

Making Personalization Work: A Review of 45 Years of Personalization Research and its Customer Outcomes

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ABSTRACT

Over the last 45 years, increased attention for personalization characterized marketing efforts. Meanwhile, 80 percent of marketers are set to abandon personalization efforts by 2025. In this context, this study aims to gain insight into the key components of personalization and the conditions under which this one-to-one marketing strategy can generate positive or negative customer outcomes. Based upon a content analysis of 91 articles identified in a systematic way, this study presents eight personalization components, which aggregate into four building blocks (learning with manner and timing components; tailoring with initiation, dynamics, and level components; delivering with orientation and channel components; evaluating with scope). If companies implement personalization components while taking customer preferences, their cultural orientation, and the type of offerings into consideration, positive customer outcomes are more likely to emerge. By integrating these insights into a personalization framework, this study advances academic research and managerial practice.

Keywords: personalization, one-to-one marketing, systematic literature review, customer outcomes

INTRODUCTION

In the last few years, we have witnessed an increasing shift toward personalized marketing efforts that tailor (part of) the marketing mix to the individual customer (Shanahan et al., 2019). Examples are manifold, including Spotify pushing playlists tailored to its individual users and online retailer Stitch Fix leveraging data analytics to deliver personalized styling packages. The rationale is clear: personalization allows to better serve individual needs, which should ultimately lead to higher customer value and long-term profitability (Wedel and Kannan, 2016).

Despite the big promise, however, a recent report by Gartner predicts 80 percent of marketers are set to abandon personalization efforts by 2025 (Blum and Omale, 2019). Key reasons include the lack of ROI and the difficulty of setting-up a clear personalization strategy to collect, integrate and protect customer data. This ambiguous relation of practice toward personalization efforts is also reflected in academic literature. So far, findings on the effectiveness of adopting a personalization strategy are mixed. While some studies demonstrate a positive impact of personalization efforts on, among other outcomes, customer satisfaction (e.g., Adolphs and Winkelmann, 2010) and purchase intention (e.g., Lee and Cranage, 2011), other research highlights negative outcomes like increased feelings of intrusiveness (e.g., van Doorn and Hoekstra, 2013), privacy concerns (e.g., Baek and Morimoto, 2012), and perceived loss of choice (e.g., Boerman et al., 2017).

So far, research lent only nominal attention toward unraveling these inconclusive findings (Benlian, 2015). Both in practice and in academia, personalization appears to mean something different to different parties (Vesänen, 2007). Despite the concept of personalization being relatively old (Surprenant and Solomon, 1987), it is understudied to date and ill-defined (Shen and Ball, 2009). The concept of personalization is still confusing, blurred and lacks clear boundaries (Kwon and Kim, 2012), largely the result of personalization literature being highly fragmented and lacking a solid theoretical basis (Boerman et al., 2017, Vesänen, 2007).

The goal of this study, therefore, is twofold. First, we seek to unravel the key components of personalization and identify their critical linkages. Building on a systematic literature review of 91 articles, we identify eight personalization components that aggregate into four building blocks. Second, we aim to gain insights into the conditions under which personalization can generate positive or negative customer outcomes, thereby proposing a personalization framework for researchers and practitioners. In the remainder of this article,

we discuss the methodology adopted for this study, followed by the findings. The article concludes with discussion regarding theoretical and practical implication and limitations and avenues for future research.

METHODOLOGY

We performed a systematic review about personalization, thereby relying on the guidelines of Tranfield et al. (2003). More particularly, this review involved two stages: (1) literature search and selection of the studies, and (2) data extraction and synthesis.

Literature Search and Selection. We sourced the articles from Web of Science, because it provides a comprehensive portfolio of business, management and information systems journals. To guarantee objectivity, transparency and replicability of our bibliographic search, we followed a five-step procedure recommended by Kranzbühler et al. (2018). First, we identified the most common keywords in the field from the leading publications in the field and used these as a basis for our search string. Specifically, we searched for articles containing the words “personalization”, “personalized”, “personalisation”, “personalised”, “customization” or “customized” in their title, abstract or author keywords. This keyword search resulted in 62,265 articles, covering the 1955 – March 2019 timeframe. Second, to increase the relevance and quality of our results set, we limited our selection to peer-reviewed, academic journals in English. Abstracts of published items, books, books chapters, book reviews, discussion, commentary, editorial material, and proceeding papers were excluded. Also, the results were further refined with respect to subject category. Articles published under the Web of Science category of “Business” and “Management” were included. All this refinement resulted in 2,610 articles. Third, we performed a thorough screening of all (2,610) articles. The initial examination of the identified publications indicated that there were redundant entries, and indeed many did not relate to the scope of this study. The authors read the abstract of each article in the pool, filtering each against three criteria: customer-focused personalization paper, B2C as study context, and non-technical in nature (e.g., articles only discussing the application/website development process behind personalization, and no customer outcomes). This resulted in a set of 93 papers. Fourth, the full text of the remaining articles was read, causing 9 additional articles to be excluded on the basis of a too narrow focus on IT. Finally, cross-references led to the inclusion of 7 additional studies, resulting in a final set of 91 articles.

