Digital Service Innovation and Customer Value

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Abstract
The limited research linking digital service innovation to the small business context makes this research mandatory. This research itself examines the impact resulting from digital service innovation on customer value in Ternate City. A total of 113 respondents were involved in this study. The data in this study were collected through a survey with a questionnaire. Testing the research hypothesis was carried out using simple linear regression analysis using SPSS version 24. The results revealed that there was a positive relationship between digital service innovation and customer value. Next, recommendations for future research are discussed.

INTRODUCTION

The COVID-19 pandemic acted as a catalyst accelerating novelty, as the ban on person-to-person contact made traditional forms of brand-to-customer interaction impossible. On the contrary, these difficulties have accelerated brands incorporating digital technologies into their existing products or services, and consumers are becoming more receptive to them (Kim, Ko, Kim, & Jiang, 2021). For example, many shows and events are now being held online, such as digital fashion shows (Noris, Nobile, Kalbaska, & Cantoni, 2021), and digital technologies allow customers to experience products from certain brands in virtual spaces (Jain, Mishra, & Mukhopadhyay, 2021).

Service innovation is the best way for brands to provide new value to their customers. Thus, many studies have been conducted on the subject of service innovation, demonstrating that service innovation leads to customer satisfaction through a value proposition (Singh, Akbani, & Dhir, 2020). However, research results that reveal new services with technology related to customer value are still very limited. Davis, Field, & Stavrulaki, (2015) and Gellweiler & Krishnamurthi, (2020) in the results of their research which was conducted qualitatively revealed that digital service innovation is able to provide value for consumers. In addition, service innovation improves performance through positive responses from customers. However, research on digital service innovation and customer behavior is still very limited to small businesses, especially in the digital context.

Therefore, this study intends to examine service innovation, especially in the digital context of customer value. This research was conducted on small businesses, especially food and drink in Ternate City. The selection of this business is based on findings (Bailusy, Buamonabot, Fahri, & Arilaha, 2022). Furthermore, in this paper, we will first discuss related literature and propose research hypotheses related to service digital innovation and customer value. Furthermore, this study presents the results of hypothesis testing and interprets them. Finally, we conclude with empirical findings and suggest directions for future research.

The concept of service innovation emerged recently and as a result, it is still far from having an established common understanding among scholars (Goduscheit &

Faullant, 2018). Service-dominant (S-D) logic is a frequently used conceptual framework that interprets service innovation as "the creation of new value propositions by means of developing existing or creating new practices and/or resources, or by means of integrating practices and resources in new ways" (Skålén, Gummerus, Von Koskull, & Magnusson, 2015). Concerning its degree of change, service innovation can be categorized as either incremental or radical (Goduscheit & Faullant, 2018). While incremental innovation is associated with only minor changes to the already existing characteristics of a service's value proposition, radical innovation refers to an entirely new set of characteristics (Johansson, Raddats, & Witell, 2019). For example, a tracking system for door-to-door deliveries adds value through the use of digital technologies to an already existing service and can, therefore, be classified as incremental service innovation (Cheng, 2011). On the other hand, providers such as Amazon are implementing radical innovations through the use of internet technologies by changing how the benefits of their services are delivered (Cheng, 2011). In highly competitive environments, pursuing radical service innovation has been identified as a critical success factor for achieving high performance and service quality (Sok & O'cass, 2015). Recently, the widespread availability of different digital technologies has led to a multitude of startups disrupting traditional markets and, therefore, increasing competition. Thus, established organizations are challenged to engage in radical service innovation that builds on the distinctive features of digital technologies (Lusch & Nambisan, 2015; Sklyar, Kowalkowski, Tronvoll, & Sörhammar, 2019).

Several scholars have highlighted the role of digital technologies in service innovation (Lusch & Nambisan, 2015; Hertog, 2000; Goduscheit & Faullant, 2018). Extant research has also demonstrated that technology is a fundamental enabler of service innovation (Troilo, De Luca, & Guenzi, 2017), and, in particular, a major driver for achieving radical service innovation in established organizations (Goduscheit & Faullant, 2018). A major focus of extant research is the process of DSI. The challenge of managing efficient value co-creation can be tackled by using an agile micro-service innovation approach (Sjödin, Parida, Kohtamäki, & Wincent, 2020). To ensure successful cooperation and governance, relational teams that integrate knowledge from both providers and customers are required. To connect data-rich organizational environments with opportunities for service innovation, data density processes need to be implemented (Troilo et al., 2017). To make these processes more effective, companies are required to design a customer-centric, data-oriented organizational culture, and to implement strong support from senior management (Troilo et al., 2017). Various articles have also investigated the characteristics and benefits of DSI. In particular, it can be used to include service-disadvantaged communities, for example, in the context of healthcare or finance (Srivastava & Shainesh, 2015; Economides & Jeziorski, 2017). Depending on the specific context, there are also distinct archetypes of innovation (Frey, Trenz, & Veit, 2019). While DSI provides various benefits for organizations, it also comes with serious challenges since it "requires a change in managing provider-customer relationships by adopting new and innovative co-creation approaches" (Sjödin et al., 2020). While extant literature provides multiple insights into organizational enablers and process frameworks for DSI (Goduscheit & Faullant, 2018; Troilo et al., 2017; Sjödin et al., 2020), so far it has not shed light on the role of DT strategies in achieving radical innovations.

