

## **Barriers of e-Commerce Adoption in Ethiopia : Large and Medium Scale Manufacturing Industries**

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### **Abstract**

The practice of e-commerce has become familiar in developed countries long years ago, but it is still at infant stage in developing countries. In Ethiopia, despite the fast growth of Information Communication Technology (ICT) infrastructures the practice of e-commerce is still in the first stage. Many factors could be a cause for low level of e-commerce adoption. This study is aimed at identifying the most important challenges that influence large and medium scale manufacturing industries in Ethiopia in order to adopt e-commerce. In this study, 330 large and medium scale manufacturing industries were incorporated using simple random sampling method. The data was collected from company managers using self-administered questionnaires which incorporated 26 barriers organized in to social & cultural, technical, economic, political, organizational, and legal & regulatory barriers. The finding of the study shows that the top barriers identified were related with lack of e-infrastructure, lack of e-trading legislations, external environmental factors and insufficient awareness about the benefit of e-commerce. In addition, the result from the t-test shows that barriers identified in the study has a more influence on non-adopters than adopters. This paper has recommendations for overcoming the barriers of adopting e-commerce in Ethiopia. This paper also contributes a lot for researchers who are interested to investigate about the barriers of adopting e-commerce in others sectors.

### **Key Words**

e-Commerce, Adoption, large and Medium Scale, Barriers

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## **INTRODUCTION**

Aydin and Savrul (2014), stated that internet based economic activities such as e-commerce becomes a common phenomenon in the world today. According to Rahayu and Day (2017), the introduction of e-commerce would play a significant role to conduct effective marketing and exchange products and services online. Gangeshwer (2013), Sabraz, Rashida, and Gunapalan (2015), stated that e-commerce is the most dominant way in which economic development can be reinforced in the digital age. Electronic commerce adoption is the acceptance and implementation of e-commerce. According to Terzi (2011), electronic commerce offers economic benefits to all countries and the gains for developed countries is in the short run, while developing countries will get more benefit in the long run. In Ethiopia, the growth and contribution of large and medium scale manufacturing industries is increasing from time to time. Asrie and Venkati (2012), stated that there is the low adoption of e-commerce in Ethiopia, and fully-fledged e-commerce has not yet been achieved in the country.

Studies conducted previously in other countries and in service sector in Ethiopia on the subject and the empirical evidences showed that e-commerce could bring profit and can also be practiced in the manufacturing sector. In Ethiopia, despite the fast growth of ICT infrastructures in large and medium scale manufacturing industries, the practice of e-commerce is still in the beginning stage. According to El-fitouri (2015), "e-commerce is buying and selling of products, services, and ideas through internet and non-internet communication systems such as telephone ordering, interactive television, electronic messaging and electronic payment".

Even though the growth of Large and Medium Scale Manufacturing industries is high in Ethiopia with lower share to Gross Domestic Product (GDP) since too much focus was given to agriculture, from time to time and the data from Central Statistical Agency (CSA) of Ethiopia in 2015 revealed that the large and medium manufacturing industries accounts 80.65 percent of the value added in the manufacturing sector.

As Amentie, Negash, and Kumera (2016), stated the growth of manufacturing industries is highly influenced by the government investment in infrastructures like road, electricity, telecommunication, access to water. The report on ICT access of CSA (2015), revealed that telecommunication and internet facility plays a great role for producers to sell, advertise and

exchange with their consumers in distant areas. In addition to this, establishing e-commerce in Ethiopia will contribute a lot for both producers and consumers.

Ethiopia has recorded a stable growth in mobile, internet penetration, and broadband services. But the practice of e-commerce is still in its infancy. Many factors could be a cause for low level of e-commerce adoption. This study aimed at identifying the important barriers that influence large and medium scale manufacturing industries in Ethiopia to adopt e-commerce and forward recommendations for implementing e-commerce successfully.

The finding of this study could contribute a lot for large and medium Scale Manufacturing industries in Ethiopia to be able to identify the possible barriers which affect the adoption of e-commerce and identify coping mechanisms. The Ethiopian government would also refocus its policies towards improving and facilitating the adoption of e-commerce in many sectors of the economy.

## **LITERATURE REVIEW**

### **Definition of e-Commerce**

Although e-commerce has been used for many years as an interdisciplinary topic, with issues ranging from e-technology, addressed by computer experts, to consumer behavior, addressed by marketing research experts. But still, there is no single definition which expresses it exactly. Zwass (2001), defines e-commerce as the sharing of business information, maintaining business relationships and conducting business transactions by means of telecommunications networks. According to Licker and Motts (2000), e-commerce is usually linked with buying and selling over the internet. Though the definition for e-commerce has slight difference among scholars, there is general consensus among researchers that the main components of e-commerce include: website, email, intranet, extranet, LAN and wireless area network (WAN), Voice over Internet Protocol (VOIP).

