

Designing Customer Knowledge Management Model to Create Value in Online Business: A Case Study of Electronic Retailers

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ABSTRACT:

In today's digital age, one of the management strategies in order to create new values and gain a sustainable competitive advantage in customer-oriented companies is to enhance customer knowledge management. Therefore, the main purpose of this study is to evaluate and analyze the impact of customer knowledge management on creating organizational value in electronic business. The present study is a qualitative-quantitative research. In the qualitative section review of the previous studies and thematic analysis were used. Then, in the quantitative section, using structural equation modeling method through PLS software, the research hypotheses were tested at the level of 400 experts of companies active in the field of electronic retail businesses. according to the qualitative results, "technical efficiency" and "corporate social responsibility" as indicators of creating organizational value were identified as new components in this study. Based on the quantitative results, a positive and significant relationship was observed between customer knowledge management and creating organizational value. The results showed that among the components of knowledge for customer, knowledge from customer, and knowledge about customer, the components of knowledge for customer and knowledge about customer had the most and the least effect on creating value in electronic retail business environments, respectively. According to the research results, it can be concluded that our expectation from customer knowledge management is to create the most value from the development of customer knowledge and its management at a strategic level.

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1. Introduction

The era we are living in is the digital age, and digitalization has become an important part of our lifestyle, work and business. With the advent of new technologies, dramatic changes have occurred in human life in recent years, and organizations are now facing ever-increasing challenges and uncertainty as a result of technological evolutions. Organizations have only one

way forward, and that is to keep pace with change; otherwise, they will be eliminated from the competition (Nouri, 2018). Digital technologies are changing the rules in many industrial sectors in terms of location and competition, business model, and the relative importance of value creation versus value achievement, and organizations may gain fame or fail depending on their success/failure to plan in this new competitive landscape (Volberda et al., 2021). In this new context, two important factors determine the future survival and success of organizations: a) electronic commerce, and b) gaining knowledge and information from customers and consumers (Aghamirian, 2015). With the formation and development of the network economy system, global e-commerce is constantly growing and companies are competing to participate in e-business environments and e-commerce (Chen et al., 2021). Adoption of new technologies is necessary for organization to adapt to today's digital world; however, this alone is not enough. Paradoxically, success in dealing with new technologies depends largely on non-technological factors that enable companies to create value and compete effectively through the use of new business models. (Volberda, 2021). Therefore, companies that adopt digital solutions have to acquire and change different types of external knowledge, and hence they need an opportunity to use new knowledge management systems. (Castagna et al., 2020).

Nowadays, customers are not only involved in the purchase and use of products and services but also cooperate actively with companies in creating organizational values. Therefore, many companies are looking for ways to engage customers in the company's innovation activities, or develop products jointly with customers, or allow customers to innovate on their own (Taghizadeh et al., 2018). In addition, technological advances in the digital economy empower e-business customers and give them more knowledge and control over the products and services they receive. Therefore, in order to meet the standards and expectations of their customers, companies must adopt methods through which they can create value (Wieczerzycki et al., 2020). Value comes not only from the product or service provided by companies, but also from the interaction between companies and customers (Wu et al., 2020). Now, consumers are smarter, more informed, up-to-



date and empowered, and accustomed to digital technology. In addition, rich content and interpersonal networks created by customers in e-business connect them. Based on websites, social networks, microblogs, forums, and social commerce platforms, customers share their purchasing information, consumption experiences, and ratings, and this content can expand rapidly (Liu et al., 2021). Accordingly, there are many opportunities in e-business environments today to collect customer data, and how companies manage customer knowledge in e-business environments is important. In this regard, despite previous solutions focusing on specific communication tools, marketing tools and search engine optimization tools, there is still a clear need to understand how to create organizational value and search for ways to create more value as important elements of developing a competitive strategy. These issues show in practice that although customer knowledge management has been widely discussed in various subjects such as competitive advantage, performance, innovation and customer relationship management, the relationship between customer knowledge management and value creation in the organization has been largely unattended. In addition, although the importance of information technology for customer knowledge management and value creation in the business model has been emphasized in the literature, the process and mechanisms of the impact of customer knowledge management on value creation in IT-based business models have not been studied. This research tries to fill this theoretical gap. Specifically, in this study, we focus on the question of what kind of customer-related knowledge in value creation is included in the IT-based business model, and how these different types of knowledge affect the value creation process in e-businesses. Therefore, we examine a conceptual framework for obtaining the relationship mechanisms between customer knowledge management and value creation in e-businesses from the perspective of a product / service provider in e-retail.

2. Research background

2-1. Theoretical background

Customer knowledge management

Today, the customer is recognized as the most important source of information for organizations. According to researchers, when a customer uses a product or service, he/she gains much knowledge and experience, and this knowledge has become an important resource for the organization (Haider and Kayani, 2020). Customer knowledge is, in fact, bridging the gap between what we think and what the customer really wants. It is an intangible asset essential to any organization that leads to the creation of value and is a dynamic combination of experience, value, information, and expertise (Yaghoubi, Amiri Fini, and Rahmati Najarkalaei, 2016). Basically, the concept of customer knowledge management is used when customers are linked to the company and combine their knowledge with experience and insight about the company. Accordingly, an effective way to help the organization to acquire knowledge about its customers is to use customer knowledge management to gather information about customer's perception (Dzulfikar et al., 2018). On the one hand, customer knowledge management supports the exchange of knowledge and learning between customers and companies. This collaboration and the creation of long-term shared value promotes sustainable partnership and trust between companies and customers. On the other hand, customer knowledge management helps companies identify the right strategic partners who can provide knowledge or information in line with innovation needs, hence improving accessibility of resources (Wen et al., 2020). Smart companies look at customers as key drivers in the growth of the organization and use customer knowledge management solutions to increase operating profit margins and competitive advantage versus the rival industries. Consequently, the identification of the effective factors in achieving customer knowledge management as a sustainable advantage for creating value, profitability and sustainability of organizations in today's competitive market is essential (Del Vecchio, Secundo, and Passiante, 2018). There are several definitions of customer knowledge management. According to Lu et al. (2021), customer



