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Electronic Business in Saudi Organization

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Abstract
This paper is to shed light on the use of electronic business and mobile applications in Saudi organizations to perform their various activities. The paper examined the validity of a previous model that was found from the literature, to identify the most significant factors that affect the intention to adopt mobile electronic business within Saudi organizations. The research suggests and tests seven hypotheses on a population consists of employees in public and private sectors. Therefore, a regular random sampling procedure was used in which 256 respondents were identified.Structural equation modeling had been performed to analyze the collected data, giving more superior empirical results that led to reject five of the seven hypotheses. Results indicate that mobile electronic business features and opportunities as well as social influence both positively affect the intention to adopt mobile electronic business in Saudi organizations.
Keywords: Information Systems, Organizations, Information Technology Adoption, Mobile Commerce, Mobile Phones, Mobile Electronic Commerce, Information Systems in Organizations, Information Technology, Mobile Commerce Adoption, Electronic Business, SEM.

Introduction

With the rapid development in information technology (IT), public and private organizations have been forced to adopt electronic business (eBusiness) and mobile applications in order to compete and provide their stakeholders with the needed services. In today's world, the desire of people towards the use of mobile applications and services in their daily life's is increasing day after day. The most significant advantage of mobile applications is that they allow users to access online services to perform their transactions anytime from anywhere.

According to StatCounter (2016) recent study about the global internet usage in October 2016 revealed that, the access to the internet from mobile and tablet devices is 51.3% compared to the access to the internet by desktops which is 48.7% (see Figure 1). Within the Kingdom of Saudi Arabia (KSA) the case is the same and the usage of mobile broadband is 26.6 million users compared to 3.06 millions for fixed broadband service (CITC, 2016).

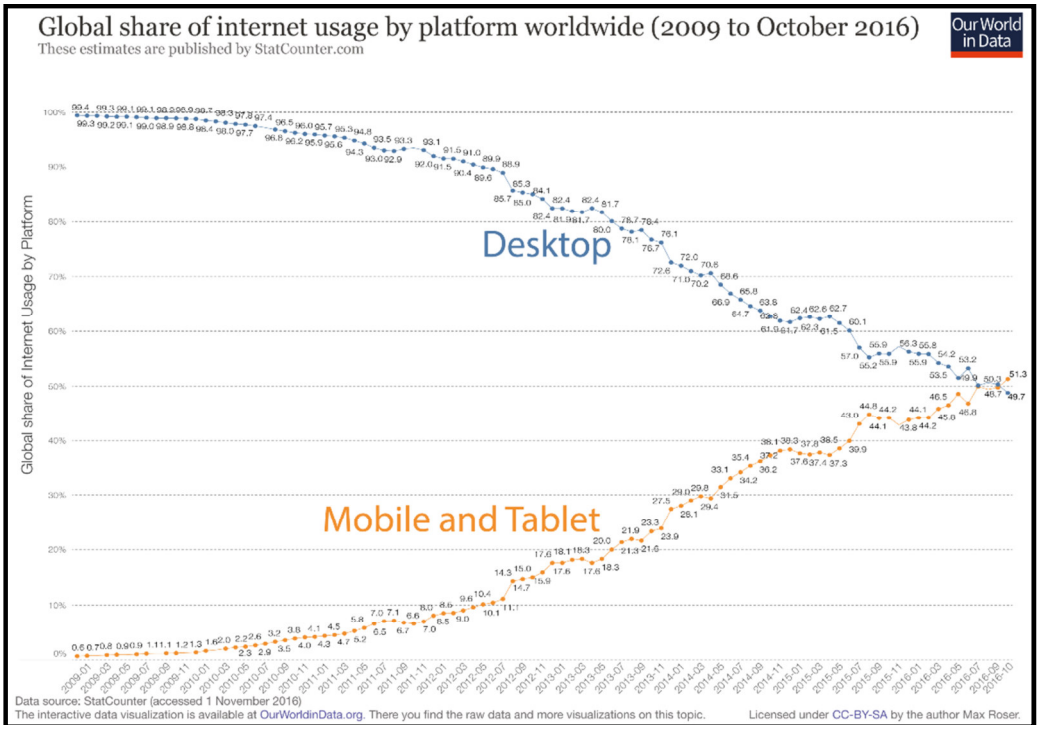

Figure 1: Access to the internet from mobile and tablet devices (StatCounter, 2016).

