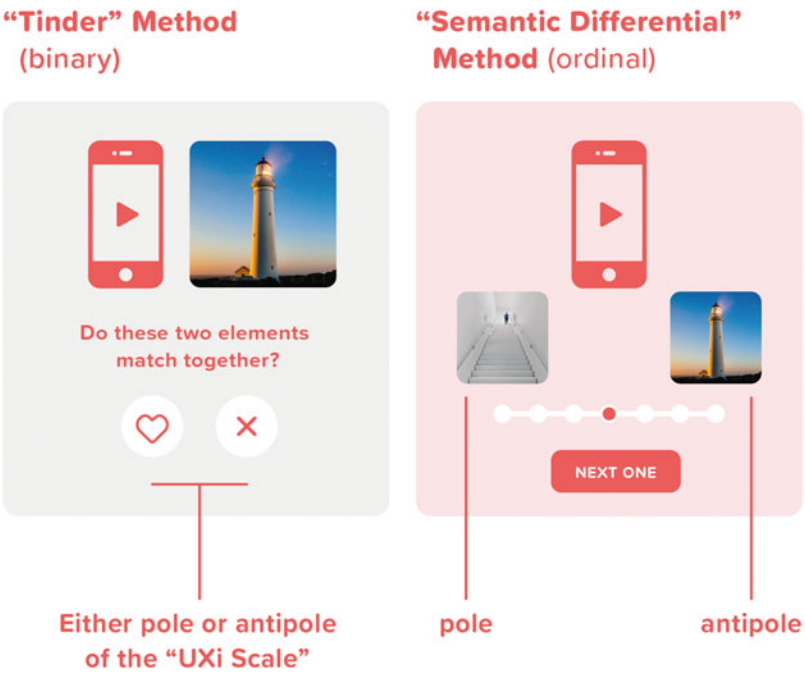


Fig. 8.2 Card sorting as visual alternative to semantic differentials, using abstract terms. *Source*: Authors' illustration, lighthouse by Joshua Hibbert via https://unsplash.com/photos/Pn6iimgM-wo, stairs by Joseph Akbrud via https://unsplash.com/photos/3GX4PJ-qces

brands. Here, researchers and designers have to try which mood images work for evaluation and which do not.

Conclusion

According to UX theory, the quality of a user experience is dependent on the fulfillment of users' psychological needs (Hassenzahl et al., 2010, 2015). As values are representations of these psychological needs (Rokeach, 1973), we concluded that there is a correlation between the experience of brand values at the touchpoint of a UI design and UX. This can be empirically confirmed by the different approaches of our evaluation strategy. Participants experienced the intended brand values *young* and *exciting* which addressed the need of stimulation. However, the need of security is reduced by this observation. This affected participants' user experience negatively (prepaid credit card app, GetOskar), as security is more important for them in the context of mobile banking. Even though the prepaid credit card app and GetOskar both aim to reach a young audience, the younger participants expressed skepticism as well. Hence, making brand values experienceable in a UX design does not automatically lead to a good user experience. Before designing, especially for defining new brands, brand values need to be critically challenged, if they match the context of the

application. For GetOskar, which offers vouchers and discounts, the use of context differs from the other banking apps; here, addressing the need of stimulation is more appropriate than for prepaid credit card app.

By assessing whether or not brand values can be experienced by users, we evaluated if the defined goals for the hedonic quality, based on the brand promise, could be achieved by the designers (Roto, Lu, Nieminen, & Tutal, 2015; Roto, Joutsela, & Nuutinen, 2016, Roto, Väätäjä, Law, & Powers, 2016; Roto & Rautava, 2008). However, we were able to observe that problems in the pragmatic quality also impact participants' evaluation of the brand values. This applies especially for semantic differentials with a functionality reference, e.g., *high-performance-comfortable*, which had already been mentioned to be easy to assess for participants. Thus, for brand experience, we can confirm the findings of Tuch and Hornbæk (2015) on Herzberg's notion, in which the pragmatic quality is identified as a hygiene factor that only influences the hedonic quality when not given. However, users per se experience the product as a whole and cannot differentiate between these two aspects of UX (see above).

