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# 7 Customer Experience Creation in Today's Digital World

*Peter C. Verhoef*

## **Introduction**

Creating a strong customer experience is now considered as one of the most important challenges for firms. In today's digitalizing world, firms can no longer compete on the product itself but need to offer more to consumers than ordinary product or service quality. The call for customer experience (CX) is not new, though. The University of Columbia professor Bernd Schmitt considered creating strong customer experiences as an important way to differentiate (Schmitt, 1999). Similarly, the work of Pine and Gilmore (1999) discussed the important role of experiences in Western economies. However, recently, with the upcoming of multiple new digital touchpoints and the considered increasing complexity of the so-called customer journeys (where consumers switch between multiple different touchpoints in their path to purchase), CX management has gained even more attention (e.g., Lemon and Verhoef, 2016).

The increasing attention to CX can also be observed in the academic literature and community. CX and understanding customer journeys have been top priorities for the Marketing Science Institute in the most recent years. Recent articles on CX have a strong impact on the field in terms of citations. For example, the brand experience measurement paper of Brakus, Schmitt and Zarantonello (2009) has more than 2,600 Google Scholar citations, while the Verhoef et al. (2009) paper conceptualizing CX now has more than 1,700 Google Scholar citations. These numbers show that many marketing academics have executed many studies on CX and related topics, and there seems no sign of decreasing interest in this topic. This can potentially be explained by the fact that creating satisfied customers is one of the core objectives of marketing. Customer satisfaction is presumed, though, to be no longer sufficient nowadays; customers should have strong experiences.

Given the importance of CX in today's marketing and business, there is a need for synthesizing knowledge on CX. Recently, several articles conceptualizing CX have appeared (e.g., Lemon and Verhoef, 2016). In this book chapter, my aim is to build on these articles and to discuss the emergent topics in this field by briefly discussing the main CX concepts and how these concepts evolve due to digital business developments. I choose this focus because the digital technologies will have a strong impact on marketing strategy. They will affect customer

journeys as well as what customers will expect from companies. Specifically, the new rise of digital giants, such as Amazon and Alibaba, will strongly affect customer expectations and their experiences (e.g., Kahn, Inman and Verhoef, 2018; Reinartz, Imschloss and Wiegand, 2019; Verhoef et al., 2017). It is by no means my intention to provide an extensive literature overview on CX, given that there are multiple existing overviews on CX (e.g., Schmitt, 2011; Lemon and Verhoef, 2016) and related topics, such as multi-channel management (e.g., Liu, Lobschat and Verhoef, 2018).

The structure of this book chapter is as follows. I will start with a discussion of the CX construct and the measurement of this construct. Next, I will discuss the concept of customer journeys and how these journeys are changing. Finally, I will focus on emerging developments and end with a conclusion.

## **Customer Experience**

Within marketing, there has been a strong focus on creating satisfied customers and a strong research stream focused on measuring customer satisfaction as well as understanding its antecedents and consequences (e.g., Smith and Bolton, 1998; Szymanski and Henard, 2001; Anderson, Fornell and Mazvancheryl, 2004). In the service marketing literature, there has been extensive attention to measuring and understanding service quality as an important driver of customer satisfaction and loyalty (e.g., Parasuraman, Zeithaml and Berry, 1988).

Despite the fact that there are clear links between satisfaction and performance (e.g., Gupta and Zeithaml, 2006), there has been a notion, especially among practitioners, that satisfaction and service quality are not sufficient anymore. Reichheld (2003) suggested that firms should create promoters and that this is essential for achieving growth. He therefore suggested measuring the Net Promoter Score (NPS). Promoters are probably more likely to exist when you provide strong experiences and exceed customer expectations. In the past, Oliver, Rust and Varki (1997) have also recommended delighting customers, as average satisfaction levels are not sufficient. Practitioners have also pledged so-called 9+ experiences and service excellence (e.g., Veldhoen and van Slooten, 2014). These suggestions all refer to the same underlying idea that moderate or good is not sufficient anymore; only a very good customer performance matters. It also suggests non-linear effects of customer evaluations (i.e., customer satisfaction) on performance. Indeed, there is ample evidence for these non-linear effects (e.g., De Haan, Verhoef and Wiesel, 2015; Anderson and Mittal, 2000).

