

## Customer Knowledge Management Application in Gaining Organization's Competitive Advantage in Electronic Commerce

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### Abstract

In modern organizations, knowledge is the fundamental basis of competition. In the new context, two major factors determine the future survival or success of organizations: electronic commerce and the knowledge from customers. Thus, the goals of the research were figured out, and investigating the relationship and application of customer's knowledge management in gaining competitive advantages of organizations in E-commerce and also the 8 followings factors were investigated: knowledge from customers, knowledge for the customers, knowledge about customers, recording and spreading customers' knowledge, quality of the products and services, pace of providing the products and services, reasonable prices and satisfaction as the output and result of using customers' knowledge management on organizations competitive advantage variable in E-commerce. For the statistic society, people who were all experts and elites of Mellat Bank market development organization were chosen, and 210 experts who are working in Iranian insurance companies. The statistic tests used were: Kolmogorov-Smirnov, simple linear and multiple regression the results extracted from the above tests stated the linear relationship and correlation between independent and dependent variables. The results of this study had shown the application of the customers' knowledge management would lead into gaining competitive advantage for the organizations in E-commerce.

**Keywords:** Customer knowledge management (CKM), Competitive advantage, E-commerce, Satisfaction, Customer knowledge, Competitive advantage in E-commerce

## 1 Introduction

Considering the complicated and dynamic conditions of today's world, going through the age of communication and information that has changed the world to a tiny village, wondrous progress of knowledge and diverse technologies and accordingly raising the living levels and humans' expectations and also fast paced cultural changes in the traditional societies, it can be concluded that no longer organizations that are now an aspect of society can be run regardless the dynamic conditions of internal and external environments [41].

Entering the new millennium, capital, raw materials and land which were considered to be critical for the formation and growth of the organization in the past, have lost their former importance. Countries and organizations need to survive in conditions that are associated with rapid and significant changes which are based on knowledge. Organizations that are grappling with the new challenges of the science era will understand that knowledge is the most strategic source of organization and the base of competition and survival in competitive and non-competitive environments. Because of this reason, they are considered a necessity for the management of these strategic resources [1].

Knowledge has become a strategic resource as the basis of competitive advantage in an organization [5].

In this new context, two important factors are determining the survival and future success of the organization are: a) e-commerce b) the acquisition of knowledge and information from customers and consumers [16], [43].

The most important type of knowledge would appear to be customer knowledge. The growing importance of customer knowledge is emphasized by numerous publications and is also confirmed by the empirical research. According to a survey, customer knowledge was quoted as the most important type of knowledge (97%) to assist organizations act effectively. This is followed by knowledge about competencies and capabilities (86%). companies need a wide variety of knowledge about customers, such as:

- Who are their customers?
- How can they use knowledge to retain and support customers?
- How can knowledge help companies acquire new customers?
- How can companies use customer knowledge to continuously improve products and services?
- How can companies use customer knowledge to create new products and services?
- How can companies use customer knowledge to understand markets better?

To reach these levels of knowledge, most organizations have focused on collecting massive amounts of data about customers [5].

The success of e-commerce is substantially dependent on knowledge management [4].

In this regard, managing the use of consumers' knowledge presents the specific tools and techniques of knowledge management used in order to support the exchange of knowledge between a business and its customers, and thereby, allowing the company to make appropriate business and strategic decisions [21], [36].

Customer knowledge management (CKM) leads to many improvements in the delivery of new products and services, improving customer service, customer respect, providing customer satisfaction, discovering serious needs of the customer, better response and respect to the costumers and for the organization to increase profit and competitive advantage [32].

## 2 Literature Review

Research literature includes topics on customer knowledge management, competitive advantage and e-commerce which will be explained in the rest of the article.

### 2.1 Customer Knowledge Management (CKM)

In order to maintain a good relationship with customers, it is essential for companies to communicate with their customers in a fully satisfactory way and thereby, through providing appropriate proposals continually meet the changing needs of the customers. This requires a conscious management of our customer's knowledge [7].

In order to have good communication with their customers, companies that focus on their customers, especially dotcoms, have to establish a good relationship with customers through a satisfying method and continuously meet the changing needs of their customers. This requires customer knowledge management [30].

CKM is a dynamic recycling process of acquiring and refining valuable customer data by means of various paths and methods, and sharing the generated customer knowledge across the organization. Through this process the organization promotes and optimizes the customer relationships in the customer oriented organizational model, frame and environment [23].

Customer knowledge management forms a continuous and stable strategic process, through which companies provide the opportunity for their customers to change from Passive recipients of information to the state of becoming strong partners with sufficient knowledge [12].

Customer knowledge is increasingly associated with marketing as a significant source which can lead us to managing the support for research and development [15].

This knowledge is blooming to achieve the goal of developing solutions, customer relationship management process and facilitating the understanding of market opportunities. Customer knowledge is originated at the customers' cognition (understanding) [6], [40].

On the other hand, Paquette (2006) went one step further and suggests that customer knowledge can be a combination of customer knowledge and knowledge of supply chain of collaboration and so on. This knowledge is formed by two streams of knowledge that creates value for both the buyer and the supplier. From this information one can achieve beyond the identifying information and the categories of customers. It creates an organization outside working-industry environment. An important aspect of customer knowledge is not the knowledge that is owned by the company, but it belongs to those who desire to give the knowledge or not. In addition to achieving the design and development of products (services) can be effective in reaching a new stage of the customer knowledge [31].

Customer knowledge management is creating the maximum value of knowledge and knowledge management at a strategic level [14], [22].