In the presented work, we developed a strategy to evaluate BX and UX to close the cycle from an only generative to a complemented iterative process. In the use case of mobile banking, we were able to show the brand diversity of three different apps, which are fostering their brand identity by a set of postulated individual brand values they want to represent in all touchpoints. In an iterative design process, designers can now take up on our results and improve the design to better emphasize specific brand values (Jetter, 2006; Jetter & Gerken, 2007). Furthermore, our strategy helps to uncover where wrong or inappropriate brand values are postulated by brands. An uncritical transfer from brand values into UX design can lead to an impaired user experience rather than an improved one. Especially while defining new brands, the creators have to carefully select the brand values which shall represent the brand. Our work confirms existing literature: BX and UX are concepts that need to be regarded joint and not isolated. As users choose their products based on their psychological needs, digital products that communicate their matching brand personality in the right way will be more successful on the market. Thus, professionals from different disciplines like marketing and design have to collaborate to create the best possible outcome for the users they want to design for, but also for the brand they want to strengthen. This work is a first approach for a strategy to include brand experience in a user-centered design approach.

References

Churchill, G. A., & Iacobucci, D. (2006). *Marketing research: Methodological foundations*. New York: Dryden Press.

Churchill, G. A., & Iacobucci, D. (2010). *Marketing research: Methodological foundations* (10th ed.). Mason, OH: South-Western/Cengage Learning.

De Chernatony, L. (2010). *Creating powerful brands*. London: Routledge.

Diefenbach, S., & Hassenzahl, M. (2010). *Handbuch zur fun-ni toolbox*. Essen: Folkwang Universität Der Künste.

Diefenbach, S., & Hassenzahl, M. (2017). *Psychologie in der nutzerzentrierten Produktgestaltung: Mensch-Technik-Interaktion-Erlebnis*. Berlin: Springer.

Frison, A.-K., Zotz, P., & Riener, A. (2017). The level of harmony: A validation strategy for brand & user experience. *Mensch Und Computer 2017-Tagungsband*.

Hassenzahl, M., Burmester, M., & Koller, F. (2003). AttrakDiff: Ein Fragebogen zur Messung wahrgenommener hedonischer und pragmatischer Qualität. In *Mensch & computer 2003* (pp. 187–196). Berlin: Springer.

Hassenzahl, M., Diefenbach, S., & Göritz, A. (2010). Needs, affect, and interactive products—Facets of user experience. *Interacting with Computers, 22*(5), 353–362.

Hassenzahl, M., Wiklund-Engblom, A., Bengs, A., Hägglund, S., & Diefenbach, S. (2015). Experience-oriented and product-oriented evaluation: Psychological need fulfillment, positive affect, and product perception. *International Journal of Human-Computer Interaction, 31*(8), 530–544.

Jetter, H.-C. (2006). Die MCI im Wandel: User experience als die zentrale Herausforderung? In *Mensch & computer* (pp. 65–72).

Jetter, C., & Gerken, J. (2007). A simplified model of user experience for practical application. In *2nd COST294-MAUSE* (pp. 106–111).

Kahneman, D. (2012). *Thinking, fast and slow*. London: Penguin Books.

Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise: A failure to disagree. *American Psychologist, 64*(6), 515.

Kroeber-Riel, W., & Gröppel-Klein, A. (2013). *Konsumentenverhalten (10., überarbeitete, aktualisierte und ergänzte Auflage)*. München: Verlag Franz Vahlen.

Kuß, A., Wildner, R., & Kreis, H. (2014). *Marktforschung: Grundlagen der Datenerhebung und Datenanalyse (5., vollständig überarbeitete und erweiterte Auflage)*. Wiesbaden: Springer Gabler.

Meschtscherjakov, A., Wilfinger, D., & Tscheligi, M. (2014). Mobile attachment causes and consequences for emotional bonding with mobile phones. In *Proceedings of the 32nd annual ACM conference on human factors in computing systems* (pp. 2317–2326). New York: ACM.