The research problem can be expressed by the following question: What are the influential factors that impact on using Mobile Electronic Business (MEB) Applications in Saudi public and private organization's? MEB can include all the actions that employees can perform in order to achieve their tasks via online services

using mobile devices and applications. The research objective was to disclose the nature of the relationship between factors that positively affects the Intention to adopt MEB in organizations. The importance of this research is to provide a theoretical framework that can be referred to identify the influential factors which impact the adoption of MEB in organizations. The practical importance stands by answering the research question to confirm or deny partially or completely the most influencing factors that impact the adoption of MEB in Saudi public and private organization's activities.

Literature Review

Many models on technology acceptance were presented in the literature such as (Rogers, 2003; Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2012). In addition, there is lots of studies such as (Bhatti, 2007; Lu, Tzeng, Cheng, & Hsu, 2015; O'Donnell, Jackson, Shelly, & Ligertwood, 2007; Park, Im, & Noh, 2016; Sgriccia et al., 2007; Tiwari, Buse, & Herstatt, 2006; Zheng & Ni, 2006) in the literature which that look at the adaption of new technologies from different perspectives using different adaption factors. Other studies highlight success factors and drivers of mobile commerce (Nisar & Prabhakar, 2017; Zeeshan, Cheung, & Scheepers, 2007) as well as the impact of payment services (Hassinen, Hyppönen, & Trichina, 2008; Henten, Olesen, Saugstrup, & Tan, 2004; Kapoor, Dwivedi, & Williams, 2015; López Catalán & Díaz Luque, 2008; Mallat & Tuunainen, 2008). Recent studies (Alfahl, 2016; Alfahl, Sanzogni, & Houghton, 2012) look at the adoption of mobile commerce within organizations.

This paper continues previous research and focus in the adoption of MEB within organizations. Alfahl (2016) proposed adoption model and this paper will examined the validity of the proposed model. The model in Figure 2 contains seven independent variables that may affect the intention to adopt MEB in Saudi organizations. The model was chosen as it was developed by combining some technology adoption theories including diffusion of innovation (Rogers, 2003), unified theory of acceptance and use of technology (Venkatesh et al., 2003), technology acceptance model (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989), theory of reasoned action (Fishbein & Ajzen, 1975). The independent variables (constructs) that are presented in Figure 2 are detailed in Table 1. The current research will examine the effect of these factors on the intention to adopt MEB (ITM). The research hypotheses that will be tested in this paper is presented in Table 2.

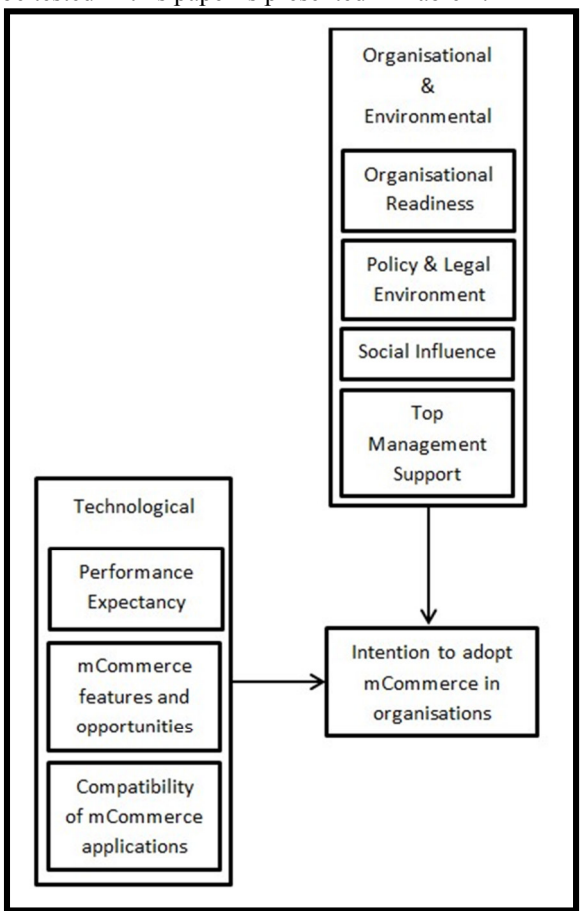

Figure 2: mCommerce organizational adoption model (Alfahl, 2016)

