Electronic Commerce Adoption in the Arab Countries – An Empirical Study

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Abstract *This study examines the factors that affect Electronic Commerce (EC) adoption in the Arab countries. The five countries that are represented in this study include Saudi Arabia, Qatar, Kuwait, United Arab Emirates and Yemen. The purpose of this study is analyzing the crucial factors affecting EC adoption among the Arab consumers. The study examines the effect of risk perception, trust and consumer knowledge on their EC adoption. It also highlights consumer's knowledge mediation in affecting their perception of risk and trust towards EC adoption. Upon filtration, three hundred samples were selected for data analysis in this study. Descriptive and inferential statistical analyses including statistical mediation technique were carried out to analyse the data. Results reveal knowledge as the most important factor that contributes to EC adoption and it mediates consumers' perception of risk and trust in contributing to their EC adoption. The preliminary finding of this study was presented in the International Arab Conference of E-Technology held in Amman, Jordan from 14th to 16th October 2008. This paper presents the complete study and further data analysis with extended report and discussions.*

Keywords: *Electronic Commerce Adoption, Arab Countries, Knowledge Mediation, Perceived Risk, Online Trust, Statistical Mediation Technique*

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1. Introduction

The convergence of telecommunications and computer technology has given birth to a new business organizational system called the internet. Over the last few years, Internet usage at all levels continues to grow which includes the Arab Countries [1][6][8]. The internet popularity has grown at an unbelievable rate as it changes its overall purpose from defense to commercial applications. The Arab countries represent a large, economically open service based economy; however it is yet to experience the optimum benefit of adopting Internet technologies.

Recently the Arab Council for Judicial and Legal Studies (ACJLS) held its second training event in Manama, Bahrain, on September 11-12, 2007. The workshop examined current trends and best practices in E-Commerce and the Challenges with Technology & the Law, Electronic Commerce and the Methods of Contracting and Transactions Online, and Electronic Contracting, and a conclusive discussion on the regional perspectives and challenges. Over seventy senior legal professionals including from Ministry of Justice officials, judges and other judicial leaders, attorneys and academics from 11 countries in the Middle East and North Africa were in attendance. In addition, the Arab Advisors Group conducted a research analysis during the second half of 2007. The study focused on e-commerce expenditure in Kuwait, Saudi Arabia, the UAE, and Lebanon. As a result, the study observed that total number of EC users in these four countries has exceeded 5.1 million people in 2007. The council also highlighted that the Arab countries are in general still lagging behind due to the lack of national information infrastructure, national information networks and advanced computer technology. Internet penetration in the Middle East stands at 17.4 % while the rest of the world is 20.1 % [5][12].

Various reasons contribute to this lag; one of it is the late introduction of the Internet in this region. In countries such as Yemen and Iraq, there are still restrictions on hard currency transfers and consumers will find it difficult to complete transactions and make payments Online. One study conducted in the UAE suggests that the slow acceptance of EC is due to consumers' lack of knowledge about the advantages of using the Internet and their view of it as a Western product propagating Western values and cultures [27].

Internet in the Arab countries has been considered as an important issue only in the mid 1980s. Most of the consumers do not surf internet at home, instead they use to go to Internet cafes. As a result, they do not spend much time online. Most users use the Internet connections to make cheap long-distance phone calls as well as chatting. The majority of the Internet users here are concentrated in the Gulf countries (UAE, Saudi Arabia, Oman, Bahrain, Kuwait and Qatar), countries whose population does not exceed 11 percent of the whole region's total

population. In addition, consumers in the Gulf region enjoy the possibility of completing transactions directly by using credit cards or other methods of payment. In other countries such as Yemen and Iraq, there are still restrictions on hard currency transfers, and consumers will find it difficult to complete transactions and effectuate payments online without these services.

Most studies on EC have often focused predominantly on Western countries, though it is perceived as a global phenomenon. Though it is directly important to find out EC in the context of more advanced countries, it is worth noticing that EC also impacts developing countries and the Internet penetration in these countries are on a steep curve. Studies indicate that EC adoption depends heavily on how it is used by the adopters and this in turn is influenced by the fit between the technology and the adopters [36]. Most developing country markets have not always been successful in adopting technologies, hence studies that will unveil the reasons for the lack of acceptance and adoption in highly needed. Researchers and practitioners also agree that there are still uncertainties in the significance of EC among consumers in developing countries hence its benefits for these countries are not fully realized [18].