Norman, D. A., & Verganti, R. (2014). Incremental and radical innovation: Design research vs. technology and meaning change. *Design Issues, 30*(1), 78–96. https://doi.org/10.1162/DESI_a_00250.

Pettersson, I., Lachner, F., Frison, A.-K., Riener, A., & Butz, A. (2018). *A Bermuda Triangle?* (pp. 1–16). New York: ACM Press. https://doi.org/10.1145/3173574.3174035.

Reynolds, T. J., & Gutman, J. (1988). Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research, 28*(1), 11–31.

Rokeach, M. (1973). *The nature of human values*. New York: Free press.

Roto, V., Joutsela, M., & Nuutinen, M. (2016). Brand experience goals guiding the design of multiple touchpoints. In *Experience design for multiple customer touchpoints workshop in conjunction with NordiCHI' 16. October 23–27, 2016*. Sweden: Gothenburg.

Roto, V., Lu, Y., Nieminen, H., & Tutal, E. (2015). Designing for user and brand experience via company-wide experience goals. In *Proceedings of the 33rd annual ACM conference extended abstracts on human factors in computing systems* (pp. 2277–2282). New York: ACM.

Roto, V., & Rautava, M. (2008). User experience elements and brand promise. In *In conjunction with NordiCHI 2008 conference*, Lund, Sweden (Vol. 8).

Roto, V., Väätäjä, H., Law, E., & Powers, R. (2016). Experience design for multiple customer touchpoints. In *Proceedings of the 9th Nordic conference on human-computer interaction* (p. 146). New York: ACM.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 80*(2), 325.

Tuch, A. N., & Hornbæk, K. (2015). Does Herzberg's notion of hygienes and motivators apply to user experience? *ACM Transactions on Computer-Human Interaction, 22*(4), 16.

Tuch, A. N., Roth, S. P., Hornbæk, K., Opwis, K., & Bargas-Avila, J. A. (2012). Is beautiful really usable? Toward understanding the relation between usability, aesthetics, and affect in HCI. *Computers in Human Behavior, 28*(5), 1596–1607. https://doi.org/10.1016/j.chb.2012.03.024.

Xu, L., Lin, J., & Chan, H. C. (2012). The moderating effects of utilitarian and hedonic values on information technology continuance. *ACM Transactions on Computer-Human Interaction, 19* (2), 1–26. https://doi.org/10.1145/2240156.2240160.

Summary and Recommendations for Action 9

As Paul Watzlawick puts it: "*One cannot not communicate*." (Watzlawick, Helmick, & Jackson, 2007, p. 275). As soon as a company enters the market with a product, the product communicates, whether intentionally or unintentionally, on many different channels and levels. Communication between companies and their customers has become a real-time dialogue, while at the same time the number of touchpoints increases. Customer experience and user experience play an important role in the credible communication of a corporate identity. Accordingly, in addition to corporate communication, the design of products and services must also be consciously and specifically aligned with the values of a brand. The story that marketing tells as well as the experiences that a consumer has with a company must match the images, emotions, associations, and memories that the consumer perceives explicitly and implicitly in every interaction with a company's products.

Psychology, neurosciences, and behavioral economics are currently only partly capable of truly understanding people's motives. Nevertheless, the influence of the implicit system on our decisions and actions can no longer be dismissed. The potential of addressing the autopilot is enormous. Products designed with the right inherent codes create relevance, credibility, and differentiation. They keep what a brand promises, and thus play a major role in creating a holistic brand experience. To achieve this goal, the findings from psychology, neuroscience, and behavioral economics help to design digital products more specifically, and to take a more detailed look at the perception that is intended to be triggered. As a result, design can be explained and discussed in a comprehensible way, making it possible to trace individual design elements back to codes that are intended to be triggered. The design is thus deprived of arbitrariness. The right communication with the autopilot will be essential for the success of brands and products in our increasingly complex world.