### Barriers of e-Commerce Adoption

**Table 1**  
**Barriers of Adopting e-Commerce**

S. No.	Barriers to e-Commerce	Sources
1.	Absence of Legal and Regulatory Systems	Love, Irani, Cheng, and Tse (2001), Mohammed, Almsafir, and Alnaser (2013), Biruk, Yilma, Andualem, and Tilahun, (2014), Savrul, Incekara, and Sener (2014), and El-fitouri (2015)
2.	Competitive Pressure	Zaied (2012), Razavi, Hosseini, and Razavi (2014)
3.	Computer Illiteracy	Abbad, Abbad, and Saleh (2011), Zaied (2012), Iddris (2012), Nanekaran (2013), Biruk, Yilma, Andualem, and Tilahun (2014)
4.	Relatively High Cost	Asrie and Venkati (2012), Iddris (2012), Zaied (2012), Biruk, Yilma, Andualem, and Tilahun (2014)
5.	Difficulty in Changing the Existing Working Procedures	Zaied, (2012)
6.	Low e-Commerce Infrastructure	Asrie, and Venkati (2012),Zaied (2012), Almousa (2013), Mohammed, Almsafir and Alnaser (2013)
7.	Low Level of Readiness Among Government Institutions	Kapurubandara (2009), Zaied (2012)
8.	Culture Differences	Tsu Wei, Marthandan, Yee-Loong Chong, Ooi, and Arumugam (2009), Zaied (2012), Iddris (2012)
9.	Poor Telecommunication Infrastructure	Iddris (2012), Asria and Venkati (2012), Almousa (2013), Nanekaran. (2013), Hassen and Svensson (2014)
10.	Lack of Awareness of e-Commerce Benefits	Zaied (2012), Iddris (2012), Asrie and Venkat (2012), Nanekaran (2013)
11.	Lack of Qualified Staff	Vijay and Asefa (2011), Asrie and Venkati (2012), Mohammed, Almsafir and Alnaser (2013), Hassen and Svensson (2014)
12.	Lack of Internet Security	Iddris (2012), Almousa (2013), Mohammed, Almsafir, and Alnaser (2013), Nanekaran (2013), Kanyaru and Kyalo (2015)
13.	Lack of Pressure from Suppliers and Customers	Zaied (2012), Almousa (2013), Adewale, Ayo-Oyebiyi, and Adebayo (2013). El-fitouri (2015)

14.	Lack of Management Support	Zaied (2012), Iddris (2012), Razavi, Hosseini, and Razavi, (2014)
15.	Lack of Technical Know How	Abbad, Abbad, and Saleh (2011), Zaied (2012), Iddris (2012), Hassen and Svensson (2014), Razavi, Hosseini, and Razavi (2014)
16.	Lack of Financial Resources	Zaied (2012), Mohammed, Almsafir, and Alnaser (2013), Hassen and Svensson (2014)
17.	Lack of Popularity for Online Marketing	Kapurubandara (2009), Lawrence and Tar (2010), Vijay and Asefa, (2011), Asrie and Venkati (2012), Zaied (2012)
18.	Lack of Secure Payment Infrastructures	Asrie and Venkati (2012), Nanehkaran (2013), Hassen and Svensson (2014), El-fitouri (2015), Singh, Yadav and Sahu (2016)
19.	No Simple Procedures and Guidelines	Zaied (2012), El-fitouri (2015)
20.	High Financial Risk	Iddris (2012), Razavi, Hosseini and Razavi (2014)
21.	Frequent Power Disruption	Asrie and Venkati (2012), Biruk, Yilma, Andualem, and Tilahun (2014)
22.	Lack of Adequate Budget	Kuzic, Fisher and Scollary (2002), Asrie and Venkati (2012), Nanehkaran (2013)
23.	Fear of Risk Product Delivery	Asrie and Venkati (2012), Biruk, Yilma, Andualem, and Tilahun (2014)
24.	Linguistic Barriers	Tsu Wei, Marthandan, Yee-Loong Chong, Ooi, and Arumugam (2009), Zaied (2012)
25.	Access to Global Market	Adewale, Ayo-Oyebiyi, and Adebayo (2013)

### **Barriers of e-Commerce in Africa**

Zaied (2012) has conducted a study on barriers of adopting e-commerce adoption in Egypt. As per their study, many factors were found responsible for the barriers of e-commerce adoption in Egypt. The finding in the study claimed that technical barriers were the most important barriers followed by legal and regulatory barriers. Whereas, lack of internet security is the highest barrier that inhibits the implementation of e-commerce in Egypt.

El-fitouri (2015) has also conducted a study on the factors affecting the adoption of e-commerce companies in Libya companies. The research was conducted to identify which obstacle affects the adoption of e-commerce in the

country by incorporation 400 companies. The finding of the study identified that the absence of security system and confidentiality of information on the internet was the first, lack of familiarity in online business is the second, Absence of laws and legislations were found the third and lack of credit card, consumers preference of traditional store, lack of training program about e-commerce, slow internet network etc were found as barriers of adoption in Libya.