Ability to design and develop new products is also affected by levels of customer knowledge currents [31].

The most important point in defining the customer knowledge management is that customer knowledge management is involved in the promotion of three types of knowledge: knowledge for the customer, the knowledge from customer and knowledge about customer [11].

In the following section we describe the three types of customer knowledge.

### **2.1.1 Knowledge for Customers**

To support customers in their purchasing cycle, a steady stream of knowledge given to customers by the company. Knowledge for customers includes information about products, markets and suppliers. This knowledge also affects the customer's perception of service quality [11].

### **2.1.2 Knowledge from Customer**

It is the knowledge the customer has about products, suppliers and markets. In order to interact mutually with the customer, this knowledge can be collected to stabilize a continuous improvement. For example, development of new products and services improvement, are included in these improvements. At the same time, knowledge from customer should be regarded to produce innovation in services and products, generate ideas and continuously improve products and services by the organizations. Capturing customer knowledge and involving customers in the innovation process can be achieved in several ways. For example, customer knowledge about products, and suppliers can market trends through a feedback mechanism can be used to provide systematic improvement and innovating products [11].

### **2.1.3 Knowledge about Customer**

This knowledge is collected in order to understand customer motivations and support giving services in a personalized way and includes backgrounds of the customer, communicating with him, his needs and expectations of a purchase. Collecting and analyzing knowledge about customers is certainly one of the oldest forms of knowledge management in the field of customer relationship management. In addition to the raw data of customers and past transactions, knowledge about the customer, also considers the customer's current needs, future aspirations, relationships, shopping activities and financial capabilities. Knowledge about the customer is gathered through the support and service process of customer relationship management and in the analysis process, the customer relationship management is being analyzed [11].

## 2.2 Competitive Advantage

Among the definitions offered by experts with competitive advantages is as follows:

- Increasing attractiveness of the company's offer compared to its competitors in terms of customer proposals.
- Differences in the characteristics or dimensions of any company that enable it to provide customers with better service worth than its competitors.
- Values that can be provided for the firm's clients so that these values are higher than the cost of the customer.
- Value offered by an organization to its clients in a way that at the time, this value is not supplied by the actual or potential competitors.

Considering these definitions and other definitions of the competitive advantage shows that direct relation of customer's desired values, companies supplied values and values supplied by the company's competitors will determine requirements and dimensions of competitive advantage. From the perspective of the customer's values, offered by the company with values supplied by competitors are more consistent and closer to his desired values, comparing it can be said that in one or more fields the company having a competitive advantage against its competitors, so that the advantage causes the company to be superior in relation than its competitors in the market, in getting closer to the customer and capturing his heart. The concept of competitive advantage is directly related to the value of the customer So that in a comparable range Whatever the values supplied to a customer by an organization are closer to his desired values or more consistent with it, it can be said that the organization against its competitors owns the competitive advantage in one or more competitive criteria; In other words, competitive advantage is a value that the organization provides to its customers, so that by the time, it is not offered by the actual and potential competitors [25].

Competitive advantage is a concept based on economic theories on competitiveness of organizations, emphasizing their particular value in resources that they dispose of, as well as the products and services offered in the market. Two important points should be considered in the creation of competitive advantage: First, the path is a continuing process that will lead to higher performance and competitiveness of the organization. This means that if an organization due to its competence, can create a sustainable competitive advantage which is valuable to customers, and will always be superior than competitors, it has actually left a proper function and brought competitiveness. Second, because of the increasing complexity of the environment and competition severity, the competitive advantage is easily imitated by competitors or paled in customers' view and should soon be replaced with new advantages. Accordingly, organizations should be thinking about finding its competitive advantage [37].

Capabilities of the company are a combination of skills, knowledge and behaviors that exist across organization and reflected in the people, systems, processes and structures. In other words, skills that the company uses to change input data into output data so that in the form of organizational processes, from the combination of tangible and intangible resources uses to achieve desired goals such as: customer service, superior product development capabilities, innovative services and products. Qualifications as the perfect combination of assets, resources and processes allow the company to respond to customer needs. Those competencies are of strategic value that can create value for the customers. As already noted, the primary goal of the organization is creating a competitive advantage based on resources and capabilities it possesses, the competitiveness and achieving a prominent position in the market in terms of performance based on customer satisfaction [2].

## 2.3 E-commerce

The World Wide Web in general and e-commerce in particular play an important role in contemporary society. Nowadays, information and communication technology has been the base of economic, social and cultural development of various countries. E-commerce is an objective aspect of information and communications technology, information technology revolutions in all economic fields. The advent of the Internet and its commercialization in recent decades has transformed traditional methods of trading. Electronic commerce is revolutionizing the business practices and procedures and work-speed and cost-saving have been fulfilled in the best way. Geographical distances and time and place restrictions have been vanished and commercial exchanges have been done on the basis of electronic information. E-commerce will remove international trade barriers and accelerate the process of global trade [26], [39].

Nowadays, information and communication technology have led to dramatic changes in business conditions, So that entering the world of e-commerce and e-business has become a pre requisite to sustain in the global competitive environment, and at the same time, the rapid advent of new competitors, globalized competition, intense competition in standards, new opportunities for alternative businesses, creating new jobs and employment opportunities in

various fields, all are considered as the benefits of e-commerce. Different definitions have been presented for e-commerce that in the simplest ones e-commerce is considered as evaluation, negotiation, order placement, delivery, payment and support services done electronically. Also on the aspect of communication, e-commerce is viewed as delivery of information, products and services, or payments via telephone lines, computer networks, or in any other way. All in all, e-commerce consist of all issues of new and modified form of business, including electronic money and account, e-mail marketing, online stores, internet promotions, auctions and tenders in a variety of ways. Electronic commerce has increased the speed and volume of trade and significantly reduced the costs of the buyer and producer, saving time, eliminating unnecessary middlemen and ultimately produced more profit and increased more social welfare [33].