Data Analysis and Synthesis. In line with Moeller et al. (2013), the analysis of the selected articles involved five steps: familiarizing with the articles, coding article content, categorizing codes/categorizations, and further analyzing. Data analysis started with the aim of gaining a basic understanding of the selected literature, followed by in-vivo coding of the conceptualization of personalization, its outcomes, and the conditions under which these outcomes emerge in the articles (first-order codes). After, the authors independently grouped these components into categories and subsequently compared their second-order codes. Inconsistencies were resolved through discussion among the author team. Finally, grouping of the second-order codes resulted in four key building blocks underlying personalization: learning, tailoring, delivering, and evaluating (see Table 1 for an overview of the link between the articles in our dataset and these building blocks). Additionally, we also identified six categories of customer outcomes: usage of personalized offerings, behavioral intentions, loyalty, experience/evaluation, trust, and well-being. Finally, six conditions were identified: personalization strategy, type of offerings, experience/evaluation, engagement/trust, personal preferences, and culture. Table 2 gives an overview of the link between the articles in our dataset and the outcomes and conditions.

--- Insert Table 1 and Table 2 about here ---

FINDINGS

This section proposes the key building blocks of personalization along with its constituent components, which stem from the literature analysis and synthesis (see Table 1). Further inquiry on the linkages among these building blocks suggest a cyclical process ranging from learning to evaluating. Figure 1 visualizes the cyclical process that goes along with the implementation of personalization, which is labeled as the personalization strategy. In what follows, we first discuss the different building blocks and components of the personalization strategy and subsequently elaborate on the outcomes of opting for a personalization strategy along with the conditions under which these outcomes emerge (see Table 2 and Figure 2).

Learning

The first building block of a personalization strategy – learning – relates to the extraction and collecting of customer preference information during customer-firm interactions (Glushko and Nomorosa, 2012). The better firms know their customers, the better

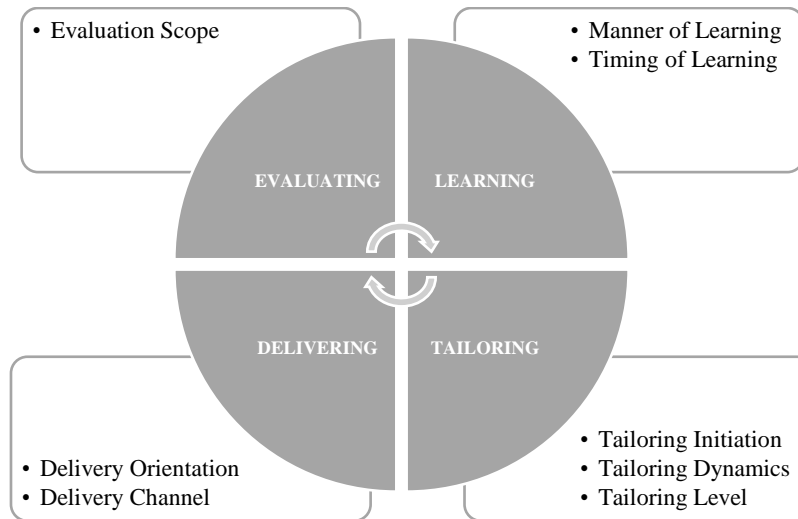


Figure 1. Personalization Strategy.

they are able to tailor their offerings to their customers in a later stage to the level desirable (Shen and Ball, 2009). Building on the coding process, we find two components underlying learning: manner of learning and timing of learning.

Manner of Learning reflects the *way* in which firms collect information about individual customers. Customer information can either be collected *explicitly*, by asking customers to disclose their information or *implicitly*, or by inferring customers' information without their knowledge or consent (Kwon and Kim, 2012, Taylor et al., 2009) – see Table 1. Some researchers label this as active versus passive information collection (Koch and Benlian, 2015), while others call this overt versus covert information collection (Aguirre et al., 2015, Boerman et al., 2017, Karwatzki et al., 2017). As shown in Table 1, studies talking about manner of learning refer in 81% of the cases to explicit learning, while 78% of the cases refer to implicit learning.

