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Abstract:

Organizations have increasingly begun to co-create innovations, conduct idea competitions, or conduct crowdsourcing initiatives with customers in online communities. Yet, many customer-integration methods fail to attract sufficient customer participation and engagement. We draw on previous research to identify customers' experience as an important determinant of whether customer-integration initiatives succeed. However, research has rarely applied the notion of experience in the context of customer integration. We conduct a cross-disciplinary literature review to identify the factors that constitute a positive customer-integration experience and the implications of the customer-integration experience. Based on 141 papers from marketing, technology and innovation management, information systems, human-computer interaction, and psychology research, we derive a framework for customer-integration experience that integrates 22 conceptually different influencing factors, 15 implications, and their interrelatedness based on motivation-hygiene theory. The framework sheds light on the current state of research on customer-integration experience and identifies possibilities for future research.

Keywords: Open Innovation, Co-creation, Customer-integration Experience, User Experience, Framework, Motivation-Hygiene Theory, Literature Review.

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1 Introduction

In a competitive business environment, organizations increasingly need to innovate because innovation represents the only way to create value through profitable growth (Prahalad & Ramaswamy, 2003). One approach that companies can take to innovate involves integrating customer knowledge and co-creating innovations with their customers (Chesbrough, 2003). Technological advances and the proliferation of information and communication technology have made co-creating and collecting customer knowledge (e.g., customers' ideas and preferences) more affordable and faster (Dahan & Hauser, 2002; Hemetsberger & Godula, 2007). IT-based customer-integration methods, such as idea competitions, online communities, and crowdsourcing, enable participants to contribute their knowledge and ideas (Ebner, Leimeister, & Krcmar, 2009; Leimeister, Huber, Bretschneider, & Krcmar, 2009).

Despite the ongoing research on IT-based customer-integration methods, many customer-integration initiatives fail to generate sufficient customer interest and participation. For instance, in an SAP idea competition, 68 percent of registered users did not submit an idea (Ebner et al., 2009), which leaves a lot of space for improvement since generating customer participation and engagement can play a critical role in terms of a customer-integration initiative's overall success. Network effects can also affect several customer motives. As the number of participants and contributions increases, participation becomes more interesting and worthwhile for customers (Leimeister et al., 2009).

Customers participate in customer-integration initiatives primarily voluntarily and invest considerable time and effort to contribute to them (Ebner et al., 2009). To attract customer participation and engagement, organizations need to ensure that customers gain a positive experience from co-creating a product or service (Füller, Hutter, & Faullant, 2011; Nambisan & Nambisan, 2008). Yet, we do not know what factors constitute a positive customer-integration experience and what implications the customer-integration experience has for the customer and the company. In order to create a positive customer-integration experience, companies need to recognize the influencing factors and their interaction effects. Additionally, companies need to know the positive and negative implications that a customer-integration experience can have. When one knows these implications and their measurement, one can measure the impact of modifying influencing factors by changing the design of an IT-based customer-integration method.

Researchers across multiple disciplines have researched experience as, for example, user experience in the human-computer interaction discipline (Hassenzahl & Tractinsky, 2006; Law & Van Schaik, 2010; Van der Geest, Ramey, Rosenbaum, & Van Velsen, 2013) or as customer experience in the marketing and consumer behavior discipline (Bridges & Florsheim, 2008; Fiore, Lee, & Kunz, 2004; Sathish & Venkatesakumar, 2011; Sheng & Teo, 2012). In contrast, customer-integration research has rarely applied a customer experience or user experience perspective. Research has only scarcely investigated the experience that customers gain from participating in customer-integration initiatives that use IT-based customer-integration methods (Füller et al., 2011; Füller, Mühlbacher, Matzler, & Jawecki, 2009). We propose that one can transfer the influencing factors and implications of experiences that human-computer interaction, information systems, and/or marketing research has identified to customer-integration research. The existing literature on customer integration has already shown that one can transfer some implications of positive experiences such as loyalty, trust, commitment, and long-term customer relationships (Füller & Matzler, 2007) primarily investigated in marketing research to the customer-integration discipline. Similarly, research has confirmed the importance of influencing factors such as ease of use, playfulness, competence, and autonomy in terms of designing appropriate IT-based customer-integration methods (Füller et al., 2011; Nambisan & Nambisan, 2008). We need to consider and analyze the influencing factors and implications that other disciplines have studied to thoroughly understand how to design a positive customer-integration experience.

Therefore, in this paper, we develop a theoretical framework and propositions concerning the influencing factors and implications of the customer-integration experience from the extant literature. We conduct a cross-disciplinary literature review (Okoli, 2015; Schryen, 2015; Templier & Paré, 2015; Webster & Watson, 2002) to identify influencing factors and implications from different disciplines that have studied customer or user experiences. Previous research has showed the potential of combining different theories and constructs from different disciplines into one framework (Chen, 2003; Douglas & Craig, 1992).

We apply motivation-hygiene theory (Herzberg, 1971, 1974) that proposes that two distinct factors determine job satisfaction and dissatisfaction in the workplace. As customer-integration tasks or crowdsourced tasks provide alternatives to traditional operational work (Tavakoli, Schlagwein, & Schoder, 2015), we propose that customer integration underlies the mechanisms that motivation-hygiene theory

describe. We use motivation-hygiene theory to analyze customers' motivation and attitudes towards performing customer-integration tasks. Drawing on motivation-hygiene theory, we analyze the underlying mechanism of the identified factors, their interrelationships, and their impact on the customer-integration experience.

With this research, we contribute a theoretical framework summarizes the influencing factors and implications of the customer-integration experience and their interrelationships based on motivation-hygiene theory. Further, we review research on user, customer, flow, and co-creation experience and suggest paths for future research endeavors. To help practitioners in designing positive customer-integration experiences, we discuss the identified influencing factors and their implications on the appropriate design of IT-based customer-integration methods.

The paper proceeds as follows: in Section 2, we present theoretical background information on customer integration and define basic terms and constructs. In Section 3, we describe our research approach to identify and analyze relevant literature. In Section 4, we present influencing factors and implications of customer-integration experiences in the different disciplines before we discuss them in detail. Further, in Section 5, in applying motivation-hygiene theory, we structure our findings in a framework, which includes propositions concerning influencing factors of customer-integration experience and their interrelatedness. Subsequently, in Section 6, we conclude with limitations, implications for theory and practice, and future research possibilities.

2 Theoretical Background on Customer Integration

In a dynamic economic environment, organizations need to innovate to survive. Due to constantly accelerating changes in society, technology, and markets, companies face constant pressure to innovate (Drucker, 1998). Unsatisfied customer needs and customer problems (i.e., market pull) or new technological possibilities (i.e., technology push) can serve as triggers for new products, services, or process and procedural innovations (Brem & Voigt, 2009).

Of 3000 ideas, only one leads to commercial success (Stevens & Burley, 1997). In order to reduce risks and costs associated with innovation, companies can open up their innovation processes to ask their customers for their opinions, preferences, and ideas (Chesbrough, 2003; Dahan & Hauser, 2002; Erat, Desouza, Schäfer-Jugel, & Kurzawa, 2006). The open innovation approach describes the process of opening up innovation processes to use external and internal ideas and internal and external paths to market (Chesbrough, 2006). We also use many related concepts in this paper. Figure 1 summarizes the concepts and their relations. We explain every concept and relation below.

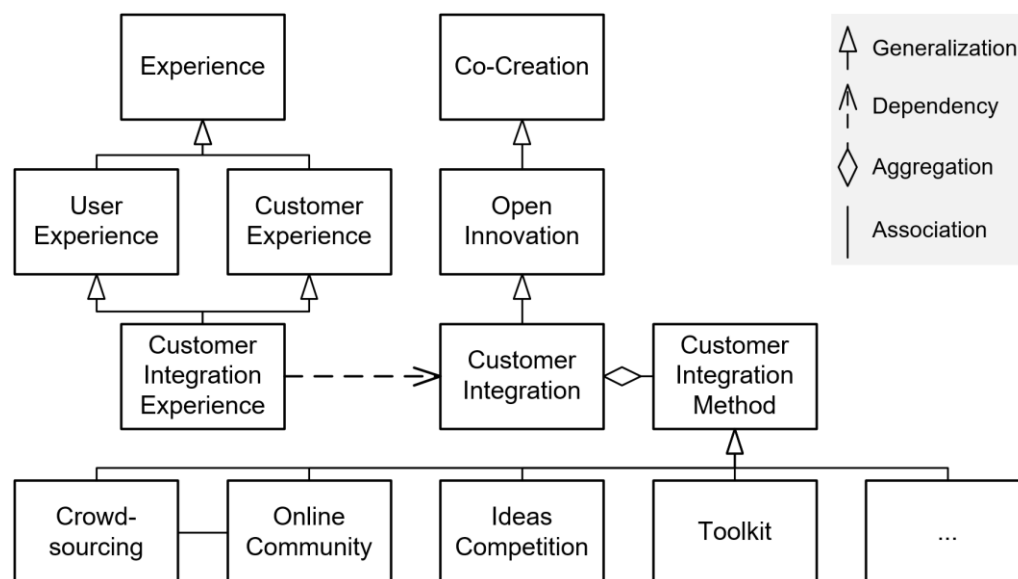


Figure 1. Terms and Concepts Related to Customer-integration Experience

In the open innovation paradigm, customers are no longer passive consumers but active partners in value creation who help companies in shaping and developing products and services and, thus, co-create value (Prahalad & Ramaswamy, 2004b, 2004c). The co-creation construct refers to the process in which a company involves consumers actively in their value-creation processes (Prahalad & Ramaswamy, 2004b). The co-creation construct has a subconstruct called customer integration (Moeller, 2008; Vargo, 2008). It describes “the incorporation of resources from customers into processes of a company” (Moeller, 2008, p. 198). In this paper, we focus on innovation processes. We see customer integration in the context of innovation and as a subconstruct of open innovation in which a company involves its customers in innovation processes. Thus, customer integration and open innovation focus on innovation processes, whereas co-creation addresses value-creation processes in general.

We connect these concepts to experience. Experience refers to an individual’s subjective, momentary perception and evaluation of an event or interaction (Klaus & Maklan, 2011; Knijnenburg, Willemsen, Gantner, Soncu, & Newell, 2012), and researchers in multiple disciplines have examined it. The human-computer interaction discipline has defined the subconcept user experience as “a person’s perceptions and responses that result from the use or anticipated use of a product, system, or service” (Van der Geest et al., 2013, p. 93). In order to design websites and interactive products that create positive user experiences, researchers have considered both instrumental (i.e., pragmatic/ utilitarian value, usability) and experiential (i.e., hedonic value, pleasure-producing) design aspects (Hassenzahl & Tractinsky, 2006; Law & Van Schaik, 2010). Customer experience represents another subconcept of experience. Building on this concept, marketing and consumer behavior researchers have analyzed the appropriate design of stores, Web stores, or marketing campaigns (Bridges & Florsheim, 2008; Fiore et al., 2004; Sathish & Venkatesakumar, 2011; Sheng & Teo, 2012). Thus, customer experience focuses on experiences in a customer-vendor relationship from a marketing perspective, whereas user experience targets experiences when using a product, service, or system and address interactions. Thus, for our research, we build on user and customer experience to define customer-integration experience as a subconcept of both. Customer-integration experience refers to a customer’s perception and evaluation of the interaction with an IT-based customer-integration method and other participants (e.g., other members of an online community) during a customer-integration initiative. Customer-integration experience directly depends on the customer-integration concept. It represents a special form of user and customer experience in the customer-integration context.

Moreover, customer-integration initiatives can have several customer-integration methods, which the relation aggregation illustrates (see Figure 1). Researchers have developed and tested a notable number of customer-integration methods (Hemetsberger & Godula, 2007) as means to gather customer ideas and to co-create new products and services with customers. For instance, crowdsourcing refers to the act of outsourcing a task once that an employee once performed to a large, undefined group of people in the form of an open call (Howe, 2008). Therefore, online crowdsourcing platforms constitute one way for companies to outsource creative tasks related to their innovation efforts. Several companies, including Dell and Starbucks, have implemented online crowdsourcing systems in order to obtain creative ideas for new products and services (Ogawa & Piller, 2006; Sullivan, 2010).

The construct online community relates to crowdsourcing. Preece (2000, p. 10) defines an online community’s components as follows:

- *People, who interact socially as they strive to satisfy their own needs or perform special roles, such as leading or moderating.*
- *A shared purpose, such as an interest, need, information exchange, or service that provides a reason for the community.*
- *Policies, in the form of tacit assumptions, rituals, protocols, rules, and laws that guide social interactions.*
- *Computer systems, to support and mediate social interaction and facilitate a sense of togetherness.*

Hence, an online crowdsourcing platform creates new online communities or uses existing ones (Ebner et al., 2009). Further, crowdsourcing platforms often serve as a basis for idea competitions, a related customer-integration method (Ebner et al., 2009). An idea competition refers to “an invitation of an organizer—namely, a firm—to a general public or a targeted group to submit contributions to a certain topic within a predefined period of time. A review committee evaluates the submitted ideas and selects the winner” (Leimeister et al., 2009, p. 200). Thus, this method does not involve IT by definition, but IT often supports it to increase scalability (Leimeister et al., 2009).

IT-based toolkits for user innovation and design represent another means to integrate customer contributions. Toolkits refer to software or Web applications that allow customers to self-design products according to their individual preferences (Franke & Piller, 2004; Franke & Schreier, 2010; von Hippel & Katz, 2002). For instance, by using a car configurator, an online toolkit for user innovation and design, BMW customers can design the roof of their Mini Cooper with own pictures and graphics (Walcher & Piller, 2012).

All these IT-based customer-integration methods make customer integration into innovation processes faster and more affordable for companies (Erat et al., 2006; Füller et al., 2009). Yet, many IT-based customer-integration methods fail to attract customer contributions or fail to keep customers engaged during the process in which they provide input (Kohler, Füller, Matzler, & Stieger, 2011). Thus, companies need to understand how to design IT-based customer-integration methods in order to provide positive experiences to customers so that they remain engaged and provide valuable input.

3 Research Methodology

Reviewing past research has value for any type of research (Webster & Watson, 2002) since literature reviews can help one to understand and build on what past researchers have already done (i.e., standing on the shoulders of giants) (Vom Brocke et al., 2015). We undertook a structured review of the literature on users, customers, flow, and co-creation experience to investigate how researchers have conceptualized these constructs to date. Based on previous research, we develop a conceptual framework of influencing factors and implications of customer-integration experience and their interrelationships.

