

E-Commerce Adoption Factors in Saudi Arabia

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Abstract

Some sectors in Saudi Arabia are slow in adopting eCommerce technologies for running their business transactions, and that is due to an internal set of factors (related to organizations) or an external set of factors (related to infrastructure and governmental support). We have noticed that most of the studies in this subject covered either internal factors or external factors, but not both. Moreover, most of the papers that studied eCommerce adoption factors in developing economies center on the environmental, infrastructural and governmental areas only, and overlook the organizational factors, while the focus of the subject studied and researched on developed economies was organizational (SMEs and large enterprises) related adoption factors by considering the technology infrastructure and government support as taken for granted, which is not the case in developing economies.

The objectives of this study are 1) to find out the level of eCommerce adoption in Saudi Arabia, and 2) to identify the factors that affect the adoption of eCommerce. By this, the output of the study can help the policy maker of ICT (Information and Communication Technology) in Saudi Arabia to direct the related activities toward the most effective local factors that will enable and leverage eCommerce potential and usage on one hand, and on the other hand the study will identify the promising local opportunities for eCommerce infrastructure providers (local banks, system integrators, IT solution providers, and major telecom operators) by discovering the distinctive eCommerce adoption factors.

Keywords: eCommerce, ICT, Saudi Arabia, Internal adoption factors, External adoption factors, PERM, Developing economies, Developed economies

1. Introduction

In developed economies, eCommerce and B2B have been in general successful and a valid option for expanding the eCommerce market either by Clicks-Pure-Play, or Clicks-and-Bricks-Mixed-Play. This research focuses on the eCommerce adoption factors in Saudi Arabia.

One of the active and dynamic industries in Saudi Arabia is the retail sector; it is the fourth largest sector in the country after oil, banking, and telecommunication sectors. In 2008, the retail sales were around USD 55 Billion, and expected to reach USD 97 Billion by 2013. On that basis, local banks recently started to provide e-payment gateway solutions, and telecom operators are concentrating their strategies on broadband as well as CITC (Communication and Information Technology Commission), which has adopted a cooperative strategy between the related parties (government agencies, media players, telecom operators, and educational bodies in the country) to leverage the broadband based economy, mainly the eCommerce.

Therefore, the focus is on adoption factors (barriers and motivators), which will provide the guidance for answering the research question "what are the eCommerce adoption factors in Saudi Arabia?" By such questions, the study will cover both internal (microenvironment) adoption factors as well as external (macroenvironment) adoption factors.

In addition to the above question, the eCommerce adoption level in Saudi Arabia will also be captured during

collecting and studying the data of the adoption factors.

1.1 Study Objectives

This paper aims to achieve three objectives:

- To find out the level of eCommerce adoption in Saudi Arabia
- To identify the factors that affect and contribute to the level of adoption of eCommerce
- To identify the distinctive factors for initial adoption of eCommerce and then its institutionalization

2. Literature Review

It has been widely recognized that the adoption and diffusion of eCommerce by businesses in developing countries is an important economic indicator of growth due to the perceived potential of the internet in reducing transaction cost (Molla and Licker, 2005), however the adoption of eCommerce in developing countries has fallen below expectation, and there have been several studies to explain the barriers and motivators (Molla and Licker, 2005). There are a very few analytical eCommerce studies in the developing countries (Davis, 1999; Enns and Huff, 1999; Jennex and Amoroso, 2002; Mukti, 2000; Moodley and Morris, 2004). Most of the studies focused on macro level and environmental constraints (physical, technological, institutional and socio-economical eReadiness and eCommerce barriers), but that should not be considered as the only source of barriers; from the literature of developed countries regarding eCommerce adoption decision, they are influenced by organizational readiness (the managerial, organizational and eCommerce related resources) (Beatty, Shim and Jones, 2001; Daniel and Grimshaw, 2002). The only comprehensive model (Molla and Licker, 2005) by Molla and Licker that focuses on developing countries covers both environmental and organizational readiness.