Timing of Learning relates to the *timing* of information collection, by which we may discern between real time and retrospective information collection (see Table 1). *Real time information collection* involves collecting information during customer journeys as they take place, whereas *retrospective information collection* implies the reconnection to information collected during previous customer-firm interactions (i.e., purchase history, web surfing patterns) (Thirumalai and Sinha, 2009, Dantas and Carrillat, 2013). While most studies consider *retrospective learning* (82%), there is an increasing emphasis on the value of *real time learning* about customer preferences (50%; see Table 1).

Tailoring

The second building block – tailoring – involves transforming what the firm knows about its customers into the design of individualized solutions. Specifically, the tailoring component of personalization involves matching the products, services and/or interactions to the preferences of the customers (Murthi and Sarkar, 2003). Overall, we find tailoring to be marked by three components: (1) initiation, (2) dynamics and (3) level.

Tailoring Initiation reflects who takes the initiative for personalization. Here, a lot of studies distinguish between *firm-initiated* (Chung et al., 2016) and *customer-initiated* (Kwon and Kim, 2012) tailoring. An example of the former includes a firm which inserts personal greetings when sending e-mails about new offerings to customers, while the latter refers to customers who opt-in or out for receiving newsletters about new offerings themselves. From Table 1, we may clearly see that firm-initiated efforts are most commonly investigated (99%).

Tailoring dynamics reflects the extent to which personalized offers are updated over time. *Static tailoring* relates to situations where firms only have basic preference knowledge of the customer based on retrospective data collection, whereas *adaptive tailoring* corresponds to situations where firms collect information and personalize offerings during interactions with customers in real-time (Ho et al., 2011) While most studies investigated *static tailoring* (81%), there is an increasing emphasis on the value of *adaptive tailoring* relying on real time information collection (27%; see Table 1).

Tailoring Level relates to the specificity by which an offering is tailored to the preferences of the customers. In this context, several researchers distinguish between low versus high tailoring (Thirumalai and Sinha, 2009, Kwon and Kim, 2012), by which *low tailoring level* refers to tailoring offerings to preferences of customer segments and *high tailoring levels* occurs when offerings are tailored to individual preferences. As shown in Table 1, most studies have investigated customer response in high tailoring levels (99%) as compared to low tailoring levels (43%). Moreover, some studies have investigated customer response to personalization by comparing customer response to personalized versus non personalized offers.

Delivering

The third building block of personalization – delivery – relates to the actual conveyance of the personalized solution. In other words, this component reflects to the way in

which personalized offerings are transferred from the firm to the customer. Building on the coding process, we put forth two underlying components: (1) delivery orientation and (2) delivery channel.

Delivery orientation refers to the focus of personalization efforts regarding delivery of the personalized offers. We may distinguish between *outcome-oriented personalization*, where the focus is on personalizing the core offering (e.g. Chung et al., 2016, Dantas and Carrillat, 2013, Taylor et al., 2009), and *interaction-oriented personalization*, which focuses on the way in which the firm interact with the customer (e.g. Neuhofer et al., 2015, Thirumalai and Sinha, 2009, Koutsabasis et al., 2008). As shown in Table 1, most studies (84%) investigated that business are outcome oriented with respect to personalization. That is, firms are more concerned in delivering the personalized product or service but increasingly firms are equally concerned with personalizing the firm-customer interactions (54% studies) along with personalizing offerings.

Delivery channel reflects *where* (i.e., online vs offline vs combination of both) the personalized solutions is delivered to the customer. Research dominantly focuses on online channels (see Table 1 - 90%), but personalization has been around long before in the offline world (Montgomery and Smith, 2009, Koch and Benlian, 2015).

Evaluating

Finally, the fourth building block of a personalization strategy – evaluating – refers to actions oriented towards gaining insight into the impact of personalization efforts. Specifically, we discern one component that encompasses the variety of personalization conceptualizations, which we label as evaluation scope.

Evaluation scope refers to the extent to which actions oriented towards gaining insight into the impact of personalization are oriented towards the customer as an economic actor or the customer as a human actor. Huang and Shyu (2009), for instance, point out that companies are not only interested in the profitability of the customer but increasingly care about their welfare, as this has a critical role in customers' adoption of personalized offers. If the focus is on evaluating how personalization affects customer value without taking their well-being into consideration, we refer to *customer-centric personalization* (e.g. Barnes and Vidgen, 2014). *Person-centric personalization*, in turn, centers on personalization efforts that contribute to customers' well-being first (Ball et al., 2006, Lee et al., 2011).