From a method perspective, one can categorize literature reviews into several types (Paré, Trudel, Jaana, & Kitsiou, 2015). While narrative literature reviews, for example, do not follow any structured review process, a theoretical literature review adopts a structured process of searching for, analyzing, and synthesizing literature to answer a specific research question (Paré et al., 2015; Vom Brocke et al., 2015). We classify our review paper as a theoretical review. Theoretical literature reviews develop research propositions, hypotheses, or a conceptual framework by drawing on existing conceptual and empirical studies from diverse research streams (Paré et al., 2015). These characteristics describe our review work well since we draw on qualitative and quantitative research studies from multiple disciplines and develop a framework of influencing factors and implications of the customer-integration experience.

A high-quality literature review should consider the following dimensions: rigor, relevance, and methodological coherence. Rigor refers to a sound review process, relevance to the usability and contribution of the review, and methodological coherence to the fit between the review's goals and the guidelines selected to conduct the review (Templier & Paré, 2015). To ensure those quality criteria and, therefore, to conduct a high-quality literature review, existing research provides guidelines and frameworks (Okoli, 2015; Schryen, 2015; Templier & Paré, 2015; Webster & Watson, 2002). Accordingly, a literature review should:

- 1) Formulate a clear problem and research question
- 2) Select sources to search for relevant and high-quality literature
- 3) Define criteria to evaluate the relevance and quality of identified literature
- 4) Describe the extraction of data from identified and included literature, and
- 5) Compile data into a whole that exceeds the sum of its parts (Levy & Ellis, 2006; Webster & Watson, 2002).

In Section 3.1, we present the keywords, databases, and journals we used to search for literature. Additionally, we provide detailed information on our search and screening processes. In Section 3.2, we describe our approach to extract data from the identified and included papers. In Sections 4, 5, and 6, we present the results of extracting and compiling data from literature.

3.1 Literature Search

To include high-quality literature in our literature search process, we searched the eight major peer-reviewed information systems journals in the AIS Senior Scholars' basket. The AIS senior scholar basket comprises the *European Journal of Information Systems*, *Information Systems Journal*, *Information Systems Research*, *Journal of the Association for Information Systems*, *Journal of Information*

Technology, Journal of Management Information Systems, Journal of Strategic Information Systems, and Management Information Systems Quarterly.

Besides the senior scholar basket, we searched major journals in the information systems, management information systems, computer information systems, and business information systems disciplines as Lowry, Romans, and Curtis (2004) have identified: *Management Science, Communications of the Association for Information Systems, Communications of the ACM, Decision Science, Decision Support Systems, IEEE Transactions Journals, Information and Management, and ACM Transactions Journals.*

As customer integration, co-creation, and open innovation are interdisciplinary constructs, we also searched the databases EbscoHost, Science Direct, Emerald, ACM, IEEE, and SSRN that provide access to multiple disciplines (Tavakoli et al., 2015). For instance, Emerald provides access to management journals, and IEEE Xplore provides access to publications in the computer engineering discipline.

We searched these journals and databases using “and” combinations of keywords from the first and second categories that we list in Table 1. Since we focus on customer-integration experience in this research, we first used “customer experience” and “user experience” as keywords. We included user experience because it relates to customer-integration experience and because human-computer interaction research frequently uses it. Second, we used “customer integration”, “co-creation”, and “open innovation” as keywords since these concepts pertain highly to customer-integration experience. Additionally, we added “crowdsourcing” as one customer-integration method because it represents an IT-enabled application of open innovation and because research and practice has begun to increasingly discuss it (Schlagwein & Bjørn-Andersen, 2014).

Table 1. Keywords for Literature Search

Category one	Category two
<ul style="list-style-type: none"> • Customer experience • User experience 	<ul style="list-style-type: none"> • Customer integration • Co-creation • Open innovation • Crowdsourcing

The initial search yielded 2,495 results. After removing duplicates and reading meta-information (title, abstract, and keywords) of all research papers to identify their relevance for understanding the basic concept of customer or user experience in the open innovation or co-creation context, we narrowed the number of relevant papers down to 432. In order to reduce the number of research papers to the actually relevant ones, we conducted a second screening process in which we evaluated the remaining papers by reading their introduction, discussion, findings, and contribution sections. In both screening processes, we considered research papers as relevant if they covered customer or user experience concepts in general and/or specifically in the open innovation or co-creation context. The second screening process reduced the number of relevant papers to 183.

As Okoli (2015) and Webster and Watson (2002) recommend, we conducted a backward and forward search based on the 183 papers. The backward and forward search resulted in 47 additional papers. We conducted a third screening process of the remaining 230 papers in order to identify those that covered influencing factors and implications of customer or user experiences. In this third screening process, we reduced the number of relevant papers to 141. Figure 2 summarizes our literature-search and screening process.

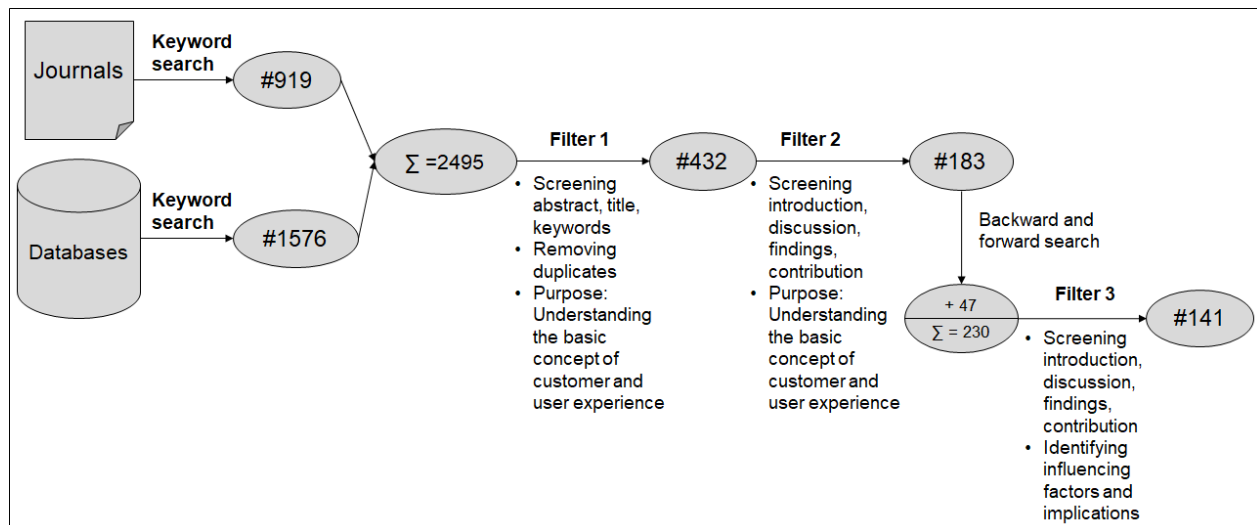


Figure 2. Literature-search and Screening Process

3.2 Qualitative Data Analysis

To identify the influencing factors and implications of customer-integration experience, we conducted a cross-disciplinary literature review to collect relevant data. In order to analyze the qualitative data and to build concepts and categories from the textual data, we used open coding. We describe the qualitative data-analysis and data-coding process in detail in this section.

Open coding includes developing concepts and categories based on their properties (Wolfswinkel, Furtmueller, & Wilderom, 2013). Therefore, our qualitative data-analysis process resulted in a coding scheme and a list of keywords (i.e., properties) that we used to assign the textual data to a category. For instance, if a paper contained the keywords user experience (UX), UX heuristics, goodness, usability, usability study, UX evaluation methods, UX measurement, UX modeling, or UX framework, we coded the paper to the human-computer interaction discipline.

The first author and an external coder independently coded the 141 papers identified in the literature-search process. First, they categorized the 141 papers into papers that examined influencing factors, implications, or both. They resolved inconsistencies via discussion. We used Krippendorff's (1980) alpha to determine inter-coder reliability (Krippendorff, 1980). Krippendorff's alpha averaged 0.84, which indicates that inter-coder reliability was satisfactory. We found that 51 papers dealt solely with influencing factors, 27 papers addressed possible implications, and 63 papers addressed both.

In our literature-search process, we identified 141 relevant papers that examined influencing factors and implications of customer or user experiences (Table A1 in Appendix A). In our qualitative data-analysis process, we found that only 26 of the 141 papers focused specifically on customer integration and co-creation between the company and customers (two on influencing factors, eight on implications, and 16 on influencing factors and implications). Table B1 in the Appendix (Appendix B) overviews these 26 papers. One can see that researchers have rarely applied the notion of experience in the customer-integration context. We need to consider and analyze influencing factors and implications that researchers in other disciplines have studied to thoroughly understand how to design positive customer-integration experiences.

In a second step in our qualitative data-analysis process, the first author and the external coder independently coded each paper's discipline and the influencing factors and implications that it discussed. Regarding the disciplines, our iterative open coding resulted in a coding scheme (Miles & Huberman, 1994) that comprised six categories: Information systems, human-computer interaction, marketing and management, technology and innovation management, psychology, and "others". The category "others" described papers that we could not assign to one of the five disciplines (see Section 4.6). Besides the keyword list, the journal or conference in which a paper appeared indicated which discipline category we coded each paper to. For the discipline coding, Krippendorff's alpha averaged 0.88, which suggests substantial agreement between coders.

Some papers applied theories from different disciplines in order to study customer experiences. We found coding these papers to one of the pre-defined categories a challenging task. We assigned papers that we could not clearly assign to one category to two categories. For instance, Yoon, Hostler, Guo, and Guimaraes, (2013) drew on the information systems, marketing and management, and social psychology literatures to propose and empirically test a theoretical model on the moderating effects of product knowledge and online shopping experience. Their theoretical model comprises several marketing-related constructs such as satisfaction, loyalty, and product knowledge. The study provides implications on using recommendation agents and designing e-commerce websites. Therefore, we coded the paper to both the information systems discipline and the marketing and management discipline. Overall, we coded eight papers to two disciplines. We present the results of our coding and analysis by discipline in Section 4.1.

As a third step in our qualitative data-analysis process, the first author and the external coder independently extracted a list of influencing factors and implications of customer experience. Krippendorff's alpha averaged 0.77 for influencing factors and 0.89 for implications. In meetings, we discussed and clearly defined the identified influencing factors and implications. The existing literature uses different aliases for the same influencing factor or implication. For instance, in our coding, the influencing factor "relatedness" included the synonyms "belongingness" and "sense of community". Similarly, the implication "intention" included the synonyms "willingness" and "future interest" to participate/use/repurchase. As a result, we clearly defined 22 conceptually different influencing factors and 15 implications. We summarized the influencing factors and implications in a descriptive preliminary framework. Finally, we applied motivation-hygiene theory to the initial framework. Figure 3 summarizes our coding and qualitative data-analysis process.

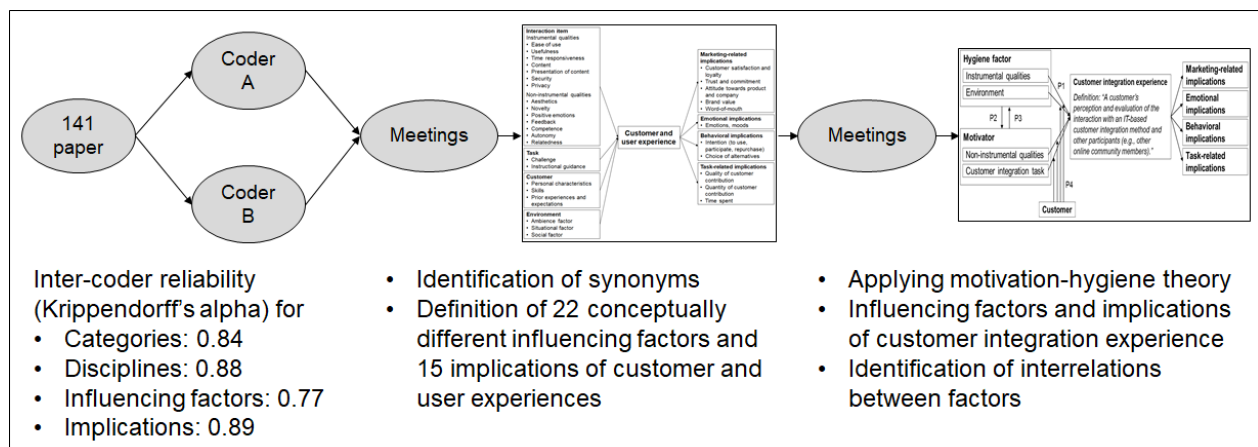


Figure 3. Coding Process

4 Influencing Factors and Implications of Customer-integration Experience

In Section 4.1, we identify influencing factors and implications of customer and user experience in different research disciplines. In Section 4.2, we discuss identified influencing factors and their consequences for the design of appropriate IT-based customer-integration methods and tasks in the context of customer-integration experience. Similarly, in Section 4.3, we present the implications that customer-integration experience can have.

4.1 Analysis by Discipline: Customer and User Experience

We found that researchers have primarily studied the customer and user experience concepts in the disciplines information systems, human-computer interaction, marketing and management, technology and innovation management, and psychology disciplines. In this section, we provide insight into the influencing factors and implications studied in the different disciplines and derive a classification of 22 conceptually different influencing factors and 15 implications of customer and user experiences.

4.1.1 Information Systems

In our iterative open-coding process, we found that information systems research frequently addressed technology acceptance, behavioral intentions, or user acceptance. From the 141 identified papers, we coded 37 papers to the information systems discipline. Three of these 37 papers studied individuals' co-creation experience in virtual environments and, therefore, directly referred to the customer integration in innovation processes context.

The information systems papers focused on appropriately designing information systems in order to enhance users' acceptance, satisfaction, and intentions to use a system (Chen, Yen, & Huang, 2004; Wang & Scheepers, 2012). In this respect, the technology acceptance model (TAM) emerged as a theory to analyze information systems' design and adoption (Davis, 1986; Davis, Bagozzi, & Warshaw, 1989).

The influencing factors that the 37 information systems papers discussed basically referred to the design and quality of information systems (e.g., ease of use, usefulness, security, privacy, reliability) (Chen, Meservy, & Gillenson, 2012; De Wulf, Schillewaert, Muylle, & Rangarajan, 2006; Devaraj, Fan, & Kohli, 2006; Hsu & Tsou, 2011; Vijayasarathy, 2004). These papers also considered the individuals that use and interact with the information system. For instance, normative beliefs (Vijayasarathy, 2004), prior experiences (Chen et al., 2004; Devaraj et al., 2006), and the user's skills (Guo & Klein, 2009) can impact a user's experience in using a certain information system.

Implications of positive experiences include satisfaction (Devaraj et al., 2006; Khalifa & Liu, 2007), intention to use (Bhattacharjee, 2001; Vijayasarathy, 2004; Wakefield & Whitten, 2006), and continuance intentions (Chen et al., 2012; Devaraj et al., 2006). As these implications concern users' behavioral change, we classified them as behavioral implications.