Creating strong CXs thus seems an important differentiator for firms and a necessity to create customer loyalty and have customers function as advocates or promoters for your firm, which has become more important with the rise of social media. Based on a literature review, Lemon and Verhoef (2016) state that CX is a multidimensional construct focusing on a customer's cognitive, emotional, behavioral, sensorial and social responses to a firm's offerings during the customer's entire purchase journey. This definition clearly signals the broad nature of CX and that programs aiming to improve the CX could focus on multiple responses. Importantly, Lemon and Verhoef (2016) also stress

the importance of the full customer journey from search to purchase and consumption. They also clearly mention that CX is a distinct construct and that, although related, it differs from theoretical constructs, such as customer engagement, commitment and customer satisfaction.

### *Measuring Customer Experience*

So far, there have been a few studies aiming to measure CX. Klaus and Maklan (2012; 2013) published two studies on measuring CX, but these studies lack a strong theoretical motivation and do not focus on multiple dimensions as proposed in the definition of CX. Instead, they consider the following four dimensions, testing the same scale: product experience, outcome experience, moments of truth and peace of mind. The focus of this scale is rather cognitive, and the peace of mind dimension seems to incorporate some emotional dimensions. Brakus, Schmitt and Zarantonello (2009) developed a brand experience scale with multiple dimensions considering the following: intellectual, sensory, behavioral and affective. Their dimensions, though focusing on the brand, include some of the dimensions mentioned by Lemon and Verhoef (2016) but do not consider the social dimension. The intellectual dimension of Brakus, Schmitt and Zarantonello (2009) (based on the work of Schmitt (1999)) strongly focuses on the inducement of elaborative thinking caused by interactions with the brand and does not focus on just the mere cognitive evaluations of the quality of a firm's interaction. The latter is more measured in the scales proposed by Klaus and Maklan (2012). Bustamante and Rubio (2017) measure CX in a retail environment, thereby using the dimensions of Lemon and Verhoef (2016). Their social dimension is rather behavioral, though, focusing on whether customers interact with other customers as well as store employees. However, they do not measure the social experience. The cognitive dimension mainly reflects the intellectual dimension as proposed by Brakus, Schmitt and Zarantonello (2009). Brun et al. (2017) also measure the five identified dimensions of CX. Their social dimension seems to focus more on the social experience, but the cognitive experience again has a strong focus on the intellectual dimension as identified in Brakus, Schmitt and Zarantonello (2009). The issue is that the cognitive dimension is not clearly discussed, and researchers seem to embrace the intellectual focus while not considering the mere cognitive evaluation of interactions with the firm. Some of these authors may consider this dimension more as an outcome of CX, regarding customer satisfaction as a consequence of CX (e.g., Bustamante and Rubio, 2017). Importantly, all the discussed scales measure CX as an overall evaluation of the customer journey and do not develop specific measures per journey phase. I summarize the measurement of the five CX dimensions as identified by Lemon and Verhoef (2016) in Table 7.1.

Developed CX scales should ideally be used in practice. As noted by Lemon and Verhoef (2016), one challenge with the developed scales is that they are typically rather lengthy, limiting the usability of these scales in business practice. One of the reasons for the popularity of the NPS in CX measurement is the use of only a single question. The use of simple questions with smileys has a similar

*Table 7.1* CX measurement operationalizations and their measurement of different CX dimensions.

<i>CX Measurement Studies</i>	<i>CX Dimensions as Identified by Lemon and Verhoef (2016)</i>				
	<i>Cognitive</i>	<i>Emotional</i>	<i>Physical</i>	<i>Sensorial</i>	<i>Social</i>
Brakus et al. (2009)	Yes, but lacks service evaluations	Yes	Yes	Yes	No
Klaus and Maklan (2012; 2013)	Yes	Partially	No	No	No
Bustamante and Rubio (2017)	Yes, but lacks service evaluations	Yes	Yes	Yes	No, focus on behavior
Brun et al. (2017)	Yes, but lacks service evaluations	Yes	Yes	Yes	Yes

advantage. Although the use of very short scales clearly has shortcomings from a methodological perspective (e.g., Morgan and Rego, 2006), firms strongly rely on these short scales, as they can use them to measure CX very easily for every customer–firm interaction. The challenge for academic researchers is to develop theoretically solid scales that will indeed be used to measure CX.