The objective of this study is to identify the obstacles that prevent the adoption of eCommerce as a retail channel in Saudi Arabia. The literature review would therefore concentrate more on the areas of eReadiness and adoption of eCommerce in the context of developing countries (Saudi Arabia as a case)

2.1 eTailer

eTailer is defined (Laudon and Traver, 2010) as “online retail store”, and this research would follow that, but many researchers have developed their own definitions similar to the one mentioned above, and some have noted that the eTailer is the same as B2C eCommerce (Kuhl and Beckmann, 1985; Davis, 1989). However, eTailing is not restricted to transactions with individuals (consumers) only; there could be a business transaction with other enterprises, and therefore eTailer should not be narrowed to B2C eCommerce type, but rather it should be viewed as the final point in the supply chain that is facing the end customer (whether individual consumer, or business customer).

2.1.1 eTailing business model

There are four main types of online retail business models (Laudon and Traver, 2010):

- Virtual Merchants: Single channel Web firms that generate almost all of their revenue from online sales.
- Multi-channel Merchandisers (Bricks-and-Clicks): companies that have a network of physical stores as their primary retail channel, but also have introduced online offerings
- Catalogue Merchants: established companies that have a national offline catalogue operation that is their largest retail channel but who have recently developed online capabilities.
- Manufacture-direct: single or multi-channel manufactures who sell directly online to consumers without the intervention of retailers.

2.2 eCommerce in Developing Countries

Because of the usual lack of the necessary financial, legal, and physical infrastructures for eCommerce in developing countries, the adoption of eCommerce in developing countries differs significantly from developed countries. Developing countries often have different business practices and cultures, which limit the applicability and relevance of the eCommerce models designed for developed countries (Gibbs, Kraemer and Dedrick, 2003; Hemple and Kwong, 2001; Molla and Licker, 2005). Additionally, most businesses in developing countries are small and thus less complex, which could facilitate eCommerce adoption, but that could also indicate the lack of sufficient resources required to invest in eCommerce (Goode and Stevens, 2000).

2.3 Theoretical Background

The literature on eCommerce adoption suggests that most research is based on one of the following frameworks:

- 1) Diffusion of innovation (DOI) (Beatty, Shim and Jones, 2001; Mehtens, Cragg and Mills, 2001; Rogers, 1995; Zhu and Kraemer, 2005).
- 2) The Theory of Planned Behaviour (TPB) (Kuhl and Beckmann, 1985).
- 3) Technology Acceptance Model (TAM) (Davis, 1989).
- 4) The Technology-Organization-Environment Model (TOE) (Kuan and Chau, 2001; Tornatzky and

Fleischer, 1990; Xu, Zhu and Gibbs, 2004; Zhu and Kraemer, 2005).

- 5) Institutional theory (Chatterjee, Grewal and Sambamurthy, 2002).
- 6) Resource-based theory (Barney, 1991; Zhu and Kraemer, 2005).

Several models have been developed on these frameworks. These models have different focuses, and are designed to examine different aspects of eCommerce adoption. Some models examine only the external environment of firms (Gibbs, Kraemer and Dedrick, 2003; Hemple and Kwong, 2001; Kshetri and Dholakia, 2002), while some consider technological aspects (Claycomb, Iyer and Germain, 2005).

Most of these models and studies examined one view or perspective, which can be summarized into the following:

- Perspective of adoption of innovation by individuals (organizations are too complex).
- Attributes of the innovation Perspective (advantages, compatibility, complexity).
- Managerial perspective and CEO characteristics.
- Organizational characteristics perspective.
- Environmental factors (competition, suppliers, regulatory actions).

Conversely, the models developed based on the Technology-Organization-Environment Model framework (Kuan and Chau, 2001; Xu, Zhu and Gibbs, 2004; Zhu and Kraemer, 2005) have tried to study the organizational context of eCommerce adoption. In these models, only factors such as firm size and scope are included. Others, such as managerial and internal organizational aspects (Molla and Licker, 2005) are left unevaluated, including the centralization, formalization, and complexity of managerial structure, the quality of human resources, and the amount of slack resources available internally (Xu, Zhu and Gibbs, 2004).

