



# An investigation of the impact of effective factors on the success of e-commerce in small- and medium-sized companies



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## ABSTRACT

Companies and organizations have to attract and retain customers so that they can survive. Electronic-commerce (e-commerce) is regarded as an appropriate strategy for marketing, selling and integrating online services which can play a significant role in identifying, obtaining and maintaining customers. E-commerce optimizes and enhances the relationship and communications between the organization, producers, distributors and customers. However, it should be noted that success in e-commerce depends upon determining effective factors in e-commerce. There is a set of effective inside organizational and outside organizational factors in e-commerce which should be taken into consideration. In this study, a model and framework was proposed for specifying the effective factors on e-commerce success. Structural equations with partial least squares (PLS- SEM) was used to investigate and experiment the proposed model. The obtained results based on the collected data from 180 staff employees of the Post Bank<sup>1</sup> in Eastern and Western Azerbaijan indicated that customer satisfaction, the amount of costs, infrastructures and knowledge and information are the effective's factors which have a significant impact on e-commerce success.

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## 1. Introduction

The relationship between commerce and technology has long existed and continues for a long time. Numerous developments and advances in ICT (information and communication technology) in the recent decades have led to many evolutions in many fields such as global commerce. Consequently, the processes involved in many fields such as commerce, economy, banking, customs, etc. have been evolved and changed (Rahayu and Day, 2015). As the time passes, the traditional commerce will no longer be able to respond to the modern requirements. Hence, new commerce methods will be required (Cegarra-Navarro, Jiménez, & Martínez-Conesa, 2007). At the present, small developing firms play significant roles in improving and enhancing the indexes of e-commerce and global economy. Thus, benefiting from novel and modern methods such as e-commerce in performing commercial processes can play important roles in the success of commercial firms (Sebora, Lee, & Sukasame, 2009). Nowadays, internet has become an

indispensable component of people's lives (Jai, Burn, & King, 2013). Approximately, people all over the world admit that internet plays a significant role in our lives and has led to the production of job opportunities and evolutions in business and commerce (Apavaloaie, 2014). Novel electronic technologies have extensively resulted in the production of opportunities through business patterns (Chen, 2003). Thanks to its remarkable and fruitful impacts on economy, science, society, etc., IT is considered to be one of the greatest innovations. The application of IT in operations related to commercial and economic processes have led to the creation of a new interdisciplinary, referred to as e-commerce, which plays an outstanding role in global economic affairs (Feizollahi, Shirmohammadi, Kahreh, & Kaherh, 2014). Undoubtedly, exploiting and benefiting from IT is one of the essential factors in enhancing the efficiency of e-commerce. For enhancing the efficiency of e-commerce, commercial notification and commerce should be facilitated. Commercial notification requires breaking information monopoly and provides the opportunity for competition and efficiency enhancement. Consequently, it provides the path for social justice. Also, for facilitating commerce and business, novel commercial methods such as barcode, standards for electronic exchange of data and paperless electronic deals and

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transactions should be used (Salehi, 2013). It should be pointed out that e-commerce has led to dramatic changes and evolutions in commercial affairs. That is, e-commerce has led to variations and changes in buying and selling products and items and has improved the relation and communication between the customers and suppliers. Furthermore, it has produced fundamental changes in business view in terms of better production and better relationship between customers and producers (Yang, Pang, Liu, Yen, & Tarne, 2015).

Developments and advances in IT is rapidly leading the societies towards knowledge and awareness-based societies. Information and communication technologies create the opportunity for the organizations to fulfill their commercial activities as fast as possible. The achieved developments in the late twentieth century resulted in the formation of e-commerce which revolutionized the field of commerce and business. In other words, e-commerce has dramatically changed the life styles of people in the developed countries (MacGregor, & Vrazalic, 2005). E-commerce is considered to be one of the best instances in which information and communication technologies are applied for economic purposes. Using this technology can support economic growth and development, enhance commercial efficiency and facilitate the convergence and unity of countries, particularly developing countries. As information and communication technologies develop, the available organizations in different industries have to use and apply these technologies so that they can benefit from their competitive advantages. Indeed, organizations have to stop using traditional commercial methods and welcome novel technologies which are based on worldwide web and, consequently, push the organization towards development and prosperity (Borges, Hoppen, & Luce, 2009).