Instead of relying on classic survey data, new, typically unstructured data can be used. Online sentiment data also provide opportunities to measure CX. Text analytics has been actively used to measure the volume and valence of online reviews (e.g., Babic et al., 2016). Valence, however, mainly considers positive vs. negative opinions about customer–firm interactions. A broader perspective is necessary here, and CX measurement can benefit from improving text analytics techniques. Similarly, machine learning techniques can be used for CX measurement using pictures and videos. The abundance of picture and video sharing on social media might provide these opportunities, although privacy regulation could hinder this. Furthermore, mobile data and devices might provide opportunities to measure CX. Baxendale, Macdonald and Wilson (2015) use mobile devices to collect instant data on CX, still using survey questions. Mobile might be essentially very relevant to understand the full customer journey, as mobile devices constantly accompany the customer on his or her journey. There are thus ample opportunities for researchers to develop methods and tools to measure CX using new data sources and devices.

## **Customer Journey**

Understanding the customer journey is an important element of CX management (e.g., Homburg, Jozic and Kuehnl, 2017). Lemon and Verhoef (2016) consider a customer journey that moves from search to after-purchase. This is a rather classic approach, which is based on the long-known consumer behavior

models (e.g., Howard and Sheth, 1969) and is rather standard, being used in the literature on attribution models (e.g., Li and Kannan, 2014). The general notion is here that customer journeys have become more complex due to the growth of customer touchpoints. From a firm's perspective, that is indeed true. The increasing number of touchpoints that can be used increases the complexity of reaching out to customers as well as managing customer journeys. For example, De Haan, Kannan and Wiesel (2018) show that due to the increasing use of mobile devices, customers switch devices in their journey to purchase. This device switching complicates the journey, as before, customers would search online using their desk-top and then use their desk-top to buy online or choose another channel (i.e., store). The question, though, is whether the easy said complexity holds for every customer a like?

The research of Konus, Verhoef and Neslin (2008) already suggested the existence of multiple multi-channel segments, where there are two multi-channel oriented segments and a store segment focusing on a single channel. De Keyser, Schepers and Konus (2015) partially replicated these findings, though they also included the phone channel and added the after-sales phase. They identified one multi-channel segment by two multi-channel segments (web, store and phone). In a recent study, Herhausen et al. (2019) segment customers based on the customer journey, thereby including a wide range of touchpoints and also including mobile devices. Analyzing data collected in 2013 and 2016, they end up with five distinct segments, which strongly differ in the use of the number and type of touchpoints. There is a sizable heavy touchpoint user segment, which uses around seven touchpoints. This segment thus indeed has a complex customer journey. However, there are also segments that have short journeys and focus only on a single touchpoint. Importantly, they still show the presence of a sizable store segment, actually using the store as their major touchpoint or channel. However, there is also a strongly web-focused segment, searching and purchasing on the web only and having a rather short customer journey. Again, this journey is far from complex. Interestingly, as Herhausen et al. (2019) analyze data at two points in time, between which mobile devices have become more present, they also show that mobile devices are mainly added to the journey in specific segments (i.e., the heavy touchpoint user segment)). The segments do, however, remain similar. Thus, the main conclusion from this study is that journeys can indeed become more complex, but the complexity strongly differs between customer segments. There are still segments having a strong focus on a single touchpoint!

## **Customer Journeys and Customer Experience**

Customer journey studies have mainly considered the use of touchpoints in the customer journey. Understanding how CX creation differs across customer segments has gained limited attention, though. In business practice, customer segmentation is now frequently enriched with the use of so-called personas. These personas aim to make segments more visible and memorable for marketing executives. It is typically a single person that aims to represent

the full customer segment and chosen target group, and the description of this persona should show journey, motivations and attitudes and their CX. This may also help marketing practice to develop strategies to improve CX through improving the customer journey. For example, if segments are using a mobile device frequently in the journey and demand instant service information, having mobile websites as well as having a mobile app can be crucial. Though frequently used in practice, one key problem with this approach is that it simplifies segmentation solutions to make them visible in a single persona. A segment will thus be rather homogeneous. However, there is typically some heterogeneity within segments. Hence, a single persona description is unlikely to represent a full segment.