4.1.2 Human-computer Interaction

We coded 43 papers to the human-computer interaction discipline. One of the 43 papers examined value co-creation in user communities and living labs (Pallot & Pawar, 2010) and, therefore, directly referred to the customer-integration context.

Researchers and practitioners in the human-computer interaction discipline face the challenge of designing usable products, services, or systems to a wide variety of users with diverse requirements (Choi et al., 2006). User experience refers to the experience users gain and subsequently memorize after using an interactive product, service, or system (Pallot & Pawar, 2010; Van der Geest et al., 2013). Initially, human-computer interaction research concentrated on the instrumental (i.e., pragmatic) goals of systems including ease of use, usability, and functionality. Subsequently, research that examined more non-instrumental aspects (i.e., hedonic), such as aesthetics, self-expression, and mental stimulation (Hassenzahl & Tractinsky, 2006), expanded this narrow perspective on user experience. Besides these influencing factors, human-computer interaction research has identified users' emotional reactions (e.g., enjoyment) (Mahlke & Thüring, 2007; McCay-Peet, Lalmas, & Navalpakkam, 2012; Partala & Kallinen, 2012) and users' behavior (e.g., focused attention, task performance, willingness to recommend) as positive implications of positive user experience (Kujala, Väänänen-Vainio-Mattila, Karapanos, & Sinelä, 2011; Mahlke, 2007; McCay-Peet et al., 2012).

4.1.3 Marketing and Management

We coded 50 papers to the marketing and management discipline: 13 papers viewed customers as active co-creators of value (Eichentopf, Kleinaltenkamp, & van Stiphout, 2011; Grönroos & Voima, 2013; Hakanen & Jaakkola, 2012; Prahalad & Ramaswamy, 2004b; Zine, Kulkarni, Chawla, & Ray, 2014) and studied the experience customers gain from co-creating products and services (Fiore, Jin, & Kim, 2005; Payne, Storbacka, Frow, & Knox, 2009; Prahalad & Ramaswamy, 2000, 2003).

The influencing factors of customer experience discussed in the 50 marketing and management papers mainly focused on the retail environment, such as the atmosphere (e.g., scents, temperature, and music), product range (e.g., variety, uniqueness, and quality), and social factors (e.g., nice, friendly, and helpful salespeople) (Fiore & Kelly, 2007; Kourouthanassis, Giaglis, & Vrechopoulos, 2007). Implications of a delightful shopping experience refer to positive emotions and marketing objectives, such as customer satisfaction with the store, customer loyalty (Yoon et al., 2013), word-of-mouth (Klaus & Maklan, 2011; Sharma & Chaubey, 2014), and repurchase intentions (Rose, Hair, & Clark, 2011; Sathish & Venkatesakumar, 2011).

4.1.4 Technology and Innovation Management

We coded 11 papers to the technology and innovation management discipline. All 11 papers directly pertained to the research area that examines customer integration into innovation processes. This research focused on new technologies (e.g., virtual reality) and their application to co-create innovations with online customer-integration initiatives (e.g., online communities, idea and design competitions) (Janzik & Raasch, 2011; Kohler, Füller, Stieger, & Matzler, 2010; Nambisan & Watt, 2011).

Researchers in the technology and innovation management discipline have shown the importance of the co-creation experience for encouraging participation and enhancing the quantity and quality of customer contributions (Füller et al., 2011; Kohler et al., 2010; Nambisan & Nambisan, 2008). Influencing factors of a positive co-creation experience include the design of IT-based customer-integration methods that visually appeal to customers and that consider usability aspects (Pals, Steen, Langley, & Kort, 2008). Additionally, such an experience should consider customers' needs to acquire product-related information and to feel autonomous, in control, and related to others (Füller et al., 2011; Matzler, Füller, Kohler, & Stieger, 2011; Nambisan & Nambisan, 2008). Implications of a positive co-creation experience include positive innovation-related outcomes in terms of the quality and quantity of customer contributions and customers' willingness to participate in future customer-integration initiatives (Füller et al., 2011; Kohler et al., 2010; Nambisan & Nambisan, 2008).

4.1.5 Psychology

Under the term flow experience, the psychology discipline has studied the state of total involvement with, deep concentration in, and enjoyment of an activity (Csikszentmihalyi, 1975, 1977, 1990; Nakamura & Csikszentmihalyi, 2002). From the 141 papers, we coded four to this discipline. None of the four papers directly pertained to co-creation with customers.

The four papers coded to this category studied the appropriate design of tasks and how a state of total involvement in an activity evolves. To this end, Csikszentmihalyi (1975) and Csikszentmihalyi (1990) conducted interviews with rock climbers, basketball players, modern dancers, chess players, and composers of modern music to study intrinsically rewarding experiences and activities that allow flow to occur. A task's design (e.g., whether it provides instructions and information on the target outcome) influence the experience that individuals gain when performing it (Dahl & Moreau, 2007). Factors that constitute flow experience include an optimally challenging task that matches an individual's skills (not too difficult and not too simple), clear goals, and immediate feedback. Consequences of flow experience include the loss of self-consciousness and transformation of time. Further, researchers have identified the state of flow as a source of enjoyment and customer value (Csikszentmihalyi, 1975, 1990; Higgins, 2006).

4.1.6 Others

The category "others" included four papers that we could not code to one of the disciplines above. These papers applied the user experience concept to e-government, construction, and contracting. None of the four papers focused directly on customer integration and co-creation. We could identify transcendence, responsiveness, and visualization of information as influencing factors of user experience (Li, Liu, & Liu, 2013; McArthur, 2011; Passera, 2012; Winckler, Bach, & Bernhaupt, 2013). Positive implications include trust, mutual respect, and transparency (Passera, 2012).

4.2 Summary of Influencing Factors and Implications

In summary, the 141 papers focused on different influencing factors and implications depending on their discipline. Table C1 in the appendix (Appendix C) summarizes the results according to disciplines.

Prior research has shown the potential of combining different theories and constructs from different disciplines into one framework (Chen, 2003; Douglas & Craig, 1992). Therefore, we drew from the above-discussed disciplines to identify and classify the most frequently investigated influencing factors and implications of customer or user experiences. In total, we identified 22 conceptually different influencing factors and 15 implications that affect customer or user experience. We aggregated the 22 identified influencing factors and the 15 implications into four categories (see Figure 4).

The design of the interaction item (e.g., system, product), which includes its instrumental and non-instrumental qualities, represents one factor that influences the experience. Other influencing factors

include the task, the customer, and the environment in which the interaction occurs (our own classification based on Mahlke & Thüning, 2007; Knijnenburg et al., 2012).

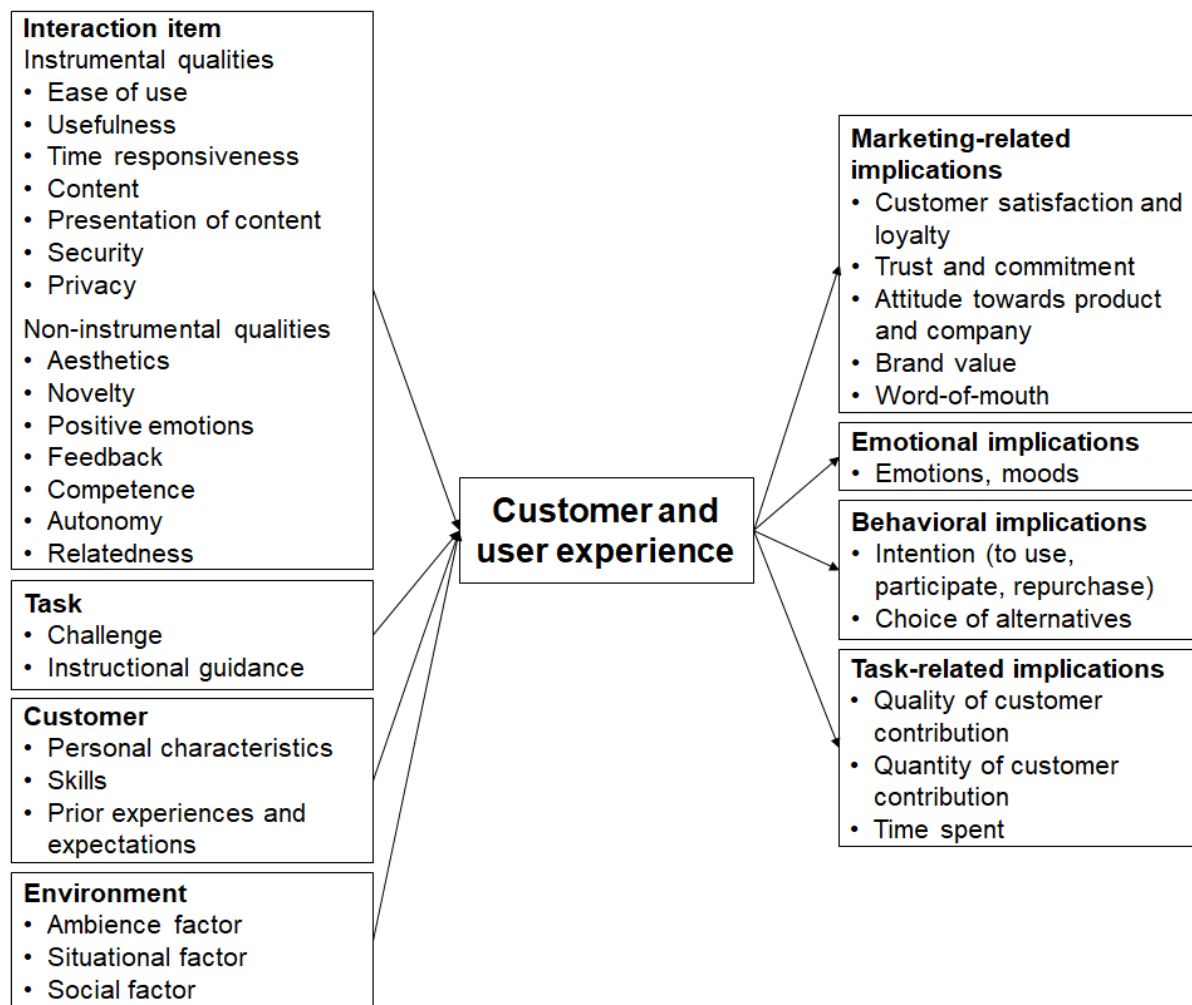


Figure 4. Influencing Factors and Implications of Customer and User Experiences

We can categorize implications of the experience into marketing-related implications, emotional implications, behavioral implications, and task-related implications (our own classification based on Mahlke & Thüning, 2007; Nambisan & Nambisan, 2008). Marketing-related implications refer to marketing-related company goals such as enhancing customer satisfaction, customer loyalty, or brand value (Klaus et al., 2013; Nambisan & Nambisan, 2008). Emotional implications subsume the impact of the experience on emotions and feelings. A positive experience results in positive emotions such as fun. In contrast, a negative experience results in negative emotions such as frustration (Éthier, Hadaya, Talbot, & Cadieux, 2006; Partala & Kallinen, 2012). Behavioral implications, in contrast, include individuals' intentions to use a system or Web store in the future (Bhattacharjee, 2001; Vijayasarathy, 2004; Wakefield & Whitten, 2006).

4.3 Influencing Factors of Customer-integration Experience

We discuss each influencing factor separately and provide guidelines for practitioners to consider the influencing factors in designing IT-based customer-integration methods. Table D1 in the Appendix (Appendix D) summarizes the relationships between the influencing factors we identified and customer-integration experience that quantitative studies have already empirically tested.

4.3.1 Instrumental Qualities of IT-based Customer-integration Methods

Instrumental qualities of systems concern the perceived support that the system provides to help them accomplish their tasks and goals, such as perceived ease of use, usefulness, functionality, effectiveness,

and the satisfaction of product-related informational goals (Mahlke & Thüning, 2007; Nambisan & Nambisan, 2008). In this section, we describe the instrumental influencing factors that we identified in our literature review. Afterwards, we summarize the factors and provide guidelines for practitioners who want to implement an IT-based customer-integration method.

Ease of use: ease of use relates to the usability of systems (Mahlke, 2007; Mahlke & Thüning, 2007) and refers to the degree to which an individual believes that using a particular system will be free of physical and mental effort (Davis, 1989). According to existing customer-integration literature, IT-based customer-integration methods suffer from severe usability problems. For instance, virtual worlds frequently face the challenge of conceptual disorientation or unintuitive navigation (Matzler et al., 2011). Ease of use represents an important determinant of the customer-integration experience. Researchers have already studied this influencing factor in the customer-integration experience context (Matzler et al., 2011).

Usefulness: information systems and human-computer interaction research in particular has identified and studied usefulness as an influencing factor of user experience. Usefulness relates to a system's utility (Mahlke, 2007; Mahlke & Thüning, 2007). One needs to design IT-based customer-integration methods in a way that supports customers in understanding the virtual product, being creative, and articulating their preferences (Füller et al., 2009).

Time responsiveness: in the online shopping context, speed or time responsiveness refers to the time required for loading and displaying a website (De Wulf et al., 2006; Devaraj et al., 2006). In terms of servicing, research has conceptualized time responsiveness as the timely delivery of services (Joshi, 2014; Rowley, Kupiec-Teahan, & Leeming, 2007; Sharma & Chaubey, 2014).

Content: marketing and management research found that the content that a website provides affects its success (De Wulf et al., 2006). Analogously, information systems research views information quality as an important factor that affects user satisfaction (Chen et al., 2012). The content that systems and websites provide needs to be credible, trustworthy, current, sufficient, and relevant (Chen et al., 2012; De Wulf et al., 2006). Some customers participate in customer-integration initiatives only to gain information about an existing product and the current state of technology (Nambisan & Nambisan, 2008).

Presentation of content: previous information systems and marketing research on the design of e-commerce websites has found that websites that organize and present information well increases the probability that the customer will experience a positive association with the website (De Wulf et al., 2006).

Security: customers' security concerns affect the experience they gain when using a system (Arhippainen, 2013). Security refers to data's confidentiality, availability, and integrity (Vijayasarathy, 2004). Previous research on the design of e-commerce websites and mobile services has found that security concerns have a significant effect on customers' intention to prefer one online shopping website over another. Thus, security represents a critical factor for online retailers' overall success (Devaraj et al., 2006).

Privacy: marketing and information systems research on e-commerce websites in particular has identified privacy concerns as an important factor. Customers' privacy concerns refer to the potential misuse of personal information (Vijayasarathy, 2004) and can influence how people interact with and evaluate a system (Knijnenburg et al., 2012).