Researchers and practitioners should not be caught off guard not studying and taking advantage of the Internet and EC phenomenon among the Arab countries. Latest statistics show a huge growth of the Internet usage in this region. As of March 2008, there are estimated 42 million Internet users in the Arab countries. These countries are experiencing a phenomenal growth of Internet usage in the last 8 years with 1176.8 % growth compared to the world average growth of 281.8% for the last 8 years [12]. The increase in the number of local Internet Service Providers (ISP) has increased consumer demands and usage of Internet services. The development and production of Arabic language-based Web browsers and software are further boosting the Internet penetration in the region. The consumers in this region are highly promising and will play a significant role in the use and development of the EC in the coming years.

2. Arab Countries and EC Adoption

The Arab countries find various similarities including religion, customs and values, history, and language. However, they differ mainly in terms of wealth and size. Among the Arab countries, Tunisia was the first to introduce the Internet in the country in 1991. Four years later, in August 1995, the UAE went online as well as some other countries such as Bahrain, Oman and Qatar. The UAE is doing exceptionally well in adopting the online technologies as a whole. With phones available to almost every person in the country and an estimated number of Internet users per 1,000 people that exceeds the same metric in the UK; United Arab Emirates has the potential to be among the leaders in the world on Internet preparedness. Latest technological initiatives and conventions often take place in UAE, and especially Dubai, the playground of the first Arab Internet city and electronic government. This is partly due to:

- Leadership with a clear modernization of vision;
- Sufficient financial resources; and
- Attractive place to work for highly skilled expatriates from South Asia, Western Europe, and the USA.

Though UAE is leading in its Internet preparedness, it is not the case with the rest of its neighbouring countries. It has been opined that the slow acceptance of the Arab people to the EC was due to the lack of knowledge about the relative advantage of internet and their view of it as a Western product propagating Western Values and cultures. Knowledge about E-commerce is important since it helps in using it strategically. The lack of knowledge in the use of computers, Internet and EC, are major problems hindering the use of IT among the Arab country consumers. Through the years, people in these countries have preferred face-to-face interactions over other modalities of doing business, purchasing products and communicating with each other. Familiarity with Basic English is also found to be essential for using the Internet. This language barrier for most consumers coupled with shortage of Arabic software further contributes to the reluctance of consumers. The Arabic culture is high on group and family collectivism and power distance, and low on future orientation. It is a high-context culture where personal relationships and the context of the communication process are more important than the content of the communicated message. Oral communication is preferred over written communication. Thus, face-to-face communication, or even a telephone call is valued more than e-mail or fax-based communication.

Prior experience of using the Internet is an important factor that affects users' decision making in using EC for Online purchasing, as it can shape individuals' beliefs on the perceived usefulness and the ease of use of EC [24]. Customers' knowledge of EC helps them in conducting information search through the Internet [28][31]. Studies also have found that knowledge and skills gained through experience of using the Internet and computer helps to reduce consumers' perceived risk in Online shopping [24][27]. An author contended that the higher a consumer's Internet usage skill, information search performance, and search proficiency is, the higher will be his or her inclination to using the Internet to conduct Online transactions [9].

Trust in the Arab culture is established through an elaborate social process [21]. For Business-to-Business or Business-to-Consumer to work, trust

must be established not only between the parties, but also among the parties and the technologies used. As the Internet continues to grow in popularity as a place for business transactions, the issues of trust and credibility are brought to the forefront [4][34]. As the Internet continues to grow in popularity as a place to transact business, the issues of trust and credibility are brought to the forefront. Customers want to know that they are receiving the exact item they have purchased. They also want the security of knowing that their credit card numbers and other personal information are safe and will not be used by unauthorized people.

Risk refers to a lack of predictability about the outcome of a problem, or to a lack of predictability about the consequences of a decision [10]. Since users are concerned about the risk of using the Internet to purchase a particular product, they prefer to visit the stores and pay cash as the payment method of choice rather than using the Internet to complete the transaction. Concerns over risk, security and fear of technology exacerbate the situation.

