

3-4-2015

# Changes in the Producer-Consumer Relationship - Towards Digital Transformation

Everlin Piccinini

Robert Wayne Gregory

Lutz M. Kolbe

Follow this and additional works at: <http://aisel.aisnet.org/wi2015>

---

## Recommended Citation

Piccinini, Everlin; Gregory, Robert Wayne; and Kolbe, Lutz M., "Changes in the Producer-Consumer Relationship - Towards Digital Transformation" (2015). *Wirtschaftsinformatik Proceedings 2015*. 109.  
<http://aisel.aisnet.org/wi2015/109>

This material is brought to you by the Wirtschaftsinformatik at AIS Electronic Library (AISeL). It has been accepted for inclusion in Wirtschaftsinformatik Proceedings 2015 by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# Changes in the Producer–Consumer Relationship – Towards Digital Transformation

Everlin Piccinini<sup>1</sup>, Robert W. Gregory<sup>2</sup>, Lutz M. Kolbe<sup>3</sup>

<sup>1,3</sup> Georg-August-University Göttingen, Information Management, Göttingen, Germany  
{everlin.piccinini, lutz.kolbe}@wiwi.uni-goettingen.de

<sup>2</sup> IESE Business School, Information Systems, Barcelona, Spain  
rwgregory@iese.edu

**Abstract.** The purpose of this paper is to analyze shifts in the producer–consumer relationship resulting from the increased use of digital technologies. In this study, we aim to understand how this relationship is fundamentally changing and the role of digital technologies in such a change. Therefore, we provide a state-of-the-art review of information systems and management literature using analysis techniques borrowed from the method of grounded theory. The results of our study indicate that the constructs of digital density, digital interconnectedness, and consumer-centricity are key drivers of changes in the producer–consumer relationship. With the growing role of digital technologies in both society and organizations, our study contributes with implications for information technology and business managers, offering them insights on how to deal with this phenomenon. Finally, our study provides a useful framework for future interdisciplinary research in this field.

**Keywords:** Producer–consumer Relationship, Systematic Literature Review, Digital Transformation, Digitalization.

## 1 Introduction

Recent advances in digital technologies are determining significant and unprecedented changes in many aspects of our social and economic lives [1], [2]. Digital technologies are considered to be combinations of information, computing, communications, and connectivity technologies, such as social media, mobile devices, analytics, and cloud computing [2], [3]. These consumer-originated technologies have become immersed in every workplace and home as part of our daily routines, fundamentally changing the way we communicate, consume, and create [4], [5]. Considering the speed at which digital tools are proliferating, by 2015 there are expected to be 20 billion connected devices in the world; this naturally has an impact on how consumers relate to information and thus to producers [6].

Producers are defined as organizations that make or supply products or services for sale, while consumers are defined as people who use a product or service [7]. The producer–consumer relationship is defined “as an exchange relationship in which each party trades one kind of value for another” [7]. Through significant advances in

digital technologies in the last decade, a shift in this relationship is taking place [8], [9]. Consumers not only know what is available to them in the marketplace—the precise prices and attributes of available products—but they can also contribute to innovations that will find their way into the enterprise world [8]. Traditional businesses, such as banking and the automotive industry, are forced to react to such shifts in consumer behavior and are focusing on digital initiatives to better respond to changing consumer needs. For example, Volvo Cars Corporation, a Swedish player in the global car industry with operations in 100 countries worldwide, is focusing on mobility technologies (e.g., connected cars), social media, and smart embedded devices in order to develop a more direct relationship with the end consumer and improve the consumer experience [6]. Although many organizations have been using digital technologies to improve customer relationships, they still fail to harness such technologies to enhance consumer interaction and value [10], [9]. Moreover, digital initiatives are often unsuccessful because organizations know little about the changing dynamics of consumer requirements and behavior in the digital landscape [11]. Therefore, a deeper understanding of the shifts in the producer–consumer relationship is extremely needed in order to enhance interactions and exchange of value.

Shifts in society and organizations due to the increasing use of digital technologies are considered to be drivers of an overarching phenomenon described as digital transformation [3], [11]. Digital transformation is characterized by the use of new digital technologies to enable significant business improvements [3]. Prior information systems (IS) research on digital transformation has mainly focused on managerial issues to help both technology and non-technology organizations create differential business value in the digital landscape (e.g., [2], [12], [8], [9]). For example, Bharadwaj et al. [2] focus on the development of strategies to leverage digital resources in organizations. Granados and Gupta [12] discuss the importance of information-transparency management in order to selectively disclose information to consumers, suppliers, and competitors through digital channels. Furthermore, Setia et al. [9] point out the need for new forms of digital collaboration and customer-side digital design strategies. Nevertheless, to the best of our knowledge, there is a lack of research focusing on the changes in the producer–consumer relationship resulting from the proliferation of digital technologies and their implications for the phenomenon of digital transformation.