The primary purpose of this study is to determine and specify the major factors which significantly impact on the success of e-commerce in small and developing companies and organizations. The followings are the main objectives of the study along the above-mentioned purpose:

- Providing a model and framework for a more comprehensive understanding of the effective factors on the success of e-commerce in SME companies and organizations
- Investigating the effects of infrastructures, costs, customer satisfaction, knowledge and awareness on E-commerce
- Examining and identifying the upcoming challenges and difficulties of e-commerce for the future studies

The remaining parts of the paper is organized as follows: Section 2 discusses related works. Section 3 describes the proposed model and hypothesis of the study in detail. Section 4 reports and discusses the method used in this study. Finally, Section 5 draws the conclusion of the study and directions for further research.

## 2. Related works

Nowadays, since technological tools and sophisticated communication instruments are produced and developed rapidly and replace the outdated and traditional operations and processes, the field of commerce has also commenced such a trend by quitting traditional and old-fashioned operations and adopting novel technology-based e-commerce (Ueasangkomsate, 2015). It has been approximately a decade that the concept of information and communication technology (ICT) has emerged as a new and robust phenomenon in the world. It has begun to influence people's lives directly or indirectly via its significant impact on cultural, economic, social and political structures. E-commerce has caused obvious changes and evolutions in the conventional foundations of

the administration of the societies by introducing a new system of management (Jai et al., 2013; Apăvăloaie, 2014). It should be noted that e-commerce is not a brand new concept but it has had increasing and unpredictable developments in recent years. Indeed, internet can be regarded as the major justification for the development of e-commerce. Inasmuch as successful administration and implementation of e-commerce call for a meticulous plan, hence, the available resources should be used optimally, needs should be identified and analyzed, customers' expectations should be respected, mutual benefits should be realized and the latest knowledge and technologies should be applied (Grandón, Nasco, & Mykytyn, 2011). In this section of the study, by briefly overviewing the previous works and studies, we try to identify the influential factors and parameters on the success of e-commerce.

Dyerson et al., classified the significant factors in the e-commerce and electronic careers of small companies which were dependent on internet technologies into the following categories (Dyerson, Harindranath, & Barnes, 2009):

- Scientific factors: this class of factors included the executive managers' knowledge and experiences, employees' expertise, customers' perceptions and awareness
- Environmental factors: this group of factors included markets, rules of government, producers and customers.
- Humanistic factors: this category is related to the accessibility and application of internal resources and the number of specialist employees
- Technical factors: this class of factors included technology, costs and security.

Ramanathan et al., investigated the impact of e-commerce in marketing and operational efficiency and the nature of its effect on the above-mentioned factors in small and medium Taiwanese companies (Ramanathan, Ramanathan, & Hsia, 2012). Using a questionnaire and statistical techniques, they proposed a conceptual model so that they can investigate and analyze the impact of e-commerce on small and medium Taiwanese companies. The results obtained in that study indicated that three underlying factors were responsible for the efficacy of e-commerce in Taiwanese companies:

- Performance factor: customers' satisfaction, improvement of process and competitive benefit
- Marketing factor: online advertisements, customers' awareness and brand recognition.
- Operational factor: quality improvement, internal communications, security of online payment, simple web design, comprehensive information.

Migiro investigated the barriers for adopting and accepting information technology in the development of e-commerce in small and medium organizations and companies (Migiro, 2006). 380 respondents were selected as the sample respondents from active companies in the industrial fields through whom data was collected via a questionnaire. The obtained results revealed that there are three barriers for developing e-commerce in small and medium companies, i.e. high cost of IT application, lack of financial resources and technical knowledge in companies.