knowledge management is a dynamic process that captures and optimizes valuable customer data through a variety of methods and shares customer-generated knowledge throughout the organization. Through this process, organizations can enhance and optimize customer relationships in the form of customer-oriented organizational models, frameworks, and environments. According to Castagna et al. (2020), customer knowledge management combines a series of organizational practices and dynamic skills related to creating, storing, and transmitting customer knowledge to gain a sustainable competitive advantage in the marketplace and improve e-business productivity through specific development strategies. To make the concept of customer knowledge management tangible, three types of knowledge play a vital role in the interaction between the company and customers: knowledge about customer, knowledge from customer, knowledge for customer (Khoddami and Osanloo, 2015). Each knowledge flow has a different effect on the speed and quality of performance. Through gathering customer information about other products, markets and competitors, knowledge from customer helps the company to have a better understanding of its position and thus come up with new ideas for innovation (Smith and McKeen, 2005). Customer knowledge can be defined as the ideas, thoughts and information that an organization receives from its customers. This feedback helps companies continually improve their products and services, develop successful business strategies, segment their markets more effectively, and create novel products and services (Kaoud, 2017).

Knowledge about customer contains basic data about the customer. The purpose of applying this knowledge is to understand customers' requirements in order to provide them with good services and make appropriate strategic decisions (Kaoud, 2017). Knowledge about customers is collected through the process of customer knowledge management services and support and is analyzed through the process of customer knowledge management analysis. Knowledge about customer helps the organization to identify its customers and focus on them effectively (Aghamirian et al., 2015).

Knowledge for customer, by raising the level of customers' knowledge, leads to the formation of new ideas among customers. By transferring these ideas into the organization, new marketing opportunities can then be achieved (Smith and McKeen, 2005). To support customers in the purchasing cycle, a continuous flow of knowledge is given to customers by the company. Knowledge for customer involves all the data and information that a company intends to provide for customers so that the customers' knowledge requirements and knowledge level can be realized and enhanced. This knowledge also affects the customer's perception of service quality (Taherparvar, Esmailpour, and Dostar, 2014; Wilhelm et al., 2013).

2-2. Creating value in E-business

Creating value in e-business is one of the most important issues in deciding to invest in e-commerce, and today, traditional companies invest more to establish e-commerce in the domestic value chain and external supply chain activities to improve quality, reduce costs, increase flexibility, improve customer satisfaction and strengthen the overall capabilities of business performance (Chen et al., 2021). E-business provides a space for knowledge creation and sharing that is easily accessible through new marketing channels and paves the way for shared value creation through customer engagement processes (Matarazzo et al., 2021). In this context, organizations may have to enter new actors, redefine roles, and reshape resources in the network, which affects the value creation process (Wieczerzycki et al., 2020). In other words, value creation in companies that sell their products online is different from companies that sell their products offline, even if the goods sold are the same. An online customer acts not only as a customer who needs the goods sold by the sellers but also as an IT user, the two of which make a difference in the sense of value creation in e-business (Cahyono, 2018). Efficiency is one of the main factors in creating value in digital operating systems. According to the literature, this is due to the interrelationship between the penetration power of big data to reduce search costs, customer purchase costs, and customer service costs, so that by reducing the cost of each transaction, transaction efficiency increases. Transaction costs generally include aspects such as non-monetary



costs in the effort and time spent to achieve value (Kieti et al., 2021). Complementary services exist wherever the value of a jointly-owned commodity is greater than the total value of each commodity separately. In the field of business strategy research and theories, highlighted the importance of providing complementary services to customers. If the customer values your product more than when he/she uses your product alone, then the role of complementary services has been successful. Hence, complementary services can create more value by increasing revenues (Zaborek et al., 2016).

Innovation as a source of value creation refers to the introduction of new features, products or services. It also includes the introduction of new methods of conducting and organizing trade and particularly the new methods of production and distribution of goods and services. Besides, innovation is expected to lead to the creation of new methods to solve existing problems or solve new problems (Zaborek et al., 2016).

Customer retention is a source of value creation in which the customer is motivated to use the company's platform frequently and is willing to continue his/her relationship with the operating system. This increases switching costs and makes customers more willing to pay more for goods and services in the operating system (Kieti et al., 2021). E-business enables customers to personalize products, services or information according to their individual needs and preferences in various ways, thus increasing the customer retention (Pesce et al., 2019).