Summary and design guidelines: designers of IT-based customer-integration methods need to consider a clear structure, a highly intuitive navigation, understandability, and findability to increase ease of use (Matzler et al., 2011). Further, the system needs to support the customer in successfully completing their customer-integration task to ensure usability. Thereby, the system needs to respond quickly to customers' requests and input (time responsiveness). For instance, a website that allows customers to self-design a product needs to provide instant visual feedback of the customized product (e.g., the website needs to immediately visualize the car exterior in the color the user selects).

Further, it needs to supply the customer with interesting and current content that helps the user to successfully complete the customer-integration task. It also needs to supply sufficient information: too much can cause information overload that overwhelms customers and leads to feelings of failure and frustration (Huffman & Kahn, 1998). Misleading, inaccurate, or unclear information; ambiguous terms; or difficult-to-access information pose further obstacles. Besides the content, its presentation is important as well. For instance, to customize a product to their needs, customers require detailed information on the product, its functionality, the product attributes that they can customize, and the options that they can select. The system needs to present this content in an adequate structure and format to aid customers in

absorbing relevant information to perform the customer-integration task (Huffman & Kahn, 1998). Finally, companies need to ensure security and privacy by using secure and reliable systems with restricted access to customer data. Companies can show their credibility by communicating their efforts and certificates (Xu, Teo, Tan, & Agarwal, 2012).

4.3.2 Non-instrumental Qualities of IT-based Customer-integration Methods

Besides instrumental qualities, designers need to acknowledge systems' non-instrumental qualities, such as playfulness, entertainment, competence, and autonomy (Hassenzahl et al., 2010; Hassenzahl & Tractinsky, 2006). In this section, we describe the non-instrumental influencing factors that we identified in our literature review. To design positive customer-integration experiences, we derive guidelines to appropriately design IT-based customer-integration methods and customer-integration tasks.

Aesthetics: human-computer interaction research in particular has studied this influence factor, which considers users' visual, haptic, and acoustic perceptions of systems (Mahlke, 2007; Mahlke & Thüring, 2007). To design visually appealing user interfaces, designers should use appropriate colors and graphics (Moczarny, De Villiers, & Van Biljon, 2012), which make user interfaces more understandable, consistent, and guiding. In contrast, cluttered page layout, inappropriate use of color, and visually overloaded interfaces evoke rather negative emotions and user experience (Moczarny et al., 2012; Stelmaszewska, Fields, & Blandford, 2004).

Novelty: novelty relates to an individual's sense of discovery, adventure, experimentation, and curiosity. According to human-computer interaction research, it represents a key factor in creating a hedonic and enjoyable experience (Stelmaszewska et al., 2004). Information system functionalities that allow the user to do something one would not expect and that allow the user to experiment with technology help in creating a positive user experience (Chung & Tan, 2004; Stelmaszewska et al., 2004).

Positive emotions: entertainment, task enjoyment, fun, and playfulness constitute a positive customer-integration experience (Füller et al., 2011; Kourouthanassis et al., 2007; Sheng & Teo, 2012). Customer-integration research has already acknowledged this influencing factor (Füller et al., 2011; Kohler et al., 2011).

Feedback: research in the psychology discipline has found that feedback contributes to flow experience (Csikszentmihalyi, 1975; Guo & Klein, 2009). Clear and unambiguous feedback supports people in successfully completing challenging tasks, which leads to their enjoying the activity for its own sake (Csikszentmihalyi, 1975). Similarly, human-computer interaction research has found that clear and unobtrusive feedback facilitates users' concentration on the task, provides users with a sense of being in control, increases confidence, and creates consciousness (Colombo & Pasch, 2012; Guo & Klein, 2009).

Competence: one can view the fulfillment of psychological needs as a source of positive experience (Hassenzahl et al., 2010). The self-determination theory views the psychological needs competence, autonomy, and relatedness as important determinants of an individual's wellbeing (Deci & Ryan, 2000; Ryan & Deci, 2000). Individuals have the psychological need to feel competent and to be able to master challenges (Partala & Kallinen, 2012). Füller et al. (2011) studied competence in the context of customer integration into innovation processes. According to their study, competence positively influences customers' co-creation experience and reflects customers' satisfaction derived from successfully completing a task.

Autonomy: customers also need autonomy, another psychological need that constitutes a major source of positive experiences (Hassenzahl et al., 2010). External influence, pressure, and restrictions on decision making result in negative emotions and experiences (Partala & Kallinen, 2012). In the context of customer integration, Füller et al. (2011) and Matzler et al. (2011) found that customers derive positive emotions and experiences from the freedom to choose the process in which they perform a creative task.

Relatedness: individuals' desire to feel part of a community, to care for, and to relate to others constitutes the social dimension customer-integration experience (Matzler et al., 2011). Individuals who participate in open innovation initiatives often engage in customer-integration tasks because they enjoy interacting with others and want to build social relationships (Füller et al., 2011). Feeling as a part of the online innovation community and interactivity with others has a significant positive effect on customer-integration experience (Füller et al., 2011; Matzler et al., 2011).

Summary and design guidelines: practitioners need to consider aesthetic user interfaces and novel functionalities as a source of positive customer-integration experience. To generate enjoyment and a

feeling of competency, organizations can employ gamification elements (e.g., achievement badges or levels) (Hamari, 2013; Hamari & Eranti, 2011; Hamari, Koivisto, & Sarsa, 2014; Kohler et al., 2011; Stelmaszewska et al., 2004). They also need to define challenging but feasible customer-integration tasks to ensure competence and autonomy. Further, they also need to consider how to integrate support and feedback systems to support customers when they experience uncertainty and frustration.

Further, IT-based customer-integration methods should provide relevant and sufficient information to assist customers in mastering their customer-integration task successfully (Zhang, Lu, Wang, & Wu, 2015). To ensure that customers feel autonomy and competence, designers can also provide them with sufficient freedom for their decision and solution processes. For instance, toolkits for user innovation and design could provide a hybrid solution space that requires customers to customize some mandatory product attributes but also allows them to self-design a lot more product attributes optionally (Franke & Hader, 2014; Franke & Schreier, 2010; von Hippel, 2001).

As customers frequently participate in customer-integration initiatives to establish relationships and to feel as if they belong to a community, IT-based customer-integration methods should enable vivid discussions, collaboration, and interactions between participants. Functionalities that allow customers to help each other or to build on and improve each other's input (e.g., ideas) can support the influencing factors of feedback and relatedness.

4.3.3 Task

Besides appropriately designing IT-based customer-integration methods, practitioners also need to consider how they design the customer-integration task. Below, we present the influencing factors we identified that relate to the task and provide guidelines for practitioners on how to consider these influencing factors in the context of implementing customer-integration initiatives.

Challenge: according to psychology and human-computer interaction research, one can design tasks so that they are intrinsically rewarding and allow a person to experience flow. Flow occurs when individuals engage in challenging tasks that match their skills (Csikszentmihalyi, 1975). Thus, a challenging but feasible task creates positive experiences, whereas a mismatch of challenge and skills (i.e., unfeasible task) negatively affects customer-integration experience. Mastering challenges results in feelings of achievement, pleasure, and satisfaction (Stelmaszewska et al., 2004).

Instructional guidance: marketing and consumer behavior research has found that whether a customer-integration task provides instructions and specifies a target outcome or not will influence an individual's perceived competence, perceived autonomy, and overall task enjoyment. Purposefully defining constraints helps to achieve a balance between perceived competence and autonomy for customers. Customers enjoy creative tasks more when they engage in creative activities that provide a sense of both autonomy and competence (Dahl & Moreau, 2007).

Summary and design guidelines: customer-integration tasks need to be challenging but feasible. Companies can decide whether and how much assistance they want to provide to their customers. For instance, they may or may not provide instructions on the task and information on the target outcome.

4.3.4 Customer

The experiences that customers gain from interacting with a product, service, or system also depends on their personal characteristics, skills, and prior experiences (Fiore & Kim, 2007; Knijnenburg et al., 2012). In this section, we describe the influencing factors related to individuals themselves. We conclude with guidelines for practitioners on how to consider the customer and its skills in designing appropriate IT-based customer-integration methods and tasks.

Personal characteristics: according to human-computer interaction and information systems research, a individuals' demographics, personality traits, interests, and domain knowledge influence how they interact with a system and how they evaluate and perceive that interaction (Knijnenburg et al., 2012). For instance, individuals interested in a topic and eager to find out more about this topic focus on, engage with, and become absorbed more in the activity (McCay-Peet et al., 2012).

Skills: customers' competencies are a function of the knowledge and skills they possess (Pralhad & Ramaswamy, 2000). Companies can harness customers' competencies by using online communities or other IT-based customer-integration methods that allow them to engage in an active dialog with their customers. However, the experience customers gain when interacting or consuming a technology,

product, or service highly depends on their skills (Pralhad & Ramaswamy, 2000). Younger users may learn to apply a new technology or software application faster in order to complete a task than older users (Pralhad & Ramaswamy, 2000).

Prior experiences and expectations: based on the expectation-confirmation theory, the confirmation or disconfirmation of expectations impacts satisfaction (Bhattacharjee, 2001; Oliver, 1980). For instance, marketing research has found that customer expectations prior to the encounter have a significant effect on how customers evaluate the shopping experience (Verhoef et al., 2009).

Summary and design guidelines: familiarity with the target customers' skills and adapting IT-based customer-integration methods to these skills help in shaping customer-integration experience. For instance, when companies invite the public (i.e., customers with a diverse set of skills) to contribute to their ideas, they can design the IT-based customer-integration method as an adaptive system that provides support to novice users and offers advanced features to intermediate and advanced users based on user behavior. When companies employ toolkits for user innovation and design, they can adapt the toolkit's solution space and the information that they provide for the product design task to users' preferences (Füller, Böhm, & Krcmar, 2016). Thus, more interested and eager toolkit users can obtain more information on product attributes and design options by clicking on an information button. Further, users can adapt the solution space to suit their preferences. A hybrid solution space requires customers to customize some mandatory product attributes but also allows them to customize many more product attributes if desired (Füller et al., 2016).

Further, prior experiences and expectations determine the customer-integration experience. Customers have expectations on how the underlying system should support them in performing the task. Customers may expect specific outcomes and feelings (e.g., fun) when providing their input. In order to create a positive customer-integration experience, a company needs to meet or even surpass these expectations with utility, novelty, challenge, and pleasure (Arhippainen, 2013; Colombo & Pasch, 2012; Stelmaszewska et al., 2004). Therefore, designers need to recognize the current state of technology. They can use market analysis and competition-based benchmarking to identify the best IT-based customer-integration methods (e.g., best car configurators) and the best employed technologies and functionalities (e.g., advanced visualization features, game elements).

4.3.5 Environment

Existing literature shows that the environment in which interactions occur highly influence the customer or user experience (Pralhad & Ramaswamy, 2000). According to marketing research, customers' shopping experiences depend on several store-related factors: the ambience (e.g., temperature, scent, and music), situational factors (e.g., crowding, budget constraints, time constraints, information overload, and promotion overload), and social factors (e.g., appearance, number, and behavior of other shoppers or personnel) (Fiore & Kim, 2007; Jain & Bagdare, 2009; Kourouthanassis et al., 2007). In this section, we describe how practitioners can consider these influencing factors in designing appropriate IT-based customer-integration initiatives.

Summary and design guidelines: companies cannot influence the ambience (e.g., temperature, scent) through IT-based customer-integration methods. However, when customers and companies meet in person to generate and discuss ideas and product concepts in brainstorming sessions or focus groups, companies can influence the ambience in the meeting room. In contrast to the ambience, in IT-based customer-integration initiatives, companies can control situational factors in terms of the content they provide (e.g., information amount and relevance). Providing too much information distracts customers from the customer-integration task and can cause negative feelings such as failure and frustration (Huffman & Kahn, 1998).

Concerning social factors, since customers frequently participate in customer-integration initiatives to acquire contacts and build their reputation among other participants (Leimeister et al., 2009; Nambisan & Nambisan, 2008), designers need to consider features and tools that foster conversations, discussions, and real-time interactive interactions of participants (Kohler et al., 2011). For instance, user profiles, private chats, discussion forums, guided discussions, and community ratings of ideas provide means to create social experiences for customers (Kohler et al., 2011; Leimeister et al., 2009).

4.4 Implications of Customer-integration Experience

Drawing from research findings of different disciplines, we identify 15 conceptually different implications of the customer-integration experience. We categorized the implications in marketing-related, behavioral, emotional, and task-related implications. In this section, we describe each implication and its relevance in the customer-integration experience context. Table D2 in the Appendix (Appendix D) summarizes the relationships between customer-integration experience and the implications we have identified that quantitative studies have already empirically tested in the research area that examines customer integration into innovation processes.

4.4.1 Marketing-related Implications

Previous research has found that the experience customers gain from a customer-integration initiative has a significant and positive effect on common marketing objectives including customer satisfaction, loyalty (Klaus, Gorgoglione, Buonamassa, Panniello, & Nguyen, 2013; Klaus & Maklan, 2011), commitment, trust (De Wulf et al., 2006), attitude towards the product and the company (Nambisan & Watt, 2011), brand value (Sheng & Teo, 2012), and perceived customer value (Tu & Zhang, 2013). The marketing literature suggests that these marketing-related implications represent the main reasons why companies try to improve their customers' experience (Johnston & Kong, 2011). Based on our literature analysis, all of the following marketing-related implications have already been mentioned in the context of customer integration and value co-creation with customers. Thus, a positive customer-integration experience helps companies achieve marketing-related objectives.

Customer satisfaction and loyalty: companies that measured the impact of their customer experience improvement program identified a 12 percent increase in customer satisfaction (from 85 percent to 97 percent) and 10 percent increase in customer loyalty (from 71 percent to 81 percent) (Johnston & Kong, 2011). Positively evaluating the interaction with an IT-based customer-integration method positively influences customers' satisfaction with the overall customer-integration initiative and their satisfaction with and loyalty to the company and its brand (Nambisan & Baron, 2009; Zine et al., 2014).

Trust and commitment: customers who have a positive experience with purchasing a product online at a particular online store can convince themselves of the store's trustworthiness (Kim, Xu, & Koh, 2004). Thus, trust evolves with positive experiences (Kim et al., 2004). The experience that customers gain from virtually participating and contributing to innovation processes can create trust, commitment, and long-term customer relationships (Füller & Matzler, 2007). Customers may even become enthusiastic about the content they co-create and co-design. For instance, if customers created ideas on a more sustainable future, they may feel committed to the topic such that they intend to live more sustainable and convince others of being more environmentally friendly (Füller & Matzler, 2007).