Organization for Economic Cooperation and Development conducted a study for identifying significant factors in small and medium companies' application of internet and e-commerce in countries which are OECD members. It showed that IT awareness and knowledge inside the companies, access to IT services outside the company, access to internet with reasonable cost, the existence of remote communication infrastructures and appropriate

bandwidth are the significant factors which played a role in the success of companies in using e-commerce (OECD, 2004).

Wymer and Regan combined the literature in utilizing e-commerce with the public application patterns (Regan & Wymer, 2005). They identified 26 effective factors for using information and communication technologies in small and medium companies. These factors can be categorized as parameters in relation to technology and business which included external factors, internal knowledge, expertise and financial resources.

Fathian et al., conducted a study for evaluating the preparedness of small and medium companies for accepting and succeeding to apply information and communication technologies (Fathian, Akhavan, & Hoorali, 2008). They found that the following factors play significant roles in companies' success and admission of e-commerce: compatible processes with IT applications, skillful and knowledgeable employees for understanding and utilizing the advantages of IT in e-commerce, IT security, IT tools and the required infrastructures for supporting business and commerce.

Salehi et al., examined the impact of the ease of access to the information in e-commerce websites on retaining and maintaining customers. They evaluated the effective factors in customers' behavior. In contrast with the traditional commerce markets, e-commerce markets encounter with the challenge of more competition and less customer loyalty. They found that, in e-commerce, attracting customers, getting their trust, security, satisfaction and retaining and maintaining them are critical issues (Salehi, Abdollahbeigi, Langroudi, & Salehi, 2012).

Beck et al., conducted studies in Denmark, France, Germany and the US and found that the majority of small and medium companies in these countries encounter with identical problems and challenges in applying information and communication technologies in e-commerce which were: direct relationship with customers, security issues in relation to customers and data and information, shortage of technical support, shortage of expert staff in e-commerce, high cost of integrating e-commerce with the available IT infrastructures in companies and the need for making obligatory changes in companies and organizations (Beck, Wigand, & Konig, 2005).

### 3. The proposed research model and hypotheses

The main purpose of this study was to propose a new model for determining important factors in e-commerce. Figure (Rahayu and Day, 2015) illustrates the research model which includes four variables (infrastructure, costs, customers' satisfaction, knowledge and awareness). In this model, the effect of each of the variables was examined. Four hypotheses for testing the relationships between the variables of the framework were formulated and produced. Also, in this section, other studies which investigated the same variables are reviewed.

It can be argued that customers are the critical components and needs of the companies. Hence, understanding their behavior is of high significance (Sá, Rocha, & Cota, 2016). With respect to e-commerce, attracting customers, gaining their trust and maintaining them are even more critical and challenging (Nakayama, 2009). For overcoming the difficulties and problems of global online purchasing, customers have to enhance their customers' satisfaction. The first hypothesis is as follows:

**H1.** there is a significant relationship between customer satisfaction and success in e-commerce.

The costs incurred for organizations and customers in e-commerce for achieving success is very important. The higher are the costs for internet infrastructures, the higher will be the costs of inside and outside organization and support costs; consequently,

the chance of achieving success in e-commerce will be weak (Thorleuchter, & Van den Poel, 2012). In the present study, cost is regarded as one of the effective factors for the success of e-commerce.

**H2.** there is a significant relationship between costs and success in e-commerce.

By selecting an appropriate technical infrastructure, we can guarantee the dynamicity of a strong and sustainable e-commerce (Kurnia, Choudrie, Mahbubur, & Alzougool, 2015). For expanding the acceptance and adoption of e-commerce, it is essential that the requirements of this technology including telecommunication infrastructure, legal issues, security issues and messaging issues be met. The presence of high-speed internet, appropriate communication network, suitable organizational infrastructures and cultural, educational and governmental factors play key roles in the prosperity of e-commerce (Xiao, & Dong, 2015). The third hypothesis is given as follows:

**H3.** there is a significant and meaningful relationship between infrastructure and the success of e-commerce.

For establishing and setting up a technology in a society, it is important that we first enhance the awareness and knowledge of the people in that society (Falk, & Hagsten, 2015). In other words, since public people establish the majority of the individuals of a society, the respective technology should be accepted by them. In case people lack the required awareness and knowledge for understanding IT and e-commerce and they lack the needed standards, thoughts and etiquette, e-commerce will not succeed. Thus, public knowledge and awareness is deemed to be a critical issue in e-commerce (Fathian et al., 2008).