Customer value forms the foundation for marketing efforts (Holbrook, 2006) and is a cornerstone of marketing research (Leroi-Werelds, 2019; Zeithaml, Verleye,

Hatak, Koller, & Zauner, 2020). Customer value is at the heart of business strategy as a source of competitive advantage (Salem Khalifa, 2004; Woodruff, 1997) that can be delivered at different customer journey stages (Sánchez, Callarisa, Rodriguez, & Moliner, 2006; Tueanrat, Papagiannidis, & Alamanos, 2021). At the product level, Zeithaml, (1988) defines customer value as the assessment of perceptual *trade-offs* between gains (benefits) and losses (sacrifices) from purchasing and using it. The trade-off idea of consumers weighing benefits and sacrifices is found to be common in conceptualizations of customer value as a higher order construct (Zeithaml et al., 2020), and is associated with economic theory of utility.

Recent research identifies the importance of cognitive and affective components that affect customer value (Sánchez et al., 2006). While earlier conceptualizations of customer value incorporate the cognitive evaluations of products, later ones include emotional and social aspects (Zeithaml et al., 2020). These conceptualizations introduced the five customer value dimensions (i.e., economic, social, hedonic, altruistic, and emotional; Jutbring, 2018; Holbrook, 2006), contributing to consumer decisions. Similarly, other conceptualizations shifted the focus from benefits and sacrifices to value components, such as expectation, partnership, transaction, and relationship values (J. Kim, Kim, Garrett, & Jung, 2015).

Customer value measurement has also evolved, shifting from unidimensional to multidimensional to higher-order conceptualizations (Zeithaml et al., 2020). The multidimensional approach resulted from the complexity in the conceptualization of customer value and calls for considering a multitude of interrelated components. Although there is some overlap between these approaches, a universally accepted scale for measuring customer value is not in place, which constitutes an often-mentioned point of criticism (Gallarza, Arteaga, Del Chiappa, Gil-Saura, & Holbrook, 2017). Yet, such a lack of a global measurement model should be seen as proof that customer value is inherently context-specific (Leroi-Werelds, 2019). As a result, Leroi-Werelds, (2019) maintains that the same measurement instrument cannot be used for different value-creating objects.

Following the multidimensional approach, Papista & Krystallis, (2013) offer an inclusive operationalization of customer value in the context of green brands, supported by further empirical evidence of its measurement robustness (Papista, Chrysochou, Krystallis, & Dimitriadis, 2018). Papista & Krystallis, (2013) operationalization integrates Zeithaml, (1988) view that values and cost perceptions drive customer value. In their conceptualization, customer value has a subsequent impact on the quality of the relationship between the customer and the product and relational outcomes (e.g., willingness to buy, purchase intention, loyalty).

Based on the theory described above and supported by the results of research by Davis et al., (2015) and Gellweiler & Krishnamurthi, (2020) which was carried out qualitatively, it shows that there is a relationship between the two variables, namely digital service innovation and customer value. For this reason, the hypothesis proposed is: There is a positive influence between digital service innovation and customer value

METHOD

This research was conducted in Ternate City. All business actors in Ternate City are the population in this study. Determination of the sample in this study using purposive sampling with conditions are business leaders with assets of not more than 500 million rupiah. The method used for data collection was a survey with a questionnaire. Questionnaire instrument testing was carried out in two stages, namely validity and reliability. The validity test was carried out using factor analysis with the condition that the factor loading value must be greater than 0.5 (Ghozali, 2018), while the reliability test was carried out using Cronbach alpha with the condition that the value must be greater than 0.7 (Hair, Babin, Anderson, & Black, 2018). Furthermore, to test the hypothesis of this study using a simple linear regression analysis. Regarding the questionnaire used in this study both for digital service innovation and customer value variables adopted from the research of (Blocker, Flint, Myers, & Slater, 2011; Fianko, Essuman, Boso, & Muntaka, 2023; Setzke, Riasanow, Boehm, & Krcmar, 2023). These two variables use a 5-point Likert scale (strongly disagree-strongly agree).