2-3. Customer knowledge management and E-business

Current organizations are under increasing pressure to discover better approaches to effective competition in a dynamic global market (Haider, 2020). In addition, social media provide new ways for communication and interaction between e-business companies and customers (Aghamirian, 2015) and act as an effective tool for sharing information between individuals and hence contribute to the accumulation of knowledge capital (Kwahk and Park, 2016). Customer knowledge management using information technology can help create value by increasing the

accessibility of knowledge for companies and customers. In the supply side, through IT tools, companies can collect, store, process and analyze customer knowledge more easily, extensively and quickly (Rowley, 2002). In the demand side, the customer easily acquires knowledge by receiving less money through mobile and internet communications than traditional channels; this is because by using these interactive IT-based channels, customers have a better chance of co-designing, co-producing, and co-creating value with companies (Prahalad and Ramaswamy, 2000). In addition, in the long run, customer knowledge management through the application of information technology can help organizations to create a strong image of the market with a wide range and fuller access to their customer bases. As a result, customer knowledge management with the application of information technology leads to the emergence of multiple by-products that generate specialized joint revenue streams (such as subscriptions, advertising and ancillary business), which will help companies involved in the business ecosystem to grow their revenue streams effectively (Wu et al., 2013). Since investing in information technology has low costs, customer knowledge management based on information technology can help companies to moderate the high costs of investing in a customer base. Moreover, information technology can greatly reduce search costs, transaction costs, and operating costs for companies or even for customers (Wu et al., 2013). Therefore, it is clear that managing customer knowledge and integrating it with e-business and designing a new business model has a vital and very important role in today's business market to create organizational value (Del Vecchio, Secundo, and Passiante, 2018).

2-4. Experimental background

In this section, first, some internal and external studies related to research variables are reviewed, and then the difference between this research and other related researches is stated. Several studies have examined the dimensions of customer knowledge management and value creation separately. Heydari, Taherikia, and Iman Khan (2021) provided a framework for integrating customer knowledge management and customer relationship management in the banking industry and then



categorized the identified codes – based on the systematic approach in the grounded theory – in 6 core classes of phenomenon-based conditions, causal conditions, contextual conditions, intervening conditions, strategies and consequences. Hassani, Sharif and Zandian (2019) posited that the variable of customer knowledge management through electronic service quality affects oral advertisements. Besides, the dimensions of customer knowledge management (knowledge about, for and from customer) have a positive and significant effect on the quality of electronic services. The quality of electronic services also has a positive and significant effect on oral advertisements. Veshkaei Nejad, Ebrahimpour, and Doustar (2019) investigated the direct effect of customer participation and its indirect effect through the mediating variables of service innovation and process innovation on the performance of service units and the moderating role of mobilizing customer knowledge resources in the relationship between customer participation and innovation. The results showed that customer participation directly and indirectly through innovation has a significant effect on the performance of service units. The moderating role of customer knowledge resource mobilization in the relationship between customer participation and service innovation and process innovation was also confirmed. In another study, Esmailpour, Doustar and Taherparvar (2016) examined customer knowledge management and its role in continuous innovation and superior performance at the level of private banks in Guilan province. Their findings indicate the different effects of knowledge about customer and customer for knowledge on the dimensions of innovation and performance. Research conducted abroad also examined the research variables, as reviewed below for the most relevant research conducted. In a study entitled “Knowledge Management, Customer Relationship Management and Innovation Capabilities,” Migdadi (2020) proposed an integrated framework to examine the impact of the dimensions of customer knowledge management (knowledge acquisition, knowledge dissemination, knowledge application, knowledge from customer, knowledge about customer, and knowledge for customer) on innovation capabilities (product innovation, process innovation,

marketing innovation, service innovation, and implementation innovation) through the mediating variable of customer relationship management. Kieti et al. (2021) conducted a study on value creation resources in digital operating systems in the agricultural services sector using a platform with two factors of efficiency and customer retention. Shane et al. (2019) in a study entitled “E-Business Value Creation Factors that Affect Consumers’ Intention to Shop Online at Shopee,” identified the factors influencing the customer’s online purchase intention. They showed that complementary services, innovation, efficiency and customer retention have a positive and significant effect on a customer’s intention to use online stores. Taghizadeh et al. (2018) examined the effect of customer knowledge management dimensions (knowledge from, for and about customer) on innovation capabilities (speed and quality) and new service market performance and found that knowledge from customer and knowledge for customer have a positive and significant effect on the performance of the new service market. Wu et al. (2013) in a study entitled “Customer Knowledge Management and IT-enabled Business Model Innovation: A Conceptual Framework and a Case Study from China” suggested that IT increases knowledge access for customers and companies in order to create value and enables companies to innovate in the business model to increase revenue stream with lower costs in value acquisition. Examining the experimental literature, it was observed that most recent studies on customer knowledge and customer knowledge management have concentrated on variables such as performance, productivity, innovation and competitive advantage while scant attention has been paid to the relationship between customer knowledge management and value creation. Moreover, a significant number of studies in this field have examined customer knowledge management in the service industry, especially in the banking industry; however, few studies in the field of e-business, and particularly e-retail, have focused on customer knowledge management and the relationship between customer knowledge management and organizational value creation in e-business has not been studied.