E-commerce owns benefits and important economic consequences such as the expansion of the market, reducing the cost of production resources, improving productivity, reducing transaction costs, creating jobs and reducing inflation and has a pivot role in endogenous economic growth. Because of its speed, efficiency, reducing costs and exploiting fleeting opportunities, e-commerce has opened up a new realm of the competition to the extent it is said that being left behind this evolutionary trend will lead to isolation in the world's economy [20].

In the past two decades we have experienced e-commerce from start via mature to smarter e-commerce. The dramatic development of social media in general and online social networking in particular in the past decade provides huge potential and challenges for e-commerce. The potential for e-commerce is that social media provides new avenues for communication and interaction between e-commerce companies and customers [42].

E-commerce is defined as improving the key business processes using the Internet. Today, most companies realize the importance of this type of trade and have begun to transform traditional commerce into e-commerce and many have been successful in this way. These leading organizations, to provide customer service, distribution and delivery of products, maintain existing customers and attract new customers who have set up their business processes based on the Internet networks. Public access to the Internet networks has increased, customer expectations in terms of support services and meeting their needs. Increasing accuracy and boarding services are among these expectations. Responding to these expectations, demands, comprehensive of flexible supports based on a powerful infrastructure. To be able, in that framework, to provide customers with the global consulting services belong to experts who have specific knowledge of the industry [20].

Increasing volume of e-commerce in the world, applying it by economic institutions and its gradual acceptance by consumers indicate potential benefits of e-commerce in economic and commercial fields. So there should be a continuous effort to use it in economic activities. Empirical research shows that the success of e-commerce in developed countries and leading developing countries is because of the appropriate electronic infrastructure. Electronic infrastructure, include Internet-based opportunities, quality of IT infrastructures, government activities and the degree of trade facilitation. Communication tools available to individuals and businesses with higher quality and lower cost, is one of the important contexts for e-commerce [8], [9].

## 2.4 Customer Knowledge Management and E-commerce

Through the development of the Internet and the emerging Internet companies, the knowledge management trend has become increasingly important in the area of electronic commerce. In other words, the success of e-commerce field depends heavily on the knowledge management process [29], [38].

The main motto of this e-commerce relies on client's identification opportunities in the new economy. Electronic commerce is a rich channel in which there is a close connection between current service and product experience and gathering information about customer [16].

The relevance of e-commerce and Internet technologies not only leads to the formation of new approaches to knowledge creation in different companies but also provides the opportunity to enhance the ability of these companies to integrated knowledge management [28].

In general knowledge of the customer is considered as an important source of feedback which can influence the innovation, design and development of offering products in electronic commerce field. This knowledge forms the center of different principles, some cases such as Internet sites, service quality, marketing research, increasing the efficiency of marketing relationship factor, direct marketing, categorizing the market, business and marketing and performance strategy so the customer knowledge management plays an important and essential part in electronic commerce [35].

Although the customer knowledge management in various cycles has been widely discussed, few of the current research in the area of electronic commerce has focused on customer knowledge management. Also, so far, in literature and previous research little attention has been paid to identify the full set of customer knowledge management mechanisms in e-commerce websites, therefore, future research needs to be done in this area [40].

## 2.5 Gaining Competitive Advantage in E-commerce

Porter (2001) states that due to the impact of the Internet on profitability, organizations need to gain competitive advantage. In terms of Porter's competitive advantage can be achieved in two ways:

1. Reduced operating costs (increasing efficiency)
2. To achieve the best price

It seems Possible and practical to combine the two ways in order to achieve competitive advantage. Through facilitating and expediting a timely exchange of information, internet causes improvement across the value chain of organization. On the other hand, because the Internet is seen as a free and open context and possesses public standards, it requires less investment than other technologies. Among the benefits that the Internet possesses which causes lower operating costs, there are:

- Lower cost of communications
- Lower inventory levels
- Lower transaction cost
- Reducing human errors
- Reducing procurement cycle time
- Reducing transportation costs
- Reducing the use of paper and...

Another way to gain a competitive advantage is strategic positioning. Regarding the difficulties to sustain operational advantages, strategic positioning becomes more critical. If the company fails to achieve a competitive advantage in terms of operational efficiency, we can achieve the competitive advantage by accessing price superiority. Most companies have set the base of their competitive advantage in e-commerce, operational effectiveness. While considering issues such as customization of products extended after sales service and customer relationship management via the Internet, better results will be achieved. The Fraser et al (2000) state, competitive Advantage in e-commerce, can be gained from four sources through which an organization will be able to achieve competitive advantage these four sources are:

1. Reducing the cost of intermediate wholesalers and retailers. Using Internet technology, the process of removing intermediate person has been formed and without going through traditional wholesalers and retailers, and with reference to the site of the original seller (manufacturer) costumers can buy the required products are required to buy. This greatly reduces costs;
2. The ability to reduce the costs associated with the purchase through reducing the time and activities needed in logistics and supply operations;
3. Improving the collection and processing of data that makes it possible to improve the supply chain management;
4. Expanding market share and creating new markets by reducing the cost of collecting and processing information about the needs and aspirations of current and potential customers.