EC carries strong business and socioeconomic implications for the Arab countries and firms, while opening many new opportunities to access the global markets. In addition, most of the Arab countries have already started to overcome their computer shortages through universities, schools and institutions in order to encourage Internet and web-based education.

3. Research Objective

The objective of this study is to examine EC adoption factors i.e. Knowledge, Risk Perception and Trust in the Arab countries. This objective is divided into four specific objectives as below; from section 3.1 through 3.4. Hypothesis (Null Hypothesis) is formulated for each research objective and included at the end of every objective listed below.

3.1 To investigate the association between Arab consumer's EC knowledge and their EC adoption.

Consumer's knowledge refers to the level of knowledge the consumer have in terms of the Internet and EC. It is believed that consumers with different levels of knowledge in Internet and EC will have varying acceptance and adoption rate of the EC. The unique nature of internet environment is relevant to the acceptance of EC and the intention of consumers to purchase [23]. Studies show that prior purchasing experiences are positively related to purchase intentions in EC [29][30]. Knowledge is defined in this study as consumers' aggregate skills and understanding of the Internet and EC system. EC Adoption is defined in this study as the willingness of consumers to use / participate in EC transactions.

H1: There is no significant relationship between customer's Knowledge and EC adoption

3.2 To investigate Risk Perception among Arab consumers and its contribution to their EC Adoption.

Perceived risk can be defined as the uncertainty in the purchase environment where consumers may consider the purchase outcomes and the importance or serious results associated with making a wrong or unsuitable decision [11]. EC, unlike traditional commerce involves various risks (product performance, delivery, credit card information, etc) that consumers perceive as risky for an Online transaction [25][34][37]. Perceived risk has been found associated with the frequency of EC use [7][17]. Perceived Risk is defined in this study as users risk estimate of the Internet and Online transactions.

H2: There is no significant relationship between customer's Risk Perception and EC Adoption.

3.3 To find out the impact of consumers' Trust towards EC adoption.

Trust is an important element affecting consumer behavior. Review of literatures stress that consumer trust is a very important element in a successful Web-based business. Lack of trust is likely to discourage Online consumers from participating in EC [15]. Furthermore, it can be realized that among the important elements of consumer EC trust is "institutional trust" which refers to consumers' perceptions about the Internet environment, such as safety and security, legal and technical protection and trustworthiness of third party service providers such as credit card payment facilities, banks, etc. [3]. Several empirical studies have theorized consumer trust in EC leading to their intention to participate in EC [16][19][33][35]. Trust in this study is defined as consumers' level of security and safety confidence in the Internet and in using an EC system.

H3: There is no significant relationship between consumer's Trust and their EC Adoption.

3.4 To analyze the mediation of Knowledge in mediating consumers' Risk Perception and Trust in affecting EC Adoption.

Mediation occurs when the effect of one variable on another variable occurs via a third intervening (mediating) variable. According to Kenny and colleagues [2][13], mediation effects occur if the three conditions below are met:

i) The independent variable significantly predicts the dependent variable;

ii) The independent variable significantly predicts the intervening variable (mediator); and
iii) When the dependent variable is regressed on both the intervening (mediator) and the independent variable, the intervening variable (mediator) significantly predicts the dependent variable, while the predictive utility of the independent variable is reduced.

The conditions above can be summarized as below:

1. If the mediator is not significant in this regression, then there is no mediation effect.
2. If the mediator and the independent variable are significant in this regression, then there is partial mediation.
3. If the mediator is significant but the independent variable is not significant in this regression, then there is full mediation.

According to Kenny et al. only Condition 2 and Condition 3 are essential for demonstrating mediation effects [14]. This study hence would like to find out if there is any mediating effect of Knowledge in EC Adoption. If there is a mediation effect, the study would seek to discover if it is a full or partial mediation effect.

H4: Knowledge does not mediate consumers' Risk Perception and Trust in affecting EC Adoption.

4. Methodology

4.1 Research variables and Conceptual Framework

The dependent variable in this study is EC Adoption; the intervening variable (mediator) is Knowledge; while the independent variables are Risk Perception and Trust; as reflected in Figure 1 below.