3. Conceptual model of research

Customer knowledge management was categorized into three dimensions of knowledge from customer, knowledge for customer and knowledge about customer. Organizational value creation was also classified into four categories: efficiency, customer retention, innovation, and complementary services. Therefore, the conceptual model of the research is as follows:

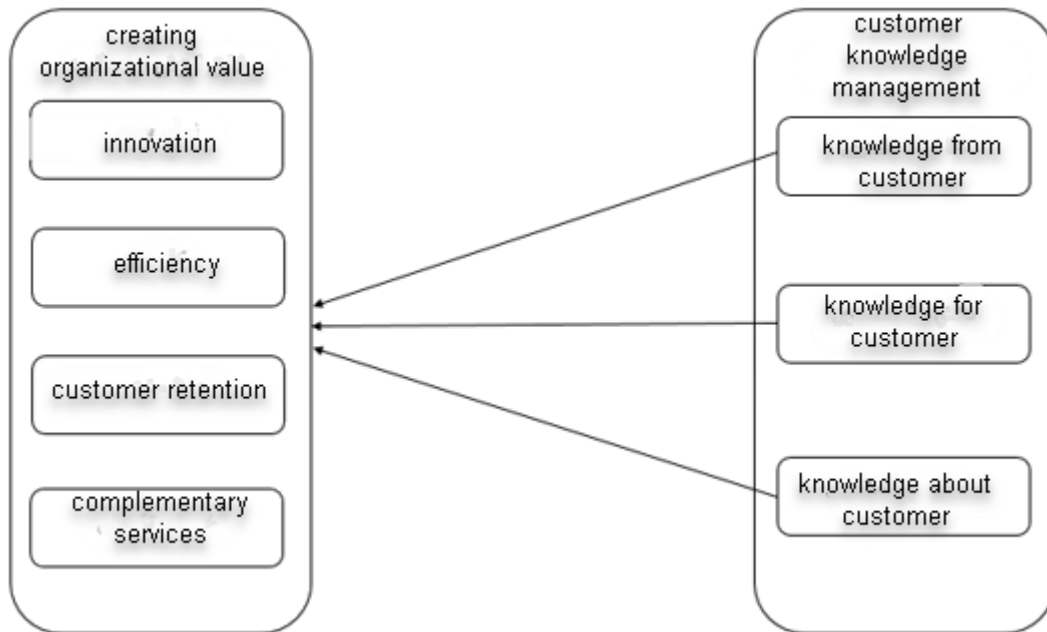


Figure 1. Conceptual research model and research hypotheses (Source: Researcher)

Accordingly, the research hypotheses are as follows:

H₁: Knowledge from customer has a significant effect on creating organizational value in e-retail.

H₂: Knowledge for customer has a significant effect on creating organizational value in e-retail.

H₃: Knowledge about customer has a significant effect on creating organizational value in e-retail.

3-1. Research methodology

In terms of purpose, the present study is of developmental-applied type. Besides, in terms of data collection method, it has the characteristics of a library and field research (survey). In order to study the thematic literature and research background as well as the basic concepts under study, previous research and specialized books and journals as well as websites and other available resources have been studied. As such, the present study falls into the category of library studies. Since evaluating and analyzing the dimensions and components of customer knowledge

management and creating organizational value and their relationship with each other required conducting a qualitative interview and using a questionnaire tool in a quantitative stage, the survey method has been selected. In this research, a composite (qualitative-quantitative) approach with initial emphasis on qualitative method has been used. Therefore, in order to achieve the components of the dimensions of customer knowledge management and organizational value creation, a semi-structured interview was conducted and then using the thematic analysis method, data coding and content extraction were performed. In this stage, to validate quality, both validity and reliability analyses were performed. It should be noted that the validity assessment was performed after several stages of correction of questions based on the opinion of experts. Cohen's kappa coefficient was used to measure reliability at this stage. Cohen's kappa coefficient was calculated to be 0.81 for this study. Since the Kappa coefficient value was higher than 0.6, the reliability is confirmed.

A quantitative research was then designed through the analysis of the findings of the qualitative section. At this stage, a researcher-made questionnaire was designed and distributed to collect the opinions of managers and experts of electronic retail companies. In order to check the content validity (face validity), the questionnaire was given to 3 experts in the fields related to the research topic and after applying the corrections proposed by them, it was distributed in the sample. Cronbach's alpha was also used to measure reliability in this section. Cronbach (1951) introduced the value of 0.7 as an acceptable value of Cronbach's alpha coefficient. The results showed that the Cronbach's alpha coefficient of all the dimensions as well as the overall Cronbach's alpha of the questionnaire is in the acceptable range (above 0.7). Finally, the main model of the research was tested through the structural equation model (SEM). The software used in this section involved SPSS (16) and Smart-PLS.

The statistical population in the qualitative part of the research consisted of senior managers in e-retail companies with at least 5 years of work experience, as well as university professors and elites, who were senior managers, faculty members and business experts mostly in the field of



business management. Besides, the highest number of interviewees had a PhD degree. The appropriate sample size was determined based on the logic of the theoretical saturation method. Accordingly, 14 people from the target community were interviewed, by which the interview was theoretically saturated. At this stage, the sampling method was a combination of the purposive judgmental and snowball methods. In the quantitative section, the statistical population was intended to test the relationship between the variables of the conceptual model of the research involving electronic retail managers and experts. Accordingly, to obtain the sample size, it was required, as a rule, that for each question of the questionnaire, the number of samples should be between 5 and 15 items (Hooman, 2018). Therefore, considering that the quantitative method questionnaire had 75 questions, the required sample size was a minimum of 375 samples and a maximum of 1125 samples. Finally, 400 questionnaires were used as the basis for analysis. Sampling method in this part of the research was available non-random sampling.