Implications of Personalization for the Customer

The overall objective of personalization is to better meet the needs of the customer. Table 2 describes what types of customer outcomes are influenced by personalization – and if applicable the explanatory mechanisms – based on the articles reviewed in this study. Overall, extant research considers the implications of personalization for the usage of personalized offerings (18 studies), customers’ behavioral intentions (50 studies), their loyalty (15 studies), their experience and/or evaluations of the offerings (19 studies), trust (10 studies), and even well-being (4 studies). In what follows, we discuss the conditions under which these outcomes emerge.

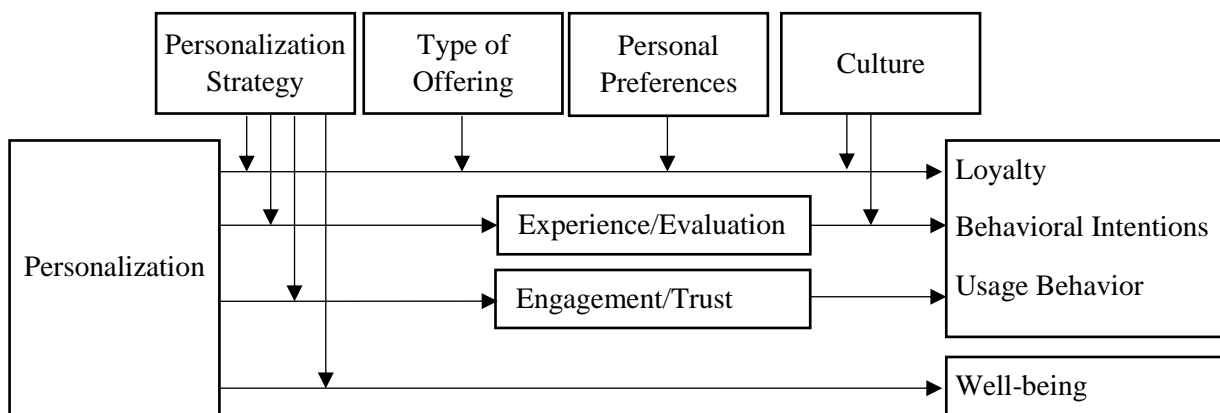


Figure 2. Personalization Framework.

Usage of personalized offerings. As shown in Table 2, personalization has behavioral effects, but the valence of these effects depends on the way in which companies implement the different components of the *personalization strategy*. Tucker (2014), for instance, contend that privacy control during learning (cf. manner of learning) affects the usage of personalized offerings. Tam and Ho (2005) show that higher tailoring levels during personalization persuades customers to accept personalized offers. Wattal et al. (2012), in turn, argue that outcome-based personalization has a positive impact on customer behaviors in relation to personalized offerings, while the opposite holds for interaction-based personalization. Additionally, our review suggests that the *type of offerings* also exerts an influence on customer behaviors (see figure 2), in such a way that personalized recommendations work better for experience products than for search products (Senecal and Nantel, 2004). Furthermore, the usage of personalized offerings is increased if customers perceive these offerings as useful (e.g., Panniello et al., 2016), believe that these offerings reduce their evaluation costs (e.g., Nath and McKechnie, 2016), and/or feel engaged with these offerings

(e.g., Hosanagar et al., 2014). In other words, customers' *experiences and engagement* with the personalized offerings steer their behaviors. Finally, the *cultural context* also affects the usage of personalized offerings (see figure 2), in such a way that customer from culture with a more individualistic orientation and higher uncertainty avoidance have high preference for personalized offerings (e.g., Torrico and Frank, 2017).

Behavioral Intentions. With regard to behavioral intentions, extant research confirms the importance of the *personalization strategy*, in that customers who get more control - which reflects the learning manner - are more likely to use personalized offering (Taylor et al., 2009, Blasco-Arcas et al., 2014). Behavioral intentions are increased when manner of learning is explicit (Aguirre et al., 2015) and customer privacy is protected (Sutanto et al., 2013, Lee and Cranage, 2011). Additionally, customers' *experiences*, as reflected in the perceived usefulness, accuracy, and ease-of-use, also play an important role to increase the behavioral intentions (e.g., Bleier and Eisenbeiss, 2015a). Furthermore, customers' *engagement/trust* with the firm increase their behavioral intentions (e.g., Choi et al., 2014), while the opposite effect is observed when customers feel that personalization intrudes into their lives (e.g., Gironda and Korgaonkar, 2018) or other negative emotions emerge (Liang et al., 2012). Finally, behavioral intentions also depend on the *personal preferences/concerns*, such as desire for transparency or privacy concerns, and the *cultural context* in which customers are embedded (Choi et al., 2014, Moon et al., 2008, Torrico and Frank, 2017, Kramer et al., 2007).