Research Methodology

In this study, we have utilized a research design to consider the forecast of intention to adopt MEB in Saudi Arabia. In this research, the population consists of employees in public and private sectors in Saudi Arabia. A regular random sample was used in which 256 respondents were identified. The questionnaire was divided into six parts: part 1 contains nine items that measure PE and Part 2 contains six items that measure OR. Part 3 contains five items that measure MFO and three items that measure CMS. Part 4 contains three items that measure PLE, three items that measure SI, and two items that measure TMS. Part 5 contains four items that measure ITM. Part 6 contains nine questions to collect some demographic information. All factors were measured using a five-point Likert scales from (1) Strongly disagree, (2) Disagree, (3) Undecided, (4) Agree, (5) Strongly Agree.

The current study applied structural equation modeling (SEM) to analyze the collected data instead of multiple regressions because SEM can give more goodness of fit indices for the full structural model, giving more superior empirical results (Hair, Black, Babin, & Anderson, 2010).

Construct	Definition	Items included	Supporting literature
Performance Expectancy (PE)	"The degree to which as individual believe that using the system will help him/her to attain gains in job performance". (Venkatesh et al., 2003)	• perceived usefulness • relative advantage • job-fit	(Alfahl, 2016; Bhatti, 2007; Davis, 1986, 1989; Davis et al., 1989; Grandon & Pearson, 2004; Moore & Benbasat, 1991; Rogers, 2003; Sait, Al-Tawil, & Hussain, 2004; Snowden, Spafford, Michaelides, & Hopkins, 2006; Subramanian, 1998; Thompson, Higgins, & Howell, 1991; Venkatesh et al., 2003; Yaseen & Zayed, 2010).
Organizational Readiness (OR)	It includes all the needed IT infrastructures and governance arrangements, and organizational culture.	• ICT infrastructure • organizational culture • organizational policy	(Alfahl, 2016; Elahi & Hassanzadeh, 2009; Grandon & Pearson, 2004; Léger, Cassivi, & Fosso Wamba, 2004; Molla & Licker, 2005; OECD, 2007; Premkumar & Ramamurthy, 1995; Yang, 2005)
MEB Features & Opportunities (MFO)	This variable includes the different value-added features and the opportunities that can be gained using MEB.	• perceived ease of use • security	(Alfahl, 2016; Bhatti, 2007; Davis, 1986, 1989; Davis et al., 1989; Grandon & Pearson, 2004; O'Donnell et al., 2007; Snowden et al., 2006; Subramanian, 1998; Venkatesh et al., 2003; Yang, 2005; Yaseen & Zayed, 2010)
Compatibility of MEB Services (CMS)	How MEB is compatible and fit with the employees tasks as well as with the culture and ICT infrastructure.		(Alfahl, 2016; Elahi & Hassanzadeh, 2009; Grandon & Pearson, 2004; Moore & Benbasat, 1991; Rogers, 2003; Sait et al., 2004; Venkatesh et al., 2003)
Policy & Legal Environment (PLE)	It includes all the relevant governmental regulations impacts MEB adoption.		(Alfahl, 2016; O'Donnell et al., 2007; OECD, 2007; Sharma, Murthy, & Sundar, 2006; Yang, 2005).
Social Influence (SI)	"The degree to which an individual perceives that important others believe he or she should use the new system". (Venkatesh et al., 2003)	• social factor • subjective norms	(Al-Somali, Gholami, & Clegg, 2009; Alfahl, 2016; Bhatti, 2007; Davis et al., 1989; Dutta & Roy, 2003; Mathieson, 1991; Taylor & Todd, 1995; Thompson et al., 1991; Venkatesh et al., 2003; Yaseen & Zayed, 2010).
Top Management Support (TMS)	Top management support "for IS refer to the senior executives' favorable attitude toward, and explicit support for IS" (Sabherwal, Jeyaraj, & Chowa, 2006).		(Alfahl, 2016; AlHaj Ali, 2005; Chang, Peng, Hung, Chang, & Hung, 2009; Elahi & Hassanzadeh, 2009; Premkumar & Ramamurthy, 1995; Sabherwal et al., 2006; Teo, Chan, & Parker, 2004).

Table 1: Independent Variables

Factor	Hypotheses
PE	H1: PE has a positive effect on the ITM.
OR	H2: OR has a positive effect on the ITM.
MFO	H3: MFO affect positively the ITM.
CMS	H4: CMS affects positively the ITM.
PLE	H5: PLE has a positive effect on the ITM.
SI	H6: SI has a positive effect on the ITM.
TMS	H7: TMS affects positively the ITM.