This paper focuses on examining these changes through a systematic literature review of existing IS and management research. Our aim is to address the following research question: *How are digital technologies fundamentally changing the producer–consumer relationship?* Following other IS researchers who also aimed to contribute to the understanding of the phenomenon of digital transformation (e.g., [2], [12], [8]), we will not limit the focus of this research to a certain type of industry. We aim to develop a general understanding of changes in producer–consumer relationships by analyzing literature on both technology and non-technology organizations in order to present the state of the art and offer guidance for further research development.

In the remainder of this paper, we briefly introduce the concept of technology-driven transformation in society and organizations to serve as a basis for understanding the phenomenon of digital transformation. Thereafter, we explain our research

process, including a detailed description of how we conducted a systematic literature review using techniques borrowed from the method of grounded theory. Drawing from the findings of our literature review, we propose an initial theoretical framework that can be used to understand the shifts in the producer–consumer relationship as a result of digital technologies. Finally, we discuss the relevance of this framework for both research and practice.

## **2 Theoretical Background: Technology-Driven Transformation**

A shift concerning people’s interactions with digital products is taking place, moving from evaluating performance to researching experience [13], [14]. This change is partially due to the increased connectivity, mobility, and domestication of digital products and services, which reflects the increasing relevance of digital devices in issues of lifestyle and how people choose to express their identities [14]. New digital technologies (e.g., mobile products and services) are everyday artifacts that have embedded computing capabilities and provide digitally mediated experiences embodied in everyday activities [15]. Computing through such technologies is not generally a user’s primary focus; instead, computing often takes place on the periphery of everyday activities, such as running, driving, and communicating [15]. The evolution of digital technologies has lifted social life from the here and now, separating time from space and changing the way people live, communicate, work, and consume [15], [16].

A number of IS scholars have strived to define what a transformational technology is [8]. Many authors (e.g., [17], [8]) refer to the work of Dehning et al. [18] in order to explain technology-driven transformation in organizational contexts by using the following criteria:

- “(It) fundamentally alter(s) traditional ways of doing business by redefining business capabilities and/or (internal or external) business processes and relationships
- (It) potentially involve(s) strategic acquisitions to acquire new capabilities or to enter a new market space
- (It) exemplif(ies) the use of IT to dramatically change how tasks are carried out,...is the move recognized as being important in enabling the firm to operate in different markets, serve different customers,... (and) gain considerable competitive advantage by doing things differently” [18].

Lucas et al. [8] propose seven specific dimensions for describing a technology-driven transformation: change in processes, creation of new organizations, change in relationships, change in user experience, change in markets, change in the amount of customers, and disruptive impact. A technology must impact three or more of these dimensions in order to be classified as transformational [8].

The dimension of change in processes was given considerable attention in the development of process virtualization theory, which describes the transition from a physical process to a virtual one in which the physical interaction between people and/or objects has been eliminated (e.g., electronic commerce, online distance learning, online banking) [19-20]. Process virtualization can be compared to the phenome-

non of digitizing, i.e., the technical process of transforming analog signals into a digital form [21]. Conversely, the phenomenon of digitalization refers to “a sociotechnical process of applying digitizing techniques to broader social and institutional contexts that render digital technologies infrastructural” [21].

Furthermore, the phenomenon of digitalization has recently been discussed in the context of digital transformation in applied managerial literature (e.g., MIT Sloan Management Review), where digital transformation was defined as “the use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new business models)” [3]. Seeger and Bick [11] propose that megatrends (e.g., globalization, sharing economy, and revolutionizing technology demands) as well as consumer trends (e.g., ownerless and personalization) are important drivers of such digital transformation.

In this paper, we aim to use data from existing literature to explain how digital technologies are changing the producer–consumer relationship in order to further contribute with essential insights for better understanding the phenomenon of digital transformation.

### 3 Methodology

Our research approach was based on a rigorous systematic literature review in the form of a five-stage iterative process. We used techniques borrowed from grounded theory as an analysis method, following the suggestions of Wolfswinkel et al. [22]. The main characteristic of grounded theory is its inductive nature, i.e., theory and key concepts emerge from the analysis of data [23], [24]. In a grounded theory literature review, concepts arise from the literature [22]. The advantage of using grounded theory in the analysis of a literature review lies in the systematic evaluation of textual data, in which ideas are developed and integrated to produce insights and conceptualizations for the research proposal [22], [25]. Wolfswinkel et al. [22] propose a step-by-step guide for applying grounded theory in the analysis of a systematic literature review, aiming to achieve more rigor and transparency in the reviewing process. This guide is aligned with other authors’ guidelines for conducting literature reviews, including the framework of Webster and Watson [26], and is illustrated in the following Table 1.