Customers thus differ in their customer journeys, and it is likely that CX plays a different role in journeys. There is little research, though, on the role of CX in different customer journey segments. Herhausen et al. (2019) study the impact of product satisfaction, journey satisfaction and customer inspiration on customer loyalty for their identified customer segments. Customer inspiration is a construct that can be linked to the intellectual dimension of CX. They clearly show differences between segments. For example, for the segment using many touchpoints, both customer journey satisfaction and customer inspiration are related to customer loyalty, while product satisfaction is not related. However, for two online oriented segments, product satisfaction is most strongly related to customer loyalty. For the store segment, product satisfaction is most important, but journey satisfaction and customer inspiration are also related to loyalty. Thus, this study provides ample evidence that for specific consumer segments, the experience during the journey and being inspired during the journey are rather important, while for other segments, the outcome of the journey with having a satisfactory product is most important. Research on this topic is still very limited, though. We do not sufficiently know the reasons for these differences. Do they occur because of different consumer goals and motivations? Do the interactions during the customer journey play a role?

## **The Transforming Nature of Digital Technologies**

The last decade has already shown a strong impact of digital technologies on customers. I observe four important technologies that may change the CX and customer journey:

1. Mobile devices
2. Big data and machine learning
3. Artificial intelligence and robotics
4. Internet-of-Things

### ***Mobile Devices***

As already noted, mobile has become very important in today's life for many customers. Mobiles constantly accompany customers and are considered as an

extension of the individual consumer. As already noted, mobiles will affect customer journeys, as they are being used as an additional device in the path to purchase (e.g., De Haan, Kannan and Wiesel, 2018). Herhausen et al. (2019) also show the strong increase of mobile usage between 2013 and 2018. However, this usage is mainly visible in online oriented segments, where specifically heavy touchpoint users have strongly increased their usage of mobile devices. However, store oriented consumers do not use mobile devices in their journey.

The question is how mobile devices affect the CX. There have been multiple studies on the impact of mobile devices on purchase behavior, thereby specifically considering the role of mobile apps. These studies suggest that mobile apps can increase customer loyalty (e.g., Liu et al., 2019; Wang, Malthouse and Krishnamurthy, 2018). These studies identify multiple mechanisms by which this may occur. Apps may provide a stronger convenience to customers. For example, customers can easily book flights, monitor booked flights, check-in flights and look up loyalty program status in multiple apps of airlines. Convenience increases the cognitive and relational experience of customers. Within apps, more branding elements can potentially be provided, which may possibly increase emotional CX. Firms can also potentially add intellectual experiences to these interactions through, for example, gaming. Social features can be added through linking apps with social media. Furthermore, apps can be strongly personalized. Thus, these apps provide ample opportunities for firms to increase the CX.

There are, however, also potential dark sides of apps for consumers. Apps can lock in customers within the relationship (Liu, Lobschat and Verhoef, 2018). Firms may benefit from this by asking higher prices. For consumers using apps, the competitor is no longer one click away, and thus, they gain less information on competitive offers. The question is how this will affect their CX in the long run. If consumers understand this, they may stop using these apps. This could also give rise to a growing importance of platform apps, as through these apps you can still compare prices and products. These apps, though, frequently do not provide the rest of the services, as described, for example, for airline apps (i.e., check-in). Platform apps (e.g., Expedia) may strive to integrate these functions as well in their apps. The key question then becomes who owns the customer relationship (e.g., Reinartz, Imschloss and Wiegand, 2019). So far, there has been little attention to the dark side of apps, and more research here is clearly required.

Not only apps are changing CX; it is predicted that mobiles will become a dominant touchpoint. Mobiles are being used for payment in stores, and mobiles can be used to enter houses, cars, etc. Mobiles have apps linking them to smart products. For example, polar sport watches have an app in which customers can monitor their physical achievements. Mobiles have already become the major connecting technology for customers through social media (i.e., WhatsApp, WeChat and Instagram). Thus mobiles are considered to connect customers to other customers (persons), products and objects. Verhoef et al. (2017) describe this in the so-called POP-framework. The integral role of the mobile in all these connections is very relevant. It suggests that mobile is becoming a very important touchpoint in many customer interactions. Firms not investing in these mobile

touchpoints might potentially get disconnected from their customers, and mobile devices may become inevitable in providing strong CXs.