From the previous studies, most of these models are designed for developed countries where businesses consider it for granted that some environmental (external) services are there, such as delivery systems, credit payment, and government regulations. Thus, the Perceived eReadiness Model (PERM) developed by Molla and Licker's study (Molla and Licker, 2005) identifies many of the contextual and organizational factors that affect eCommerce adoption in developing countries (Molla and Licker, 2005). It defines two major constructs that measure both internal and external factors: Perceived Organizational eReadiness (POER) and Perceived External eReadiness (PEER) (Molla and Licker, 2005).

POER is defined as managers' perception and evaluation of the degree to which they believe that their organization has the awareness, resources, commitment, and governance to adopt eCommerce (Molla and Licker, 2005). The PEER is the degree to which managers believe that market forces, government, and other supporting industries are ready to aid in their organization's eCommerce implementation (Molla and Licker, 2005) (Figure 1).

The theoretical root of this model is interactionism, which allows a multi-perspective audit of the managerial, internal organizational, and external contextual issues to provide meaningful predictors of eCommerce adoption in developing countries (Molla and Licker, 2005).

The PERM Model is more comprehensive than earlier models, because it includes both external environmental and internal organizational issues (Molla and Licker, 2005). It is more relevant, because it is designed for developing countries (Molla and Licker, 2005), compared with previous studies of e-commerce adoption factors in Saudi market, where the focus is on either external environment or end-user perspective.

PERM model identifies two levels of adoption, the initial adoption of eCommerce, and the institutionalization of eCommerce (Molla and Licker, 2005).

The definitions of the model's variables are listed in table 12. We believe, however, that we should redefine the dependant variable "eCommerce Adoption level" and its values of categories of the dependant variable as the following:

eCommerce Adoption levels are:

Non-Adopters:

- 1) Not connected to the internet, no email.
- 2) Connected with email but no web site.

Initial Adopters:

- 1) Static eCommerce, that is, publishing basic company information on the web without any interactivity.
- 2) Interactive eCommerce that accepts queries, email, and form entry from users.
- 3) Institutional Adopters:
- 4) Transactive eCommerce, that is, online selling and purchasing of products or services, including customer services.

- 5) Integrated eCommerce, where the web site is integrated with suppliers, customers and other back office systems allowing most of the business transactions to be connected electronically.

We disagree with the original model of PERM in counting the first three levels (1,2,3) from the above list as non-adopters. In our opinion, if a business took the step to build a static website, meaning paying the money to register a domain, and arrange for hosting and basic development (even if it is one of the free services on the internet) it would indicate a higher intention and willingness to adopt and join the highway of internet, and therefore it would be in our judgment counted as an adopter more than not.

Finally, to make the model more compatible with Saudi market and because of the lack of an institutional physical delivery system (lack of local and national home delivery services) we added one dimension to the supporting industries: eReadiness about the delivery system.

2.4 Conclusion of Review

It is generally agreed that online retail is the smallest segment of the retail industry (Laudon and Traver, 2010) representing about 3% of the total retail market today, but it is continuing to increase at a fast growth rate (around 14% a year) and that not including the online services such as travel and job-hunting. Moreover, the retail sector in Saudi Arabia is one of the fastest growing industries. Answering the question of this research would identify the promising local opportunities for eCommerce infrastructure providers (local banks, system integrators, IT solution providers, and major telecom operators).

2.5 The Questions of the Study

Using the pioneering Molla and Licker Model (Molla and Licker, 2005) in the context of Saudi Arabia, The contributions of this paper will seek to answer the following questions:

- What is the current level of eCommerce adoption in Saudi Arabia?
- What are the distinct factors (barriers or motivators) that are more likely to affect the initial adoption of eCommerce in Saudi Arabia?
- What are the distinct factors (barriers or motivators) that are more likely to affect the institutional adoption of eCommerce in Saudi Arabia?

2.6 The Hypothesis

To be able to answer such questions, the following hypotheses are used to link the effect of internal and external factors to the spirit after positively to the level of eCommerce adoption:

- Hypothesis POER1: Perceived Organizational eReadiness factors contribute positively to initial adoption of eCommerce.
- Hypothesis POER2: Perceived Organizational eReadiness factors contribute positively to the institutionalization of eCommerce.
- Hypothesis PEER4: Perceived External eReadiness factors contribute positively to initial adoption of eCommerce.
- Hypothesis PEER4: Perceived Organizational eReadiness factors contribute positively to the institutionalization of eCommerce.