Vail (1992) maintains, the benefits of investing in information technology and expresses that that the benefits of information technology lead to improve customer relations with organization and create a competitive advantage. The advantages of IT are categorized in three general groups of data. The advantages of IT are categorized in three general groups of data benefits, benefits of exchange and strategic advantages. Each of these categories has also some sub-categories. The benefits of data quality, and flexibility and accessing information, communication efficiency, efficiency of systems development and effectiveness of business cause to improve the relationship with customers and respond to them and lead to the strategic advantage. In e-commerce, in order to gain competitive position and competitive advantage, organizations can no longer focus solely on the physical dimensions of their products, but they need to combine the two factors of services and information with their products. The shift from focusing on product to focusing on services which is associated with the products causes separation of the traditional economy from the digital economy. Business value of IT in general and e-commerce in particular have helped the

organization in combining services and information with products in digital economy. It helps companies to be active in designing and delivering services that distinguish their products from their competitors [3].

## 2.6 History and Background of Research

Table 1 summarizes the research background categorized based on publication years in an ascending order.

Table 1: Record of research background

Researchers Name	Publication years	The results of the study
Garcia-Murillo et al	2002	Presenting a model, considering customer knowledge as a part of company's knowledge, creating a process of interaction between customers and organizations from which both sides can benefit [13].
Rowley	2002	To address the richness of knowledge in the field of electronic commerce, to display a wide range of topics in the field of e-commerce on the CKM, to display knowledge and tools, severe need to maintain the knowledge about clients and the knowledge customers possesses in order to gain benefits [35].
Rollins et al	2005	Presenting a framework of CKM competence, providing knowledge of the CKM as an integrated management approach, focusing on organizational capabilities and competencies in the CKM process the proposed framework based on relationship marketing and market orientation which includes five main elements [34].
Akhavan et al	2007	They presented a conceptual model, which is a combination of principles of customer relationship management and knowledge management, to gain the competitive advantage [1].
Lopez-Nicolas et al	2008	Investigating the literature and the relationship between CKM and e-commerce based on several consumer properties, addressing the role of risk perception and risk by the client [24].
Shamizanjani et al	2008	The two conceptual models, a model describing the process of forming customer knowledge and other models on the classification of the customer, through conscious communication between different entities and the customer's one can form the customer knowledge [40].
Ogunde et al	2010	Presenting a model, the need to develop competence in all aspects of CKM in the organizations that are dealing with e-commerce, This model helps the existing commercial areas to successfully detect and integrate different types of customer knowledge [30].
Hashemi et al	2011	To provide a framework and model for describing customer knowledge management in e-commerce [17].
Buchnowska	2011	Present a review and assessment of presented in literature customer knowledge management models and to propose an integrated management model for customer knowledge that should help in understanding how to manage customer knowledge in order to improve customer value [5].
Zhao et al	2012	Develop a framework of general knowledge management model from the perspective of organizational competitive advantages, and further discusses the application of enterprise knowledge management model through the case of Landray [44].
Jiebing et al	2013	Provide a conceptual framework to explore the linking mechanisms between customer knowledge management and IT-based business model innovation. In this conceptual model, three types of customer-related knowledge (i.e., knowledge about customer, knowledge from customer and knowledge for customer) contribute to value creation in business model innovation within different mechanisms [18].

Given the above and conceptual models that are shown in figure 1 and 2, the use of customer knowledge management in e-commerce to gain competitive advantage for organizations is necessary and inevitable, therefore, the goals of the research are figure out, and investigating the relationship and application of customer's knowledge management in gaining competitive advantages of organizations in e-commerce and also the eight followings factors are investigate: knowledge from customers, knowledge for the customers, knowledge about customers, recording and spreading customers' knowledge, quality of the products and services, pace of providing the products and services, reasonable prices and satisfaction as the output and result of using customers' knowledge management on organizations competitive advantage variable in e-commerce and the impact of these factors on the dependent variable will be investigated.