**Table 1.** Processes of systematic literature review with techniques borrowed from grounded theory, adapted from Wolfswinkel et al. (2013)

<i>Stage</i>	<i>Description</i>
Define	Identification of the fields of research and definition of the criteria for inclusion/exclusion, as well as specific search terms
Search	Search process
Select	Refinement of the sample
Analyze	Use of analytical coding steps (open, selective, and theoretical coding)

In the first stage of our literature review, we aimed to identify the most suitable set of data to be analyzed. We decided to focus on international peer-reviewed IS journals and major IS conferences ranked in the VHB-JOURQUAL (the journal ranking of the German Association for Business Research) in order to develop a state of the art about changes in the producer–consumer relationship within this discipline to contribute to IS studies on digital transformation. Since our research topic also has managerial implications, we considered international peer-reviewed management journals as well. As the research topic is relatively new and of an applied nature, we also decided to scan applied management journals [27], [25]. Ultimately, we defined the terms “digital technolog\*”, “digital transformation”, “digital business\*”, and “digitalization” as our search string. We limited our search by focusing on literature that deals with our defined topic, i.e., changes in the producer–consumer relationship as a result of digital technologies.

In the second stage, we used our search string in the following databases: EBSCOHOST, ScienceDirect, JSTOR, IEEE Xplore, and AIS Electronic Library. The search string was applied in the title, abstract, keywords, and main text of the articles. In this stage, we identified a total of 138 publications.

In the third stage, our refinement process involved a careful screening of the identified publications, primarily focusing on the articles’ titles, abstracts, introductions, and conclusions [28], [29]. Here, we aimed to select articles that explicitly discuss changes in the producer–consumer relationship resulting from digital technologies, i.e., digitalization. Articles related to changes in organizational processes or products that were not consistent with the topic of our study were excluded, resulting in a total of 19 relevant articles. To assure comprehensive coverage of all important studies, we extended our selection process by conducting a forward and backward search, as suggested by Webster and Watson [26]. We used the Web of Science database for the forward search. Our final sample consisted of 21 articles.

In the fourth stage of the literature review, the key principles of grounded theory were applied for analyzing the final sample of articles [22]. We began our analysis by reading one article and highlighting any findings and insights in the text that were relevant to our research question, according to the suggestions of Wolfswinkel et al. [22]. All selected articles underwent this procedure at least once. “Every word, sentence or paragraph that is highlighted in each paper represents a relevant ‘excerpt’ ” [22]. We decided to use the techniques of grounded theory based on Glaser [30], and therefore, while reading our final sample of articles for the purpose of excerpting, we engaged in “open coding,” “selective coding,” and “theoretical coding,” as summarized in Table 2.

**Table 2.** Steps of analysis borrowed from grounded theory

<i>Steps of Analysis</i>	<i>Task</i>
Open Coding	Coding data by assigning conceptual labels to it and identifying core categories that help understand the analyzed phenomenon [30].
Selective Coding	Further coding is limited to only those concepts and dimensions that relate to the emerged categories [30], [31].
Theoretical Coding	Analysis of relationships between the outcomes of open and selective coding as hypotheses to be integrated into a theory [30], [24].

In order to achieve reliability in our coding, one of the authors coded an article, documenting the coding and the respective conceptual labels in a dated codebook, following the suggestions of Wolfswinkel et al. [22]. The other authors controlled and examined that coding by reading the excerpts assigned to the conceptual labels, resulting in intensive discussions over the interpretation of the data. As each of the three coding processes was finished, the authors discussed the coding, only moving on to the next coding step after agreeing that a theoretical saturation had occurred. According to Wolfswinkel et al. [22] and Glaser [30], a theoretical saturation occurs when in the process of category development no new concepts, properties, or interesting links emerge.

## 4 Results

In the following, we present and discuss the findings of our literature analysis. Essentially, perceptions about changes in the producer–consumer relationship as a result of digital technologies are presented in our results in the form of quotations and coding. This should provide an initial understanding of how the data was analyzed and how our coding was conducted. In the course of our literature analysis, we identified three main categories that help explain the topic of our study. Each category as well as its respective dimensions and codes are represented in Table 3. In this table, we use short quotations per code to exemplify our coding process. Here, we chose quotations that help the understanding of how the code was identified.

**Table 3.** Results of the literature review

<i>Categories</i>	<i>Dimension</i>	<i>Code</i>	<i>Quotation</i>
Shifts in consumer behavior	Digital density <sup>1</sup>	Information availability	“The ability to connect to the Internet through a variety of inexpensive and mobile devices [...] has made anytime, anywhere connectivity a reality.” [32]
		Consumer informed-ness	“Consumers just know what is available to them in the marketplace, with accurate and precise understanding of price and of the exact set of attributes that each good or service offers them, changing consumers’ behavior.” [8]
		Digital competence	“One no longer needs a travel agent to recommend a property or book a hotel. One no longer needs a sales person to explain or recommend a camera and one no longer even needs a service representative to deal with problems with purchases.” [8]
		Democratization of content	“Consumers use new media to participate in social networks, which enable them to create and share content, [...] and build relationships with other consumers.” [33]

<sup>1</sup> We borrowed this term from Káganer et al. 2013 but used it in a different way in line with what emerged from our coding.