RESULTS AND DISCUSSION

Based on the distribution of questionnaires, it showed that only 124 questionnaires were returned (91.85%) out of a total of 135 questionnaires distributed (100%). Of the number of questionnaires returned, only 113 questionnaires (83.7) were eligible for testing. For this reason, the response rate in this study was 91.85%. Furthermore, the questionnaires that were considered to fulfill the requirements turned out to be in general respondents who were also small business owners tended to be dominated by women compared to men. In terms of age, more business owners are under the age of 25 than those over that age. This descriptive finding is in line with the research of Arilaha, Fahri, & Buamonabot, (2021).

The validity test results in table 1 indicate that the question items measure both digital service innovation variables with nine question items (Dig-Ser-Innov1 = 0.667, Dig-Ser-Innov2 = 0.720, Dig-Ser-Innov3 = 0.791, Dig-Ser-Innov2 = 0.720, Dig-Ser-Innov3 = 0.791, Dig-Ser- Innov4 = 0.667, Dig-Ser-Innov5 = 0.675, Dig-Ser-Innov6 = 0.564, Dig-Ser-Innov7 = 0.606, Dig-Ser-Innov8 = 0.634 and Dig-Ser-Innov9 = 0.580) and four questions of customer value (Cust-Val = 0.880, Cust-Val = 0.889, Cust-Val = 0.751 and Cust-Val = 0.649) none were excluded and considered to have met the requirements for a factor loading of more than 0.5. Furthermore, the reliability test shows that both digital service innovation and customer value variables also indicate that these two variables are considered reliable because they have a Cronbach alpha value greater than 0.7 (digital service innovation = Cronbach α = 0.833 and customer value = Cronbach α = 0.807).

Table 1. Validity and Reliability Testing Results

Factor and Scale	Factor-1	Factor-2
Dig-Ser-Innov1	0,677	
Dig-Ser-Innov2	0,720	
Dig-Ser-Innov3	0,791	
Dig-Ser-Innov4	0,667	
Dig-Ser-Innov5	0,675	
Dig-Ser-Innov6	0,564	
Dig-Ser-Innov7	0,606	

Factor and Scale	Factor-1	Factor-2
Dig-Ser-Innov8	0,634	
Dig-Ser-Innov9	0,580	
Digital Service Innovation (Dig-Ser-Innov) = Cronbach α = 0,833		
Cust-Val1		0,880
Cust-Val2		0,889
Cust-Val3		0,751
Cust-Val4		0,649
Customer Value (Cust-Val) = Cronbach α = 0,807		

Source: data processed

Table 2 also displays the results of respondents' perceptions of digital service innovation and customer value variables. Respondents' perceptions of the digital service innovation variable indicated that the majority of respondents agreed that led small businesses were able to provide digital services for the products traded. Similar to the respondents' perceptions of the digital service innovation variable, the customer value variable also shows the results that almost the majority of small business leaders also admit that the level of satisfaction felt by consumers as a result of buying a product or service is as desired.

Table 2: Respondents Perception

Variables	(%) Strongly Disagree	(%) Disagree	(%) Neutral	(%) Agree	(%) Strongly Agree	Mode
Digital Service Innovation	-	-	9,73	67,26	23,01	Agree
Customer Value	1,77	3,54	27,43	47,79	19,47	Agree

Source: data processed

Based on the results of hypothesis testing in table 4, it shows that customer value is affected by digital service innovation ($β$ = 1.030, t = 9.260, P < 0.05). This means that the proposed hypothesis is declared accepted in this study.

Table 4: Hypotheses Testing

Independent Variable	Customer Value		
	β	t	Sig
Digital Service Innovation	1,030	9,260	0,000

Source: data processed

The results of the hypothesis test show that there is a positive and significant relationship between digital service innovation and customer value. The results of this study also support previous research which revealed that these two variables are interconnected (Davis et al., 2015; Gellweiler & Krishnamurthi, 2020). This means that digitalization is about taking advantage of technological advances combined with business aspects. Companies that provide customer (digital) advantages will achieve competitive advantages (Woodruff, 1997). Companies that ignore today's digitization may lose market share, and eventually disappear from the market. Digital innovation prioritizes customer benefits and value. From this point on, new opportunities can be seized by connecting smart devices, modifying business systems, and/or exploiting social trends. Smart devices connected via the Internet or via private networks are

sense organs and the heart of digital solutions. They permit the collection of physical data, which is necessary to provide appropriate digital services.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that service digital innovation has a positive and significant effect on customer value in small businesses in Ternate City. Furthermore, there are several limitations, namely, this research only focuses on the food and drink category, so it would be better if in future research it can be carried out on other categories such as wedding organizing which are still very rarely researched in order to get better generalizations. In addition, customer value should also be investigated in future research based on innovation or can add other variables that are either influenced, such as customer intimacy, service innovation, experience value or those that have an effect such as customer satisfaction.

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