4. Research findings

4-1. Qualitative research findings

At this stage, the dimensions of customer knowledge management and organizational value creation in e-business were identified in 9 and 16 categories, respectively. Dimensions of customer knowledge management consisted of knowledge from customer (knowledge related to the company, knowledge of competitors' services and products, knowledge of customer needs and preferences, and knowledge of customer relations), knowledge for customer (general knowledge of the company, knowledge of the company's products and services, and knowledge of responsibility towards customers) and knowledge about customer (knowledge about current and potential customers). Furthermore, dimensions of creating organizational value in e-business consisted of innovation (marketing innovation, process innovation, organizational innovation and product innovation), efficiency (market efficiency, operational efficiency, communication efficiency, financial efficiency and technical efficiency), customer retention (personalization,

customer communication quality, and customer trust) and complementary services (process simplification, application of new technologies, after-sales service and corporate social responsibility).

Table 1. Dimensions and components of customer knowledge management to create organizational value in e-business by frequency

Basic codes	Constructive themes	Comprehensive themes
Company related information	Knowledge from customer (31)	
Competitors' products and services quality		
Identifying customer needs and preferences		
Customer relationships		
Company general information	Knowledge for customer (38)	Customer knowledge management (83)
Company products and services information		
Responding to customers		
Current customer information		
Potential customer information	knowledge about customer (14)	
Marketing innovation	Innovation (28)	
Process innovation		
Organizational innovation		
Product innovation		
Market efficiency	Efficiency (34)	Creating organizational value in E-business (123)
Operational efficiency		
Communication efficiency		
Financial efficiency		
Technical efficiency	Customer retention (37)	
Personalization		
Customer relationship quality	Complementary services (24)	
Customer trust		
Process simplification		
new technologies application		
after-sales service		
Corporate social responsibility		

4-2. Quantitative findings

Based on descriptive statistics of demographic characteristics, 60.2% of the respondents were male and 39.8% were female. 30.4% of the respondents had a bachelor's degree, 59.7% had a master's degree and 9.9% of the respondents had a doctorate degree. In terms of work experience, 28.6% of respondents had between 3 and 5 years of work experience, while 47.7% of the respondents had between 6 and 10 years of experience and 23.7% had more than 10 years of work experience. 9.9% of the respondents were under 30 years old, 50% were between 30 and 40, and 40.1% were over 40. Before examining the research model, the normality of the distribution of model variables was



investigated. The output of Kolmogorov-Smirnov test showed that the significance levels obtained for all the variables were less than the standard significance level ($p < 0.5$). Therefore, the distribution of research model variables was non-normal.

After examining the normality of the distribution of variables that indicated the non-normality of the distribution of variables, to test the hypotheses and confirm the model, structural equation modeling was performed in two stages based on the partial least squares method and PLS software. In the first stage, the measurement model was investigated through validity, reliability, and confirmatory factor analyses. In the second stage, the structural model was evaluated by estimating the path between variables and determining the fit indexes of the model.

In fitting the measurement model, three criteria of index reliability, convergent validity and divergent validity are used. The index reliability is measured by three criteria: factor load coefficients, Cronbach's alpha, and composite reliability. Factor loads are measured by calculating the correlation value of the indicators of a structure. If this value is equal to or greater than the value of 0.4 (Hulland, 1999) or the strict value of 0.5 (Rivard and Huff, 1998), it can be understood that the variance between the structure and the indicators is greater than the variance of the measurement error of that structure and therefore the reliability of the measurement model is acceptable. The second sub-criterion for measuring the reliability of the index, which is a good measure for assessing internal stability, is Cronbach's alpha. Cronbach (1951) introduced the value of 0.7 as an acceptable value of Cronbach's alpha coefficient. The results of the Cronbach's alpha coefficient are presented in Table 2. Cronbach's alpha value for all the variables is higher than 0.7. Therefore, the reliability of all the variables is acceptable. The third sub-criterion for measuring index reliability is composite reliability, which has been introduced as a more modern and better measure than Cronbach's alpha (Vinzi, Trinchera and Amato, 2010). The merit of this criterion over Cronbach's alpha coefficient is that the reliability of structures is not calculated in absolute terms but according to the correlation of their structures with each other. A value of composite

reliability higher than 0.7 indicates good internal stability of structures and values less than 0.6 indicate the lack of proper stability of the indicator (Nunnally and Bernestein, 1994). According to the information in Table 2, this criterion has an acceptable value for all variables and in general, the index reliability of the measurement model is confirmed. The second criterion for examining the fit of measurement models in PLS is convergent validity, which is measured based on the values of the average variance extracted (AVE) for the structures. The convergent validity of the research model shows that the indicators of each structure have a median correlation with each other. This means that the average variance extracted is greater than 0.5. According to Table 2, the AVE coefficients for all the research variables are higher than 0.5. Therefore, the convergent validity of the model is confirmed.

Table 2. Results of confirmatory factor analysis of the research model

Variable	Composite reliability	Average variance	Cronbach's alpha
Company-related information (CRI)	0.806	0.583	0.738
Competitors' products and services Quality (CPSQ)	0.862	0.676	0.760
Identifying Customer Needs and Preferences (ICNP)	0.888	0.729	0.805
Customer Relationship (CR)	0.901	0.754	0.832
Company General Information (CGI)	0.845	0.647	0.727
Company Products and Services Information (CPSI)	0.924	0.804	0.872
Customer Response (RESPON)	0.841	0.639	0.718
Current Customer Information (CCI)	0.994	0.987	0.987
Potential Customer Information (PCI)	0.803	0.578	0.734
Marketing Innovation (MI)	0.761	0.519	0.739
Process Innovation (PI)	0.853	0.661	0.745
Organizational Innovation (OI)	0.761	0.518	0.757
Product Innovation (PRI)	0.893	0.740	0.810
Market efficiency (ME)	0.910	0.775	0.845
Operational efficiency (OE)	0.890	0.801	0.752
Communication efficiency (CE)	0.767	0.532	0.762
Financial efficiency (FIE)	0.821	0.606	0.774
Technical efficiency (TE)	0.849	0.738	0.748
Personalization (PER)	0.830	0.576	0.758
Customer Relationship Quality (CRQ)	0.870	0.533	0.766
Customer Trust (TR)	0.844	0.730	0.732
Process Simplification (PS)	0.907	0.765	0.847
After Sales Service (ASS)	0.909	0.768	0.849
New Technologies Application (NTA)	0.861	0.675	0.759
Corporate Social Responsibility (CSR)	0.888	0.725	0.810

Finally, the fit of the measurement model was estimated using divergent validity criterion that measured the measurement model validity in two dimensions.