Attitude towards product and company: companies can also create a positive customer-integration experience to affect customers' attitudes towards them and their products (Nambisan & Watt, 2011). In online product communities, customers can discuss products, generate ideas on how to improve them, or customize them to their individual preferences. Product-related interactions and the experiences customers gain in such virtual product environments can influence customers' attitudes towards the product (Nambisan & Watt, 2011). Although the interactions mainly concern the product, positive experiences in virtual product environments may also have a lasting positive effect on customers' attitudes towards the company affiliated with the product. When customers have negative experiences from interacting with the virtual product and the virtual product environment, customers may blame the company. Thus, customers may develop a negative attitude toward the product and the affiliated company (Nambisan & Watt, 2011; Nambisan & Nambisan, 2008).

Brand value: further, a positive customer experience can cause customers to develop affective bonds with each other or the company, which, in turn, leads to enhanced brand loyalty and brand value (Nambisan & Watt, 2011). In contrast, negative customer experiences result in dissatisfied customers and the brand value suffers (Parandker & Lokku, 2012).

Perceived customer value: previous research has found that one needs to assign customers with an active role in value creation because the experience that stems from the interaction embeds customer value more than the product or service itself does (Prahalad & Ramaswamy, 2003). Customers can derive value from co-creating products or services by acquiring product-related information (i.e., pragmatic value), interacting with other customers and establishing relationships (i.e., social value), or enjoying the

customer-integration task (i.e., hedonic value) (Nambisan & Watt, 2011; Nambisan & Nambisan, 2008; Zhang et al., 2015).

Word-of-mouth: positive experiences and satisfaction with a service or product have a positive effect on customers' intention to recommend the company or the product to others. Negative experiences may also propagate through word-of-mouth (e.g., complaints and negative online reviews) (Sharma & Chaubey, 2014). Matzler et al. (2011) found that a positive customer-integration experience increases the probability that customers recommend and talk positively about the customer-integration initiative and the associated product and company (Matzler et al., 2011).

4.4.2 Behavioral Implications

Customer-integration experience can shape customers' behavior and decisions. In this section, we present the behavioral implications we identified that relate to customer-integration experience context.

Willingness: previous customer-integration research found that customers' previous customer-integration experience determines their willingness to engage in customer-integration initiatives in the future (Füller et al., 2011; Kohler et al., 2011).

Choice of alternatives: due to positive experiences with a company, customers may decide to buy a product over an alternative from a competitor. Nambisan and Nambisan (2008) conducted interviews with customers that have participated in IT-based customer initiatives. One participant in their study stated that they bought smartphone from the company they did primarily due to the active customer forum associated with it and the good experience he had while engaging with this forum (Nambisan & Nambisan, 2008).

4.4.3 Emotional Implications

Between the most satisfying and unsatisfying experiences, customers experience emotions significantly differently (Partala & Kallinen, 2012). According to previous customer-integration research, customers can derive positive emotions such as enjoyment, pleasure, pride, and accomplishment from co-creating products and services (Franke & Piller, 2004; Franke & Schreier, 2010; Nambisan & Nambisan, 2008). In contrast, negative customer-integration experiences due to poorly designed co-creation tools and tasks lead to dislike and frustration (Füller et al., 2011).

4.4.4 Task-related Implications

Existing customer-integration research has identified the time that customers require to complete the customer-integration task and their contribution to the innovation process (e.g., quality and quantity of ideas) as important implications of a positive customer-integration experience (Füller et al., 2011; Kohler et al., 2010; Nambisan & Nambisan, 2008). A positive, flow-like customer-integration experience fully engages customers in their customer-integration task. Focused attention and enjoyment of the task results in increased persistence and helps individuals perform at their peak level (Füller et al., 2011; Kohler et al., 2010). Therefore, a positive customer-integration experience can result in participants spending more time, contributing more content, and, most importantly, submitting high-quality content (Füller et al., 2011; Kohler et al., 2010; Nambisan & Nambisan, 2008).

5 Framework Development on Influencing Factors and Implications of Customer-integration Experience

Above, we introduce and discuss the influencing factors and implications separately. However, existing literature proposes interrelations and moderating effects between the different influencing factors (Fiore & Kim, 2007; Mahilke, 2007). As such, we draw on motivation-hygiene theory to analyze and explain the underlying mechanisms of the factors we identified. In Section 5.1, we briefly introduce the motivation-hygiene theory. In Section 5.2, we apply motivation-hygiene theory to the influencing factors in the customer-integration experience context to derive propositions about their interrelations. Finally, in Section 5.3, we discuss the current state of research concerning the proposed relationships.

5.1 Motivation-hygiene Theory

Motivation-hygiene theory postulates that two factors, motivators and hygiene factors, determine satisfaction and dissatisfaction in the workplace. Hygiene factors are extrinsic to work and include its

preventive and environmental conditions (Herzberg, 1974). Examples of hygiene factors include company policies, administration, salary, working conditions, and interpersonal relations (Herzberg, 1971). In order to reduce job dissatisfaction, employers need to address hygiene factors by paying good wages and improving company policy and administration (Herzberg, 1974).

In contrast, motivators are intrinsic factors to the work and relate to its content. Examples of motivators include responsibilities, achievement, recognition, advancement, and the work itself (Herzberg, 1974). These job satisfiers can effectively motivate individuals to make more effort and achieve a better performance (Herzberg, 1971). In order to generate job satisfaction, employers need to restructure jobs so that employees have some control over the way they manage their work and feel responsibility and personal growth.

According to motivation-hygiene theory, companies need to consider both factors (i.e., hygiene factors and motivators) to enhance employees' productivity and attitudes in the workplace. While hygiene factors prevent job dissatisfaction, motivators satisfy psychological needs and generate motivation and positive feelings. Thus, the ideal situation includes both hygiene and motivation fulfillment (Herzberg, 1968; Miner, 2005).

5.2 Motivation-hygiene Theory in the Context of Customer-integration Experience

One can view crowdsourced tasks and, in particular, customer-integration tasks as a certain type of work that customers perform for a company (Tavakoli et al., 2015). Therefore, we propose that customer integration underlies the mechanisms that motivation-hygiene theory describes.

Human-computer interaction research has found that a system's non-instrumental (i.e., hedonic) qualities relate more to intrinsic motivation than instrumental motivation (i.e., pragmatic, utilitarian) qualities (Hassenzahl, Diefenbach, & Göritz, 2010; Valacich, Parboteeah, & Wells, 2007). This finding supports the notion of instrumental qualities as hygiene factors and non-instrumental qualities as motivators (Hassenzahl et al., 2010). Non-instrumental qualities as motivators capture a system's ability to generate positive experiences, while instrumental qualities as hygiene factors remove barriers and, thereby, prevent negative feelings (Hassenzahl et al., 2010).

Based on these findings and Herzberg's (1974) definition of hygiene factors and motivators, we classify the influencing factors of customer-integration experience that we identified in our literature review as follows: the instrumental qualities of an IT-based customer-integration method (e.g., ease of use, usefulness, time responsiveness) are extrinsic aspects that support customers in successfully completing the customer-integration task and, thereby, prevent frustration and dissatisfaction. Thus, we understand instrumental influencing factors of customer-integration experience as hygiene factors. Further, the influencing factor "environment", which includes ambience, situational, and social factors, comprises environmental conditions of a customer-integration initiative. As an extrinsic aspect of the customer-integration initiative, we classify the environment as a hygiene factor. In contrast, non-instrumental qualities of co-creation tools (e.g., entertainment, factors that provide a feeling of autonomy and competence) are motivators because they satisfy customers' intrinsic, psychological needs. The customer-integration task presents the work itself and encompasses the content of the "work". Therefore, we define the customer-integration task as a motivator.

Motivation-hygiene theory helps explain how motivation and job satisfaction evolve and how one needs to design IT-based customer-integration methods. Customers participate primarily voluntarily and most do not stand to gain anything tangible for the effort they expend in providing input (i.e., no extrinsic motives or rewards) (Füller, Goswami, & Krcmar, 2014). However, companies can provide customers with other forms of compensation or value for participating, such as by providing a positive and unique customer-integration experience. According to motivation-hygiene theory, companies need to consider hygiene factors and motivators to create positive customer-integration experience. Therefore, we propose that:

- P1:** Instrumental qualities of IT-based customer-integration methods and the environment as hygiene factors and non-instrumental qualities and the customer-integration task as motivators influence the customer-integration experience.

Motivation-hygiene theory states that hygiene factors do not constitute a source of positive experience themselves. Rather they enable customers to fulfill their psychological needs (e.g., competence, autonomy) by removing barriers. If designers do not fulfill instrumental qualities of IT-based customer-integration methods such as ease of use, security, and privacy, they contribute to a negative feeling

(Hassenzahl et al., 2010). Instrumental qualities of IT-based customer-integration methods (e.g., ease of use, usefulness) ensure smooth interaction processes and intuitive co-creation systems that reduce the perceived burden, time, and effort that customers need to provide their input. Easy to use and intuitive IT-based customer-integration methods (instrumental qualities) support customers in successfully accomplishing their task, which, in turn, results in positive emotions such as task enjoyment (non-instrumental qualities) (Stelmaszewska et al., 2004). When customers who use co-creation tools perceive the interaction as intuitive (instrumental qualities), emotions of playfulness, enjoyment, and fun (non-instrumental qualities) increase as they relieve the associated burden with the participation (e.g., cognitive burden, spend time, and effort). Therefore, customers need to fulfill hygiene factors (environment, instrumental qualities of IT-based customer-integration methods), which serve as a sound basis for motivators (customer-integration task, non-instrumental qualities) to generate a positive customer-integration experience. Therefore, based on motivation-hygiene theory, we propose that:

P2: Instrumental qualities of IT-based customer-integration methods and the environment as hygiene factors can support instrumental qualities of IT-based customer-integration methods and the customer-integration task (i.e., motivators).

Vice versa, visually appealing user interfaces (non-instrumental qualities) are more understandable, consistent, and guiding and can, thereby, improve perceived usability (instrumental qualities) (Arhippainen, 2013). Therefore, we propose that:

P3: Non-instrumental qualities of IT-based customer-integration methods (i.e., motivators) can improve the perception of instrumental qualities of IT-based customer-integration methods (i.e., hygiene factors).

According to human-computer interaction research, individuals' demographics, personality traits, interests, and domain knowledge influence the interaction and how they evaluate and perceive their interaction with a system (Knijnenburg et al., 2012). If a customer is not familiar with virtual reality, the customer may find an innovative toolkit for user innovation and design employing virtual reality as distracting and overwhelming. Companies need to recognize their target customers' skills and need to adapt IT-based customer-integration methods to these skills. Therefore, we propose that:

P4: The influencing factor "customer" moderates the impact of hygiene factors (instrumental qualities, the environment) and motivators (non-instrumental qualities, customer-integration task) on the experience that customers' gain from participating in IT-based customer-integration initiatives.

Figure 5 summarizes the identified influencing factors and implications of customer-integration experience and their classification as hygiene factors and motivators. Further, the figure illustrates the proposed relationships and interrelations based on motivation-hygiene theory.

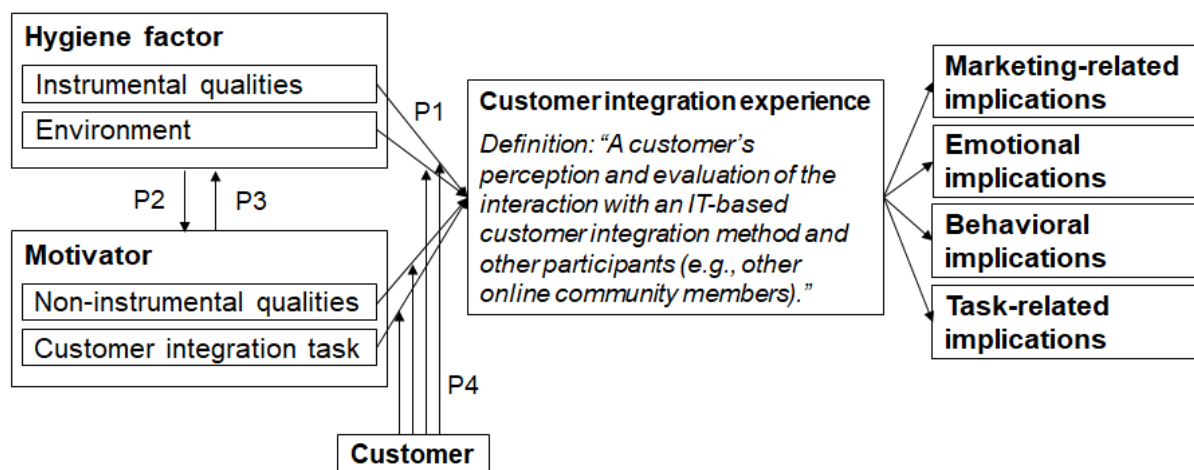


Figure 5. Framework on Influencing Factors and Implications of Customer-integration Experience based on Motivation-hygiene Theory

5.3 Research Gaps

In this section, we present the current state of research concerning the four propositions we present in Section 5.2.

Concerning the impact of hygiene factors and motivators on customer-integration experience (P1), customer-integration research has already studied the effect of instrumental qualities on customer-integration experience. For instance, Matzler et al. (2011) found that ease of use had a significant positive influence on the experience that customers gain from using an IT-based customer-integration tool to co-create a product or service. Research has not yet analyzed the influence that other instrumental qualities such as time responsiveness, content, security and privacy have on customer-integration experience.

In terms of non-instrumental qualities, previous customer-integration research has confirmed the positive impact that task enjoyment, competence, autonomy (Füller et al., 2011), control (Matzler et al., 2011), and relatedness (Füller et al., 2011; Matzler et al., 2011) have on customer-integration experience. However, in our literature basis, we found no research evidence on aesthetic user interface design, feedback, and novelty.

We identified instructional guidance and challenges as task-related influencing factors of experience (Csikszentmihalyi, 1975; Dahl & Moreau, 2007; Stelmaszewska et al., 2004). Customer-integration research has not yet studied whether the design of customer-integration tasks has a direct and positive impact on customer-integration experience.

Research in the marketing literature in particular has research the environment as an influence factor. Store atmospherics, merchandise display, and staff members themselves influence customers' shopping experience (Sathish & Venkatesakumar, 2011). In the human-computer interaction discipline, Partala and Kallinen (2012) analyzed the structure of the most satisfying and unsatisfying user experiences. According to their study, other people around and the level of hurry influence user experience. Based on our literature review, customer-integration research has not yet studied what impact these influencing factors have on customer-integration experience.