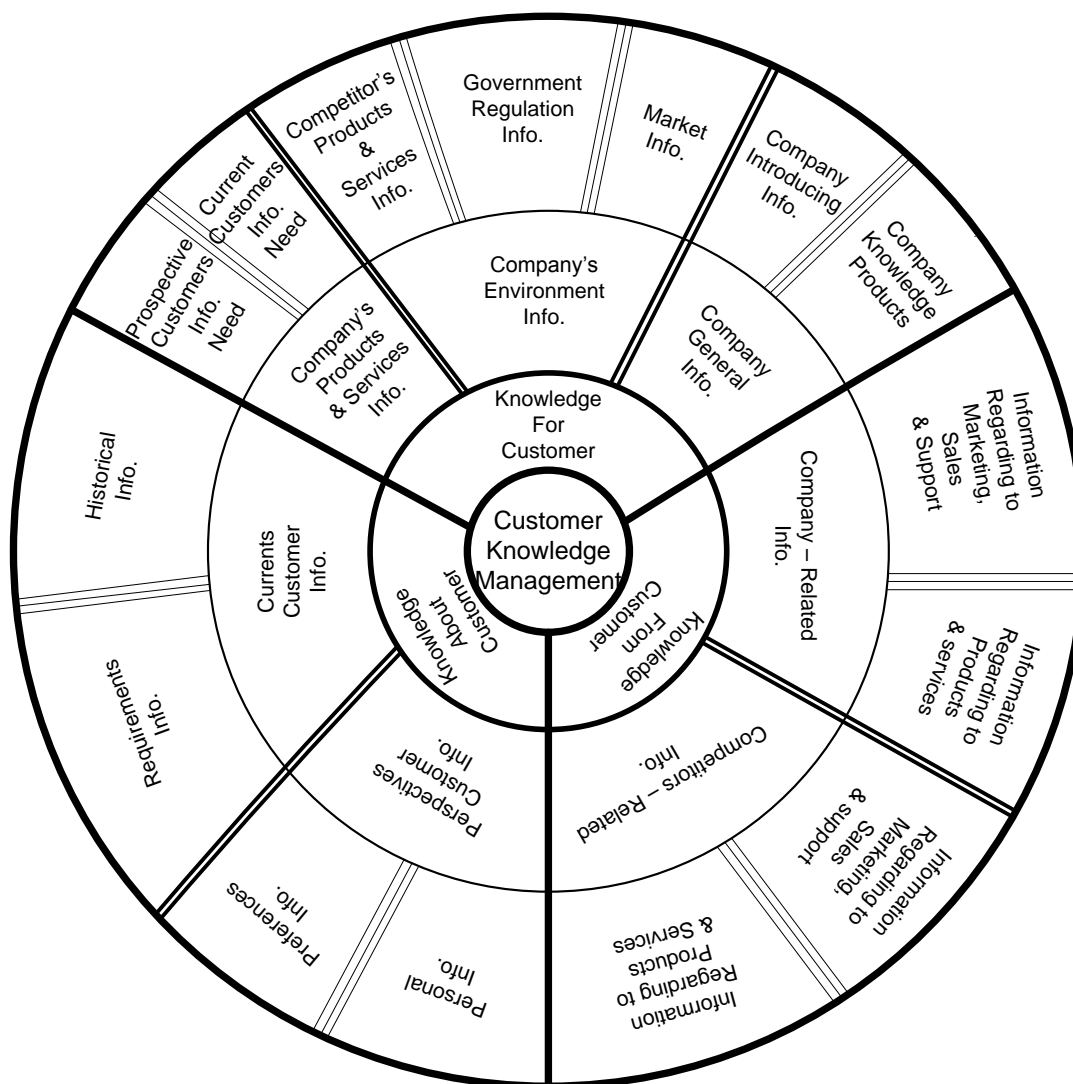


Figure 1: The conceptual model of customer knowledge management [40]



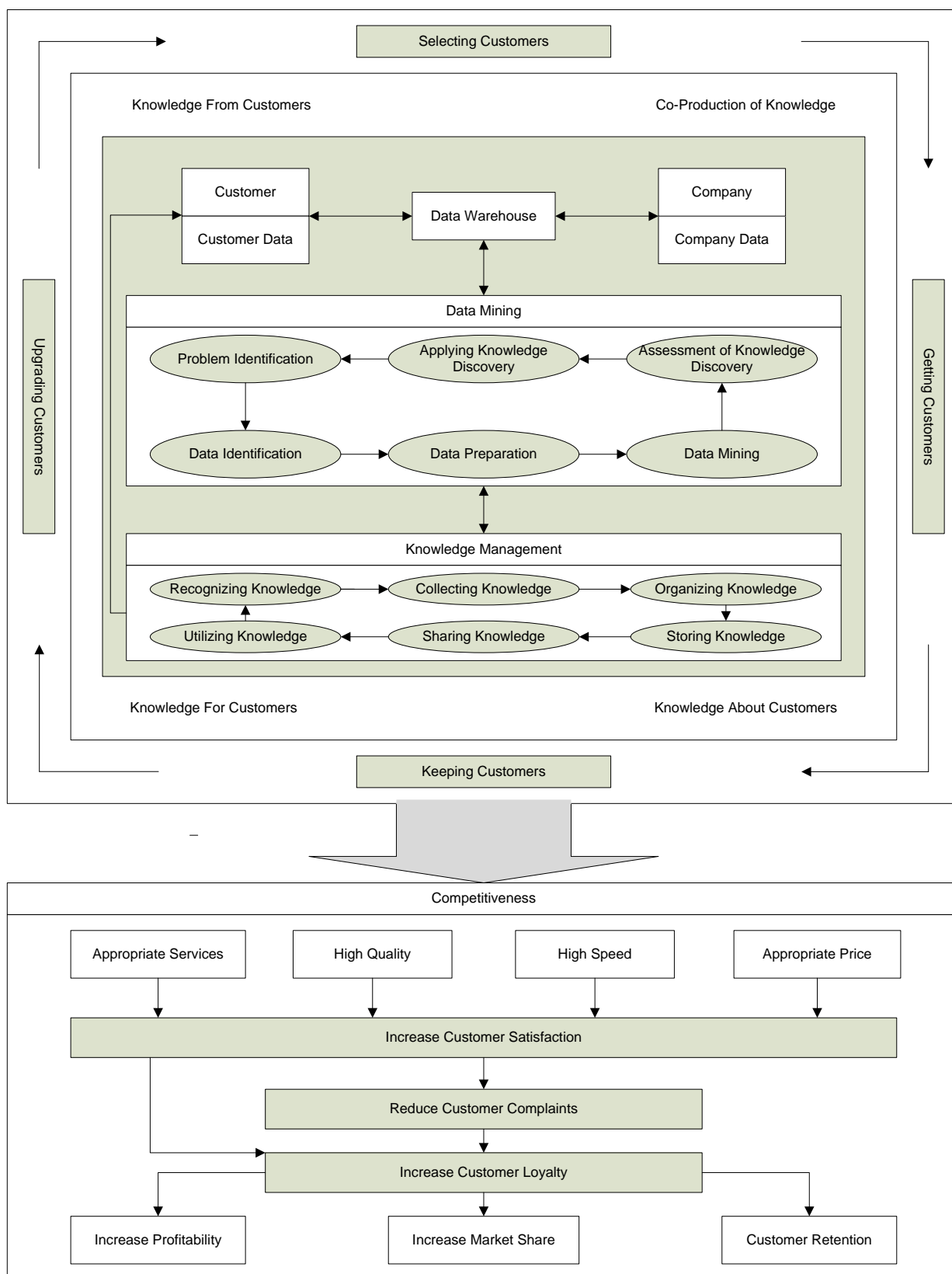


Figure 2: The conceptual model of customer knowledge management in gaining competitive advantage [1]