**H4.** there is a significant and meaningful relationship between individuals' awareness and knowledge and e-commerce.

Moreover, Fig. 1 shows the proposed model of the study and its variables which indicates that the variables of infrastructure, cost, customer satisfaction and individuals' awareness have a direct impact on the success of e-commerce. Each hypothesis is denoted by the H letter and the relations of the hypotheses are indicated by the arrow lines.

In this research, for measuring the elements of the model, questionnaire was used as the main data collection tool. The questionnaire was designed based on five point Likert-type from 1 to 5 where 1 = completely disagree, 3 = neither agree nor disagree, and 5 = completely agree. It was designed by the researchers and included 40 questions. The content validity of the questionnaire was revised with the help of experts (including academic and practitioners) with significant experiences in the E-commerce field. This research is practical in nature and the goal was to conduct it from extensive perspective; this research was thus, descriptive and exploratory in approach. To examine the validity of the questionnaire was used from standard and reliable resource and were used after the revision, then among the statistical sample was distributed. The request for participation was asked in June 1 to September 1, 2015 and participation in this research was voluntary. The target respondents of the questionnaire were the staff employees of the Post Bank in Eastern and Western Azerbaijan. The total population in this research were 2500 people. Morgan table (appendix 1) was used for selecting the sample participants. Random sampling method was used to select the participants. Overall, 180 responses were received. After eliminating 9, which were invalid, we had 171 responses left for further analysis (see Table 1).

Based on the Morgan table, 148 people were randomly selected

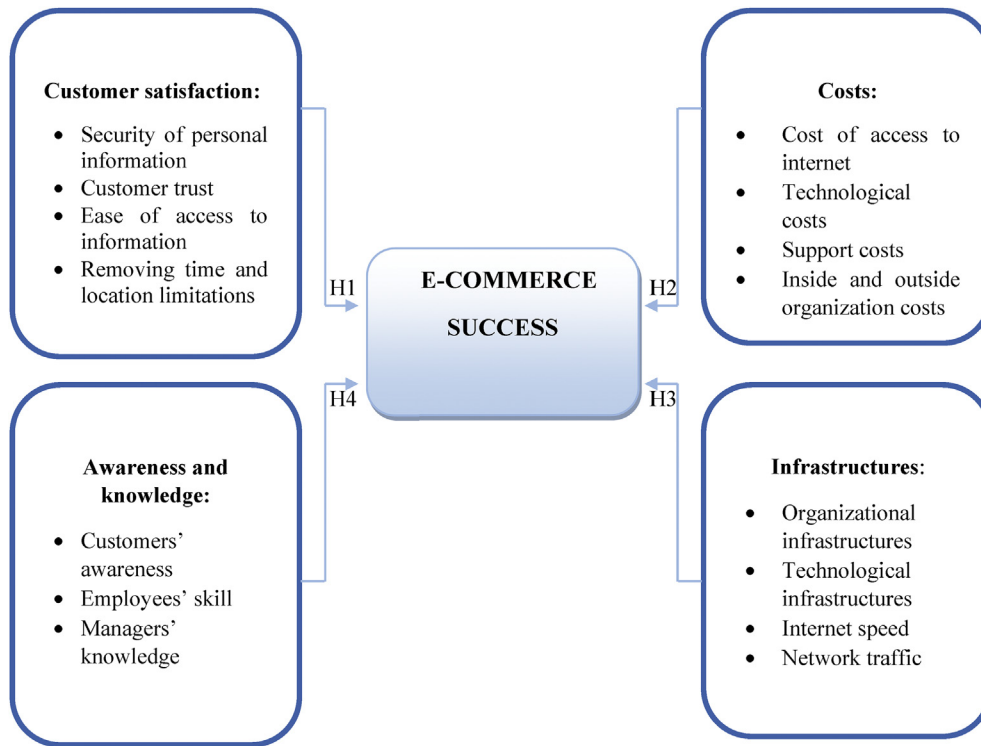


Fig. 1. The conceptual model.