Additionally, the proposed interrelationships of hygiene factors and motivators (P2 and P3) remain unresearched. Further, customers' skills, prior experiences, and expectations moderates the impact of hygiene factors (instrumental qualities, the environment) and motivators (non-instrumental qualities, customer-integration task) on customer-integration experience. Research has not yet researched the moderating effect that P4 proposes in the context of the customer-integration experience.

6 Conclusion

Based on a structured, cross-disciplinary literature review through which we identified 141 relevant papers, we identified 22 conceptually different influencing factors and 15 implications of the customer-integration experience. We classified the identified influencing factors and implications into four categories. We categorized the implications of a positive customer-integration experience in marketing-related, emotional, behavioral, and task-related implications and the influencing factors into instrumental and non-instrumental qualities of the IT-based customer-integration method, the customer-integration task, the customer, and the environment in which the interaction occurs.

The influencing factors of the customer-integration experience pose important means for practitioners to design IT-based customer-integration methods that create a positive customer-integration experience and, thereby, result in positive behavioral, emotional, marketing, and innovation-related implications. Further, we contribute a framework based on motivation-hygiene theory that structures the influencing factors of the customer-integration experience as hygiene factors and motivators (see Figure 5).

Motivation-hygiene theory defines external factors of work as hygiene factors. Therefore, we classified instrumental qualities of IT-based customer-integration methods/co-creation tools and the environment in which the interaction occurs as hygiene factors (Herzberg, 1971, 1974). Hygiene factors do not create motivation or satisfaction. Yet, practitioners need to consider hygiene factors since their implementation results in intuitive and highly performant co-creation tools that help customers in successfully accomplishing a customer-integration task. Hygiene factors help companies to avoid dissatisfaction and negative feelings such as frustration. Thereby, hygiene factors prevent customers from quitting the customer-integration task and lead to more customer-generated content (e.g., customers submit more ideas).

In addition to hygiene factors, companies need to consider motivators in order to design a positive customer-integration experience. According to motivation-hygiene theory, motivators are intrinsic factors and create motivation and satisfaction. Motivators relate to a task's content, achievement, and responsibility (Herzberg, 1971, 1974). Based on this definition, we classified the non-instrumental qualities (e.g., control, autonomy, and relatedness) of co-creation tools and the customer-integration task (e.g., challenging task) as motivators. Non-instrumental qualities of IT-based customer-integration methods and the customer-integration task help to generate a positive user experience and satisfaction. Higher levels of satisfaction result in customers' expending more effort and time to solve a customer-integration task. Thereby, motivators lead to higher-quality customer contributions (e.g., higher-quality ideas for new products or services that customers submit to the innovation process).

6.1 Directions for Future Research

The experiences individuals gain from interacting with systems, products, or other people can have profound effects. Customer experience represents a crucial strategic component of company success (Klaus et al., 2013; Nambisan & Nambisan, 2008). However, previous research has rarely applied a user or customer experience perspective to customer-integration research (Füller et al., 2011; Kohler et al., 2010; Matzler et al., 2011; Nambisan & Nambisan, 2008). Of the 141 papers we identified in our literature search process, only a small number (26) referred to the customer integration and co-creation context. Thus, little empirical research has examined the experience that customers gain from co-creating a product or service and from interacting with an IT-based customer-integration method.

As Section 4.3 shows, the existing customer-integration literature mentions the diverse impacts of the customer-integration experience, which include marketing, behavioral, emotional, and task-related implications. It has also identified several implications of a positive customer-integration experience, such as enjoyment, customers' willingness to participate in the future, and higher-quality and more customer contributions (Füller et al., 2011; Kohler et al., 2011). However, no paper in our review differentiated or compared experiences according to specific customer-integration methods. We need more empirical studies to investigate the influencing factors of and implications for specific customer-integration methods. The influencing factors and implications of customer and user experiences that Figure 4 illustrates can serve as a theoretical framework for comparing and evaluating specific customer-integration methods.

In terms of influencing factors of customer-integration experience, existing customer-integration research has primarily focused on influencing factors such as ease of use, sense of autonomy, competence, and relatedness. Thus, future research should examine the impact of social and cultural factors, trust, privacy and security concerns, the appropriate design of the customer-integration task, and the customers themselves (e.g., their skills). Since individuals' privacy and security concerns may differ across cultures, it would be interesting to study the moderating effect of culture on the relationship between privacy/security and the customer-integration experience. Additionally, the influence that the provided information (its relevance, format and structure, visualization) has on customers' task performance and customer-integration experience represent interesting paths for future research. Further, environmental and social factors can be significant predictors of participation in online communities (Bidar, Watson, & Barros, 2016). However, the influence of social influence (e.g., identification with peers, compliance with group norms) on the customer-integration experience and its implications remains unclear.

Previous research that has addressed the value co-creation with customers has stated the need to assume that customers have an active role in value creation. The experience of co-creating a product or service embeds customer value more than the product or service itself does (Prahalad & Ramaswamy, 2003). Therefore, customers may view a positive and unique customer-integration experience as compensation for their effort. Customers engage in customer-integration initiatives to improve their skills (Spindeldreher & Schlagwein, 2016), to learn about a product, and to satisfy their product-related informational goals (i.e., pragmatic, utilitarian value, pragmatic experience dimension) (Nambisan & Nambisan, 2008). Further, customers participate in customer-integration initiatives because they can derive hedonic value (i.e., hedonic experience dimension) by enjoying the activity of providing their input or can derive social value (i.e., sociability experience) from interacting with other customers and establishing relationships (Nambisan & Watt, 2011; Nambisan & Nambisan, 2008; Spindeldreher & Schlagwein, 2016).

Besides these intrinsic motives, individuals participate in customer-integration initiatives to obtain monetary and material rewards (Spindeldreher & Schlagwein, 2016). However, under certain circumstances, monetary rewards may negatively impact individual's motivation (e.g., in pro-

social/altruistically framed customer-integration initiatives). The psychology discipline originally investigated this negative effect, called the crowding-out effect (Janzik & Herstatt, 2008; Lepper, Greene, & Nisbett, 1973). According to our literature review, previous research has not studied the effect that extrinsic aspects such as prizes or monetary compensation have on the customer-integration experience. However, motivation-hygiene theory suggests that designers need to consider extrinsic aspects (more related to hygiene factors) to prevent dissatisfaction. Therefore, future research should investigate the role of extrinsic motives and remuneration in creating a positive customer-integration experience.

Previous research that has examined customer or user experiences has used diverse measurement constructs, which makes comparing and aggregating existing research findings difficult (Klaus et al., 2013). For instance, researchers have used measurement constructs labeled cognitive appraisal (Éthier et al., 2006), flow (Goel, Johnson, Junglas, & Ives, 2013; Kim et al., 2013b), cognitive absorption (Goel et al., 2011; Wakefield & Whitten, 2006), online shopping experience (Khalifa & Liu, 2007), compelling experience (Kohler et al., 2011; Matzler et al., 2011), co-creation experience (Füller et al., 2011), customer experience (Hsu & Tsou, 2011; Sheng & Teo, 2012), online community experience (Nambisan & Watt, 2011), and customer experience quality (Klaus et al., 2013), which all comprise different items to measure experience. Even constructs with the same label frequently include different items.

Further, we lack empirical evidence on the customer-integration experience. Of the 141 papers we identified in our literature review, only 26 papers directly referred to customer integration. Of these 26 papers, 11 quantitative papers analyzed the relationship between influencing factors and the customer-integration experience, and 17 quantitative papers analyzed influencing factors (see Appendix). Therefore, we need more quantitative studies that empirically analyze the customer-integration experience and test the relationships we propose in this paper (see Figure 5). Additionally, future research should discuss ways to measure the customer-integration experience in a standardized way so we can synthesize research findings (e.g., in a meta-analysis).

6.2 Limitations and Implications for Theory and Practice

We acknowledge that our research has some limitations. The keywords and the databases and journals we used to search for relevant literature limit our research findings, which includes the papers we identified as relevant to the underlying research and the identified influencing factors and implications. Even though the keyword crowdsourcing led to online communities, ideas competitions, and toolkits, we cannot ensure that we covered all kinds of customer-integration methods. However, we conducted a backward and forward search to mitigate this limitation.

Our research has several implications for theory and in practice. We contribute to theory by reviewing existing research in different disciplines on customer or user experience. We analyze the discipline-specific perspectives on experience and the diverse constructs and items used to measure individuals' experiences. Based on our literature review, we derived a classification of influencing factors and implications of customer or user experience. In total, we identify 22 different influencing factors and 15 implications. Further, with this study, we broaden the body of knowledge on customer integration by applying a user- and customer-experience perspective to customer-integration research. Drawing on motivation-hygiene theory, we contribute a framework of influencing factors and implications of the customer-integration experience.

From a managerial perspective, we improve our general understanding about how to design IT-based customer-integration methods for innovation processes that create enjoyment, playfulness, and support customers in successfully accomplishing a customer-integration task. Thus, for practitioners, we provide a more nuanced understanding about how to design positive customer-integration experiences. By considering hygiene factors (instrumental qualities and environment) and motivators (non-instrumental and the customer-integration task), companies can achieve more and higher-quality customer contributions to the innovation process.

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Appendix A: Full List of Papers Included in the Review

Table A1. Full List of Papers Included in the Review

No	Reference	Title	Outlet	Influencing factors	Implications
1	Agarwal & Meyer (2009)	Beyond usability: Evaluating emotional response as an integral part of the user experience	<i>SIGCHI Conference of Human Factors in Computing Systems - Extended Abstracts</i>	x	
2	Arhippainen (2013)	A tutorial of ten user experience heuristics	<i>International Conference on Making Sense of Converging Media</i>	x	
3	Arnold, Reynolds, Ponder, & Lueg (2005)	Customer delight in a retail context: Investigating delightful and terrible shopping experiences	<i>Journal of Business Research</i>	x	x
4	Arrasvuori, Korhonen, & Väänänen-Vainio-Mattila (2010)	Exploring playfulness in user experience of personal mobile products	<i>Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction</i>	x	
5	Bargas-Avila & Hornbæk (2011)	Old wine in new bottles or novel challenges: A critical analysis of empirical studies of user experience	<i>SIGCHI Conference on Human Factors in Computing Systems</i>	x	
6	Bevan (2008)	Classifying and selecting UX and usability measures	<i>International Workshop on Meaningful Measures: Valid Useful User Experience Measurement</i>	x	
7	Bhattacharjee (2001)	An empirical analysis of the antecedents of electronic commerce service continuance	<i>Decision Support Systems</i>	x	
8	Brajnik & Gabrielli (2010)	A review of online advertising effects on the user experience	<i>International Journal of Human-Computer Interaction</i>	x	
9	Bridges & Florsheim (2008)	Hedonic and utilitarian shopping goals: The online experience	<i>Journal of Business Research</i>	x	x
10	Chen et al. (2004)	Media selection to meet communications contexts: Comparing e-mail and instant messaging in an undergraduate population	<i>Communications of the Association for Information Systems</i>	x	x
11	Chen et al. (2012)	Understanding information systems continuance for information-oriented mobile applications	<i>Communications of the Association for Information Systems</i>	x	x
12	Choi, Lee, & Kim (2006)	Culturability in mobile data services: A qualitative study of the relationship between cultural characteristics and user-experience attributes	<i>International Journal of Human-Computer Interaction</i>	x	x
13	Chung & Tan (2004)	Antecedents of perceived playfulness: An exploratory study on user acceptance of general information-searching websites	<i>Information & Management</i>	x	
14	Colombo & Pasch (2012)	10 Heuristics for an optimal user experience	<i>SIGCHI Conference of Human Factors in Computing Systems</i>	x	

Table A1. Full List of Papers Included in the Review

15	Csikszentmihalyi (1975)	Play and intrinsic rewards	<i>Journal of Humanistic Psychology</i>	x	
16	Csikszentmihalyi (1990)	Flow. The psychology of optimal experience	<i>Book (Harper & Row)</i>	x	
17	Cuadra-Sánchez et al. (2012)	A global customer experience management architecture	<i>Future Network & Mobile Summit</i>	x	
18	Dahl & Moreau (2007)	Thinking inside the box: Why consumers enjoy constrained creative experiences	<i>Journal of Marketing Research</i>	x	x
19	Dawes & Rowley (1998)	Enhancing the customer experience: Contributions from information technology	<i>Management Decision</i>	x	
20	De Wulf et al. (2001)	Critical constructs for analyzing e-businesses: Investment, user experience and revenue models	<i>Logistics Information Management</i>	x	x
21	De Wulf et al. (2006)	The role of pleasure in web site success	<i>Information & Management</i>	x	x
22	Deng, Turner, Gehling, & Prince (2010)	User experience, satisfaction, and continual usage intention of IT	<i>European Journal of Information Systems</i>	x	x
23	Devaraj et al. (2006)	Examination of online channel preference: Using the structure-conduct-outcome framework	<i>Decision Support Systems</i>	x	x
24	Eichentopf et al. (2011)	Modelling customer process activities in interactive value creation	<i>Journal of Service Management</i>		x
25	Éthier et al. (2006)	B2C web site quality and emotions during online shopping episodes: An empirical study	<i>Information & Management</i>		x
26	Finstad (2010)	The usability metric for user experience	<i>Interacting with Computers</i>	x	
27	Fiore & Kelly (2007)	Surveying the use of sound in online stores: Practices, possibilities and pitfalls for user experience	<i>International Journal of Retail & Distribution Management</i>	x	
28	Fiore & Kim (2007)	An integrative framework capturing experiential and utilitarian shopping experience	<i>International Journal of Retail & Distribution Management</i>	x	x
29	Fiore et al. (2004)	Individual differences, motivations, and willingness to use a mass customization option for fashion products	<i>European Journal of Marketing</i>	x	x
30	Forlizzi & Battarbee (2004)	Understanding experience in interactive systems	<i>Designing Interactive Systems</i>	x	
31	Franke & Pillar (2003)	Key research issues in user interaction with user toolkits in a mass customisation system	<i>International Journal of Technology Management</i>		x
32	Franzak, Makarem, & Jae (2014)	Design benefits, emotional responses, and brand engagement	<i>Journal of Product & Brand Management</i>	x	
33	Fruhlinger (2001)	Make it flow: Achieving the optimal user experience	<i>Intercom</i>	x	x