<i>Categories</i>	<i>Dimension</i>	<i>Code</i>	<i>Quotation</i>
Shifts in interactions	Digital interconnectedness	Changes in consumer–technology interaction	“With the mutual maturation of the personal computer and the Internet, the ‘bleeding edge’ has been taken over by individuals who are persistently finding new and different ways to use technology for their personal benefit.” [32]
		Changes in consumer–consumer interaction	“The phenomenon of users’ recommending favorites to friends and followers plays an important role in shaping other users’ behaviors and purchases.” [34] “Every piece of lost luggage and every disastrous room experience shows up in a report on TripAdvisor” [35]
		Changes in consumer–producer interaction	“Due to the real-time online nature of the Internet, relationships between organizations and customers are becoming more interactive in the market space.” [36]
Shifts in producer behavior	Consumer-centricity	Individual customizability	“Newspapers were a one-size-fits-all product. Today, online editions can be customized to include just the news and information that a particular subscriber is likely to want.” [37] “Informed customers are increasingly demanding products and services tailored to their specific needs.” [38]
		Hyperdifferentiation	“When consumers can find out anything they want about any product of interest, entire industries have been transformed, and consumers have more choice than at any time [...]. From beers and soft drinks to consumer electronics, from financial services to travel, manufacturers have moved from mass-market fat spots to highly focused high margin ‘sweet spots.’” [8]
		Improvement of consumer experience	“The customer experience embodies what it’s like to be a digital customer of your organization, whether buying digital or physical products. E.g.: Amazon’s well-developed customer-created content: customer product ratings and reviews, as well as sophisticated tools like search, and recommendations.” [39]
		Consumers as partners	“Many e-business companies, have established online customer communities to allow their customers to share tips, point out glitches and lobby for changes. These customers have become their de facto product development teams.” [40]
		Response agility	“Speed as a dimension becomes important in the context of responding to customer service requests in real-time through Twitter, Facebook and other social media platforms. Slowness in response could mean customers moving away from companies perceived as being out of tune with the new reality.” [2]

In the following, Table 4 illustrates the articles that provided us with the complete references for the all the entire quotations we used, which supported each of the identified coding.

**Table 4.** Results of the literature review: list of articles

<i>Code</i>	<i>References</i>
Information availability	[32], [33], [15]
Consumer informedness	[35], [12], [38], [8], [9]
Digital competence	[37], [12], [8]
Democratization of content	[4], [2], [35], [34], [33]
Changes in consumer–technology interaction	[3], [32], [15]
Changes in consumer–consumer interaction	[35], [34], [39], [41]
Changes in consumer–producer interaction	[42], [36], [39]
Individual customizability	[37], [35], [36], [40], [38]
Hyperdifferentiation	[35], [8]
Improving consumer experience	[36], [3], [43], [44], [39]
Consumers as partners	[43], [40], [38], [8], [45], [33]
Response agility	[2], [35], [40], [9]

## 5 Discussion of Findings

In searching for shifts in the producer–consumer relationship in our final sample of articles, our data indicated three categories to be examined: shifts in consumer behavior, shifts in interactions, and shifts in producer behavior. These categories and their corresponding dimensions served as the basis for our framework development that is explained in the following.

### 5.1 Shifts in Consumer Behavior

We conceptualized the category shifts in consumer behavior as the increase in the integration of digital technologies into consumers’ lives along the dimension of digital density that emerged from our data. This dimension presents some of the reasons why changes in consumer behavior occur as a result of the increasing use and availability of digital technologies. We found that information about products and services has become more and more accessible to consumers; information is everywhere, and through inexpensive digital technologies, this information is becoming increasingly available at any time, anywhere, to everybody [32], [33]. This increases consumer informedness. Consumer informedness means that consumers are well informed about products or services available on the market, with precise prices and attributes, which influences their willingness to pay and changes their purchasing decisions [35] [38]. This increase in consumer informedness and consequent change in consumer behavior will become as important to organizations as a review of competitors and their current portfolios, because it forces a revision of the corporate strategy [41]. As consumers become more informed, they develop a certain digital competence. This refers to the ability that consumers develop through Internet and mobile technologies to solve

many purchase and service issues online, without the assistance of a company's intermediary when buying goods and checking the status of their order online [12], [8]. While this trend benefits consumers and individual investors, it threatens intermediaries [18]. As a consequence, a "democratization of content" takes place. Organizations no longer retain control over the information they used to push to consumers through marketing channels. Through digital media, consumers are able to create, propagate, and amplify content about organizations (e.g., in consumer reviews), which determines the consumer's perception of an organization and its offerings [35], [4]. This results in significant power shifts in market channels and disintermediation, disrupting traditional organizations and creating a fundamentally new source of value [8].