**Figure 1**  
**Barriers of e-Commerce Adoption**

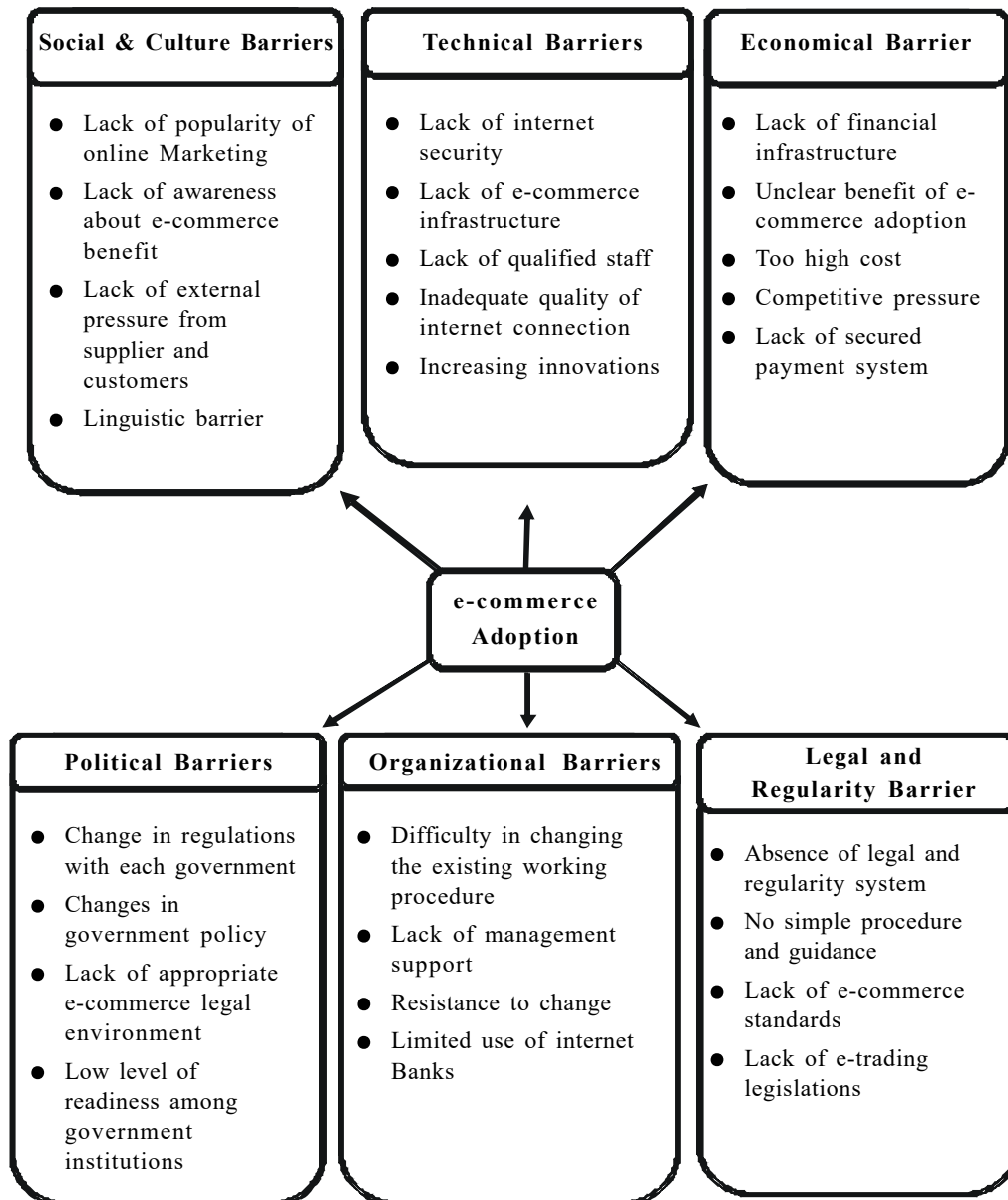


Figure 4.9. Conceptual framework for e-commerce adoption barriers by Zaid, (2012)

As it has been discussed in the literature review, many researchers have discovered different barriers of e-commerce adoption section. In this research, after a detail review on the barriers of e-commerce adoption the model developed by Zaied, (2012) was employed since the model has comprised most of the barriers identified by researchers. Zaied, (2012) has identified 26 barriers and organized in to six parts as shown in (Figure.1) below. In the model, the first part focused on barriers related to socio-cultural factors, the second part is about technical factors, the third part is about economic factors, the fourth part focus on political factors, the fifth part is about organizational factors and the las part is about legal and regulatory factors.