Table A1. Full List of Papers Included in the Review

34	Füller & Matzler (2007)	Virtual product experience and customer participation—A chance for customer-centred, really new products	<i>Technovation</i>		x
35	Füller et al. (2009)	Consumer empowerment through internet-based co-creation	<i>Journal of Management Information Systems</i>	x	x
36	Füller et al. (2011)	Why co-creation experience matters? Creative experience and its impact on the quantity and quality of creative contributions	<i>R&D Management</i>	x	x
37	Garrett (2006)	Customer loyalty and the elements of user experience	<i>Design Management Review</i>	x	x
38	Garrett (2010)	The elements of user experience: User-centered design for the web and beyond	<i>Book (New Riders)</i>	x	
39	Garrity, Glassberg, Kim, Sanders, & Shin (2005)	An experimental investigation of web-based information systems success in the context of electronic commerce	<i>Decision Support Systems</i>	x	x
40	Gentile, Spiller, & Noci (2007)	How to sustain the customer experience: An overview of experience components that co-create value with the customer	<i>European Management Journal</i>	x	x
41	Goel, Johnson, Junglas, & Ives (2011)	From space to place: Predicting users' intentions to return to virtual worlds	<i>MIS Quarterly</i>		x
42	Goel et al. (2013)	Predicting users' return to virtual worlds: A social perspective	<i>Information Systems Journal</i>		x
43	Goodman (2011)	Qualitative research and the modern library	<i>Book (Chandos Publishing)</i>	x	
44	Grönroos and Voima (2013)	Critical service logic: Making sense of value creation and co-creation	<i>Journal of the Academy of Marketing Science</i>		x
45	Gross & Bongartz (2012)	Why do I like it?: Investigating the product-specificity of user experience	<i>Nordic Conference on Human-Computer Interaction</i>	x	
46	Guo (2008)	Customer experience hierarchy model: Based on the theory of customer value hierarchy	<i>International Conference on Wireless Communications, Networking and Mobile Computing</i>	x	x
47	Guo & Klein (2009)	Beyond the test of the four channel model of flow in the context of online shopping	<i>Communications of the Association for Information Systems</i>	x	x
48	Gouillart (2014)	The race to implement value co-creation with stakeholders: Five approaches to competitive advantage	<i>Strategy & Leadership</i>	x	x
49	Hakanen & Jaakkola (2012)	Co-creating customer-focused solutions within business networks: A service perspective	<i>Journal of Service Management</i>	x	x
50	Hartson & Pyla (2012)	The UX Book: Process and guidelines for ensuring a quality user experience	<i>Book (Morgan Kaufmann)</i>	x	

Table A1. Full List of Papers Included in the Review

51	Hassenzahl (2008)	User experience (UX): Towards an experiential perspective on product quality	<i>Conference on l'Interaction Homme-Machine</i>	x	
52	Hassenzahl et al. (2010)	Needs, affect, and interactive products – Facets of user experience	<i>Interacting with Computers</i>		x
53	Henke (2004)	Shaping a positive user experience by cross-skill teaming	<i>International Professional Communication Conference</i>	x	
54	Herd, Bardill, & Karamonoglu (2009)	The co-design experience: Conceptual models and design tools for mass customization	<i>Handbook of research in mass customization and personalization</i>	x	x
55	Higgins (2006)	Value from hedonic experience and engagement	<i>Psychological Review</i>	x	x
56	Hoch (2002)	Product experience is seductive	<i>Journal of Consumer Research</i>		x
57	Hsu & Tsou (2011)	Understanding customer experiences in online blog environments	<i>International Journal of Information Management</i>	x	x
58	Huang (2003)	Modeling virtual exploratory and shopping dynamics: An environmental psychology approach	<i>Information & Management</i>	x	x
59	Huang (2005)	Web performance scale	<i>Information & Management</i>	x	x
60	Huang, Hsieh, & Wu (2014)	Gratifications and social network service usage: The mediating role of online experience	<i>Information & Management</i>		x
61	Jain & Bagdare (2009)	Determinants of customer experience in new format retail stores	<i>Journal of Marketing & Communication</i>	x	x
62	Janzik & Raasch (2011)	Online communities in mature markets: Why join, why innovate, why share?	<i>International Journal of Innovation Management</i>		x
63	Jiang & Benbasat (2004)	Virtual product experience: Effects of visual and functional control of products on perceived diagnosticity and flow in electronic shopping	<i>Journal of Management Information Systems</i>	x	
64	Johnston & Kong (2011)	The customer experience: A road-map for improvement	<i>Managing Service Quality: An International Journal</i>	x	
65	Joshi (2014)	Customer experience management: An exploratory study on the parameters affecting customer experience for cellular mobile services of a telecom company	<i>Procedia-Social and Behavioral Sciences</i>	x	
66	Khalifa & Liu (2007)	Online consumer retention: Contingent effects of online shopping habit and online shopping experience	<i>European Journal of Information Systems</i>		x
67	Kim et al. (2004)	A comparison of online trust building factors between potential customers and repeat customers	<i>Journal of the Association for Information Systems</i>		x

Table A1. Full List of Papers Included in the Review

68	Kim et al. (2013a)	A study of mobile user engagement (MoEN): Engagement motivations, perceived value, satisfaction, and continued engagement intention	<i>Decision Support Systems</i>		x
69	Kim et al. (2013b)	Effects of collaborative online shopping on shopping experience through social and relational perspectives	<i>Information & Management</i>	x	x
70	Klaus & Maklan (2011)	Bridging the gap for destination extreme sports: A model of sports tourism customer experience	<i>Journal of Marketing Management</i>	x	x
71	Klaus et al. (2013)	Are you providing the "right" customer experience? The case of Banca Popolare di Bari	<i>International Journal of Bank Marketing</i>		x
72	Knijnenburg et al. (2012)	Explaining the user experience of recommender systems	<i>User Modeling and User-Adapted Interaction</i>	x	x
73	Kohler et al. (2010)	Avatar-based innovation: Consequences of the virtual co-creation experience	<i>Hawaii International Conference on System Sciences</i>		x
74	Kohler et al. (2011)	Co-creation in virtual worlds: The design of the user experience	<i>MIS Quarterly</i>	x	x
75	Komulainen, Takatalo, Lehtonen, & Nyman (2008)	Psychologically structured approach to user experience in games	<i>Nordic Conference on Human-Computer Interaction</i>	x	
76	Körber, Eichinger, Bengler, & Olaverri-Monreal (2013)	User experience evaluation in an automotive context	<i>Intelligent Vehicles Symposium Workshops</i>	x	
77	Kosmadoudi et al. (2013)	Engineering design using game-enhanced CAD: The potential to augment the user experience with game elements	<i>Computer-Aided Design</i>	x	
78	Kourouthanassis et al. (2007)	Enhancing user experience through pervasive information systems: The case of pervasive retailing	<i>International Journal of Information Management</i>	x	
79	Kramer, Noronha, & Vergo (2000)	A user-centered design approach to personalization	<i>Communications of the ACM</i>	x	
80	Kujala et al. (2011)	UX Curve: A method for evaluating long-term user experience	<i>Interacting with computers</i>	x	x
81	Kuniavsky (2003)	Observing the user experience: A practitioner's guide to user research	<i>Book (Morgan Kaufmann)</i>	x	
82	Kuniavsky (2010)	Smart things: Ubiquitous computing user experience design	<i>Book (Morgan Kaufmann)</i>	x	
83	Law et al. (2010)	Modelling user experience – An agenda for research and practice	<i>Interacting with Computers</i>	x	x

Table A1. Full List of Papers Included in the Review

84	Lee et al. (2008)	Cultural dimensions for user experience: Cross-country and cross-product analysis of users' cultural characteristics	<i>British HCI Group Annual Conference on People and Computers</i>	x	
85	Lew, Olsina, & Zhang (2010)	Integrating quality, quality in use, actual usability and user experience	<i>Central and Eastern European Software Engineering Conference</i>	x	
86	Li et al. (2013)	Optimal keyword auctions for optimal user experiences	<i>Decision Support Systems</i>	x	
87	Ma & Xue (2010)	Web information system construction technology based on user experience	<i>International Conference on Management and Service Science</i>	x	x
88	Machleit & Eroglu (2000)	Describing and measuring emotional response to shopping experience	<i>Journal of Business Research</i>	x	x
89	Mahlke (2007)	User experience of interaction with technical systems: Theories, methods, empirical results and their application to the design and evaluation of interactive systems	<i>Doctoral Dissertation, Technische Universität Berlin</i>	x	x
90	Mahlke & Thüning (2007)	Studying antecedents of emotional experiences in interactive contexts	<i>SIGCHI Conference on Human Factors in Computing Systems</i>	x	x
91	Maklan & Klaus (2011)	Customer experience	<i>International Journal of Market Research</i>	x	x
92	Mascarenhas, Kesavan, & Bernacchi (2006)	Lasting customer loyalty: A total customer experience approach	<i>Journal of Consumer Marketing</i>	x	x
93	Mathwick & Rigdon (2004)	Play, flow, and the online search experience	<i>Journal of Consumer Research</i>		x
94	Matzler et al. (2011)	Avatar-based innovation: How avatars experience co-creation projects in second life	<i>Problems and Perspectives in Management</i>	x	x
95	McArthur (2011)	Practical lessons from user-experience design for spaces in learning	<i>The American Clearinghouse for Educational Facilities Journal</i>	x	
96	McCay-Peet et al. (2012)	On saliency, affect and focused attention	<i>SIGCHI Conference on Human Factors in Computing Systems</i>	x	x
97	Moczarny et al. (2012)	How can usability contribute to user experience?: A study in the domain of e-commerce	<i>South African Institute for Computer Scientists and Information Technologists Conference</i>	x	x
98	Nadkarni & Gupta (2007)	A task-based model of perceived website complexity	<i>MIS Quarterly</i>	x	
99	Nagasawa (2008)	Customer experience management: Influencing on human Kansei to management of technology	<i>The TQM Journal</i>	x	x
100	Nambisan & Baron (2009)	Virtual customer environments: Testing a model of voluntary participation in value co-creation activities	<i>Journal of Product Innovation Management</i>	x	x

Table A1. Full List of Papers Included in the Review

101	Nambisan & Nambisan (2008)	How to profit from a better "virtual customer environment"	<i>MIT Sloan Management Review</i>	x	x
102	Nambisan & Watt (2011)	Managing customer experiences in online product communities	<i>Journal of Business Research</i>		x
103	O'Brien & Lebow (2013)	Mixed-methods approach to measuring user experience in online news interactions	<i>Journal of the Association for Information Science and Technology</i>	x	x
104	Pallot & Pawar (2012)	A holistic model of user experience for living lab experiential design	<i>International Conference on Engineering, Technology and Innovation</i>	x	x
105	Pals et al. (2008)	Three approaches to take the user perspective into account during new product design	<i>International Journal of Innovation Management</i>	x	
106	Parandker & Lokku (2012)	Customer experience management	<i>International Conference on Services in Emerging Markets</i>		x
107	Partala & Kallinen (2012)	Understanding the most satisfying and unsatisfying user experiences: Emotions, psychological needs, and context	<i>Interacting with Computers</i>	x	
108	Passera (2012)	Enhancing contract usability and user experience through visualization - An experimental evaluation	<i>International Conference Information Visualisation</i>	x	
109	Paula & Iliuță (2008)	Customer experience management – The most important dimension of the service firm strategy	<i>The Annals of the University of Oradea</i>	x	x
110	Payne et al. (2009)	Co-creating brands: Diagnosing and designing the relationship experience	<i>Journal of Business Research</i>		x
111	Peng et al. (2009)	A study on user experience of online games	<i>WRI World Congress on Software Engineering</i>	x	
112	Petre, Minocha, & Roberts (2006)	Usability beyond the website: An empirically-grounded e-commerce evaluation instrument for the total customer experience	<i>Behaviour & Information Technology</i>	x	x
113	Prahalad & Ramaswamy (2000)	Co-opting customer competence	<i>Harvard Business Review</i>	x	
114	Prahalad & Ramaswamy (2003)	The new frontier of experience innovation	<i>MIT Sloan Management Review</i>	x	
115	Prahalad & Ramaswamy (2004a)	Co-creation experiences: The next practice in value creation	<i>Journal of Interactive Marketing</i>	x	x
116	Prahalad & Ramaswamy (2004b)	Co-creating unique value with customers	<i>Strategy & Leadership</i>		x
117	Prahalad & Ramaswamy (2004c)	The future of competition: Co-creating unique value with customers	<i>Book (Harvard Business Press)</i>	x	x

Table A1. Full List of Papers Included in the Review

118	Pucillo & Cascini (2014)	A framework for user experience, needs and affordances	<i>Design Studies</i>	x	
119	Pullman & Gross (2004)	Ability of experience design elements to elicit emotions and loyalty behaviors	<i>Decision Sciences</i>		x
120	Rose et al. (2011)	Online customer experience: A review of the business-to-consumer online purchase context	<i>International Journal of Management Reviews</i>	x	x
121	Rowley (1994)	Customer experience of libraries	<i>Library Review</i>	x	x
122	Sathish & Venkatesakumar (2011)	Customer experience management and store loyalty in corporate retailing - with special reference to "Sony World"	<i>Annamalai International Journal of Business Studies & Research</i>	x	x
123	Sharma & Chaubey (2014)	An empirical study of customer experience and its relationship with customer satisfaction towards the services of banking sector	<i>Journal of Marketing & Communication</i>	x	x
124	Sheng & Teo (2012)	Product attributes and brand equity in the mobile domain: The mediating role of customer experience	<i>International Journal of Information Management</i>	x	x
125	Shilpa Iyanna, Bosangit, & Mohd-Any, (2012)	Value evaluation of customer experience using consumer generated content	<i>International Journal of Management and Marketing Research</i>	x	x
126	Sindhav & Adidam (2012)	Hedonic and utilitarian values of a service experience with a nonprofit: The role of identification	<i>International Management Review</i>		x
127	Sorooshian, Salimi, Salehi, Nia, & Asfaranjan (2013)	Customer experience about service quality in online environment: A case of Iran	<i>Procedia-Social and Behavioral Sciences</i>	x	
128	Stelmaszewska et al. (2004)	Conceptualising user hedonic experience	<i>European Conference on Cognitive Ergonomics</i>	x	
129	Tu & Zhang (2013)	Research on the effect of co-creation customer experience on customer co-created value in non-trading virtual community	<i>International Conference on Service Operations and Logistics, and Informatics</i>		x
130	van der Geest et al. (2013)	Introduction to the special section: Designing a better user experience for self-service systems	<i>IEEE Transactions on Professional Communication</i>	x	x
131	Van Schaik & Ling (2008)	Modelling user experience with web sites: Usability, hedonic value, beauty and goodness	<i>Interacting with Computers</i>		x
132	Varma (2012)	Enhancing and empowering: customer experience	<i>SCMS Journal of Indian Management</i>	x	
133	Verhoef et al. (2009)	Customer experience creation: Determinants, dynamics and management strategies	<i>Journal of Retailing</i>	x	

Table A1. Full List of Papers Included in the Review

134	Vijayasarathy (2004)	Predicting consumer intentions to use on-line shopping: The case for an augmented technology acceptance model	<i>Information & Management</i>	x	
135	Wakefield & Whitten (2006)	Mobile computing: A user study on hedonic/utilitarian mobile device usage	<i>European Journal of Information Systems</i>	x	
136	Wang & Scheepers (2012)	Understanding the intrinsic motivations of user acceptance of hedonic information systems: Towards a unified research model	<i>Communications of the Association for Information Systems</i>	x	x
137	Winckler et al. (2013)	Identifying user experience dimensions for mobile incident reporting in urban contexts	<i>IEEE Transactions on Professional Communication</i>	x	x
138	Yamakami (2014)	Exploratory analysis of differences between social experience design and user experience design	<i>International Conference on Advanced Communication Technology</i>	x	x
139	Yoon et al. (2013)	Assessing the moderating effect of consumer product knowledge and online shopping experience on using recommendation agents for customer loyalty	<i>Decision Support Systems</i>		x
140	Zhou & Jiao (2013)	An improved user experience model with cumulative prospect theory	<i>Procedia Computer Science</i>	x	
141	Zine et al. (2014)	A framework for value co-creation through customization and personalization in the context of machine tool PSS	<i>Procedia CIRP</i>	x	x

Appendix B: Experience in the Context of Customer Integration and Co-creation with Customers

Table B1 summarizes the 26 papers we identified that examined experience in the context of customer integration and co-creation with customers.