In summary, with an increase in digital density, consumers have greater access to information through digital channels, are more informed about different products and services, are becoming more capable of solving problems with products or services online without the help of intermediaries, and are able to create and propagate content by themselves.

## **5.2 Shifts in Interactions**

The category shifts in interactions is defined by the dimension of digital interconnect- edness. The dimension of digital interconnectedness attempts to explain some reasons for changes in the producer–consumer relationship due to new means of interaction enabled by digital technologies. For example, we found that there is a rise of technol- ogy-savvy, interconnected consumers who are finding new and different ways of consuming and using technology for their personal benefit. This changes the expecta- tions consumers have toward companies, since consumers expect easy usability of digital products [32], [15], [3]. Additionally, digital technologies have been facilitat- ing interactions among consumers. In the search for quality information, the exchange of opinions among consumers (e.g., sharing of product information in social net- works, online reviews, and blogs) has become increasingly important and influential [35], [41]: "24% of Internet users access online reviews before paying for a service delivered offline" [41]. Finally, the consumer–producer interaction has also changed due to advances in digital technologies. Consumers express an increasing need to interact with companies on a 24/7 basis. They want the flexibility of conducting busi- ness outside of normal office hours, e.g., at home at night they might want to make a money transaction, order something online, or track a sent package [37], [39]. Fur- thermore, digital technologies provide organizations with vast amounts of information on their customers, such as customer's locations, behavior and social interaction. While such information provides firms the ability to offer highly customized services to their customers, it requires numerous changes in organizations, particularly regard- ing privacy policies at organizations and increases consumers' concerns about data privacy [42].

To sum up, digital interconnectedness is enabling new means of interactions be- tween (1) consumers and technologies (i.e., it changes the way consumers use or even develop new digital technologies), (2) consumers and consumers (i.e., there is an easier and more dynamic exchange of information about products and services), and

(3) consumers and producers (i.e., there is an increasing need to obtain responses about products and services anytime, anywhere).

### **5.3 Shifts in Producer Behavior**

We defined the category shifts in producer behavior as the way organizations are strategically reacting to changes in consumer behavior, based on the dimension of consumer-centricity that emerged from our literature analysis. This dimension describes how digital technologies empower consumers to influence organizations to deliver a higher range of improved products and services and the way in which organizations attempt to engage empowered consumers through digital technologies. Informed consumers can optimize their choices and organizations can now optimize their selection of offerings [35]. For example, through advances in digital technologies, online or mobile editions of newspapers can be customized according to the specific preferences of individual customers [37]. This implies that organizations can focus on data mining and can exploit the potential of individual customizability in order to meet the needs of each of their consumers [36]. Furthermore, as consumers can find out practically anything they want to about any product of interest, companies have tried to create as many offers as possible in the market [35], [8]. This hyperdifferentiation of products has also enabled organizations to focus on niche markets of consumers that appreciate being different and have become loyal to such organizations. This can be seen in the case of environmentally friendly cars with too little acceleration. Recently, General Motors faced difficulties in competing with Toyota but not because of quality issues: “it is just that Toyota’s cars are more interesting, and consumers are far more likely to be passionate about a Prius hybrid than about a Buick” [35].

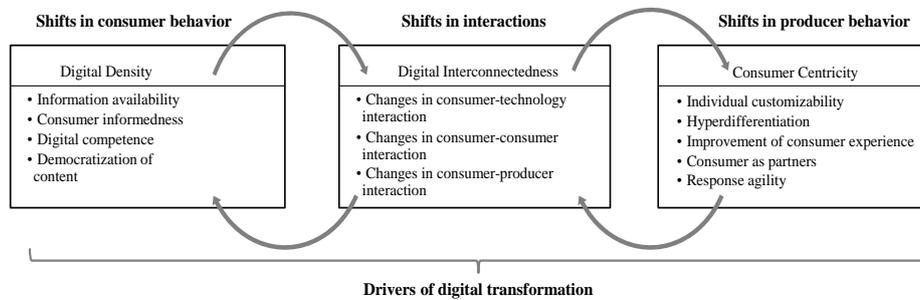
Organizations are focusing on improving the consumer’s digital experience in order to “strengthen the bond between the customer and the firm” [44]. Improving consumer experience is about enhancing products and services in customer-friendly ways, whether consumers buy digital or physical products [3]. For example, in the automotive industry context, organizations that provide consumers with the ability to shop or finance a purchase online have turned purchasing a car into a fun and interesting experience [34]. Furthermore, consumers are no longer merely buying products and services [38]. Through new technologies, the interaction between consumers and producers has increased in a cost-effective way, supporting new product development, product improvement, and product problem solving by exploiting consumer knowledge and involving consumers as partners [45], [40]. By co-acting with customers or interacting with them virtually, organizations are able to sense and respond readily to consumer-driven changes in needs. This has become imperative for the survival of organizations in the digital age [40].