After examining the internal structure and condition of research model structures using confirmatory factor analysis, in the next step, the correctness of the hypotheses in the form of a structural model was investigated. According to the structural equation modeling, if the value of t-statistic related to a path is greater than 1.96, it can be said that the path related to it is significant at 95% confidence level and the hypothesis related to that path is confirmed. The results of the model test (information in Table 3) showed that the value of t-statistic of the paths related to all the research hypotheses is greater than 1.96 and these paths are significant. Therefore, it can be said that the hypotheses related to all the paths are confirmed ($t > 1.96$).

Table 3. Path coefficient values and t-statistics of the research model paths

Hypothesis	Model path	Path coefficient	t-statistic	Result	Type of effect
1	knowledge from customer on creating organizational value in e-retail business	0.291	5.759	<i>confirmed</i>	positive
2	knowledge for customer on creating organizational value in e-retail business	0.295	5.462	<i>confirmed</i>	positive
3	knowledge about customer on creating organizational value in e-retail business	0.266	3.976	<i>confirmed</i>	positive

To evaluate the fit of the research model, three criteria of coefficient of determination (R^2), redundancy criterion (Red) and goodness of fit index (GOF) were used. The coefficient of determination indicates the effect that an exogenous variable has on an endogenous variable. The redundancy criterion is obtained by multiplying the common values of the structures by the values of the coefficient of determination related to them. The Red criterion indicates the amount of variability of the indexes of an endogenous structure that is affected by one or more exogenous structures, and the higher the value of this criterion, the better the fit of the model (Abbasi Esfanjani, 2017). Besides, the goodness of fit index is related to the general part of structural equations. Three values of 0.19, 0.33 and 0.67 are assumed to be the weak, medium and strong

values, respectively, for the coefficient of determination. On the other hand, the values 0.01, 0.25 and 0.36, respectively, are assumed to be the weak, medium and strong values for the goodness of fit index.

Table 4. The values of coefficient of determination for research model variables

Variable	R ²	status	Red	GOF
Creating organizational value	44.8	medium		
Innovation	42.0	medium		
Efficiency	70.9	strong	0.514	0.702
Customer retention	48.5	medium		
Complementary services	78.2	strong		

In general, according to the values obtained for the model fit criteria, it can be said that the research model has an acceptable and desirable fit. Figs 2 and 3 represent the tested model of the research along with the path coefficient and t-statistic obtained for all the model paths.