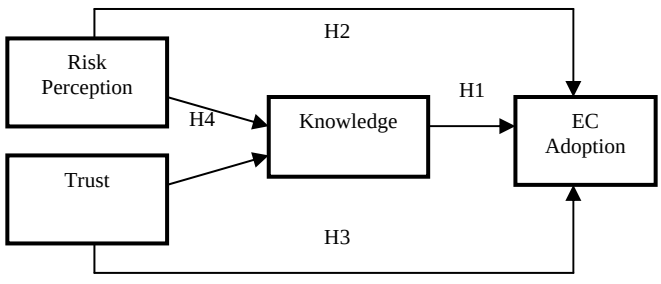

Fig 1: Research Conceptual Framework

4.2 Research Instrument

A questionnaire was designed, tested and deployed to collect the data for this study. The questionnaire consists of 2 sections.

Section 1 contains the demographic information of the respondents. The information required covered age, gender, nationality, income level and levels of education attained.

Section 2 measures the independent and dependent variables in the study. This includes Knowledge, Risk Perception, Trust and EC Adoption. A five-point Likert scale (strongly disagree to strongly agree) was used to measure several items measuring each of the variables.

4.3 Sampling and Filtering

Due to the difficulty in data collection in the Arab countries, a non-probability sampling method, i.e. Snowball Sampling was used to aid data collection. The authors circulated the questionnaire among known respondents in the Arab countries including Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Yemen and others. The contacted respondents then recommended their friends and relatives to participate in the study by forwarding a softcopy of the questionnaire to their friends. The cycle went on until more than 300 samples were collected. All the collected samples were then transcribed into the Statistical Package for Social Sciences (SPSS) Version 12 for data analysis. The final collected data is further filtered to achieve a high quality and consistent data. Respondents who did not complete the survey were removed from the final data.

5. Result and Discussion

5.1 Descriptive Statistics

Table 1 show that male respondents represent 63.67% (191 respondents) while female respondents represent 36.33% (109 respondents) in this study. There is an obvious difficulty in reaching to female respondents to participate in studies such as this in the Arab countries. This difficulty is attributed to the cultural and religious barriers, whereby a person (stranger) is not supposed to casually approach or speak with women. The authors faced this difficulty during data collection especially in Saudi Arabia and Yemen, it was however less apparent in Oman and Qatar. To facilitate the data collection, most female respondents in this study have been selected from schools, universities, organizations and government agencies through the help of friends and relatives. Using the snowball sampling, respondents were introducing other respondents to the study upon participating in the survey.

Table 1 Respondents' Gender and Nationality

		Gender		
		Male	Female	Total
Nationality	Kuwait	26	21	47
	Saudi Arabia	48	24	72
	Qatar	31	16	47
	Yemen	54	20	74
	UAE	25	21	46
	Others	7	7	14
Total		191 (63.67%)	109 (36.33)	300 (100%)

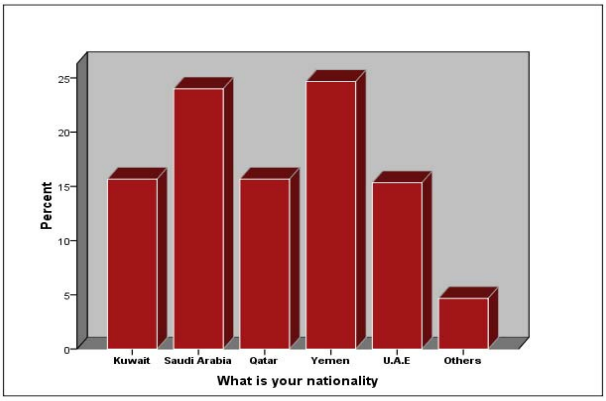

Fig 2: Nationality of Respondents Participated in the Study

According to Table 1, 24.7 % of the total respondent is from Yemen, followed by 24 % are from Saudi Arabia. This is justified as these two countries have the largest population in the region compared with the other selected countries. However, respondents from Kuwait, Qatar, and the UAE had quite similar percentage that range between 15 percent and 16 percent. Other respondents (4.7%) who participated in this survey are from other Arab countries in the region including Oman.