Loyalty. Like behavioral intentions, loyalty is seen as a function of customers' *experiences* and their *engagement/trust* with the firm (e.g., Piccoli et al., 2017). Meanwhile, the *personalization strategy* also plays a role, in such a way that customers who get personalized payment and delivery (cf. outcome-based personalization) achieves better customer loyalty whereas providing customer aid in decision making (cf. interaction-based personalization) may not be uniformly beneficial (Thirumalai and Sinha, 2013).

Experience/Evaluation. Studies aimed at explaining the emergence of better customer experiences and satisfaction as important determinants of loyalty, behavioral intentions, and actual behavior confirmed the importance of the *personalization strategy* (see figure 2). Specifically, extant studies suggest that higher tailoring levels are positively associated with customers' positive attitude towards personalized offers (Choi et al., 2014) and transparency during learning (cf. manner of learning) positively affects perceived fit of the personalized

offers (Gretzel and Fesenmaier, 2006). Meanwhile, this evidence also shows that perceived usefulness, perceived enjoyment, and also the reduction of evaluation costs - which reflect *experience* dimensions - affect the overall experience and/or evaluation of personalized offerings. Finally, the *cultural context* also plays an important role, as customers from cultures with more uncertainty avoidance have a more positive attitude towards personalized offers (Choi et al., 2014).

Trust. With regard to trust, extant research suggests that it is important to offer recommendations or website quality while reducing the cognitive effort for the customer. In other words, a trade-off between negative and positive *experiences* is required for trust-building. To build trust, companies can also reflect upon their *personalization strategy*, because there is some evidence that higher levels of tailoring allow for trust-building (e.g., Nilashi et al., 2016). Additionally, extant research suggests that implicit learning reduces trust (e.g., Aguirre et al., 2015) whereas explicit learning enhances trust (e.g., Wang et al., 2018, Wang and Benbasat, 2016).

Well-being. Extant research suggests that personalization may lead to happy customers (e.g., Pappas et al., 2014), but few studies explain why these well-being outcomes emerge. A notable exception is (Lee et al., 2011) who refers to the personalization strategy. More particularly, autonomous choices of privacy protection made by personalizing firms (cf. manner of learning) are associated with more social welfare by reducing customer's disutility due to unfitness of standard products through the expansion of the personalization segment (Lee et al., 2011).

DISCUSSION

Moved by the fragmented and inconclusive personalization literature, this research examined extant research on personalization to (1) delineate its building blocks along with their key components, (2) identify what customer outcomes are affected by personalization, and (3) specify the conditions under which personalization affects different customer outcomes. In this section, we detail the theoretical and managerial contributions of this work along with the limitations and future research directions.

Theoretical Implications

The present research extends the personalization framework of Murthi and Sarkar (2003) by showing that a personalization strategy includes four instead of three building blocks. Indeed, Murthi and Sarkar (2003) identified learning, matching (cf. tailoring), and evaluating as important building blocks of personalization in the digital reality, while the present research – which broadens the scope to the physical reality – shows that the delivery of offerings is also subject to personalization. In line with the work of Vesanen and Raulas (2006), the present research suggests that a personalization strategy necessitates to link the different building blocks to one another, but emphasizes the cyclical nature of this process.

Next, this research also delineates the underlying components of each of the personalization building blocks, which were largely ignored in the literature. Doing so, this research paves the way for more detailed (empirical) discussions about personalization and its implications for customers and firms. It is our hope this research triggers academic interest to further explore the personalization concept.

With regard to the outcomes of personalization efforts, this research also expands previous work – such as the study of Adolphs and Winkelmann (2010) – by covering a broader timeframe and range of journals during the systematic review. Consequently, the present research identifies various extra outcome variables that matter in the context of personalization, such as customer well-being (Pappas et al., 2017). Additionally, this research is also among the first to clearly outline the boundary conditions that impact the extent to which personalization generates better customer outcomes.