### 3 Research Methodology

For practical purposes and from the point of view of the nature and methods, the present study is a kind of descriptive, survey and correlational research, and using the data collection tools, the data collected and the

following analysis methods have been used to examine the relationship between customer knowledge management as the main independent variable and competitive advantage in e-commerce as the dependent variable and also the influence of eight above-listed factors. In this study, a questionnaire measuring instruments was used to collect data. After proving the validity and reliability of the questionnaire, in order to analyze data statically the following tests have been run:

- Kolmogorov-Smirnov Test
- Simple Linear Regression Analysis
- Multiple Regression Analysis

The results of statistical computations and their descriptions gained by the software SPSS20.

### 3.1 Population, Sample, Sampling Method and Sample Size Determination

The population of this study consists of all the scholars and experts in the department of Market Development at Mellat Bank who are 90 people according to the obtained data and 210 experts who are working in Iranian insurance companies.

The sample is a small collection of the target population which exemplifies the main qualities of the community and by studying it; the researcher will be able to generalize the results to the general population [10].

The sampling method of the research is simple random sampling. Due to the limited study sample of the present research, Krejcie and Morgan table has been used to determine the sample size. Thus, the total population of 300 subjects (N = 300), in the table of Krejcie and Morgan sample size has been estimated as, 169 patients (S = 169), respectively. Therefore, 169 questionnaires sent to market development department of Mellat Bank and insurance agents and later they were collected.

#### 3.1.1 Mellat Bank and Iranian Insurance Companies

Mellat Bank was established on 20/12/1979 by virtue of the resolution dated 29/9/1979 adopted by the general assembly of banks and pursuant to the provision of article 17 of the bill on administering the banks, with a paid up capital of RIs 33.5 bn as a merger of ten pre-revolution private banks comprising: Tehran, Dariush, Pars, Etebarat Taavoni & Tozie, Iran & Arab, Bein-al-melalie-Iran, Omran, Bimeh Iran, Tejarat Khareji Iran and Farhangian. Currently, the bank's capital amounts to RIs 33100 bn and is one of the largest commercial banks in the Islamic Republic of Iran, ranking among the top 1000 banks of the world. Mellat Bank is the most successful Iranian banks in e-banking and e-commerce. Market development department of the bank has a pivotal role of enjoying experience of experts in this field. As stated earlier, among the most important the bank's objectives and strategies are: managing customer relationships, improving service quality, providing good service to customers, understanding customer needs and classifying customers; the most important values of the bank include customers' confidence, innovativeness, and customer loyalty and excellency which all need customer knowledge management and achieve customer knowledge levels to gain the competitive advantage and keep its position in the competitive environment among banks. Among other features and advantages of the bank and market development department is the form of electronic banking and e-commerce initiatives aimed at being customer-oriented. And therefore, they have been able to maintain good relationships with customers and to attract new customers and continuously, to meet their changing need.

Historical background of insurance in Iran goes back to 90 years ago when two Russian companies ventured to open their branch offices, and following that Iran Insurance Company was established as the first independent and state owned insurance market. In the early 1970s many new insurance companies were established and at the same time the law establishing Bimeh Markazi Iran (BMI) or in English Central Insurance of Iran was passed in the parliament. All the Iranian insurance companies are supervised by Bimeh Markazi Iran. The Insurance service in Iran also presented by insurance agents and brokers both of which are authorized to act in the market after passing the relevant tests and receiving the license from Bimeh Markazi Iran. Some of these agents, at present, proceed to issue policies on behalf of their companies. Currently, there are one non-private and twenty-one private companies in Iran.

### 3.2 Tools for Data Collection

This data collection method is comprised of two parts: the library studies and field research. To review the research literature some sources were used which were mainly from books, articles, and the web, Latin and Persian resources, banks, libraries and information sources. In order to collect the desired information and evaluate the variables, a questionnaire was used. Indicators measured in the study, before surveyed in the questionnaire; they were evaluated and judged by Several experts and university professors and professionals in market development department of the Mellat Bank and finally the agreed questionnaire was used as data collection tools, The questionnaire consisted of 24 questions that are designed based on the range of 5-choice Likert-scale questions

were designed in two main customer knowledge management and competitive advantage in e-commerce and based on eight dimensions of knowledge from customers, knowledge for the customers, knowledge about customers, recording and spreading customers' knowledge, quality of the products and services, pace of providing the products and services, reasonable prices and satisfaction.

### 3.3 Validity and Reliability of the Questionnaire

The purpose of the validity is that the measurement tool can measure the properties and characteristics desired to measure. Validity is a term that refers to achieving the desired goals. The purpose in the validity test is to deal with the potential problems and ambiguities in the questions and structure of the questionnaire and etc [19].

After preliminary design of the questionnaire, the questions have been studied in several stages and in relation to intelligibility of questions, relatedness of the purpose of the test to the questions and removing irrelevant questions, a number of experts and specialists, including experts from the office of market development, Iranian electronic commerce association, university professors and experts were surveyed and finally by applying their comment, required changes have made in questions of the questionnaire. Therefore, the content validity of the questionnaire is achieved.