3. Research Methodology

The research has utilized the survey method by having the questionnaire from PERM, which covers 33 items of POER measured using 5-point Likert scale, 10 items of PEER using 5-points Likert scale plus one additional item regarding the supporting industries' eReadiness (in total 11 items for PEER), while using six item usage scale to measure the eCommerce adoption.

3.1 Sampling and Data Collection

- The population is any company operating in the Saudi local market
- The sample: we chose the top 100 Saudi companies, by targeting the Marketing and IT staff in these companies, for it is most likely that they have the leadership position in their industry.

3.2 Data Analysis Procedure

- The dependant variable is a categorical variable while the independent variables are intervals.
- Discriminant Function Analysis is the appropriate technique.
- The research model and the hypotheses were analyzed using Discriminant Function Analysis.
- Discriminant Function Analysis is a statistical analysis to predict a categorical dependent variable by one or more continuous or binary independent variables.

3.3 Implementation – Questionnaire Distribution

- On the 16th of May, the distribution of questionnaires started, and continued for two weeks using the following forms and media:

- 150 electronic questionnaires have been distributed.
- 50 hardcopy questionnaires have been distributed.
- On the 30th of May, the reminder procedure was followed for a week.

4. Analysis

4.1 Respondents and Response Rate

By the end of deadline “7th of June 2010”, 110 responses were received, 18 out of 110 responses were incomplete, therefore the total accepted responses are 92 with 46% response rate.

4.2 Descriptive Analysis

Of the respondents, 72% have 500 employees or more, which means the majority are large enterprises, and table1 shows the distribution based on industry type.

View of Job titles: Managing Director, CEOs, VPs, but the majority was in managerial levels in IT, Finance, Marketing and Sales.

The status or the level of eCommerce adoption in Saudi Arabia is expressed in table2.

It is clear that none of the cases was not connected to the internet, and based on our definition of non-adopters, initial adopters, institutional adopters, we can have the following calculations:

- 6.5 % are non-adopters
- 42.4% are initial adopters
- 51.1% are institutional adopters

4.3 Reliability Analysis

We performed a reliability test to validate the model with the local market of Saudi Arabia. The coefficient alpha and item-scale correlations have been used to test the reliability as illustrated in table3.

By reading the Cronbach's Alpha of each item, we can conclude that in general all the items are above 0.8, the accepted cut-off for reliability, while in the corrected item total correlation there are some items that did not meet the acceptable level (> 0.4) as defined in Moll's model, and these are listed below:

HR2: “Most of our employees have unrestricted access to computers” with 0.19

BR5: “Failure can be tolerated in our organization” with 0.2

SIeR2: “The technology infrastructure of commercial and financial institutions is capable of supporting eCommerce transactions” with 0.314

SIeR5: “Delivery system services are easily available and affordable” with 0.296

However, for our study and the importance of the infrastructure and delivery system, we will use a lower cut-off point of 0.25, and by so doing we will have to reject HR2, and BR5

4.4 Inferential Analysis – Using Discriminant Function Analysis (DFA)

Part I: We ran the DFA using SPSS with the following input:

- Categorical dependant variable:
 - eCommerce Adoption status (EAD): 1 for Non-Adopter, 2 for Initial Adoption, 3 for Institutional Adoption.
 - On that basis, we have three groups, and therefore DSA should provide two functions.
- Interval independent variables:
 - POER – Perceived Organizational eReadiness.
 - PEER – Perceived External eReadiness .

From Test of Equality it can be seen that Wilks's lambda is significant by the F test for all variables (POER and PEER) → i.e., no Variable will be dropped from the Model. (Table 4)

Box's M test tests (Table5) the assumption of homogeneity of covariance matrices. This test is very sensitive, to meet the assumption of multivariate normality. For the data in the table below, the test is significant, so we conclude that the groups do differ in their covariance matrices.