Managerial Implications

From a managerial angle, the present research suggests that personalization has the potential to generate better customer outcomes, but the success of this one-to-one marketing strategy depends on the extent to which customers have an individualistic and/or more uncertainty avoiding orientation. Additionally, companies need to take customers' desire for transparency and privacy into consideration when implementing the different building blocks of a personalization strategy, for instance by opting for explicit versus implicit learning. With the help of the personalization framework, companies can streamline their strategies for personalized offerings with the various conditions that lead to desired (behavioral) outcomes.

Limitations and Future Research Avenues

Research on personalization as a potential one-to-one marketing strategy is still in its infancy. To date, many studies compare personalization with other one-to-one marketing strategies (e.g., Arora et al., 2008), while the implications of implementing personalization in various ways – such as static versus adaptive tailoring – also deserve further investigation. Future research can advance the personalization literature by empirically investigating the implementation and potential outcome of the personalization framework.

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Table 1. Personalization Building Blocks and its Constituent Components.

	Learning				Tailoring						Delivering				Evaluating	
	Manner		Timing		Initiation		Dynamics		Level		Orientation		Channel		Scope	
	Ex	Im	RT	RE	F	C	Ad	St	L	H	O	I	On	Of	Per	Cus
Houston and Jefferson, 1975		x		x	x			x		x		x		x		
Surprenant and Solomon, 1987				x	x			x		x	x	x		x	x	
Mittal and Lassar, 1996			x		x		x			x		x		x		x
Murthi and Sarkar, 2003	x	x	x	x											x	
Johns et al., 2004				x	x			x			x			x	x	
Senecal and Nantel, 2004	x		x	x				x		x	x	x	x			x
Howard and Kerin, 2004		x			x			x	x		x			x		
Tam and Ho, 2005										x	x	x	x			x
Komiak and Benbasat, 2006					x				x	x	x		x			x
Awad and Krishnan, 2006		x									x		x		x	
Liang et al., 2006	x	x	x	x	x		x	x	x	x	x	x	x			x
Ball et al., 2006					x			x		x	x	x	x	x	x	
Gretzel and Fesenmaier, 2006	x	x			x			x	x	x	x	x	x			x
Aksoy et al., 2006					x						x		x			x
Kramer et al., 2007					x			x		x	x		x			x
Miceli et al., 2007					x	x		x			x	x	x		x	
Vesanen, 2007			x	x	x		x	x		x	x	x	x	x		x
McCoy and Hargie, 2007				x	x			x		x	x			x		
Koutsabasis et al., 2008	x	x			x						x	x	x		x	
Arora et al., 2008				x	x			x	x	x					x	
White et al., 2008					x			x	x	x	x		x		x	
Moon et al., 2008					x	x				x	x		x			x
Fung, 2008		x	x		x			x		x	x	x	x			
Thirumalai and Sinha, 2009	x	x	x	x	x			x	x	x	x	x	x		x	
Taylor et al., 2009	x	x			x			x			x		x		x	
Lee and Lee, 2009	x	x		x	x			x		x	x		x			x
Montgomery and Smith, 2009					x	x	x				x	x			x	
Shen and Ball, 2009					x		x			x	x	x	x	x	x	
Yu and Cude, 2009					x			x		x	x		x			x
Huang and Shyu, 2009					x			x		x		x	x		x	
Adolphs and Winkelmann, 2010	x	x														x
Lee et al., 2011					x				x	x	x		x		x	
Ho et al., 2011	x	x	x		x		x	x		x	x	x	x			x
Lee and Cranage, 2011	x	x			x											
Thirumalai and Sinha, 2011					x				x	x			x			x
Zhang, 2011	x	x		x	x					x	x					
Zhang et al., 2011	x	x	x	x	x		x	x		x	x		x			
Kwon and Kim, 2012	x	x	x		x	x	x		x	x	x	x	x			x
Wattal et al., 2012	x	x		x	x			x		x	x	x	x		x	
Liang et al., 2012					x			x	x	x	x	x	x		x	
Baek and Morimoto, 2012					x			x		x	x		x		x	
Coelho and Henseler, 2012						x				x	x	x		x		x
Aljukhadar et al., 2012	x	x		x	x			x			x		x		x	
Glushko and Nomorosa, 2012	x	x	x	x	x								x			x
Dantas and Carrillat, 2013					x				x	x	x		x		x	

Note. Ex= Explicit, Im= Implicit, RT= Real Time, RE = Retrospective, F = Firm, C = Customer, Ad = Adaptive, St = Static, L = Low, H = High, O = Outcome, I = Interaction, On = Online, Of = Offline, Pers = Person, Cus = Customer