In summary, because consumers are more informed and empowered through digital technologies, producers are changing the way they develop new offerings, which are becoming more individually customized and hyperdifferentiated. Producers are also changing the way they engage with consumers, i.e., there is a greater need to improve consumer experience, respond quickly to consumer needs, and use consumer

interactions to co-create products and services. Thus, producers are becoming more consumer-centric.

#### 5.4 Relationship between Categories: Building a Theoretical Framework

Through our systematic literature review supported by analysis techniques borrowed from the method of grounded theory, we developed a theoretical framework that attempts to provide understanding about the way digital technologies are shifting the producer–consumer relationship. Our framework indicates the relationships between the categories we found in our study, summarized in Figure 1. The framework indicates that shifts in consumer behavior occur due to an increase in digital density (i.e., through information availability, consumer informedness, digital competence, and democratization of content). Consequently, digital density leads to shifts in the way consumers interact with technology, other consumers, and producers. Moreover, these shifts in interactions make producers rethink the way they engage with consumers. By acknowledging that consumers are more empowered through digital technologies, producers are reacting to changes in consumer behavior by becoming more consumer-centric and changing the way they exchange values (e.g., by co-creating digital products and services). Additionally, our framework indicates that another interplay order in the relationship among the categories is possible. For example, in the process of product co-creation, producers are enabling closer and engaged interactions with consumers, which may influence consumers to write positive product reviews or create digital word-of-mouth about certain producers. Therefore, we assume that the relationships between the categories found in our study are interdependent. Nevertheless, further research is needed to deeply analyze these relationships.



**Fig. 1.** Changes in the producer–consumer relationship

#### 5.5 Implications for Practice and Future Research

With the growing role of digital technologies in both society and organizations, our study has many practical implications for guiding organizations in understanding the source of changes in the producer–consumer relationship in order to help them design and develop strategies to better deal with the digital consumer. Technology and non-technology organizations alike need to be prepared to respond to and embrace em-

powered consumers, as they can strongly impact an organization's image. Business and IT managers need to understand that the more empowered consumers are, the more value technology-enabled products and services can generate for both consumers and organizations themselves [43]. For example, producers can take advantage of the increase in consumer–producer digital interaction and co-creation. Due to advances in digital technologies, producers can readily access consumer knowledge about their products and services through different channels. Consequently, they can benefit from consumer-side innovations (e.g., incremental services or new product development) or from faster solutions to business problems that consumers find. The importance of consumer interaction is a topic that has already been discussed in the discipline of marketing (e.g., [46]). Here, we argue that this topic is also extremely relevant in the field of IS since consumer interaction has become much more dynamic as a result of digital technologies and information technology (IT).

In addition, we suggest that organizations build management and IT capabilities to harness digital technologies. According to Fitzgerald et al. [3], emerging technologies (such as social media, mobile, and analytics) demand critical skills from management in order to support organizations selecting relevant new technologies and use their features and applications to improve consumer relationships. Such capabilities may help organizations sense and respond to business opportunities and threats [9]. Furthermore, we argue that digital capabilities in IT management are essential in order to design and develop a digital infrastructure that facilitates consumer interactions and enables a differentiated consumer experience, thereby enhancing consumer value. This should help organizations on their way to a digital transformation.

Furthermore, we suggest several avenues for future research. Further empirical research should be conducted in order to empirically analyze our proposed framework. Therefore, examining changes in the producer–consumer relationship in practice through a case-study analysis in both technology and non-technology organizations would be recommended. Furthermore, our study has indicated that consumers are playing a more active role in co-production, co-creation, and problem solving. Overall, this reminds us of the discussion about “prosumers” (e.g., [7], [47]). We argue that the concepts of prosumer, “one who is both producer and consumer,” and prosumption, “involving a combination of production and consumption” [47], which were already examined in the disciplines of marketing and sociology, should also be a topic of further research in the IS community.

## **6 Conclusion**

In this paper, we provided a literature review in order to understand how changes in the producer–consumer relationship are occurring as a result of the increasing use and accessibility of digital technologies. An important finding of our study is that digital density, digital interconnectedness, and consumer-centricity can be seen as essential drivers of changes in this relationship. This indicates that consumers have developed a higher expectation concerning information quality, response agility, and means of interacting with organizations. Furthermore, the producer–consumer relationship has

become more consumer-centric. In order to add value to their consumers, organizations are responding to the (digital) shifts in consumer behavior by focusing on individually customized and hyperdifferentiated products and services, attempting to match the particular needs of their individual customers. With our analysis and discussion, we attempt to contribute to IS studies on digital transformation by providing an overview of the current understanding of the nature of changes in the producer–consumer relationship, which is an important driver of digital transformation in organizations. Additionally, due to the discussed shifts in the producer–consumer relationship that are strongly enabled by new digital technologies, implications for future research on “prosumerization” as a driver of digital transformation should be taken into consideration. In IS there is an ongoing debate about our identity and defining our research focus. The phenomenon of digital transformation illustrates the potential for building unique IS theory that serves as a reference across disciplines.