The model has generated two functions, and both are significant as illustrated in table 6:

By calculating the discriminant loading for each variable per each function we can get the indication of the predictors of membership as shown in table 7:

From function1: POER is identified as a significant and positive contributor to institutionalization of eCommerce, which result supports the hypotheses of POER2

From function2: PEER is identified as a significant and positive contributor to Initial adoption of eCommerce, and this result supports the hypotheses of PEER3

On that basis, the perceived external eReadiness factors are the main drivers for the initial stage of adoption; on

the other hand, for the businesses to take the extra mile towards the institutionalized eCommerce, the perceived organizational eReadiness factors are the main drivers.

Part II: We ran the DFA using SPSS with the following input:

- Categorical dependant variable:
 - eCommerce Adoption status (EAD): 1 for Non-Adopter, 2 for Initial Adoption, 3 for Institutional Adoption.
 - Based on that, we have three groups, and DSA will therefore provide two functions.
- Interval independent variables:
 - Internal: Awareness, Commitment, Governance, Resources (Human Resources, Business Resources, and Technology Resources).
 - External: Market Forces eReadiness, Supporting Industries eReadiness, and Government eReadiness.

From Test of Equality it can be seen that Wilks's lambda is significant by the F test for all variables except for BR (Business Resources) (Table 8).

Box's M test tests the assumption of homogeneity of covariance matrices. This test is very sensitive, to meet the assumption of multivariate normality. For the data in table 9, the test is significant so we conclude the groups do differ in their covariance matrices.

The model has generated two functions, and both are significant as illustrated table 10:

By calculating the discriminant loading for each variable per each function we can get the indication of the predictors of membership as shown in table 11.

From function1: TR, C, A, G, MFeR, and HR are identified as significant and positive contributors to institutionalization of eCommerce

From function2: SIeR, MFeR, and GVeR are identified as significant and positive contributors to Initial adoption of eCommerce.

5. Results

As orientation for newcomers to the Saudi market, the level of adopting eCommerce is 51% as institutionalized and 42% as initial adopters.

The Supported Hypotheses are:

- Hypotheses POER2: Perceived Organizational eReadiness factors contribute positively to the Institutionalization of eCommerce
- Hypotheses PEER3: Perceived External eReadiness factors contribute positively to initial adoption of eCommerce

That means that the first step in adoption of eCommerce and the related decisions are heavily dependent on the external factor, mainly the factors related to market forces (customers and partner eReadiness) as well as the supporting industries eReadiness, and then the effect of government eReadiness and support will play an effective role of directing and facilitating. However, for advanced and institutional eCommerce-level decisions and adoption, the main factors and determinants are internal factors (technology resources related factors, managerial factors, organizational factors) while the only external factor that still has a considerable amount of influential power in this level of adoption is the market forces' eReadiness.

As a policy maker (Ministry of Communication and Information Technology, and Communication and Information Technology Commission) concentrating on external enablement will take firms only to the initial level of adoption. For taking the last mile, policies and strategies need to be developed with focus on the internal factors of the local firms.

Opportunities seekers and investors in the arena of eCommerce solutions must concentrate on providing the Technology resources, training for raising the awareness, commitment, and governance of firms in a specific industry, as well as analyzing the market forces of that particular industry, and help in raising such forces (from the customers, and the suppliers).

6. Limitation and Future Work

The current research has several limitations:

First: a larger sample would be desirable for greater results, and to test the obtained results in this study.

Second: covering more small and mid-size enterprises (SMEs) (in this study the large enterprises are 72% of the sample) would give another view of its reality.

For future work and research, the use of logistic regression in the analysis may add some degree of ease of use of the PERM model because logistic regression is much more relaxed and flexible in the assumptions than DFA, logistic regression does not require the independent variable to be normally distributed, nor linearly related. It does, however, require a large sample size.

7. Conclusion

By utilizing the PERM model with the two constructs PEER and POER and with its exploratory power (covering the perspective of innovation, management, organization, and environment), the study has addressed the following questions: – What is the current level of eCommerce adoption in Saudi Arabia? And – what is the group of factors or determinants that affects the decision of adoption and the level of adoption?