**Table 1**  
Different variables and parameters investigated in related works.

Variables	Related works
Infrastructure	Chang, Chang, Ho, Yen, & Chiang, 2011; Kurnia et al., 2015; Piris, Fitzgerald, & Serrano, 2004; Xiao, & Dong, 2015
Cost	Chang et al., 2011; Thorleuchter, & Van den Poel, 2012; Turban, Rainer, & Potter, 2005
Customer satisfaction	Hoseinpoor, Danae, & Haghtalab, 2013; Nakayama, 2009; Sá et al., 2016; Wetzels, Odekerken-Schröder, & van Oppen, 2009
Awareness and knowledge	Chang, Yen, Chiang, & Parolia, 2013; Falk, & Hagsten, 2015; Fathian et al., 2008

from the valid sample participants. In this research, the discard rate was low. The samples selected for this study are the male and female genders. In terms of gender, the distribution of the sample was 39.19% for female and 60.81%. In this study for examine descriptive statistics about age, gender, and education the SPSS software was used. As Table 2 indicates having analyzed the demographic characteristics of participants in this survey, most of them were figured out to be in the age between 41 and 50 (33.78%),

followed by those in the range between 31 and 40 (32.43%), 21–30 (20.27%) and those in the age 51–60 (13.52%). Finally, post-graduate (45.94%) and under-graduate (54.06%) participants formed the population. Cronbach's alpha and Average Variance Extracted (AVE) were used for further checking the reliability and validity of the questionnaire. Moreover, composite reliability of the questionnaire was investigated. Then, the obtained data were analyzed in the SPSS and SMART PLC (partial least square) which are given in Tables (3) and (4).

**Table 2**  
The demographic characteristics of the sample.

	Frequency	Percentage
<i>Gender</i>		
Female	58	39.19
Male	90	60.81
<b>total</b>	<b>148</b>	<b>100</b>
<i>Age</i>		
20–30	30	20.27
31–40	48	32.43
41–50	50	33.78
51–60	20	13.52
<b>Total</b>	<b>148</b>	<b>100</b>
<i>Education</i>		
Under-graduate	80	54.06
Post-graduate	68	45.94
<b>Total</b>	<b>148</b>	<b>100</b>

#### 4. Result and data analysis

Structural equation modelling was used for examining the model and investigating the relationships between exogenous and endogenous structures. Hence, SMART PLS software was used for these tests. It is a component-based approach which can be used for measuring reliability, validity and the relations between variables (Cheng, & Yang, 2014). PLS method is mainly used as an alternative for modelling structural equations (Huang, Huang, Huang, & Lin, 2012). In this study, SMART PLS 3.0 was used for analyzing data. As mentioned above, reliability of the data collection tool was checked by Cronbach alpha and composited reliability. Cronbach's alpha is regarded as a traditional criterion for measuring reliability which should be over 70% so that reliability is judged to be acceptable (Cronbach, 1951). Since PLS is a modern method for

**Table 3**  
Reliability and validity of the model.

Variables	Cronbach's alpha	Convergent validity	Composite reliability (PLS)
Infrastructure	0.93	0.60	0.94
Costs	0.88	0.64	0.91
Customer satisfaction	0.90	0.67	0.92
Awareness and knowledge	0.92	0.68	0.93
Success of e-commerce	0.96	0.55	0.97

checking reliability, it was used as well as Cronbach's alpha. The superiority of PLS to Cronbach's alpha is that it does not measure the absolute reliability of the variables. Rather, it measures the correlation among the variables. Whereas 70% composite reliability (PLS) indicates the appropriate internal stability for the model, less than 60% PLS is interpreted as the lack of reliability (Nunnally, 1967). The next criterion for checking the validity of the model was Average Variance Extended (AVE). It indicates the average shared variance between a variable and its indexes. The higher the correlation between the variable and its index, the better it will be. The critical value for AVE is 0.4. The AVE values greater than 0.4 are regarded as acceptable (Larcker, & Fornell, 1981).