### ***Big Data and Machine Learning***

Nowadays, firms have large amounts of data. This is also referred to as big data, and firms analyze these data using standard techniques as well as new computer science techniques, such as machine learning (e.g., Kübler, Wieringa and Pauwels, 2017). These data allow firms to optimize the CX. The most typical way this occurs is through personalization. Personalization is typically used in customer interactions to provide customers with personalized offers or promotions (e.g., Ansari and Mela, 2003). However, the use of big data and new techniques, such as machine learning, may provide much wider opportunities. Through analyzing choices, firms may be able to predict customer behavior and preferences. Firms like Spotify and Netflix can offer music and movie lists based on a deep knowledge of customer preferences. Chung, Rust and Wedel (2009) propose a method that dynamically updates these recommendations based on continuously monitoring customer choices. Customers may consider these recommendations as very useful, as they may increase convenience, and these recommendations match customer preferences, creating higher satisfaction levels. However, recommendations may also come at the cost of the customer's need to explore, which may limit the intellectual parts of the experience.

So far, recommendation systems strongly build on collected internal data (i.e., purchases at online retailers, music choices at streaming services, etc.). However, many digital players are now able to collect data over devices, and they use tracking techniques to follow the digital paths of the customer. Especially, digital platforms, such as Google, now offer so many services that they can link many data sources (i.e., YouTube, Google Search, Google Maps, Gmail, etc.). Despite privacy adjustments, Google is able to follow every move of mobile phone users (Gayle, 2018). This can be used to provide new (unpaid) services to consumers and provide specific mobile recommendations (e.g., Andrews et al., 2016). Google, for example, provides information about the travel time to your next presumed destination based on geographic and traffic information (based on mobile phone data) from Google Maps and the information customers have in their agenda and/or daily travel routines. This is rather pro-active and can be valuable for consumers. In a similar vein, firms, including banks, have solutions to help customers with financial decisions, based on extensive data analytics (including machine learning) of bank accounts and other sources. Banks can already do that, based on customers' bank accounts. But new parties may integrate data from different sources and come up with specific recommendations. Again, this may be valuable for consumers, because they might, for example, improve their financial decisions. However, all these solutions can also negatively affect the emotional CX. Specifically, literature already acknowledges that personalization may create feelings of intrusiveness (van Doorn and Hoekstra, 2013). Moreover, recommendation may create less perceived freedom and thus may create reactance. The increasing integration of data sources without the

consent of consumers may create “Big Brother is watching you”-type emotions and result in even stronger negative emotional reactions (see Beke, Eggers and Verhoef, 2018 for an overview on information privacy).

Thus, although big data and analytical techniques, such as machine learning, can provide a stronger CX, there are potential dark sides. Specifically, the lack of exploration opportunities and the feelings of intrusiveness and reactance may negatively influence CX.

### ***Artificial Intelligence and Robotics***

As noted by Huang and Rust (2018), artificial intelligence (AI), manifested by machines that exhibit aspects of human intelligence, is increasingly utilized in services (see also Huang and Rust, 2014). Examples are robots for homes (robot vacuum cleaners), and social robots (i.e. Pepper) are replacing human greeters to welcome customers in customer-facing contacts. Robots have gained a lot of attention in especially the computer and robotics literature. Recently, researchers have started to discuss and investigate the consequences of robotization for CXs, behavior and service provision (e.g. van Doorn et al., 2017; Huang and Rust, 2018). Robots can be considered as a technological infusion into customers’ service frontline experiences. Van Doorn et al. (2017) group these technological infusions, based on two dimensions: (1) automated social presence and (2) human social presence. Self-Service Technologies (SST), such as ATMs and self-check-in machines, can be considered as a service technology low on automated social and automated human presence. SST has already gained special attention in the marketing and service literature. SST may also influence CX. Reinders, Dabholkar and Frambach (2008), for example, show that forcing customers to use SST may cause reactance and thus dissatisfaction. SST are now widely accepted by customers and have been professionalized by service providers. Although the human contact is frequently absent, for example, the convenience of an early airport check-in combined with having a digital ticket (on a mobile) is valued. Similarly, banking customers now heavily use mobile banking applications, making payment even more convenient. Dutch banking satisfaction figures show that although many customers do not trust their bank, they are rather satisfied with the digital banking system (Nederlandse Vereniging van Banken, 2018). Thus, we can conclude that SST is now an integral part of many service processes. The use of SST makes channels such as bank branches obsolete, though specific customer segments (i.e., elderly people) might still consider the use of SST problematic and might get disconnected from important services. Firms need to develop strategies to serve these customers and/or educate and help these customers to be able to use SST. This is also highly relevant from a corporate social responsibility and a relational perspective, as, for example, banks cannot stop serving vulnerable older customers, especially when these customers also have had long-standing relationships with their bank.