## **RESEARCH METHODOLOGY**

The main objective of the study is to identify the most important barriers facing the adoption of e-commerce in large and medium scale manufacturing industries in Ethiopia and to discover the relationship between the barriers affecting the adoption of e-commerce and the level of e-commerce adoption. In order to achieve the intended objectives, the questionnaire was designed as per the identified barriers in conceptual framework including instruments which measures respondent demographic characteristics and the level of ecommerce adoption. Marketing experts have checked the validity of the questionnaire and pilot study was also conducted for the design of final data collection instrument. Self-administered questionnaire was distributed to selected company managers. The participants were asked to rate their perception towards the barrier that affects e-commerce adoption within their enterprises on a five-point Likert-type scale with anchors from "strongly agree", "agree", "neutral", "disagree", and "strongly disagree" assigning values '5', '4', '3', '2', and '1' respectively.

Simple random sampling techniques was employed to select 410 samples from the total population of 3150 large and medium scale manufacturing industries found in Ethiopia. The sample size is representative according to Yamane (1967). In this research, a total of 410 questions were distributes and only 330 questionnaires were returned on time and properly filled. The response rate was 80.5 percent which is acceptable as per Baruch (1999).

## RESULTS AND DISCUSSION

### Demographic Background of Respondents

Table 2

Demographic Background of Respondents

Characteristics	Category	Frequency	Percentage
Gender	Male	296	90
	Female	34	10
	Total	330	100
Age	20-30 years	53	16
	31-40 years	172	52
	41-50 years	69	21
	51-60 years	29	9
	Above 60 years	7	2
	Total	330	100
Educational Qualifications	Certificate or less	16	5
	Diploma	80	24
	Bachelor degree	208	63
	Master degree and above	26	8
	Total	330	100
Work Experience	Less than 1 year	30	9
	1-3 years	71	20
	3-5 years	134	41
	More than 5 years	95	29
	Total	330	100

Source : Researcher Own Survey, 2018

In the demographic background of respondents, the gender, age, educational qualification, and work experience were asked. The data regarding gender of managers indicated that 296 (90%) were males and 34 (10%) were females. The data regarding age revealed that from the total respondents 53 (16%) were found 20-30 years, 172 (52%) were found 31-40 years, 69 (21%) were found 41-50 years, 29 (9%) were found 51-60 years, and 7 (2%) were aged above 60 years. The educational background of respondents indicate that 16 (5%) were certificate of less holders, 80 (24%) were diploma holders, 208 (63%) were bachelor degree holders



and the remaining 26 (8%) were found having Master's degree or above. The other demographic background incorporated in the study was the work experience of respondents in the management position. Regarding the experience characteristics 30 (9%) of the respondents were having an experience less than 1 year, 71 (20%) have 1-3 years' experience, 134 (41%) have 3-5 years' experience, 95 (29%) have more than 5 years' experience in management position.

From the demographic profiles of most of respondents it is understood that the large and medium scale manufacturing industries in Ethiopia were male dominated, with young and energetic managers aged between 30-40 years with bachelor degree and 3-5 years of experience in management position.

### Characteristics of the Companies

**Table 3**

**Characteristics of the Companies**

Characteristics	Category	Frequency	Percentage
Year of Service	Less than 1 years	13	4
	1-3 years	51	15
	3-5 years	84	26
	Above 5 years	182	55
	Total	330	100
Number of Employees	30- 50	64	19
	51-100	136	41
	101-500	88	27
	501-1000	32	10
	More than 1000	10	3
	Total	330	100
Category	Large	130	39
	Medium	200	61
	Total	330	100

**Source :** Researcher Own Survey, 2018

Regarding the experience of the selected large and medium scale manufacturing companies service experience 13 (4%) of the companies were having an experience less than 1 year, 51 (15%) have 1-3 years' experience, 84 (26%) have 3-5 years' experience, 182 (55%) have more than 5 years' experience in management position. The number of Employees working in the selected companies were also

included in the study and 64 (19%) were having 30-50 employees, 136 (41%) were having 30-50 employees, 88 (27%) were having 101-500 employees, and only 10 (3%) have more than 1000 employees. In addition, from the total companies included in the study, 200 (61%) were found medium scale manufacturing and the remaining 130 (39%) were found large scale manufacturing companies.

From the demographic profiles of most of Respondents Company, it is understood that most of the selected large and medium scale manufacturing industries were medium size and have an experience of more than five years of service. Moreover, many of the companies included in the study were having 30-50 employees.

### Reliability and Validity Test

Reliability and Validity are two basic elements in evaluating a measurement instrument. Validity is concerned with the extent in which the instrument measures what it is intended to measure, while reliability is concerned with the ability of an instrument to measure consistently. As a result, a reliability check was computed and the following Cronbach's Alpha Value were obtained.