	Learning				Tailoring						Delivering				Evaluating	
	Manner		Timing		Initiation		Dynamics		Level		Orientation		Channel		Scope	
	Ex	Im	RT	RE	F	C	Ad	St	L	H	O	I	On	Of	Per	Cus
Thirumalai and Sinha, 2013				x	x			x			x	x	x		x	
van Doorn and Hoekstra, 2013					x			x	x	x	x		x		x	
Sutanto et al., 2013					x				x	x	x		x		x	
Ho and Chau, 2013		x	x		x		x		x	x			x		x	
Lambrech and Tucker, 2013			x	x	x			x		x	x		x			x
Tucker, 2014				x	x				x	x	x		x		x	
Pappas et al., 2014				x	x							x	x		x	
Wierich and Zielke, 2014		x		x	x			x	x	x	x		x			x
Ho and Bodoff, 2014					x		x			x	x		x			x
Blasco-Arcas et al., 2014									x	x	x	x	x			x
Barnes and Vidgen, 2014					x		x				x	x	x			x
Shen, 2014					x						x	x	x		x	
Hosanagar et al., 2014					x			x		x			x			
Choi et al., 2014					x					x	x		x			
Neuhofer et al., 2015	x		x	x	x	x	x	x		x	x	x	x	x	x	
Bleier and Eisenbeiss, 2015a				x	x			x	x	x	x	x	x		x	
Koch and Benlian, 2015	x	x			x			x	x	x	x	x	x		x	
Benlian, 2015			x	x	x		x		x	x	x	x	x		x	
Bleier and Eisenbeiss, 2015b		x		x	x			x	x	x	x	x	x		x	
Aguirre et al., 2015	x	x	x	x	x			x	x	x	x		x		x	
Chung et al., 2016	x		x		x		x			x	x		x			x
Guo et al., 2016					x			x		x	x		x		x	
Song et al., 2016				x	x			x	x	x	x		x		x	
Bodoff and Ho, 2015									x	x	x		x		x	
Nath and McKechnie, 2016					x			x	x	x	x	x	x		x	
Pappas et al., 2016	x				x					x	x	x	x			x
Panniello et al., 2016	x			x				x		x			x			
Nilashi et al., 2016					x					x	x	x	x			x
Wang and Benbasat, 2016	x				x						x	x	x		x	
Piccoli et al., 2017	x	x	x	x	x	x	x	x		x	x	x	x	x		x
Karwatzki et al., 2017	x	x			x				x	x	x	x	x		x	
Boerman et al., 2017	x	x			x			x	x	x	x	x	x		x	
Torrico and Frank, 2017											x				x	
Pappas et al., 2017					x				x	x			x			
Choi et al., 2017					x			x			x	x	x			x
Aljukhadar et al., 2017	x				x						x		x			x
Sahni et al., 2018				x	x			x		x	x		x		x	
Aydin, 2018					x					x	x	x	x			x
Leischnig et al., 2018			x		x		x			x	x	x		x	x	
Whang and Im, 2018					x			x	x	x	x	x	x			x
Gironda and Korgaonkar, 2018	x	x			x			x		x	x		x		x	
Pappas, 2018					x								x		x	
Wang et al., 2018	x			x	x						x		x		x	
Kang and Namkung, 2019					x					x	x	x	x		x	
Shanahan et al., 2019					x			x	x	x	x		x			x

Note. Ex= Explicit, Im= Implicit, RT= Real Time, RE = Retrospective, F = Firm, C = Customer, Ad = Adaptive, St = Static, L = Low, H = High, O = Outcome, I = Interaction, On = Online, Of = Offline, Pers = Person, Cus = Customer

Table 2. Customer Outcomes of Personalization and its Explanatory Mechanisms.