Table 2 Internet Usage Rate

	Frequency	%	Valid %	Cumulative %
Daily	161	53.7	53.7	53.7
Several times a week	96	32.0	32.0	85.7
Weekly	26	8.7	8.7	94.3
Bi-weekly	2	.7	.7	95.0
Monthly	12	4.0	4.0	99.0
Hardly at all	3	1.0	1.0	100.0
Total	300	100.0	100.0	

Table 2 shows that 53.67 percent of the respondents participated in the survey use the Internet on a daily basis. Most of these users come from the Arab Gulf area. This is due to the high living standards in these countries that have enabled the citizens to take advantage of technological progress and the digital revolution at low prices.

Table 3 Cross-tabulation between Gender and Highest Education Achieved

		Gender		
		Male	Female	Total
Highest education	College	31	15	46
	Bachelor	96	58	154
	Masters	50	28	78
	PHD	12	8	20
	Others	2	0	2
Total		191	109	300

The cross-tabulation above between gender and highest level of education achieved (Table 3) shows that male and female respondents are somewhat equally represented in this study. Also, a Chi-Square test for the above yield a Chi-Statistics of 1.657 with a p-value 0.798 (not significant at 5% significance level). The analysis reveals that male and female respondents have no statistical difference in their education levels obtained.

Table 4 Cross-Tabulation between Gender and Online Purchase

		Do you purchase Online?		
		YES	NO	Total
Gender	Male	51 (26.6%)	140 (77.3%)	191 (100%)
	Female	37 (33.9%)	72 (66.1%)	109 (100%)
Total		88	212	300

Further to the findings in Table 3 above, this analysis in Table 4 also shows a somewhat equal distribution between male and female in relation to their online purchasing habits. Both genders seem to be not far apart in their online purchasing habits. A Chi-Square test yields a Chi-Statistics of 1.756 with a p-value = 0.185 (not significant at 5% significance level). This shows that the respondents' gender do have any significant effect on their online purchase behaviour.

Table 5 Cross-tabulation between hours spent online and intention to purchase online

		Hours Spent Online Per Day				
		Less than one hour	1-4 hours	5-8 hours	More than eight hours	Total
Intention to Purchase Online	Least Likely	16	15	3	6	40
	Not Likely	29	48	25	10	112
	Neutral	14	26	22	5	67
	Likely	3	33	27	11	74
	Most Likely	1	1	4	1	7
Total		63	123	81	33	300

The cross-tabulation result above (Table 5) between hours spent online and users' intention to purchase Online shows an apparent trend. It seems to indicate a positive association between hours spent Online per day and likelihood to make an Online purchase. A Chi-Square analysis for this data yield a Chi-Statistics of 35.230 with a p-value that is less than 0.001 (significant at 5% significant level). This analysis proves the association between hours spent Online per day and user's intention to make an Online purchase. Users who have spent more hours Online per day have a higher tendency to make purchases Online.

5.2 Reliability Analysis

The reliability analysis was carried out for each independent and dependent variable in the study.

5.2.1 Customer Knowledge

Customer knowledge and its contribution to EC was measured through 5 questions as found in Table 6. Reliability analysis conducted to the variables shows high Cronbach's Alpha reliability score. A Cronbach's alpha score of 0.70 or higher is satisfactory to ensure reliability of tested items [32].

Table 6 Reliability Analysis for Customer Knowledge

	Mean	Std. Deviation
I have sufficient knowledge about computer and internet	4.62	1.22
I have adequate English language knowledge in using the internet	2.80	1.40
I use the internet for online chat and discussion	4.31	1.34
My interaction with EC websites is clear and understandable	3.42	1.54
I have sufficient skills to make online transactions	3.20	1.79
Customer's Knowledge (GRAND MEAN)	3.75	1.458
Cronbach's Alpha 0.731 for N (5)		

5.2.2 Risk Perception

Customer risk perception and its contribution to EC was measured through 5 questions as found in Table 7. The result show that the variable (Risk Perception) measured in this study is reliable for data analysis.