**Table 5**  
**Summary of Barriers of e-Commerce Adoption Reliability Test**

Sr. No.	Item	Cronbach's Alpha Value	Number of Items
1.	Social & Cultural Barriers	0.884	4
2.	Technical Barriers	0.859	5
3.	Economical Barriers	0.788	5
4.	Political Barriers	0.801	4
5.	Organizational Barriers	0.824	4
6.	Legal & Regulatory Barriers	0.914	4
7.	Total Items	0.930	26

Source : Researcher Own Survey, 2018

As Streiner (2003) has mentioned alpha value of 0.70-0.95 has been acceptable and recommended. As a result, since the Cronbach's Alpha value of the instruments used in this study to identify the barriers of adopting e-commerce is 0.79-0.93, the instruments used were able to measure barriers consistently.

The other important element regarding the instrument is validity test. In order to have valid instrument, the researcher has adopted the items which were

developed by Zaied (2012) and used by Savrul, Incekara, and Sener (2014). In addition marketing experts have checked the contents in the items and the instruments were found highly measures in what it is intended to measure. Therefore, the instrument was found both reliable and valid.

### **Barriers of e-Commerce Adoption in Ethiopia**

For the purpose of identifying the barriers of adopting e-commerce, arithmetic average, standard deviation, and relative agreement of the study samples were used. Table 6 shows the results on barriers of in e-commerce adoption by Ethiopian large and medium scale manufacturing companies.

In order to rank the barriers as the level of agreement the researcher has categorized the result in to three. The top barriers which have a mean value of 3.67 (73.5% relative importance) and above were marked as "\*\*\*\*", the barriers which have a mean value of 3.5-3.67 (70-73.5% relative importance) were marked as "\*\*\*", and the barriers which have a mean value of less than 3.5 (<70% relative importance) were marked as "\*\*".

From Table 6 above, it can be seen that the percentage regarding relative importance and the arithmetic mean of answers respondents indicate that the first category barriers which have a mean value of 3.67 (73.5% relative importance) or above includes lack of financial infrastructure (76.4%), followed by lack of e-trading legislations (76.2%), followed by inadequate quality of internet connection (76%), followed by low level of readiness among government institutions (74.2%), followed by lack of e-commerce standards (74.2), followed by lack of external pressure from supplier and customers (74.1), followed by unclear benefit of e-commerce adoption (73.6), followed by limited use of internet Banks (73.6), followed by lack of Competitive pressure (73.5%) and followed by absence of simple procedure and guidelines (73.5) were categorized under the top ten barriers of e-commerce adoption in the large and medium scale manufacturing industries in Ethiopia.

It is observed from analysis that second category agreements were categorized for the barriers which have mean value of 3.5-3.67 (70% -73.5% relative importance). These barriers include lack of e-commerce infrastructure (73.4%), lack of appropriate e-commerce legal environment (73%), lack of popularity for online marketing (72.8), lack of qualified staff (72.8), lack of awareness about e-commerce benefit (72.7%), lack of secured payment system (72.4%), absence of legal and regulatory system (71.5%), lack of internet security (70.7%), and difficulty in changing the existing work procedure (70.7%) were categorized under the second level barriers of e-commerce adoption in the large and medium scale manufacturing industries in Ethiopia.

**Table 6**  
**Mean, Standard Deviation, Relative Importance of e-Commerce Barriers**

Barriers	Mean	Relative Importance	Ranking	Remark
Lack of Financial Infrastructure	3.8212	76.42%	1	***
Lack of E-trading Legislations	3.8121	76.24%	2	***
Inadequate Quality of Internet Connection	3.8	76.00%	3	***
Low Level of Readiness in Government Institutions	3.7121	74.24%	4	***
Lack of E-commerce Standards	3.7091	74.18%	5	***
Lack of Pressure from Supplier and Customers	3.7061	74.12%	6	***
Unclear Benefit of E-commerce Adoption	3.6818	73.64%	7	***
Limited Use of Internet Banks	3.6818	73.64%	8	***
Lack of Competitive Pressure	3.6758	73.52%	9	***
No Simple Procedure and Guidelines	3.6758	73.52%	10	***
Lack of E-commerce Infrastructure	3.6697	73.39%	11	**
Lack of Appropriate E-commerce Legal Environment	3.6485	72.97%	12	**
Lack of Popularity for Online Marketing	3.6424	72.85%	13	**
Lack of Qualified Staff	3.6424	72.85%	14	**
Lack of Awareness about E-commerce Benefit	3.6364	72.73%	15	**
Lack of Secured Payment System	3.6212	72.42%	16	**
Absence of Legal and Regulatory System	3.5758	71.52%	17	**
Lack of Internet Security	3.5333	70.67%	18	**
Difficulty in Changing the Existing Work Procedure	3.5333	69.67%	19	**
Linguistic Barrier	3.4727	69.46%	20	*
Too High Cost	3.3485	66.97%	21	*
Lack of Management Support	3.3333	66.67%	22	*
Change in Regulations with Each Government	3.3152	66.3%	23	*
Changes in Government Policy	3.2515	65.03%	24	*
Increasing Innovations and New Technologies	3.2	64%	25	*
Resistance to Change	3.1212	62.42%	26	*