Although already used in practice (see some examples in different sectors in Mende et al. (2019), robots are still rather uncommon in service settings. There are, though, strong differences across the globe. Japan is considered as

one of the leaders in using robots in business, and robots seem also to be more widely accepted there (de Planque, Zhao and Elamri, 2015). Robots have multiple appearances. A main distinction is whether robots appear to be mainly machines with few human characteristics or robots with a strong human appearance. The latter type are typically referred to as humanoids and in service contexts as humanoid service robots (e.g., Mende et al., 2019). It is expected that these humanoid service robots (HSR) will increasingly replace human service providers in multiple industries (Harris, Kimson and Schwedel, 2018). This could, though, have strong consequences for the CX. Van Doorn et al. (2017) discuss how HSR might affect satisfaction, engagement and loyalty though the impact of HSR on social cognition (i.e., warmth) and psychological ownership (i.e., attractiveness). In a recent study, Mende et al. (2019) show that HSR can create discomfort among consumers. Interestingly, more machine-like robots elicit lower discomfort, leading to compensatory responses. Thus, initial studies on the impact of HSR on CXs suggest potential negative effects. Note, though, that these effects can be customer specific; van Doorn et al. (2017) discuss some moderators (i.e., technological readiness). Indeed, Mende et al. (2019) discuss and empirically test some of these moderators.

Robots, and specifically HSR, will thus impact CXs. Current research suggests that they may create mainly negative emotional responses (i.e., discomfort), assuming that HSR can deliver the same service quality. The question, though, is whether this assumption is true, as HSR might be less able to react to unforeseen customer interactions. However, on the positive side, due to its machine-like nature, the variance in the delivered service might be reduced substantially. Hence, applying HSR in customer service interactions should be considered carefully by firms. Moreover, there is also a societal issue. As extensively discussed by Huang and Rust (2018), AI solutions, such as HSR, replace humans, and jobs disappear. This may create tensions within society, as specific work-classes may be affected. Especially, we have seen that the middle-level class has been affected relatively strongly by both globalization and IT developments (Weel and van den Berge, 2015). However, one could also argue that in specific industries (i.e., healthcare), robots are strongly welcomed because of a shortage of supply of employees in a growing market. Still, firms should be reluctant to adopt robots, and specifically HSR, given the assumed negative effects on CX as well as potential negative social consequences. However, note that in specific countries, such as Japan, these consequences might be absent. Further research on the effects of HSR on CX is thus strongly welcomed.

### ***Internet of Things***

The Internet of Things (IOT) consists of billions of devices that are able to communicate with consumers and other systems, services and devices through the Internet. The IOT eco-system is large and consists of connected cars, smart-home appliances, VR headsets and many other applications (Novak and Hoffman, 2018). One of the most famous examples, which is strongly promoted by Amazon, is “Alexa”. Literature on IOT is rather scarce in marketing. Novak

and Hoffman (2018) and Ng and Wakeshaw (2017) are among the few papers conceptually discussing IOT. It is clear, though, that like the other technological developments noted, IOT will impact the customer journey and CXs.

Novak and Hoffman (2018) take a relational perspective using assemblage theory on how smart objects affect CXs. They argue that these objects can provide enabling experiences and constraining experiences. Enabling experiences are generally positive and seem to occur through self-extension and self-expansion. Constraining experiences occur through self-restriction and self-reduction. Self-restriction may occur because of a restriction on usage, which may cause feelings of reactance. Self-reduction may occur when a customer becomes less proficient in tasks because of the actions of the smart object. For example, a digital voice assistant like Siri might restrict linguistic diversity.