## References

1. Corrocher, N., Ordanini, A.: Measuring the digital divide: a framework for the analysis of cross-country differences. *Journal of Information Technology*, vol. 17, no. 1, pp. 9-19 (2002).
2. Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., Venkatraman, N.: Digital Business Strategy: Towards a Next Generation of Insights. *MIS Quarterly*, vol. 37, no. 2, pp. 471-482 (2013).
3. Fitzgerald, M., Kruschwitz, N., Bonnet, D., Welch, M.: Embracing Digital Technology. *MIT Sloan Management Review*, pp. 1-12 (2013).
4. Aral, S., Dellarocas, C., Godes, D.: Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, vol. 24, no. 1, pp. 3-13 (2013).
5. Oestreicher-Singer, G., Zalmanson, L.: Content or Community? A Digital Business Strategy for Content Providers in the Social Age. *MIS Quarterly*, vol. 37, no. 2, pp. 591-616 (2013).
6. Westerman, G., Tannou, M., Bonnet, D., Ferraris, P., McAfee, A.: The Digital Advantage: How Digital Leaders Outperform Their Peers in Every Industry. Capgemini Consulting and The MIT Center for Digital Business, pp. 1-24 (2012).
7. Humphreys, A., Grayson, K.: The Intersecting Roles of Consumer and Producer: A Critical Perspective on Co-production. Co-creation and Prosumption. *Sociology Compass*, vol. 2, no. 3, pp. 963-980 (2008).
8. Lucas, H.C., Agarwal, R., Clemons, E.K., El Sawy, O.A., Weber, B.: Impactful Research on Transformational Information Technology: an Opportunity to Inform New Audiences. *MIS Quarterly*, vol. 37, no. 2, pp. 371-382 (2013).
9. Setia, P., Venkatesh, V., Joglekar, S.: Leveraging Digital Technologies: How Information Quality Leads to Localized Capabilities and Customer Service Performance. *MIS Quarterly*, vol. 37, no. 2, pp. 565-590 (2013).
10. Hansen, A.M., Kraemmergaard, P., Mathiassen, L.: Rapid Adaptation in Digital Transformation: a Participatory Process for Engaging IS and Business Leaders. *MIS Quarterly Executive*, vol. 10, no 4, pp.175-185 (2011).
11. Seeger, G., Bick, M.: Mega and Consumer Trends – Towards Car-Independent Mobile Applications. *International Conference on Mobile Business*, Berlin (2013).

12. Granados, N., Gupta, A.: Transparency Strategy: Competing with Information in a Digital World. *MIS Quarterly*, vol. 37, no. 2, pp. 637-641 (2013).
13. Light, A.: Adding method to meaning: a technique for exploring peoples' experience with technology. *Behaviour & Information Technology*, vol. 25, no. 2, pp. 175-187 (2006).
14. Anaman, M., Lycett, M., Love S.: Enhancing Customer Experience within the Mobile Telecommunications Industry. Proceedings of the 16th European Conference on Information Systems, Galway, Ireland (2008).
15. Yoo, Y.: Computing in Everyday Life: a Call for Research on Experimental Computing. *MIS Quarterly*, vol. 34, no. 2, pp. 213-231 (2010).
16. McDonald, M.P., Russel-Jones, A.: *The Digital Edge - Exploiting Information and Technology for Business Advantage*. Gartner eBook (2012).
17. Agarwal, R., Johnson, S.L., Lucas, H.C.: Leadership in the Face of Technological Discontinuities: The Transformation of EarthColor. *Communications of the Association for Information Systems*, vol. 29, no. 1, pp. 627-644 (2011).
18. Dehning, B., Richardson, V.J., Zmud, R.W.: The Value Relevance of Announcements of Transformational Information Technology Investments. *MIS Quarterly*, vol. 27, no. 4, pp. 637-656 (2003).
19. Overby, E.: Process Virtualization Theory and the Impact of Information Technology. *Organizational Sciences*, vol. 19, no. 2, pp. 277-291 (2008).
20. Balci, B., Rosenkranz, C.: Virtual or Material, What Do You Prefer? A Study of Process Virtualization Theory. Proceedings of the 22<sup>nd</sup> European Conference on Information Systems, Tel Aviv, Israel (2014).
21. Tilson, D., Lyytinen, K., Sorensen, C.: Research Commentary – Digital Infrastructures: The Missing IS Research Agenda. *Information Systems Research*, vol. 21, no. 4, pp. 748-759 (2010).
22. Wolfswinkel, J.F., Furtmueller, E., Wilderom, C.P.: Using grounded theory as a method for rigorously reviewing literature. *European Journal of Information Systems*, vol. 22, no. 1, pp. 45-55 (2013).
23. Glaser, B.G., and Strauss, A.L.: *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine, Chicago (1967).
24. Charmaz, K.: *Constructing Grounded Theory - A Practical Guide Through Qualitative Analysis*, Sage Publications Ltd., Thousand Oaks, California (2006).
25. Kumar, R., Stylianou, A.: A Process Model for Analysing and Managing Flexibility in Information Systems. *European Journal of Information Systems*, vol. 23, no. 2, pp. 151-184 (2014).
26. Webster, J., Watson, T.R.: Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, vol. 26, no. 2, pp. 13-23 (2002).
27. Wiener, M., Vogel, B., Amberg, M.: Information Systems Offshoring - A Literature Review and Analysis. *Communications of the Association for Information Systems*, vol. 27, no. 1, pp. 455-492 (2010).
28. Swanson, E.B., Ramiller, N.C.: Information Systems Research Thematics: Submissions to a New Journal, 1987–1992. *Information Systems Research*, vol. 4, no. 4, pp. 299–330 (1993).
29. Dibbern, J., Goles, T., Hirschheim, R., Jayalilaka, B.: Information System Outsourcing: A Survey and Analysis of the Literature. *ACM SIGMIS Database*, vol. 35, no.4, pp. 6-102 (2004).
30. Glaser, B.G.: *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Sociology Press, Mill Valley/California (1978).