Table 7 Reliability Analysis for Consumer Risk Perception

	Mean	Std. Deviation
I am concerned about my information privacy over the internet.	4.67	1.13029
I am concerned the products do not perform as intended	4.59	1.01228
Pre-purchase information helps to lower risk of buying online	4.42	1.14926
I am comfortable to make online payments using credit card	3.72	1.44055
Perception of risk influences my decision when buying products online	4.57	1.20710
Risk **(**GRAND MEAN)	4.39	1.187896
Cronbach's Alpha 0.721 for N (5)		

5.2.3 Customer Trust

Customer trust and its contribution to EC was measured through 5 questions as found in Table 8. The result show that the variable (Customer Trust) measured in this study is reliable for data analysis.

Table 8 Reliability Analysis for Consumer Trust

	Mean	Std. Deviation
I trust the information presented on EC websites	3.91	1.49309
Developing trust with online businesses requires seeing and talking to them	4.15	1.44341
Matters of security influence my online shopping decisions	4.27	1.21739
I trust the quality of the products sold through internet	3.93	1.37909
I trust online delivery system	4.04	1.41128
Trust (GRAND MEAN)	4.06	0.38885
Cronbach's Alpha 0.70 for N (5)		

5.2.4 Customer E-commerce Adoption

Customer EC adoption was measured through 4 questions as found in Table 9. The result show that the variable (EC Adoption) measured in this study is reliable for data analysis.

Table 9 Reliability Analysis for E-commerce Adoption

	Mean	Std. Deviation
I will purchase products online	2.65	1.06314
I intend to use EC to communicate with global companies	2.91	1.13236
To what extent would you adopt e-commerce?	3.11	1.32960
I intend to use EC to save time and effort	2.97	1.16497
E-Commerce Adoption (GRAND MEAN)	2.91	1.17252
Cronbach's Alpha 0.910 for N(4)		

5.3 Hypothesis Testing

Table 10 shows the result of Multiple Linear Regression (MLR) between 1) Knowledge, 2) Risk Perception and 3) Trust (Independent Variables) with EC Adoption (Dependent Variable).

Table 10 MLR between independent and dependent variable in the study

	USC		**SC**	**t**	**Sig.**
	B	Std. E			
(Constant)	.325	.261		1.243	.215
Knowledge	.418	.044	.509	9.573	.000*
Risk	.039	.051	.038	.754	.451
Trust	.066	.048	.074	1.367	.173

* = Significant at 0.05 significant level
USC = Unstandardized Coefficients
SC = Standardized Coefficients

The result of Multiple Linear Regression (MLR) yield the R Square value of 0.31, which reveals that approximately 31% of the variation in EC adoption is explained by the three variables in this study, i.e. Knowledge, Risk Perception and Trust. A regression formula can be formulated for EC adoption based on the findings in Table 4 as below:

EC Adoption = 0.33 + 0.42 Knowledge + 0.04 Risk Perception + 0.07 Trust

However at 5% significant level, only one out of the expected 3 predictors contributes to the dependent variable. Only Knowledge is found to significantly affect EC adoption. Hence, H1 is rejected while H2 and H3 are not rejected.

Further analysis is carried out to investigate the mediating effect of Knowledge. Table 11 shows the result of MLR analysis between Risk Perception and Trust towards Knowledge.

Table 11 MLR between Risk Perception and Trust towards Knowledge

	USC		**SC**	**t**	**Sig.**
	B	Std. E			
(Constant)	1.574	.334		4.708	.000
Risk	.115	.068	.093	1.701	.090**
Trust	.409	.060	.377	6.864	.000*

* = Significant at 0.05 significant level
** = Significant at 0.1 significant level
USC = Unstandardized Coefficients
SC = Standardized Coefficients

The MLR test yield R Square value of 0.20, which reveals that approximately 20% of variation in Consumer Knowledge is contributed by Risk Perception and Trust. Knowledge is found significantly regressed with both variables, i.e. Risk Perception and Trust.

From the previous analysis (Table 10) whereby the study failed to reject H2 and H3, coupled with this finding (Table 11), the study gathers enough evidence to conclude that Knowledge has full mediation effect on mediating Risk Perception and Trust towards EC adoption. H4 is hence rejected.