Finally, discriminant validity was checked which compares the relation of a variable with its different indexes with its relation with other variables. An acceptable discriminant validity of a model indicates that a variable in the model interacts better with its indexes than it does with other variables. Discriminant validity will be acceptable if AVE for each variable is higher than the shared variance between a variable and other variables. The Square of the correlation coefficient between variable (Larcker, & Fornell, 1981) Tables 3 and 4 reveal that since all the criteria are within the standard levels, the obtained results are acceptable.

The matrix shown in Table 3 is related to the proposed model. Inasmuch as the values in the main diameter is greater than the values under it, it can be argued that the discriminant validity is acceptable.

$$\mu AVE = \frac{AVE_{\text{infrastructure}} + AVE_{\text{costs}} + AVE_{\text{customer satisfaction}} + AVE_{\text{awareness}} + AVE_{\text{e-commerce}}}{5}$$

For testing and confirming or disconfirming the hypotheses of the study, the collected data were tested based on this test in the selected software. Three criteria of R<sup>2</sup>, significance values (T-value) and goodness-of-fit (GOF) were used for testing the hypotheses and the model which are described below. The most elementary criterion for evaluating the relationship between the structures in the model are the T significance values. In case T values exceed 1.96, it confirms the relation among the structures; consequently, it can be argued that the hypotheses are accepted with 0.95 confidence level. Using PLS software as the tool, we used Bootstrap method for measuring t value (Chin, Marcolin, & Newsted, 2003). Fig. 2 illustrates the obtained results for testing the hypotheses of the study. All the hypotheses were accepted at 0.95 confidence level. T value and the relations among the hypotheses are given in Table 4.

R<sup>2</sup> criterion is used for connecting the measurement and structural parts of the equation modelling. It indicates the impact of the independent variable on the dependent variable. Chin introduced three values of 0.19, 0.33 and 0.67 as the indexes for weak, moderate and strong values of R<sup>2</sup> (Chin, 1998). Indeed, R<sup>2</sup> was used

for evaluating the capability of the proposed model. In this research, there were four independent variables and one dependent variable. That is, the impact of the four variables of infrastructure, costs, customer satisfaction and awareness on e-commerce were investigated. Based on the obtained values from the analyses for path coefficients and R<sup>2</sup> criterion, we can argue that the hypotheses of the study are accepted and the independent variables of the study have significant effect on the dependent variable. Fig. 2 illustrates the value of R<sup>2</sup>. Table 5 gives a synopsis of the test results.

Recently, an appropriate global measurement has been proposed for examining the overall fitness of models using PLS. GOF criterion is related to the general aspect of structural equations models. Indeed, using this criterion, we can first investigate the fitness of the measurement section and, then, the fitness of the structural model. Consequently, we can control the overall fitness of the model. GOF index in the PLS model is regarded as a practical solution for sorting out the problem of overall model fitness. It functions like fitness indexes in covariance-based models. It can be used for investigating the reliability or the quality of PLS model (Ringle, 2006).