The reliability of a measurement tool refers primarily to the accuracy of its results. Reliability, points out the accuracy, trust ability, stability, or repeatability of test results [27].

In this study, Cronbach's alpha coefficient of reliability has been used since it is used as the basis of measuring reliability in most researches. Cronbach's alpha coefficient method is a method to determine the reliability of the test based on internal consistency. Cronbach's alpha coefficient for the 24 questions of questionnaire is obtained as 0.837 which represents that the reliability of the questionnaire is acceptable.

## 4 Findings from the Data Analysis

In this section, the results of the Kolmogorov-Smirnov test, simple linear regression analysis and multiple regression analysis have been presented and discussed.

### 4.1 Kolmogorov-Smirnov Test

Before determining the type of test used, especially in the case of comparative test, it is required to ensure the normality of the distribution of variables. If the variables are normal, parametric tests are recommended otherwise equivalent non-parametric test will be considered. Kolmogorov-Smirnov test for determining the normality of distribution of variables is the best option is. The results of the Kolmogorov-Smirnov test are given in table 2.

Table 2: Results of Kolmogorov-Smirnov test of study variables

Variables	Kolmogorov-Smirnov Z	Sig
Customer Knowledge Management	1.017	0.252
Competitive Advantage in E-commerce	1.147	0.144

As it is clear from the above table, the significance level (sig) for all the variables is higher than 0.05, which shows the variables under consideration in this study are normally distributed.

### 4.2 Simple Linear Regression Analysis and Multiple Regression Analysis

To investigate the relationship between two variables of customer knowledge management, and competitive advantage in e-commerce as well as the components of knowledge from customer, knowledge for Customer, knowledge about customer, recording and spreading customers' knowledge, quality of the products and services, pace of providing the products and services, reasonable prices and satisfaction which is the output result of applying knowledge management on competitive advantage in e-commerce, the simple linear regression and multiple regression were used. Listed in the following, are the tables of statistical computations gained by the software SPSS20 and their descriptions.

#### 4.2.1 Simple Linear Regressions Analysis

In regression analysis we are to estimate a mathematical equation and its analysis so that it can help to quantify an unknown variable using evident variable or variables. Assuming that there is a causal relationship between two variables and the relationship is linear ( $y = a + bx$ ) [27].

A simple regression analysis is used to examine the main independent and dependent variables of the research. The R Square represents the percentage of change in the dependent variable is affected by the independent variable.

ANOVA table contains regression analysis of variance to assess the certainty of the existence of a linear relationship between two variables. If the significance is less than 0.05 the regression equation linear and if it is more than 0.05, the regression equation is not linear. Regression analysis can be done through coefficients table. In column B of this table the constant independent variable in the regression and its coefficients are presented respectively. The output tables obtained from the regression test by SPSS software are presented in the tables 3 and 4.

Table 3: Results of analysis CKM and competitive advantage in e-commerce

Independent Variable	Dependent Variable	R Square	ANOVA (sig)	Coefficients
				B
CKM	Competitive Advantage in E-commerce	0.677	0.000	Constant 0.986
				Customer Knowledge Management 0.809

Regression analysis of variance table confirms the linear relationship between dependent and independent variables since the significance level is less than 0.05. According to regression test theory, the determining coefficient between the components of CKM and competitive advantage in e-commerce is 67.7% which shows 67.7% of changes in the competitive advantage in e-commerce are affected by CKM. For a unit change in CKM component 0.809 unit change is created in the component of competitive advantage in e-commerce. The regression line equation can be written as follows:

$$\text{Competitive Advantage in E-commerce} = 0.986 + 0.809 \text{ CKM}$$

Table 4: Results of analysis 8 factors as the output of using CKM and competitive advantage in e-commerce

Independent Variable (X)	Dependent Variable (Y)	R Square	ANOVA (sig)	The regression line equation
Knowledge from customers	Competitive Advantage in E-commerce	0.180	0.000	$Y=3.590 + 0.181 X$
Knowledge for customer	Competitive Advantage in E-commerce	0.151	0.000	$Y=2.881 + 0.342 X$
Knowledge about customer	Competitive Advantage in E-commerce	0.447	0.000	$Y=2.365 + 0.465 X$
Recording and spreading customers' knowledge	Competitive Advantage in E-commerce	0.307	0.000	$Y=3.325 + 0.227 X$
Quality of the products and services	Competitive Advantage in E-commerce	0.230	0.000	$Y=3.369 + 0.223 X$
Pace of providing the products and services	Competitive Advantage in E-commerce	0.219	0.000	$Y=3.469 + 0.208 X$
Reasonable prices	Competitive Advantage in E-commerce	0.166	0.000	$Y=3.608 + 0.174 X$
Satisfaction	Competitive Advantage in E-commerce	0.044	0.000	$Y=3.879 + 0.096 X$

Regression analysis of variance table confirms the linear relationship between dependent and independent variables since the significance level is less than 0.05. According to regression test theory:

- The determining coefficient between the components of knowledge from customer and competitive advantage in e-commerce is 18%. Which shows 18% of changes in the competitive advantage in e-commerce is influenced by knowledge from customer. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.590 + 0.181 Knowledge from customers
- The determining coefficient between the components of knowledge for customer and competitive advantage in e-commerce is 15.1%. Which shows 15.1% of changes in the competitive advantage in e-commerce is influenced by knowledge for customer. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 2.881 + 0.342 Knowledge for customers