Table B1. Overview of Papers on Customer-integration Experience

Reference	Influencing factors	Implications	Research approach
Herd et al. (2009)	Design for pleasure Design coherent experience: multiple touch points/interactions between company and customer, if touch points are designed correctly, they create a coherent experience	N.A.	Conceptual paper
Pals et al. (2008)	Design (aesthetics, usability) Product interaction User's pre-disposition (e.g., moods, goals, preferences, earlier experience etc.) Context (e.g., physical, social and virtual) in which the interaction happens	N.A.	Conceptual paper
Eichentopf et al. (2011)	N.A.	Customer satisfaction Customer value	Conceptual paper
Füller & Matzler (2007)	N.A.	Ability to articulate needs Empowerment to participate Trust Commitment	Case study, AUDI, virtual lab as web-based interaction platform
Grönroos & Voima (2013)	N.A.	Customer value	Conceptual paper
Janzik & Raasch (2011)	N.A.	Quality of customizations improve Experience itself as main reason to return	In-depth netnography analysis of online communities
Kohler et al. (2010)	N.A.	Further interest Evangelism Contribution Time Intention to act	Survey of Green Ideation Quest (a virtual world) participants; n = 114
Nambisan & Watt (2011)	N.A.	Attitude towards product Attitude towards company Service quality	Web-based questionnaire survey, n = 178
Prahalad & Ramaswamy (2004b)	N.A.	Customer value	Conceptual paper
Tu & Zhang (2013)	N.A.	Customer value creation (pragmatic/hedonic value) Word-of-mouth Repeated use intentions	Survey, n = 485
Fiore et al. (2004)	Novelty Interface with advanced technology	Willingness to use co-design	Survey, n = 521
Füller et al. (2009)	Design of co-creation tool Self-determination Enjoyment	Willingness to participate in future virtual new product development projects Trust	Survey, n = 825

Table B1. Overview of Papers on Customer-integration Experience

Füller et al. (2011)	Autonomy Competence Enjoyment Sense of community	Quality of contributions Amount of contributions Number of visits Further interest to participate	Online survey and log files, n = 174
Gouillart (2014)	Interaction design/experience design Gradually increase scope of interactions	Value Loyalty Repeat business	Conceptual paper
Hakanen & Jaakkola (2012)	Carefully designed processes and roles to clarify who provides or needs certain resources Suppliers' commitment to common goals as it affects the coherency of customer experience Commit all the suppliers to delivering a seamless customer experience Common customer interface.	Positive interaction experience with supplier Source of customer value	Multiple case studies, the empirical data comprise 51 interviews and observations made at 21 company workshops
Kohler et al. (2011)	Design principles: Pragmatic (develop interactive objects(Sociability (attract critical mass; encourage collaboration; engage in conversations) Hedonic (nurture playfulness; provide challenging task) Usability (simplify the experience; provide clear navigation structure; promote intuitive usage)	Actual participation Continued participation in such forums	Action research, avatars in virtual worlds
Matzler et al. (2011)	Enjoyable activity Ease of use Perceived usefulness Feeling as a part of community	Perceived usefulness Word of mouth Further interest	Observation and tracking of user behavior in open innovation projects of KTM (n = 166) and Philips Design (n = 167); survey with n = 94
Nambisan & Baron (2009)	Characteristics of virtual customer environment: Product-related content (type and amount of information exchanged) Member identity (extent to which members reveal their identity) Human interactivity (extent to responsiveness or rapid feedback from members)	Customer participation and contribution (quality, quantity) Future participation	Survey, n = 152
Nambisan & Nambisan (2008)	Four components of customer experience: Pragmatic experience, sociability experience, usability experience, hedonic experience	Customer attitude towards product Customer attitude towards company Brand loyalty Customer perceived value Time to market Development cost Product quality	Conceptual paper

Table B1. Overview of Papers on Customer-integration Experience

Pallot & Pawar (2010)	Design principles: Sensory (e.g., visual, auditory) Perceptive (e.g., affordances) Cognitive (e.g., human interface, cognitive artefacts) Reciprocal (e.g., shared meaning, group consciousness) Social (e.g., social networking, group dynamics) Emotional (e.g., arousal) Cultural (e.g., habits, sense of community) Empathical (e.g., helpfulness) Technological (e.g., new functionalities, performance) Economical (e.g., usefulness, availability) Legal (e.g., privacy, security)	High rate of product adoption	Conceptual paper
Payne et al. (2009)	Easy-to-use systems Service processes need to be efficient and facilitate desired outcomes	Customer satisfaction Encourage the customer to participate increasingly in the process of co-creation	Cases study research, case of the City Car Club (CCC)
Prahalad & Ramaswamy (2000)	Create personalized experiences Shape customer expectations Experiences of customers varies according to their skills as users Choice and flexibility (in terms of distribution and communication channels)	Competition Customer value	Conceptual paper
Prahalad & Ramaswamy (2003)	Create personalized interactions Infrastructure/ experience environment for personalizes interactions: Experience environment as a networked combination of company capabilities (e.g., technical and social) and consumer interaction channels (devices, employees) View and analyze technology as a facilitator (e.g., technology can enable interactivity and connectivity)	Customer value Customers' willingness to pay Company revenue Profitable growth	Conceptual paper
Prahalad & Ramaswamy (2004a)	Create high-quality interactions Create personalized interactions Create experience environments Continuous company customer dialogue Building blocks of interactions between the company and consumers that facilitate co-creation experiences: Dialogue, access, risk-benefits, transparency (DART approach for interaction design)	Interaction between company and customer and customer experience as source of customer value Competitive advantage	Conceptual paper
Prahalad & Ramaswamy (2004c)	Co-creation experience developed through purposeful interactions between consumer and company Dialogue, access, risk assessment and transparency (DART) as foundation for value co-creation Dimension of choice (provide multiple channels) Quick, individual, and safe transactions Fair prices of experiences	Customer value Customers' willingness to pay	Book
Zine et al. (2014)	Personalized services leading	Customer satisfaction Customer loyalty	Conceptual, literature review

Appendix C: Influencing Factors and Implications Studied in Different Disciplines

Table C1 summarizes the identified influencing factors and implications in the different disciplines. We could not clearly assign eight papers to one discipline. Thus, we assigned them to two disciplines, which influences the overall sum of papers in this table.

Table C1. Influencing Factors and Implications Studied in Different Disciplines

Discipline	Influencing factors	Implications	Number of papers we coded to the discipline that address customer integration
Information systems	Information systems quality: ease of use, usefulness, security, privacy, reliability, time responsiveness, information quality	Satisfaction with the system	37 (3)
	User: normative beliefs, self-efficacy	Behavioral implications: intention to use, continuance intentions, user acceptance	
Human-computer interaction	Instrumental qualities: ease of use, usefulness	Emotional user reactions: pleasure, frustration	43 (1)
		Behavioral implications: intention to use	
	Non-instrumental qualities: beauty, aesthetics	Task-related implications: task performance	
Marketing and management	Environment: atmosphere (e.g., scents, temperature, music), assortment (e.g., variety, quality), and social factors (e.g., personnel)	Emotional user reactions: perceived autonomy, competence, task enjoyment, pleasure	50 (13)
		Marketing-related implications: satisfaction, loyalty, word-of-mouth	
Technology and innovation management	Design of IT-based customer-integration method: ease of use, usability, aesthetics, satisfy customers' needs to feel competent and to acquire information	Task-related/ innovation-related implications: Quality and quantity of customer contributions	11 (11)
		Behavioral implications: willingness to participate	
Psychology	Task: skills in balance with challenge, clear goals, feedback, instructions, clear target outcome	Emotional user reactions: enjoyment	4 (0)
Others	Qualities of interaction: visualization of information, visual aesthetics, responsiveness	Marketing-related implications/ customer relationship: sense of trust, transparency	4 (0)

Appendix D: Influencing Factors and Implications of Customer-integration Experience

Table D1 summarizes quantitative studies in the research area that examines customer integration into innovation processes and value co-creation with customers that have already statistically tested the impact of the identified influencing factors on the customer-integration experience.

Table D1. Factors that Influence Customer-integration Experience

Influencing factor (measurement construct)	Experience (dependent variable)	Methodology, sample size	p-value	Test statistics/ effect size	Reference
Influencing factors: instrumental qualities of interaction item					
Ease of use	Compelling experience	Survey, n = 94	n.s.	$\beta = 0.025$	Matzler et al. (2011)
Influencing factors: non-instrumental qualities of interaction item					
Positive emotions: task enjoyment	Co-creation experience	Survey, n = 174	p = 0.000	$\beta = 0.97$	Füller et al. (2011)
Competence	Co-creation experience	Survey, n = 174	p = 0.000	$\beta = 0.81$	Füller et al. (2011)
Autonomy	Co-creation experience	Survey, n = 174	p = 0.000	$\beta = 1.0$	Füller et al. (2011)
Autonomy: control	Compelling experience	Survey, n = 94	p < 0.001	$\beta = 0.326$	Matzler et al. (2011)
Relatedness: sense of community	Co-creation experience	Survey, n = 174	p = 0.000	$\beta = 0.55$	Füller et al. (2011)
Relatedness: feeling as part of the innovation community	Compelling experience	Survey, n = 94	p < 0.05	$\beta = 0.172$	Matzler et al. (2011)
Influencing factors: customer					
Characteristics: optimum stimulation level	Exciting experience	Survey, n = 521	p < 0.001	t = 5.28	Fiore et al. (2004)
Characteristics: experience with appearance	Exciting experience	Survey, n = 521	p < 0.001	t = 7.22	
$\hat{\alpha}$ = Entire sample estimate β = Strength of relationship between influencing factor and experience t = T-value/t-statistics p = Significance of correlation Z = Wilcoxon's matched pairs signed ranks tests for pairwise comparisons					

Similarly to Table D1, Table D2 summarizes quantitative studies in the research area that examines customer integration into innovation processes and value co-creation with customers that have already statistically tested the relationship between customer-integration experience and the implications we identified.

Table D2. Implications of Customer-integration Experience

Implication (measurement construct)	Experience (independent variable)	Methodology, sample Size	p-value	Test statistics/ effect size	Reference
Marketing-related implications					
Attitude towards company	Pragmatic experience	Survey, n = 178	$p < 0.01$	$\beta = 0.19$	Nambisan & Watt (2011)
	Hedonic experience	Survey, n = 178	$p < 0.05$	$\beta = 0.14$	
	Sociability experience	Survey, n = 178	$p < 0.001$	$\beta = 0.30$	
	Usability experience	Survey, n = 178	n.s.	$\beta = 0.09$	
Attitude towards product	Pragmatic experience	Survey, n = 178	$p < 0.01$	$\beta = 0.21$	Nambisan & Watt (2011)
	Hedonic experience	Survey, n = 178	$p < 0.05$	$\beta = 0.18$	
	Sociability experience	Survey, n = 178	$p < 0.05$	$\beta = 0.17$	
	Usability experience	Survey, n = 178	$p < 0.05$	$\beta = 0.17$	
Word-of-mouth	Compelling experience	Survey, n = 94	$p < 0.001$	$\beta = 0.411$	Matzler et al. (2011)
Behavioral implications					
Intention to act	Compelling experience	Survey of participants of an ideation question, n = 114	$p < 0.001$	$\gamma = 0.61$	Kohler et al. (2010)
Further interest	Compelling experience		$p < 0.001$	$\gamma = 0.83$	
Further interest	Compelling experience	Survey, n = 94	$p < 0.001$	$\beta = 0.357$	Matzler et al. (2011)
Willingness to co-design	Exciting experience	Survey, n = 521	$p < 0.001$	$\beta = 0.34$, $t = 11.70$	Fiore et al. (2004)
Further interest	Co-creation experience	Survey, n = 174	$p < 0.000$	$\beta = 0.73$	Füller et al. (2011)
Emotional implications					
Task-related implications					
Quality of customer contribution	Co-creation experience	Top 30 (expert voting of 298 created items in a design competition)	$p < 0.05$	$\beta = 0.17$	Füller et al. (2011)
Quantity of customer contribution	Compelling experience	Contribution (words contributed)	$p < 0.10$	$\gamma = 0.16$	Kohler et al. (2010)
	Co-creation experience	Number of contributed designs (analysis of log files of a virtual design competition)	$p < 0.05$	$\beta = 0.22$	Füller et al. (2011)
Time spent	Compelling experience	survey of participants of an ideation question, n = 114	$p < 0.05$	$\gamma = 0.23$	Kohler et al. (2010)
\hat{a} = Entire sample estimate β = Strength of relationship between influencing factor and experience F = Multivariate analysis of variance (MANOVA) has been applied, results is a multivariate F-value (Wilkes λ) t = T-value/t-statistics p = Significance of correlation Z = Wilcoxon's matched pairs signed ranks tests for pairwise comparisons γ = Chi ² test, results for main effects					

About the Authors

Kathrin Füller completed her PhD at the Chair for Information Systems at the Technical University of Munich. She holds a Diploma in Economics and Management from Ulm University. Her research interests lie in the area of human-computer interaction, open innovation, and consumer research. Her dissertation focuses on the application of IT to co-create innovations with customers, and the design of co-creation tools that create positive user experience. Her work has appeared in refereed conference proceedings such as the *European Conference on Information Systems* and the *Hawaii International Conference on System Sciences*.

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