Wetzels et al., introduced 0.01, 0.25 and 0.36 as weak, moderate and strong values for GOF. That is, 0.1 or a value close to it is obtained for GOF in a model, it can be argued that the overall fitness of the model is weak. Hence, the relations between the structures of the model should be modified. However, as mentioned above, if the GOF values are 0.25 and 0.36, respectively, the relations between the structures are moderate and strong. The formula for calculating GOF is given below (Wetzels et al., 2009):

$$GOF = \sqrt{AVE \times R^2} \tag{1}$$

Also, for measuring AVE, Equation (2) is used.

$$\mu AVE = \frac{1}{n} \sum_{i=1}^n x_i \tag{2}$$

$$\mu AVE = \frac{0.60 + 0.64 + 0.67 + 0.68 + 0.55}{5} = 0.628$$

Moreover, R<sup>2</sup> should be measured for obtaining the overall fitness of the model:

$$\mu R^2 = \frac{1}{n} \sum_{i=1}^n x_i R^2 = 0.726 \tag{3}$$

By placing Equations (2) and (3) in Equation (1), GOF value is obtained:

$$GOF = \sqrt{AVE \times R^2} = \sqrt{0.628 \times 0.726} = 0.67$$

The obtained value for GOF in this study was 0.67 which is higher than the value for strong GOF. Thus, it can be argued that the structure of the proposed model is highly consistent with data.

**Table 4**  
Discriminant validity for the model.

Variables	Infrastructure	Costs	Customer satisfaction	Knowledge and awareness	Success of e-commerce
Infrastructure	0.77				
Costs	0.67	0.80			
Customer satisfaction	0.68	0.65	0.81		
Knowledge and awareness	0.73	0.69	0.68	0.82	
Success of e-commerce	0.70	0.72	0.67	0.60	0.74

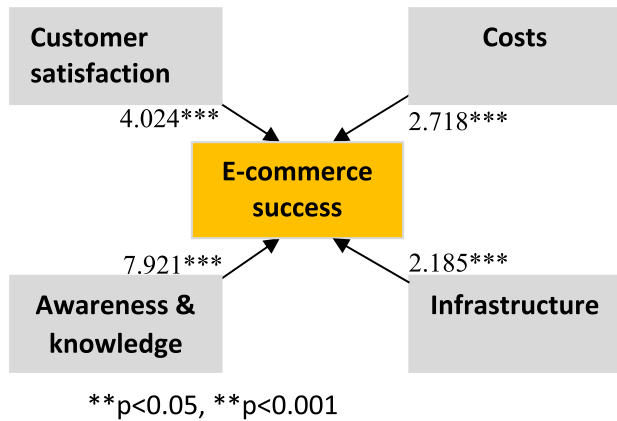


Fig. 2. Results for testing the hypothesis.

**5. Discussion of the results**

The results obtained from the analysis of the data indicate that all the hypotheses of the study are confirmed. As shown in Table 4, the results related to the obtained t-value and path coefficient revealed that customer satisfaction and attention to customers' behavior are regarded as one remarkable factor in e-commerce. Customer satisfaction included the security of personal information, customers' trust, ease of access to information and the elimination of time and location limitations. According to the results, i.e.  $\beta = 0.40$ ,  $t = 4.024$ ,  $p < 0.001$ , the first hypothesis was confirmed. Furthermore, the analysis of data indicated that the amount of cost is of high significance. Costs included indexes such as technological costs, supporting costs and the cost of accessing internet. Hence, it can be maintained that there is a significant and meaningful relationship between costs and the success of e-commerce. Based on the obtained results ( $\beta = 0.43$ ,  $t = 7.921$ ,  $p < 0.001$ ), the second hypothesis was accepted. Also, in the presence of appropriate infrastructures, we can enhance the efficiency and success of e-commerce. The identified indexes for organizational infrastructures included technological infrastructures, internet speed and network

traffic. Consequently, the third hypothesis of the study is accepted based on ( $\beta = 0.48$ ,  $t = 2.185$ ,  $p < 0.05$ ). Finally, the fourth hypothesis of the study, namely awareness was tested. It included customers' level of awareness, employees' skills and managers' knowledge. The higher the managers, employees and customers' awareness of e-commerce, the higher the probability of the acceptance of e-commerce. Hence, based on the obtained results, (i.e.  $\beta = 0.39$ ,  $t = 2.718$ ,  $p < 0.001$ ), the fourth hypothesis of the study was accepted.