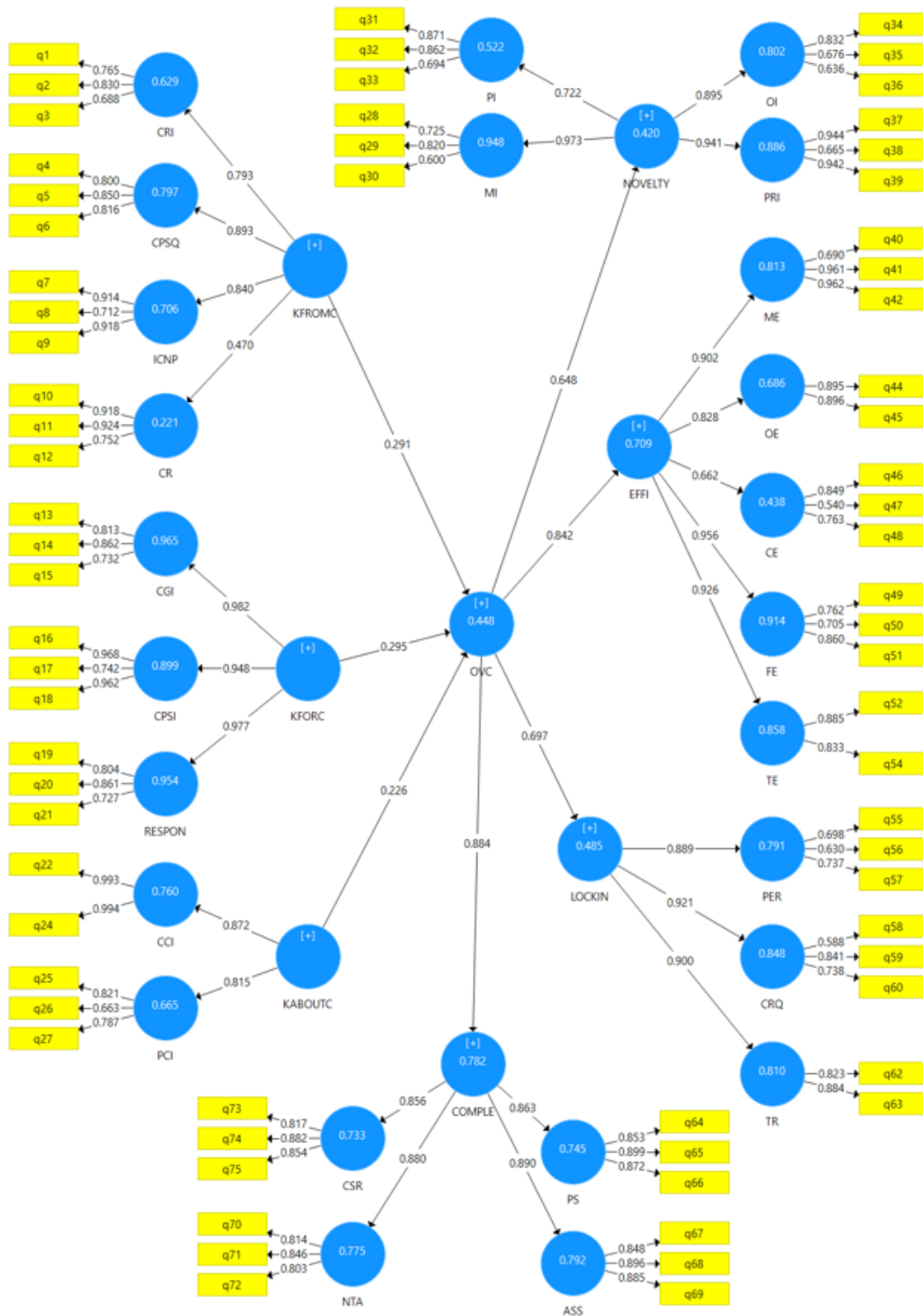


Figure 2. The final research model in the path coefficient mode

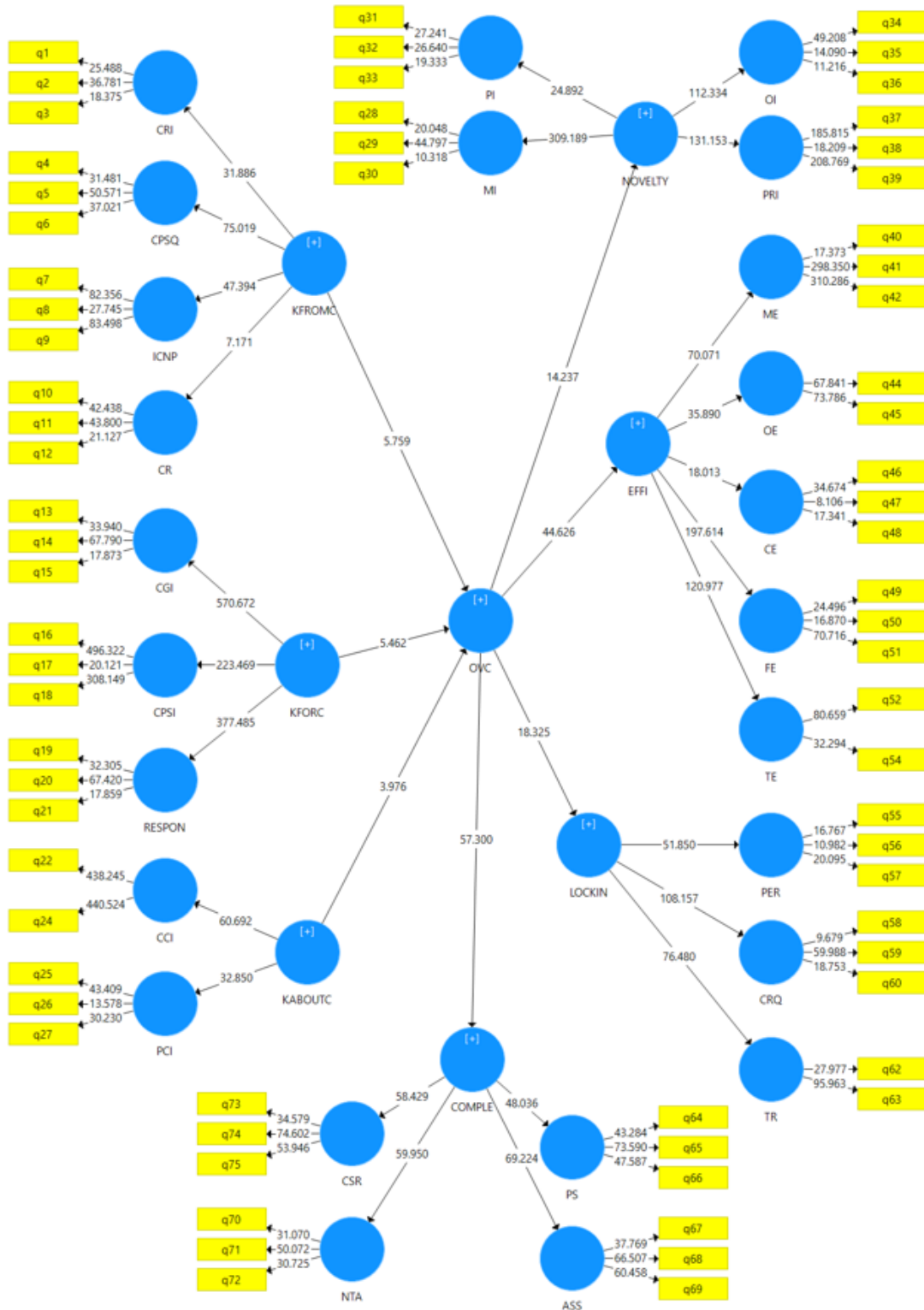


Figure 3. The final research model in the mode of significance coefficient



5. Conclusion and suggestions

The findings of this study indicate the positive and significant effect of knowledge from customer on the dimensions of creating value in electronic retail, which shows the importance of the flow of knowledge from the customer in this industry. Using the flow of knowledge from customer, the managers and advisors in this area can identify their customers and focus on them purposefully and effectively. Moreover, the use of the flows of knowledge from customer allows companies to communicate more effectively with their customers and gain more knowledge of customer needs and preferences, which in turn results in high-quality services, compared to competitors, and creates organizational value. Consequently, knowledge from customer, since it cannot be imitated, has long-term benefits for electronic retailers and allows for the provision of better services and products by a company, compared to competitors. This result is consistent with the findings of Wu et al. (2013) concerning the positive impact of all the three streams of knowledge (knowledge about customer, knowledge from customer and knowledge for customer) in the process of creating value and acquiring value on innovation in IT-based businesses with different and complementary mechanisms. The findings of this study also show that the flow of knowledge for customer has a positive and significant effect on the dimensions of value creation, because it creates a trust in customers, as a result of which customers are more willing to share their information with e-retail companies. In fact, customer knowledge about e-retailer services is likely to create or improve value for the organization, which is consistent with the results of Wu et al. (2013). Besides, knowledge about customer has a positive and significant effect on creating value for electronic retailers. By having information about the needs and preferences of customers in e-retail business environments, organizations can create or enhance a series of related values in the market for themselves. This result is also consistent with the findings of Wu et al. (2013). On the other hand, based on the results of the research hypotheses, among the three streams of customer knowledge management (knowledge from customer, knowledge for customer, and knowledge about customer), knowledge for customer has the greatest impact on the value creation variable, which

indicates the importance of interaction with customers and improving customer knowledge and awareness by the organization. Moreover, a sense of trust can lead to a greater desire among the customers to share their knowledge with the organization, which ultimately creates organizational value due to customer loyalty to the organization. On the other hand, by effectively controlling and using digital space tools, organizations provide standards for creating, sharing, exploiting and leveraging knowledge in the e-business environment, which leads to higher efficiency and lower costs for the organization in terms of updating and managing the knowledge base for customers.

5-1. Applied suggestions

Based on the relationships confirmed in the research conceptual model, it is recommended to managers, consultants and planners in e-retail industry to consider customer as a knowledgeable entity. Besides, since knowledge from customer has a significant effect on creating organizational value for e-retailers, further attention should be paid to the following: up-to-date, diverse and efficient use of interactive IT-based channels that present opportunities for cooperation with customers as builders of organizational value, creation of a synergetic network of customers by connecting customers to each other (board of advising customers) to identify customer needs and attitudes via social media and extensive communication tools of e-business, comprehensive analysis of the opinions of primary and secondary customers and others to improve the perceived online service quality and get a realistic view of the company market, continuous improvement of the quality of company products and service by the efficient use of knowledge from customer and participation in an active and value-added conversation with customers, and use of capabilities of information technology to get further access to the ideas and experiences shared via customer-to-customer interactions.