In general, the findings of the study can be summarized into two conclusions:

- i. In Saudi Arabia, the environmental factors are more likely to affect the initial adoption of eCommerce, which is a stage of “I am there! I am online but not generating online revenue”, so it is a way of the firm saying, “I hear the environment – the market forces, the supporting industry evolving, the governmental direction and regulations.”
- ii. As firms seek a more advanced form of eCommerce adoption, then the internal organizational factors become the main determinants for such decision, and on top of these factors are the technology resources, followed by commitment, awareness, and governance. One of the external factors, then, is placing considerable importance for such decision, the market force eReadiness, which represents the required ability to adapt to the market changes and customer needs.

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Table 1. The distribution based on industry type

Respondents' Sector	%
Financial and insurance	10.1%
Tourist and transportation	1%
ICT services and products	28.3%
Energy and utilities	11.1%
Real-estate and construction	4%
Retail	28.5%
Petrochemicals	11%
Health (pharmaceutical and medical goods)	6%

Table 2. The status or the level of eCommerce adoption in Saudi Arabia

Case Processing Summary			
		No. of cases	Marginal Percentage
EAD	2 "email"	6	6.5%
	3 "Static Site"	14	15.2%
	4 "Interactive"	25	27.2%
	5 "Transactive"	16	17.4%
	6 "Integrated"	31	33.7%
Valid		92	100.0%
Missing		0	
Total		92	

Table 3. The coefficient alpha and item-scale correlations (Item Analysis)

Item analysis: Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Organizational				
A1	153.74	606.986	0.591	0.952
A2	153.7	602.807	0.648	0.952
A3	153.62	609.095	0.674	0.952
A4	153.7	606.763	0.61	0.952
A5	153.52	607.967	0.583	0.952
A6	153.79	607.045	0.563	0.952
A7	153.95	607.283	0.524	0.952
C1	154.11	593.263	0.785	0.951
C2	154.25	592.981	0.764	0.951
C3	154.26	593.514	0.803	0.951
C4	154.34	596.226	0.762	0.951
C5	154.24	594.843	0.755	0.951
G1	154.34	599.742	0.675	0.951
G2	154.23	602.991	0.708	0.951
G3	154.38	601.645	0.672	0.951
G4	154.32	596.108	0.734	0.951
G5	154.39	601.45	0.657	0.952
G6	154.37	600.609	0.682	0.951
G7	154.5	596.802	0.746	0.951
G8	154.18	608.284	0.542	0.952
HR1	153.32	611.537	0.493	0.952
HR2	153.66	624.006	0.194	0.954
BR1	153.92	615.763	0.394	0.953
BR2	153.97	611.878	0.449	0.953
BR3	153.91	608.366	0.508	0.952
BR4	154.36	611.991	0.531	0.952
BR5	154.11	624.34	0.232	0.954
BR6	153.79	606.825	0.537	0.952
TR1	153.42	608.489	0.587	0.952
TR2	153.6	599.034	0.684	0.951
TR3	153.15	614.328	0.496	0.952
TR4	153.14	611.573	0.57	0.952
TR5	153.57	605.721	0.597	0.952
TR6	153.63	603.093	0.662	0.952
External				
MFeR1	153.72	617.348	0.379	0.953
MFeR2	153.6	619.935	0.358	0.953
GVeR1	154.03	614.054	0.408	0.953
GVeR2	154.27	614.024	0.425	0.953
GVeR3	154.11	618.603	0.385	0.953
GVeR4	154.13	614.005	0.38	0.953
SIeR1	153.55	618.733	0.36	0.953
SIeR2	153.68	620.24	0.314	0.953
SIeR3	153.6	618.99	0.381	0.953
SIeR4	153.99	614.692	0.38	0.953
SIeR5	154.02	619.428	0.296	0.954

Table 4. Tests of Equality of Group Means

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
POER	0.758	14.216	2	89	0.000
PEER	0.821	9.669	2	89	0.000

Table 5. Box's M test

Test Results		
Box's M		18.452
F	Approx.	2.798
	df1	6
	df2	1.257E3
	Sig.	0.01

Table 6. Significance Table

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1 through 2	0.647	38.59	4	0.000
2	0.862	13.17	1	0.000

Table 7. Structure Matrix (discriminant loading)