**6. Conclusion**

In this study, a model and framework was proposed for directly evaluating and investigating the impact of four parameters on the success of e-commerce. The questionnaire as the data collection tool was designed by the researchers themselves which included 40 items based on the parameters of the study. Data were collected from 180 staff members of Post Bank in eastern and western Azerbaijan. The data obtained through the questionnaire were analyzed by the SMART PLS 3.0 software. In this study, the researchers focused on determining the impact of four variables on the success of e-commerce.

In any system, there are a number of critical factors which play pivotal roles in maintaining the system. The results obtained from this study indicated that the used infrastructures for each system have a significant impact on the success of e-commerce. On the other hand, the lower the costs, the higher the success of e-commerce. Consequently, the efficiency of e-commerce will be more. Furthermore, customers' awareness and knowledge affects their satisfaction with e-commerce. In general, some of the key issues in e-commerce are related to retaining customer satisfaction, adopting appropriate infrastructures with the lowest possible costs and having adequate awareness and knowledge for improving e-commerce.

**6.1. Limitations of the study**

It is inevitable that researchers deal with some limitations in their studies and the present study is no exception. One of the

**Table 5**  
Synopsis of test results.

Path	Path coefficient	T-test	Significance level	Effect size
Infrastructure → e-commerce success	0.48	2.185	Significant	Strong
Costs → e-commerce success	0.43	7.921	Significant	Strong
Customer satisfaction → e-commerce success	0.40	4.024	Significant	Strong
Awareness → e-commerce success	0.39	2.718	Significant	Strong

major limitations of the study was that the participants in this study were selected from only one organization, namely Post Bank. Including participants from different organizations and companies would be more optimal though it needs more cost and time. It is recommended that future studies include respondents from more than one organization. Also, the present study revealed that e-commerce is not ideally used in many organizations and even some organizations still use traditional commercial methods.

Moreover, another limitation of the study is that data were collected at a specific time span. Hence, it can be maintained that causal relations might vary over time. The dependent variable in this study was the success of e-commerce which is considered to be a highly variable construct. Each individual responds to e-commerce based his/her awareness and knowledge of it. As the time passes, one's acceptance of e-commerce might increase or decrease.

6.2. Suggestions for further research

Based on the results and findings of the study, the following issues are suggested as directions for further research:

- Protection of customers' privacy: nowadays, as the information and communication technology and internet use develops, the protection of individuals' privacy becomes a more critical challenge. Due to the anonymity of users and the ease of using internet for the public, the invasion of privacy has remarkably increased. Hence, for protecting people's privacy, certain measures such as legal strategies, financial support for the encryption technology and secure systems and awareness enhancement should be adopted.
- Improvement of the management of e-commerce: proper management is attributed to sound educational programs and supervising their correct execution. Due to not using and the lack of awareness of many organizations for the benefits of e-commerce, serious measures should be taken for improving e-commerce and its management.
- Enhancing the security of e-commerce: with respect to the increasing development and application of novel technologies and the remarkable increase of viruses and internet attacks, it is essential that the security of systems should be enhanced. For increasing security, certain approaches should be adopted. That is, preventive techniques such as symmetric encryption Hash functions can remarkable increase the general security of systems.

Appendices

Appendix 1  
Morgan table.

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	373
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	225	1900	320	30000	379

Appendix 1 (continued)

N	S	N	S	N	S	N	S	N	S
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Appendix 2  
Abbreviations and terms.

Abbreviation	Description
EC	Electronic Commerce
IT	Information Technology
CRM	Customer Relationship Management
SME	Small to Medium-sized Enterprise
B2B	Business to Business
B2C	Business to Consumer
C2B	Consumer to Business
C2C	Consumer to Consumer
B2A	Business to Administration
OECD	Organization for Economic Cooperation and Development
PLS	Partial Least Squares
SPSS	Statistical Package Social Sciences
WWW	World Wide Web
ANOVA	Analysis Of Variance
GOF	Goodness Of Fit
AVE	Average Variance Extracted

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