Since knowledge for customer has a significant impact on creating value for electronic retailers, the following measures are recommended: Prioritization of social media and complementary channels to provide value-added and surplus information to the customer, active presence in various real and virtual spaces to increase knowledge for customer in the field of products and



services provided, provision of up-to-date information about new and innovative services for customers using social media-based opportunities, accurate, complete and timely response to customer questions and problems (increased accuracy and 24-hour service), satisfaction of customer demands in the shortest-possible time and flexible support based on a strong communication infrastructure, having experienced staff to reduce information asymmetries, provision of comprehensive education for customers to make better decisions, and enriching customer knowledge and information in areas they are interested in or specialized in (education by email, daily short messages, magazines and social media).

Besides, since knowledge about customer has a significant effect on creating organizational value, suggestions are made as follows: Use of social media and cyberspace capabilities to find the motivational and latent needs of the customer, market segmentation with understanding the background, needs and buying patterns of the customer in relation to the characteristics of products and services and defining the appropriate model of each segment, preparation of appropriate electronic infrastructure and use of social media capabilities in the online space to examine customer buying behaviors, needs and tastes versus their changes over time, gathering information about actual and potential customers' preferences and purchase intention, and being aware of the demands, requests and expectations of potential customers.

Limitations and suggestions for future research

- 1) The present study considers customer knowledge management only in e-business and e-retail industry, and hence the results cannot be generalized to other areas, products and industries. Accordingly, due to the importance of customer knowledge management in the field of e-business, researchers are suggested to study the other dimensions of this problem in different virtual sales platforms with different industries, including B2B organizations.
- 2) The statistical population of this study is the managers and employees of electronic retail companies. The research has sought to investigate the impact of customer knowledge

management on creating organizational value. Therefore, the generalization of these results to create value for customer and from the perspective of the customer's desired values should be done with caution. Researchers are thus recommended to study diverse statistical populations of consumers to obtain further results and insights in this field.

- 3) In the time of conducting this research, the organizations in Iran have incurred much pressure due to international sanctions, the impossibility of extensive communication and cooperation with organizations active in this field at the international level, and severe currency fluctuations. In other words, these factors have largely affected the research evaluation and respondents' perceptions, which in turn limits the accuracy and generalizability of research results. Therefore, it is suggested that research should be conducted in another time and that the results of the two studies should be compared.

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