- The determining coefficient between the components of knowledge about customer and competitive advantage in e-commerce is 44.7%. Which shows 44.7% of changes in the competitive advantage in e-commerce is influenced by knowledge about customer. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 2.365 + 0.465 Knowledge about customer
- The determining coefficient between the components of recording and spreading customers' knowledge and competitive advantage in e-commerce is 30.7%. Which shows 30.7% of changes in the competitive advantage in e-commerce is influenced by recording and spreading customers' knowledge. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.325 + 0.227 Recording and spreading customers' knowledge
- The determining coefficient between the components of quality of the products and services and competitive advantage in e-commerce is 23%. Which shows 23% of changes in the competitive advantage in e-commerce is influenced by quality of the products and services. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.369 + 0.223 Quality of the products and services
- The determining coefficient between the components of pace of providing the products and services and competitive advantage in e-commerce is 21.9%. Which shows 21.9% of changes in the competitive advantage in e-commerce is influenced by pace of providing the products and services. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.469 + 0.208 Pace of providing the products and services
- The determining coefficient between the components of reasonable prices and competitive advantage in e-commerce is 16.6%. Which shows 16.6% of changes in the competitive advantage in e-commerce is influenced by reasonable prices. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.608 + 0.174 Reasonable prices
- The determining coefficient between the components of satisfaction and competitive advantage in e-commerce is 4.4%. Which shows 4.4% of changes in the competitive advantage in e-commerce is influenced by satisfaction. Summary of the obtained results and the regression line equation are as follows:
  - Competitive Advantage in E-commerce = 3.879 + 0.096 Satisfaction

#### 4.2.2 Multiple Regression Analysis

Sometimes two or more variables have a major impact on the dependent variable. In this situation, the dependent variable multiple regression is used. The linearity assumption in multiple regressions of relationships between variables is also confirmed and thus the regression equation is defined as follows:

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots \quad [27]. \quad (1)$$

The results and output tables obtained from the multiple regression analysis test by SPSS software are presented in the table 5.

The significance level (sig) for the components of pace of providing the products and services and satisfaction is more than 0.05, which indicates no linear relationship exists between the above factors and competitive advantage in e-commerce. On the other hand, the significance level (sig) of components of knowledge from customers, knowledge for customer, knowledge about customer, recording and spreading customers' knowledge, quality of the products and services and reasonable prices is less than 0.05, which indicates a linear relationship exists between the above factors and competitive advantage in e-commerce. The determining coefficient is 72.2% between the above components and the competitive advantage in e-commerce and this indicates that 72.2% of the change in component of competitive advantage in e-commerce is affected by the components of the knowledge from customers, knowledge for customer, knowledge about customer, recording and spreading customers' knowledge, quality of the products and services and reasonable prices. Multiple regression line equation and the obtained results are summarized, as follows:

Table 5: Results of multiple regression analysis of 8 factors and competitive advantage in e-commerce

Independent Variable	Dependent Variable	ANOVA (sig)	Coefficients	R Square
			B Constant 0.933	
Knowledge from customers	Competitive Advantage in E-commerce	0.002	0.076	0.722
Knowledge for customer		0.000	0.234	
Knowledge about customer		0.000	0.222	
Recording and spreading customers' knowledge		0.001	0.116	
Quality of the products and services		0.000	0.107	
Pace of providing the products and services		0.736	–	
Reasonable prices		0.027	0.057	
Satisfaction		0.981	–	

Competitive Advantage in E-commerce = 0.933 + 0.076 Knowledge from customers + 0.234 Knowledge for customer + 0.222 Knowledge about customer + 0.116 Recording and spreading customers' knowledge + 0.107 Quality of the products and services + 0.057 Reasonable prices

## 5 Conclusion

Researchers believe that when customers use a service or a product, they gain a great deal of knowledge and experience. This knowledge has become an important resource for organizations and obtaining that has become a competitive advantage in enterprises especially in the age of information in which technologies such as web and computer networks have been developed, the organization environment has been more dynamic and with the advent of e-commerce the importance of competitive advantage has increased and ensured better performance than the competitors and led to profitability in the short term, and survival and growth in the long term for the organization. This paper focuses on the use of customer knowledge management in gaining organizations' competitive advantage in E-commerce. Results of simple and multiple linear regression tests indicate that applying customer knowledge management causes to gain competitive advantage for organizations in e-commerce. The result of regression test shows 67.7% of changes in the competitive advantage in e-commerce are affected by customer knowledge management. Customer knowledge management provides opportunities for organizations to provide valuable information and support to maintain and retain new and existing products and services. This often provides considerable competitive advantage for organization in E-commerce. Findings show CKM includes knowledge from customer, knowledge for customer and knowledge about customer that by recording and spreading customers' knowledge, and its use, application and management lead to enhancing the quality of products and services and their pace of providing the products and services as well as the acquisition of reasonable prices and thus increasing customer satisfaction and loyalty, and reducing complaints, it ultimately leads to the achievement of the organizations that deal with e-commerce and e-business to a sustains a competitive advantage in electronic commerce. Therefore, it is recommended that organizations and companies that deal with e-commerce and e-business provide the customer with opportunity to change from a passive mode information sources and passive recipients of products and services and turn into powerful knowledge partners. By careful planning of managers and planners the companies and organizations are to design organizational strategies for managing and applying customer knowledge in order to achieve a sustainable competitive advantage in e-commerce. Through a more efficient and effective use of customer knowledge they can produce and offer products and services with higher quality and in the shortest possible time and in accordance with the costumers' wishes and opinions in order to achieve satisfaction, loyalty and maintain this competitive advantage in e-commerce.

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