31. Urquhart, C.: *Grounded Theory for Qualitative Research*. Sage Publications Ltd, London (2013).
32. Smith, H.A., McKeen, J.D.: Developments in Practice XXXI: Social Computing: How Should It Be Managed? *Communications of the Association for Information Systems*, vol. 23, no. 1, pp. 409-418 (2008).
33. Hennig-Thurau, T., Malthouse, E.C., Friege, C., Gensler, S., Lobschat, L., Rangaswamy, A., Skiera, B.: The Impact of New Media on Customer Relationships. *Journal of Service Research*, vol. 13, no. 3, pp. 311-330 (2010).
34. Lee, S., Noh, S., Kim, H.: A mixed methods approach to electronic word-of-mouth in the open-market context. *International Journal of Information Management*, vol. 33, no. 4, pp. 687-696 (2013).
35. Clemons, E.K.: How Information Changes Consumer Behavior and How Consumer Behavior Determines Corporate Strategy. *Journal of Management Information Systems*, vol. 25, no. 2, pp. 13-40 (2008).
36. Dutta, S., Biren, B.: Business Transformation on the Internet: Results from the 2000 Study. *European Management Journal*, vol. 19, no. 5, pp. 449-462 (2001).
37. Andal-Ancion, A., Cartwright, P.A., Yip, G.S.: The Digital Transformation of Businesses. *MIT Sloan Management Review*, vol. 44, no. 4, pp. 34-41 (2003).
38. Kauffman, R.J., Li, T., van Heck, E.: Business Network-Based Value Creation in Electronic Commerce. *International Journal of Electronic Commerce*, vol. 15, no. 1, pp. 113-143 (2010).
39. Weill, P., Woerner, S.L.: Optimizing Your Digital Business Model. *MIT Sloan Management Review*, vol. 54, no. 3, pp. 71-78 (2013).
40. Huang, P., Pan, S.L., Zuo, M.: Being Responsive to Your Customer: Developing Customer Agility Through Information Management. *Proceedings of the 33rd International Conference on Information Systems*, Orlando, United States of America (2012).
41. Zhu, F., Zhang, X.M.: Impact of Online Consumer Reviews on Sales: The Moderating Role of Product and Consumer Characteristics. *Journal of Marketing*, vol. 74, no. 2, pp. 133-148 (2010).
42. Drnevich, P.L., Croson, D.C.: Information Technology and Business-Level Strategy: Towards an Integrated Theoretical Perspective. *MIS Quarterly*, vol. 37, no. 2, pp. 483-509 (2013).
43. Gray, P., El Sawy, O.A., Aper, G., Thordarson, M.: Realizing Strategic Value Through Center-Edge Digital Transformation in Consumer-Centric Industries. *MIS Quarterly Executive*, vol. 12, no. 1, pp. 1-17 (2013).
44. Rishika, R., Kumar, A., Janakiraman, R., Bezawada, R.: The Effect of Customers' Social Media Participation on Customer Visit Frequency and Profitability: An Empirical Investigation. *Information Systems Research*, vol. 24, no. 1, pp. 108-127 (2013).
45. Nambisan, S.: Designing Virtual Customer Environments for New Product Development: Toward a Theory. *Academy of Management Review*, vol. 27, no. 3, pp. 392-413 (2002).
46. Wikström, S.: Value Creation by Company-Consumer Interaction. *Journal of Marketing Management*, vol. 12, no. 5, pp. 359-374 (1996).
47. Ritzer, G., Dean, P., Jurgenson, N.: The Coming Age of the Prosumer. *American Behavioral Scientist*, vol. 56, no. 4, pp. 379-398 (2012).