Source : Researcher Own Survey, 2018

In the Table, it is also observed that the third category agreements were categorized the barriers with a mean value of less than 3.5 (<70% relative importance). These barriers include difficulty in changing the existing work procedure (69.6%), linguistic barrier (69.5%), too high cost (67%), lack of management support (66.7%), change in regulations with each government (66.3), changes in government policy (65%), increasing innovations and new technologies (64%) and resistance to change (62.4%).

Through previous results, it can be noted that the result is logical, because the success of e-commerce cannot be achieved with the absence of laws and regulations governing e-commerce. In addition to that, the success of e-commerce cannot be achieved by the lack of economic advantage and with the weakness regarding the social and cultural barriers in large and medium Scale manufacturing industries in Ethiopia. Besides, the technological, political and organizational are hindering factors to deal with e-commerce adoption.

**Table 7**  
**Compiled Mean, Rank and Relative Agreement on Barriers of e-Commerce Adoption**

Sr. No.	Item	Number of Items	Mean Agreement	Relative	Rank	Remark
1.	Legal & Regulatory Barriers	4	3.7	74%	1	***
2.	Economical Barriers	5	3.63	72.6%	2	**
3.	Social & Cultural Barriers	4	3.61	72.2%	3	**
4.	Technical Barriers	5	3.57	71.4%	4	**
5.	Political Barriers	4	3.41	68.2%	5	*
6.	Organizational Barriers	4	3.41	68.2%	6	*

Source : Own Survey, 2018

As shown above in the finding of the study, from the top ten barriers ranked above most of the factors are related with infrastructural (poor online financial infrastructure, interrupted internet connection), legal issue (lack of e-trading legislation, e-commerce standard and guidelines), and external environmental factors (low level of readiness among government institutions, suppliers, competitors and customers) barriers and insufficient awareness about the benefit of e-commerce. The studies that have been done in some of the countries of Europe and America, regarding the barriers of e-commerce where the development of the infrastructure and established legal system does not support the finding. However, These results are consistent with several previous studies,

where the study conducted by Love, Irani, Cheng, and Tse (2001), Laurance and Usman (2010), Zaied (2012), Savrul, Incekara, and Sener (2014), and El-fitouri (2015) in most of the developing countries, the infrastructure, laws, and legislation, and external environmental factors were the main factors hindering the growth and success of e-commerce adoption.

### **Barriers Among Adopters and Non-adopters**

The other area the researcher has investigated was either the barriers have relation with the level of adoption or not. As a result, the researcher has computed the average and standard deviation of the adopters and non-adopters and examine an independent t-test to know either the barriers have significant difference between the adopters and non-adopters. As Qirim (2007), the level of e-commerce is categorized in to four. In which the first category is "Non adopters" which are not connected to internet at all. The second category is "Starter" which are adopters of internet and e-mail. The third category is "Adopter" which are adopters of any Electronic Data Interchange (EDI), and website. The fourth category is "Extended Adopters" are adopters of any of the electronic commerce information technology. As a result, the data was splited in to two section. The "Non adopters" section combines non adopters and starters and "Adopters" incorporated those adapters and extended adopters.

The assumptions of an independent t-test like the assumption of independence were done carefully by selecting samples and administering respondents, test of normality by using Kim, (2013) criteria, test of homogeneity of variance using Levene's test for equality of variance were checked and the result of an independent on one tailed t-test in which the null hypothesis that stated the barrier mean for adopter is more than non-adopter. And the finding of the research has shown below in Table 8.

Results showed that the inadequate quality of internet connection as a barrier of e-commerce adoption is more in non-adopters with scores ( $M = 3.93$ ,  $SD = 0.88$ ) than adopters ( $M = 3.67$ ,  $SD = 1.25$ ) and it was found to be significant at  $t_{300.76} = 2.193$ ,  $p < 0.05$ . Regarding the lack of awareness about e-commerce benefit as a barrier of e-commerce adoption is more in non-adopters with scores ( $M = 3.91$ ,  $SD = 1.09$ ) than adopters ( $M = 3.67$ ,  $SD = 1.25$ ) and it was found to be significant at  $t_{314.88} = 3.85$ ,  $p < 0.05$ .