Customer outcome	Conditions under which these outcomes emerge
Increased usage of personalized offerings (n=14)	<ul style="list-style-type: none"> - personalization strategy (Wattal et al., 2012; Tucker, 2014; Tam and Ho, 2005) - type of offerings (Senecal and Nantel, 2004) - experience/evaluation: perceived usefulness (Panniello et al., 2016), evaluation cost reduction (Nath and McKechnie, 2016) - engagement with offerings (Hosanagar et al., 2014) - culture (Kramer et al., 2007) - not mentioned (Howard and Kerin, 2004; Bodoff and Ho, 2016; Sahni et al., 2018; Benlian, 2015; Chung et al., 2016; Ho et al., 2011)
Decrease in usage of personalized offerings (n=4)	<ul style="list-style-type: none"> - personalization strategy (Wattal et al., 2012; Lambrecht and Tucker, 2013) - not mentioned (Yu and Cude, 2009; Karwatzki et al., 2017)
Increased behavioral intentions (n=35)	<ul style="list-style-type: none"> - personalization strategy (Lee et al., 2011; Sutanto et al., 2013; Taylor et al., 2009; Blasco-Arcas et al., 2014) - experience/evaluation: perceived usefulness/relevance (Dantas and Carrillat, 2013; Aydin, 2018; Zhang et al., 2011; Bleier and Eisenbeiss, 2015; Girona and Korgaonkar, 2018; Kang and Namkung, 2019; Lee and Cranage, 2011), accuracy (Wierich and Zielke, 2014; Ho and Chau, 2013; Pappas et al., 2017; Pappas et al., 2016), ease of use (Bleier and Eisenbeiss, 2015; Kang and Namkung, 2019), evaluation cost reduction (Zhang et al., 2011), not specified (Barnes and Vidgen, 2014; Choi et al., 2017) - engagement/trust with offerings (Thirumalai and Sinha, 2009; Ho and Chau, 2013; Taylor et al., 2009; Komiak and Benbasat, 2006; Aydin, 2018; Kang and Namkung, 2019; Nilashi et al., 2016) - personal preferences (Girona and Korgaonkar, 2018; Lee and Lee 2006) - culture (Moon et al., 2008; Torrico and Frank, 2017) - not mentioned (Koch and Benlian, 2015; Lee and Lee 2006; Baek and Morimoto, 2012; Leischnig et al., 2018)
Decrease in behavioral intention (n=15)	<ul style="list-style-type: none"> - personalization strategy (Aguirre et al., 2015) - experience/evaluation: perceived usefulness/relevance (Shen and Ball, 2009), intrusiveness/invasiveness (Girona and Korgaonkar, 2018; van Doorn and Hoekstra, 2013), negative emotions (Liang et al., 2012) - personal preferences: desire for efficiency (Johnset et al., 2004), desire for transparency (Awad and Krishnan, 2006), privacy concerns (Liang et al., 2012; Guo et al., 2016; Lee and Cranage, 2011; Girona and Korgaonkar, 2018; Song et al. 2016; Wattal et al., 2012) - not mentioned (Houston and Jefferso, 1975; White et al., 2008)
Increased loyalty (n=15)	<ul style="list-style-type: none"> - personalization strategy (Thirumalai, and Sinha, 2013) - experience/evaluation: Wierich and Zielke, 2014; Piccoli et al., 2017; Coelho and Henseler, 2012; Ball et al., 2006; Piccoli et al., 2017; Kwon and Kim, 2012; Huang and Shyu, 2009) - engagement/trust (Shanahan et al., 2019; Fung, 2008; Huang and Shyu, 2009; Aksoy et al., 2006; Coelho and Henseler, 2012; Ball et al., 2006; Piccoli et al., 2017)
Increased experience/evaluation (n=19)	<ul style="list-style-type: none"> - personalization strategy (Choi et al., 2014; Choi et al., 2017; Gretzel and Fesenmaier, 2006; Aksoy et al., 2006; Choi et al., 2014) - experience/evaluation: perceived usefulness (Liang et al., 2012; Gretzel and Fesenmaier, 2006), evaluation cost reduction (Liang et al., 2006; Liang et al., 2012; Gretzel and Fesenmaier, 2006), perceived enjoyment (Gretzel and Fesenmaier, 2006), not specified (Mittal and Lassar, 1996) - culture (Choi et al., 2014) - not mentioned (Thirumalai and Sinha, 2011; Benlian, 2015; Neuhofer et al., 2015; Pappas et al., 2014; Pappas et al., 2017; Aljukhadar et al., 2012)
Increased trust (n=9)	<ul style="list-style-type: none"> - personalization strategy (Aguirre et al., 2015; Nilashi et al., 2016; Wang et al. 2018; Wang and Benbasat, 2016) - experience/evaluation: recommendation/website quality (Nilashi et al., 2016; Wang and Benbasat, 2016) - not mentioned (Whang and Im, 2018; Pappas et al., 2014; Pappas et al., 2017)
Decreased trust (n=1)	<ul style="list-style-type: none"> - experience/evaluation: perceived cognitive effort (Wang and Benbasat, 2016)
Increased well-being (n=4)	<ul style="list-style-type: none"> - personalization strategy (Lee et al., 2011) - not mentioned (Aljukhadar et al., 2012; Pappas et al. 2014; 2017)

Note. Total number of studies per category may exceed the number of articles in our sample, as a number of studies have multiple dependent variables