The findings presented in this book can therefore also be beneficial for optimizing design processes. The validation of the assumption that the desired associations are triggered in the interaction with a product must be carried out comprehensively on the basis of codes. This is because, above all, the access via empirical knowledge

F. van de Sand et al., *User Experience Is Brand Experience*, Management for Professionals, https://doi.org/10.1007/978-3-030-29868-5_9

brings objectivity into the design process, which is otherwise determined by subjective decisions. The benefits of this process optimization are fewer design errors, less subjective and taste-driven discussions, lower costs, and an efficient and transparent process that results in a brand-congruent, comprehensible, aesthetic, and, last but not least, highly successful product.

With the UXi method, the boundaries between marketing and design are dissolved, which is unavoidable in view of the aforementioned change of societal and economic conditions. A company's digital products must be seen as an integral part of corporate communication from the very beginning. Here, signals are perceived implicitly and explicitly. Accordingly, codes must be jointly defined across the different departments. This process should be supported by a tailor-made cooperation of the various disciplines with the consumer. Brand experience, user experience, and thus customer experience can contribute measurably to the success of a company. The proof is provided by successful, UX-driven companies such as Google, Apple, Uber, or Airbnb. These companies have understood that user experience is brand experience and that additional to a high pragmatic quality (usability) the hedonic quality of digital products is a critical success factor.

The only way to succeed is for the customer experience departments and the design and development departments to link their capabilities and work together as closely as possible. In this context, digitization opens up new ways of creating a harmonized customer experience. New contact points enable voluntary involvement of customers. In close dialogue with the customer, new insights regarding perception, user experience, and brand management can be gained. Already ten years ago, Bogusky and Winsor (2009) stated that *"in our digital age, technology is definitely making it more difficult to tell the difference between product and marketing. Is a website a product, a retail location, or marketing? The answer is yes. The lines have blurred"* (p. 53). Today, this statement is more valid than ever. Only if the departments of marketing, branding, and product design are carefully orchestrated, based on a brand positioning, companies can nowadays be successful.

Therefore, the ability to translate the findings of psychology, neuroscience, and behavioral economics into a practical guide that can be given to product managers and UX designers is essential. These parties must be supported in understanding which codes can and should be incorporated into a product, how and for what reason, and what benefits they bring. It is important to consider the levels of multisensory communication, embodiment, language, and symbolism, which help to specifically address the goals and motives of the consumer. The more senses a product appeals to simultaneously and appropriately, the more sustainably the brand or product message to be transported is stored in the brain of the consumer. Especially in the era of the *Internet of Things*, language and embodiment will play an important role for a brand-coherent design of products. Because the way in which products talk to us, how we touch and use them will be crucial for how the character of a product will be perceived in daily interaction. Products thus become credible ambassadors, the literal personification of a brand, and help to be successful in the battle for the attention of the consumer.

So, yes, companies need to fight and win the battle for attention in order to be successful in the market. However, sustainable business with digital products and services needs to be thought of in a long-term perspective, and responsible designers need to be educated accordingly. A small group of computer scientists working at Silicon Valley tech companies are currently responsible for designing the experiences of billions of users. So Tristan Harris, former Google design ethicist and now co-founder of the Center for Humane Technology, poses the right question: *"What's the moral operating system in their head? Are they thinking about their ethical responsibilities? Do they even have the time to think about that?"* (Leslie, 2016). Surely not all product makers can be accused of having bad intentions. Yet, they can be expected to first and foremost aim to make their products successful. The mindset in Silicon Valley is purely optimistic and aiming at building products that extend human potential. It will be important to emphasize the importance of further researching and debating when and where behavior design can be used beneficially and morally right and in which cases it is actually used to exploit users. This is valid for everyone involved in the creation of digital products and services.

At the end, it will become apparent that making users addicted to digital products is not sustainable. Users are beginning to increasingly react informed and thus condemn the methods of the *Attention Merchants* (see also Chap. 1). As a reaction to that, big digital players like Apple and Google have recently introduced screen time monitoring features. It seems that they have also sensed the sociocultural trend toward *Balanced Simplicity* and *Meaningful Connections*. The significant opportunity here is for brands and businesses to move from a more superficial engagement with people to one that develops relationships, loyalty, and advocacy.