**Table 8**  
**Independent Test on the Difference Between Mean of Adopters and Non-adopters**

Sr. No.	E-commerce Adoption Barrier	Level of Adoption				Independent Test			
		Non Adopter (162)		Adopters (168)		Mean Difference	T	Df	Sig. (1-tailed)
		Mean	Std. Deviation	Mean	Std. Deviation				
1.	Inadequate Quality of Internet Connection	3.9321	0.8785	3.6726	1.24534	0.25948	2.193	300.757	0.0145
2.	Lack of Awareness about E-commerce Benefit	3.9074	1.09661	3.375	1.40012	0.53241	3.853	314.881	0
3.	Lack of popularity for online Marketing	3.9012	1.2015	3.3929	1.34492	0.50838	3.624	326.115	0
4.	Lack of Financial Infrastructure	3.9012	1.05859	3.744	1.18371	0.15719	1.270	328	0.1025
5.	Limited Use of Internet Banks	3.8889	0.97802	3.4821	1.29935	0.40675	3.220	309.916	0.0005
6.	Unclear Benefit of E-commerce Adoption	3.8765	1.05598	3.494	1.17864	0.38250	3.107	326.253	0.001
7.	Lack of External Pressure from Supplier and Customers	3.821	1.08005	3.5952	1.20993	0.22575	1.786	328	0.0375
8.	Lack of E-commerce Standards	3.8025	1.05052	3.619	1.01962	0.18342	1.610	328	0.054
9.	Lack of E-commerce Infrastructure	3.784	1.01369	3.5595	1.21223	0.22443	1.827	321.603	0.0345
10.	Lack of E-trading Legislations	3.7778	0.95878	3.8452	0.89569	-0.06746	-0.660	324.467	0.255
11.	Low Level of Readiness Among Government Institutions	3.7469	1.09381	3.6786	1.09611	0.06834	.567	328	0.2855
12.	No Simple Procedure and Guidelines	3.7407	1.02488	3.6131	1.08294	0.12765	1.099	328	0.1365
13.	Lack of Qualified Staff	3.7099	0.99491	3.5774	1.20626	0.13250	1.090	320.360	0.138

**Contd.**

Contd. Table 8

14.	Competitive Pressure	3.7099	1.10156	3.6429	1.2869	0.06702	.509	323.481	0.3055
15.	Absence of Legal and Regulatory System	3.6975	0.97859	3.4583	1.24705	0.23920	1.942	315.104	0.0265
16.	Lack of Internet Security	3.6914	1.02323	3.381	1.40064	0.31041	2.305	305.837	0.011
17.	Difficulty in Changing the Existing Working Procedure	3.6358	1.0792	3.4345	1.15629	0.20128	1.633	328	0.0515
18.	Lack of Secured Payment System	3.6111	1.09912	3.631	1.04141	-0.01984	-1.168	328	0.433
19.	Linguistic Barrier	3.6049	1.27741	3.3452	1.32678	0.25970	1.810	328	0.0355
20.	Lack of Management Support	3.5802	1.16751	3.0952	1.41522	0.48501	3.401	320.380	0.0005
21.	Lack of Appropriate E-commerce Legal Environment	3.4321	1.16297	3.2917	1.2105	0.14043	1.074	328	0.142
22.	Too High Cost	3.4259	1.13008	3.2738	1.1923	0.15212	1.189	328	0.1175
23.	Changes in Government Policy	3.3642	1.14075	3.1429	1.12822	0.22134	1.772	328	0.0385
24.	Increasing Innovations and New Technologies	3.3272	1.16272	3.0774	1.42264	0.24978	1.749	319.484	0.0405
25.	Change in Regulations with Each Government	3.3148	1.00602	3.3155	1.02156	-0.00066	-0.006	328	0.4975
26.	Resistance to Change	3.2531	1.20203	2.994	1.38208	0.25904	1.819	324.588	0.035

Source : Own Survey, 2018



Results showed that Resistance to Change as a barrier of e-commerce adoption is less in non-adopters with scores ( $M = 3.25$ ,  $SD = 1.2$ ) than adopters ( $M = 2.99$ ,  $SD = 1.38$ ) and it was found to be significant at  $t_{324.5} = 1.81$ ,  $p < 0.05$ .

In general, Since the p-value for barriers like lack of financial infrastructure, lack of e-commerce standards, low level of readiness among government institutions, No simple procedure and guidelines, lack of qualified staff, Competitive pressure, lack of appropriate e-commerce legal environment and too high cost was  $> 0.05$  the researcher accepted the null hypothesis, that said the barrier mean for adopter is more than non-adopter. But for the rest of all cases since the p value was  $< 0.05$  the researcher rejected the null hypothesis that said the barrier mean for adopter is more than non-adopter.

As a result, barriers like inadequate quality of internet connection, lack of awareness about e-commerce benefit, lack of popularity for online marketing, limited use of internet banks, unclear benefit of e-commerce adoption, lack of external pressure from supplier and customers, lack of e-commerce infrastructure, absence of legal and regulatory system, lack of internet security, linguistic barrier, lack of management support, changes in government policy, increasing innovations and new technologies, resistance to change used in the study has a more influence on non-adopters than adopters. From this finding it can also be claimed that the barriers that has been used in the study are binding the adoption of large and medium scale manufacturing industries in Ethiopia. This finding is supported by the study of Almousa (2013), Chitura, Mupemhi, Dube, and Bolongkikit (2008) and Zaied (2012).