All the hypotheses tests reveal Knowledge, Risk Perception and Trust as important factors that affect users' EC adoption in the Arab countries. Knowledge is found to be the most important factor among these three factors. Although Risk Perception and Trust are found not to directly contribute towards EC adoption (Table 10), both these factors significantly contribute to the variation in Knowledge as found in Table11.

6. Conclusion

The study sought to empirically test factors that affect EC adoption among Arab consumers. Due to the difficulty in obtaining respondents to participate in the study using probability sampling technique, snowball sampling technique was employed. Upon filtering the collected data, 300 samples were finalized for data analysis.

The respondents who participated in this study are well represented from both genders. Statistical analysis shows that there is no significant gender effect towards Internet usage or Online purchase among the Arab consumers. Both genders represented in this study also did not differ in terms of their educational levels obtained. This is indeed an encouraging finding that leads to a conclusion that ladies are not lagging behind men when it comes to Internet usage and EC adoption.

The study also finds that longer Internet usage hours among respondents lead to higher inclination towards Online purchase. This is understandable and concurs with the rest of the findings in this study. Users who spend more time using the Internet would tend to acquire greater knowledge and understanding of the Online systems. This agrees with other studies in this area that have associated consumers' knowledge and experience to EC participation [9][24][27]. Users who are knowledgeable about the

Internet and EC are more likely to use the Internet and adopt EC solutions. The inexperienced Internet users and users with less knowledge of Internet and EC assume greater risk and lacks trust in the Online systems.

Knowledgeable customers can use EC more adequately in order to reap more benefits through it. Also, studies have shown that consumers' knowledge affects the entire company in their planning to adopt EC solutions [30]. Consumers' Internet knowledge such as the Internet usage skills, using search functions, and search proficiency makes them more confident and in control in engaging in Online transactions [9][28].

This study empirically finds that Perceived Risk and Trust are mediated by consumers' Knowledge. Further analysis has revealed a full mediation effect of Knowledge. This is a unique finding observed in this study as most studies in this field have not tested Knowledge mediation of Risk and Trust [3][4][7][15][22][26]. The Arab consumers are found unique in their EC adoption behaviour in this sense. Their Risk Perception leads to their better understanding of the EC system. Their Trust of the system also contributes to their aggregate Knowledge of the Internet and the EC. Together, the consumers' total Knowledge of the Internet and the Online system leads to EC Adoption.

The study evidently concludes that EC adoption can be significantly improved in the Arab countries if consumers are given adequate Knowledge on Internet and the EC. Consumers' Risk Perception and Trust should be treated as components within "Consumer Knowledge" of EC. Giving consumers clarifications of Online risk and trust issues will contribute to their overall understanding and aggregate Knowledge of EC. Government initiatives which include computer laboratory installations in schools are highly commendable. As this study has shown, one way of increasing EC adoption is by increasing the hours potential consumers spend Online per day. This can be achieved with more computers and Internet facilities made available for the community. A society that has gathered higher knowledge and clearer understanding of the Online system will certainly play an active role in Online participation. This study concludes through empirical evidence that the Arab countries are well prepared in facing the EC revolution; and given more knowledge of the Internet, they will certainly be on par with other leading countries in EC adoption.

6. LIMITATION AND FUTURE STUDIES

A non-probability sampling method i.e. Snowball Sampling was employed due to the difficulty of getting respondents using probability sampling method. In a strict statistical sense, the findings lack statistical inference to generalize the findings to the overall population. However, there is no strong evidence to disregard this sample as representative of the overall population as there was no known bias in the sample selection process. Also, upon filtration, the study only used 300 finalized samples for data analysis. A bigger sample representing each Arab country would have made the findings more significant.

Despite sampling limitation, the study has made significant contributions in highlighting the important factors to be considered in encouraging EC adoption among Arab consumers.

Future research could work towards overcoming the limitations of this study. Further studies can be carried out to specifically examine the Risk Perception of Arab consumers and its effect towards their aggregate Knowledge of EC. There are other areas as well that could be studied such as usability factors and their effect to EC adoption among Arab consumers. Web usability has been found to be a vital issue that affects EC usage [20]. Moreover, the Arab countries' various market segments could also be research to discover underlying issues within each market segments and their Online participation.

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