Structure Matrix		
	Function	
	1	2
POER	.961*	-0.278
PEER	0.574	.819*

Table 8. Test of equality

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
A	0.785	12.153	2	89	0.000
C	0.776	12.817	2	89	0.000
G	0.812	10.32	2	89	0.000
HR	0.928	3.428	2	89	0.037
BR	0.967	1.499	2	89	0.229
TR	0.72	17.292	2	89	0.000
MFeR	0.817	9.951	2	89	0.000
GVeR	0.928	3.447	2	89	0.036
SIeR	0.89	5.487	2	89	0.006

Table 9. Test the assumption of homogeneity of covariance matrices

Test Results		
Box's M		116.101
F	Approx.	2.282
	df1	45
	df2	21560
	Sig.	0.000

Table 10. Significance Table

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	0.518	55.935	18	0.000
2	0.832	15.615	8	0.048

Table 11. Structure Matrix (discriminant loading)

Structure Matrix		
	Function	
	1	2
TR	.796*	-0.145
C	.676*	-0.23
A	.659*	-0.214
G	.617*	-0.061
HR	.345*	-0.152
SieR	0.259	.639*
MFeR	0.498	.601*
GveR	0.226	.479*
BR	0.188	-.247*

*. Largest absolute correlation between each variable and any discriminant function

Table 12. Structure Matrix (discriminant loading)

Description of the variables in the PERM[1]	
Variables	Description
Perceived organizational eReadiness (POER)	
Awareness	Represents perception of eCommerce elements in the environment; comprehension of their meaning through an understanding of eCommerce technologies, business models, requirements, benefits and threats and projection of the future trends of eCommerce and its impact.
Commitment	Reflects enough energy and support for eCommerce from all corners of an organization and especially from the strategic apex. It refers to having a clear-cut eCommerce vision and strategy championed by top management, eCommerce leadership and organization wide support of eCommerce ideas and projects.
Human resources	Refers to the availability (accessibility) of employees with adequate experience and exposure to information and communications technology (ICT) and other skills (such as marketing, business strategy) that are needed to adequately staff eCommerce initiatives and projects.
Technological resources	Refers to the ICT base of an organization and assesses the extent of computerization, the flexibility of existing systems and experience with network based applications
Business resources	This covers a wide range of capabilities and most of the intangible assets of the organization. It includes the openness of organizational communication; risk-taking behavior, existing business relationships, and funding to finance eCommerce projects.
Governance	The strategic, tactical and operational model organizations in developing countries put in place to govern their business activities and eCommerce initiatives.
Perceived external eReadiness (PEER)	
Government eReadiness	Organizations' assessment of the preparation of the nation state and its various institutions to promote, support, facilitate and regulate eCommerce and its various requirements.
Market forces eReadiness	The assessment that an organization's business partners such as customers and suppliers allow an electronic conduct of business.
Supporting industries eReadiness	Refers to the assessment of the presence, development, service level and cost structure of support-giving institutions such as telecommunications, financial, trust enablers and the IT industry, whose activities might affect the eCommerce initiatives of businesses in developing countries.
eCommerce adoption	
Initial eCommerce adoption	A business is considered to have adopted eCommerce if it has achieved an interactive eCommerce status.
Institutionalization of eCommerce	Indicates whether or not an organization has attained an interactive, or transactive or integrated eCommerce status.

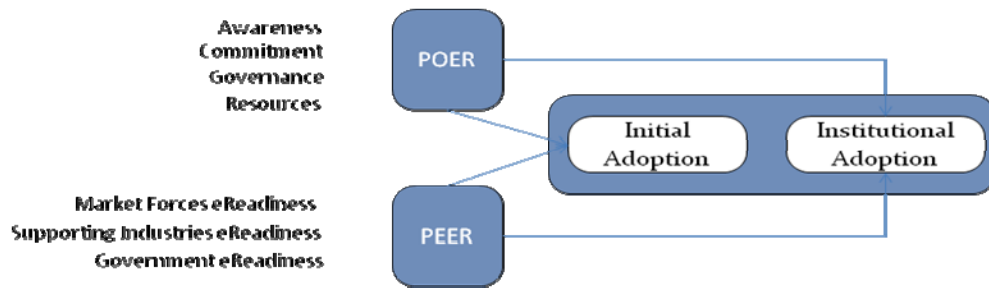


Figure 1. PERM