**Table 9**  
**Independent Samples t-Test Result**

Sr. No.	E-commerce Adoption Barriers	Independent Samples Test Result			
		Mean Difference	t	Df	Sig. (1-tailed)
1.	Legal & Regulatory Barriers	0.12070	1.184	328	0.1185
2.	Economical Barriers	0.14780	1.607	328	0.0445
3.	Social & Cultural Barriers	0.381559	3.237	325.04	0.0005
4.	Technical Barriers	0.23532	2.300	304.8	0.011
5.	Political Barriers	0.10736	1.056	328	0.146
6.	Organizational Barriers	0.33802	3.139	310.64	0.001

As it has shown above in Table 9 : results showed that Legal & Regulatory related barriers are affecting more non-adopters with scores ( $M = 3.75$ ,  $SD = 0.91$ ) than adopters ( $M = 3.63$ ,  $SD = 0.93$ ) and it was found to be insignificant at  $t_{328} = 1.184$ ,  $p < 0.05$ . In addition, results showed that economical barriers are affecting more non-adopters with scores ( $M = 3.70$ ,  $SD = 0.83$ ) than adopters ( $M = 3.55$ ,  $SD = 0.83$ ) and it was found to be significant at  $t_{328} = 1.607$ ,  $p < 0.05$ . Results also showed that social & cultural barriers are affecting more non-adopters with scores ( $M = 3.80$ ,  $SD = 0.99$ ) than adopters ( $M = 3.42$ ,  $SD = 1.14$ ) and it was found to be significant at  $t_{325.04} = 3.237$ ,  $p < 0.05$ . Moreover, technical barriers are affecting more non-adopters with scores ( $M = 3.68$ ,  $SD = 0.77$ ) than adopters ( $M = 3.45$ ,  $SD = 1.06$ ) and it was found to be significant at  $t_{304.08} = 2.3$ ,  $p < 0.05$ . The political barriers are affecting more non-adopters with scores ( $M = 3.46$ ,  $SD = 0.9$ ) than adopters ( $M = 3.35$ ,  $SD = 0.93$ ) and it was found to be insignificant at  $t_{328} = 1.056$ ,  $p < 0.05$ .

Finally, the organization related barriers are affecting more non-adopters with scores ( $M = 3.58$ ,  $SD = 0.83$ ) than adopters ( $M = 3.25$ ,  $SD = 1.10$ ) and it was found to be significant at  $t_{310.64} = 3.139$ ,  $p < 0.05$ . From the above finding it is claimed that the Economic, Social, Technical and organizational barriers affects the non-adopters more than adopters. And the legal and regulatory and political barriers affects both because the finding which stated the barriers more affect non-adopter than adopters was found insignificant.

## **CONCLUSION**

From the finding of the study, the most important top ten barriers are the factors related with infrastructural (poor online financial infrastructure, interrupted internet connection), legal issue (lack of e-trading legislation, e-commerce standard and guidelines), and external environmental factors (low level of readiness among government institutions, suppliers, competitors and customers) barriers and insufficient awareness about the benefit of e-commerce. In addition, the researcher claimed that the Economic, Social, Technical and organizational barriers affects the non-adopters more than adopters. And the legal & regulatory and political barriers affects both because the finding which stated the barriers more affect non-adopter than adopters was found insignificant.

## **RECOMMENDATIONS**

Based on the research result, the following recommendations were forwarded for the successful adoption of e-commerce in large and medium Scale manufacturing industries in Ethiopia.

### **The Ethiopian Government**

- Develop the legal infrastructure such as e-commerce law, e-signature and e-payment laws, electronic security and safety systems.
- Focus on improving technical infrastructure necessary for the operation of e-commerce and internal systems support e-commerce.
- Encourage and stimulate the banking sector to enter the field of e-banking and credit card service to facilitate electronic payment.

### **Organizations that rely on e-Marketing in Ethiopia**

- Take into consideration the social customs and traditions for the consumer, when the target community.
- Create a climate that aims to disseminate the concept, importance, and advantages of e-commerce, and increasing the consumer confidence.

### **Non-adopting Manufacturing Companies in Ethiopia**

- Develop electronic infrastructures and technological advancement as a means of communicating electronically.
- Communicate using the web and work more to reduce the cost for enterprises.

## **LIMITATION OF THE STUDY**

It should be noted that this study has limitations. The data for the study were collected from manufacturing industry sectors, and it is not possible to make general conclusions. Also, this is a quantitative study and further qualitative research is required to gain a better understanding of the key issues of e-commerce adoption.

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