As Hassenzahl (2010) puts it, we need to put "*[. . .] experience before functionality and leave behind oversimplified calls for ease, efficiency, and automation or shallow beautification. Instead, [we need to] explore what really matters to humans and what it needs to make technology more meaningful.*" (p. 1)

Companies understand more and more that it is not sustainable to exploit your users, e.g., to keep them in your app as often and as long as possible and to bombard them with push messages. In the future, it will be important to provide users with the right service at the right time at the right touchpoint, and in the right context, all of that in a way that feels right to them and thus makes their life a bit more pleasant and beautiful. Hereby, products, services, and the technology can only be the medium for experiences.

If we pay attention to a high pragmatic and hedonic quality of these experiences at every touchpoint, chances to sustainably succeed in the battle for attention are high, because whoever will provide the best and most coherent experience will win.

We seem to be on the way to a more humanistic digital world. User experience design can help make our lives not only easier but also increase our well-being. This knowledge leaves us with valuable insights about the value of great experiences. In their work, van Boven and Gilovich (2003) make a clear statement about the importance of experiences for leading a happy life. As the authors point out, "*For many of us, deciding how to invest our resources to maximize happiness is a challenge: We wonder whether we are as happy as we might be, given the resources*

at our disposal" (p. 1193). Their studies show that investment in experiences makes people happier than investing in material possessions, especially when judged with temporal distance. As the authors explain, experiences leave more room for positive memories, have a greater social value, and, most of all, are more relevant for our identity: "*A person's life is quite literally the sum of his or her experiences. The accumulation of rich experiences thus creates a richer life*" (p. 1200).

Here, technology can be a useful tool to create meaningful experiences. In his *Letter to Humanity*, van Mensvoort (2017) writes:

> Technology not only alters our environment, it ultimately alters us. The changes to come will allow you to be more human than ever before. What if we used technology to magnify our best human qualities and support us in our weaknesses? We could call such technology humane, for lack of a better word. Humane technology takes human needs as its starting point. It would play to our strengths rather than rendering us superfluous. It would expand our senses rather than blunting them. It would be attuned to our instincts; it would feel natural. Humane technology would not only serve individuals but, first of all, humanity as a whole.

With this book, we aimed to provide both practitioners and researchers with valuable insights on how to design brand-specific value-based experiences. In the past eight chapters, we learned that there is an increasing number of touchpoints and opportunities for brands to interact with customers—leaving the latter in a confused state. We learned about the multisensory cognitive processes behind conscious and unconscious perception, and how customers judge products and brands, carefully contemplating whether or not they fit our needs and motives. We hope to have created an understanding of how important it is to bring brand values into all touchpoints—not only to foster the success of a brand but also to create meaningful experiences and enrich the life of users and customers. Even more so, we hope you found our scientific research results just as helpful as the hands-on introduction of our UXi method. We are excited for what's to come: With the possibilities of rising technologies like AR, VR, and the Internet of Things, there are great opportunities for providing amazing forms of experiences.

After all it is in the hands of every single person who is involved in product design and development to create products and services that make this world a better place for all of us.

References

Bogusky, A., & Winsor, J. (2009). *Baked in: Creating products and businesses that market themselves*. Evanston, IL: Agate Publishing.

Boven, v., & Gilovich, T. (2003). To do or to have? That is the question. *Journal of Personality and Social Psychology, 85*(6), 1193–1202.

Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. *Synthesis Lectures on Human-Centered Informatics, 3*(1), 1–95.

Leslie, I. (2016). *The scientists who make apps addictive*. Retrieved July 3, 2019, from https://www.1843magazine.com/features/the-scientists-who-make-apps-addictive

van Mensvoort, K. (2017). *Letter to humanity*. Retrieved July 3, 2019 from https://lettertohumanity.org/english/

Watzlawick, P., Beavin Helmick, J., & Jackson, D. D. (2007). Some tentative axioms of communication. In R. T. Craig & H. L. Muller (Eds.), *Theorizing communication: Readings across traditions* (1st ed., pp. 275–288). Los Angeles: Sage.