The discussion of Novak and Hoffman (2018) is very theoretical and lacks a strong link with the classic CX literature. This strong theoretical focus limits the applicability of their models in practice. A key issue is how actual CXs can be enriched by IOT. The success of “Alexa” and also, for example, sport watches, etc. seems to suggest that consumers value IOT solutions, as they can enrich experiences. For example, a sport watch can enrich the physical experience of a user of that watch, as it might stimulate them to move more. Customers may also feel more socially connected when their sporting performance is shared through social media applications, such as Strava. “Alexa” potentially creates stronger relational emotional connections for customers with Amazon and can create more convenience. Importantly, “Alexa” can induce changes in the customer journey, as the journey will now be more owned by Amazon, and the customer is likely to use fewer other touchpoints in their search for products and services (e.g., Reinartz, Imschloss and Wiegand, 2019).

Extended conceptualizations and studies on how IOT may affect different dimensions are needed. The broadness of IOT is in that sense a challenge. And therefore, also categorizations of IOT are required. The CX-effect of a service like “Alexa” is potentially totally different from an effect of using VR headsets in service delivery. It is clear, though, as with the other technological developments, that IOT will affect CX. The question is how and when that actually occurs!

## **Conclusion and Implications**

In this book chapter, I have aimed to discuss CX, its conceptualizations and its measurement. The theory on CX seems to have converged to a broad agreement that CX is multidimensional and should be measured as such. The academic measurement of CX leads to lengthy scales; this may limit their adoption in practice, which relies on short single-item measures, such as NPS. Understanding the customer journey is important to create CX. I concluded that though customer journeys could have become more complex, multiple customer segments still have rather simple journeys with a focus on a limited number of touchpoints. To increase CX, these segments should also be treated differently.

However, I did not only look backward at what we have learned about CX and customer journeys. I have also aimed to discuss the consequences of

digital technological developments for CX. Thereby, I focused on the effects of mobile, big data and machine learning, AI and robots, and IOT. Note that these developments are clearly related. For example, data and analytics are a crucial input into mobile, AI and IOT. IOT has frequent connections with mobiles using specific apps. The discussion clearly shows positive consequences of these technological developments for CX creation. However, I also identified negative consequences, such as reactance, exclusion of specific customer segments, discomfort, etc. Moreover, specific developments, such as robotization, also can have more far-reaching effects due to their impact on employees and their jobs. These jobs will either become different and/or be eliminated.

These digital developments clearly call for more research. While marketing research has paid considerable attention to mobile and big data, we have only recently started to conceptualize and investigate the impact of robotics. These developments are still at the early stages but can strongly influence customer–firm interactions. As discussed, the notion that humanoids are replacing humans in service delivery can create feelings of discomfort. Firms thus need to carefully consider when, how and to what extent they will be using these new technologies. These decisions could easily turn to become cost-driven decisions without taking customer reactions into account. I strongly state that CX reactions are really important to consider as well.

Research on CX has a strong focus on Business-to-Consumer Markets. CX is, though, also important in Business-to-Business Markets (B2B). Decision makers in B2B markets are typically considered to behave more rationally than consumers, which suggests that cognitive CX dimensions could be more relevant. However, Bolton, Lemon and Verhoef (2008) also suggest that B2B customers have biases due to psychological processes, suggesting that other CX dimensions could also play a role. Moreover, relationship-marketing theory has emphasized the importance of trust and commitment (Morgan and Hun, 1994). Digital developments will also affect B2B customers and the service delivery in B2B markets. For example, IOT is an important element in machines, shipping, trains, etc. We refer to Bolton et al. (2018) for an extensive discussion on the impact of digital on B2B markets. More research on CX in B2B markets is clearly warranted, though.

For managers, providing an excellent CX is important. This may create a strong competitive advantage. However, managers should clearly look at the returns of CX investments. Do CX investments really positively influence CX, and does CX translate into sufficient increases in customer attraction and retention and customer equity? Moreover, when increasing CX, firms should clearly treat different segments differently. Some segments strongly focus on cognitive dimensions of CX, while other segments value emotional elements of CX more (Herhausen et al., 2019). When considering the new digital developments, firms should clearly consider how these developments can be incorporated in the service delivery to customers. However, while some of these developments clearly impact CX positively due to, for example, increased convenience, other digital developments (i.e., robotization) may have negative effects. We strongly warn

that although using digital tools solely to reduce costs (i.e., employee costs) may be beneficial, negative consequences of a decrease in CX may outweigh these benefits.

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