Table 2: Research Hypotheses

Data Collection and Analysis

The survey questionnaires were printed and distributed. The survey was also available online and 256 responses were collected. 44 responses were collected from the paper-based questionnaires and 212 responses were collected from the online questionnaires. SEM were preformed using AMOS program. Some demographic information about the study sample is presented in Table 3 based on SPSS 22.0 results.

Demographic Profile	Group	Number	Percentage
SEX	Male	228	89.1 %
	Female	28	10.9 %
Age	21 - 30	52	20.3 %
	31 - 40	95	37.1 %
	41 - 50	68	26.5 %
	51 - 60	36	14.1 %
	Over 60	5	2.0 %
Monthly Income Level (In SAR)	3000 or Less	5	2.0 %
	3001 - 5000	15	5.7 %
	5001 - 7000	23	9.0 %
	7001 - 9000	45	17.6 %
	9001 - 11000	36	14.1 %
	More than 11000	132	51.6 %
Live In	Large city	213	83.2 %
	Small city	43	16.8 %
Use Smart Phone?	No	2	0.8 %
	Yes	254	99.2 %
Nationality	Resident	35	13.7 %
	Saudi	221	86.3 %

Table 3: Participants Demographic Information

As we can see from Table 3, all respondents are over 20. There are more male respondents compared to female. The majority the respondents were from public sector. Finally, the majority of the respondents' income were more than SAR 11000.

Reliability and Validity Analysis

This study contains seven independent variables and one dependent variable. The reliability test is illustrated in Table 4. The reliability test for all the variables, that is represented by Cronbach alpha, were range from 0.717 to 0.951 which is acceptable as they are above 0.60 (Nunnally & Bernstein, 1994). It is also detectable that correlations are above 0.5 which is acceptable (Nunnally & Bernstein, 1994).

Variable	Cronbach's Alpha	Items	Correlation Value Of Item	New Cronbach's Alpha after Deleting the Item
Total	.948	35		
PE	0.951	PE1	0.828	0.946
		PE2	0.865	0.943
		PE3	0.843	0.945
		PE4	0.862	0.943
		PE5	0.781	0.948
		PE6	0.759	0.944
		PE7	0.818	0.946
		PE8	0.811	0.946
		PE9	0.782	0.948
OR	0.894	OR1	0.549	0.904
		OR2	0.807	0.868
		OR3	0.806	0.866
		OR4	0.826	0.870
		OR5	0.803	0.871
		OR6	0.800	0.871
MFO	0.822	MFO1	0.621	0.786
		MFO2	0.710	0.757
		MFO3	0.797	0.778
		MFO3	0.838	0.762
		MFO5	0.503	0.844
CMS	0.830	CMS1	0.768	0.807
		CMS2	0.887	0.664
		CMS3	0.739	0.817
PLE	0.878	PLE1	0.813	0.844
		PLE2	0.873	0.801
		PLE3	0.836	0.836
SI	0.717	SI1	0.622	0.676
		SI2	0.720	0.615
		SI3	0.699	0.594
TMS	0.810	TMS1	0.847	0.810
		TMS2	0.804	0.810
ITM	0.923	ITM1	0.853	0.905
		ITM2	0.864	0.900
		ITM3	0.905	0.889
		ITM4	0.848	0.907

Table 4: Results of Reliability analysis

Convergent Validity Analysis:

The investigation of the validity was accomplished using confirmatory factor analysis (CFA). Moreover, the average variance extracted (AVE) and combination validity (CR) were calculated manually by following the steps mentioned by (Hair et al., 2010). The results of convergent validity analysis are presented the in Table 5 which shows that the AVE is more than 0.5 and the CR is above 0.6 for all the constructs which are acceptable (Hair et al., 2010).

Construct	Items	Factor loading	AVE	C.R
PE	PE1 PE2 PE3 PE4 PE5 PE6 PE7 PE8 PE9	0.832 0.868 0.851 0.863 0.776 0.859 0816 0.804 0.777	0.69	0.73
OR	OR1 OR2 OR3 OR4 OR5 OR6	0.543 0.793 0.801 0.828 0.813 0.809	0.59	0.84
MFO	MFO1 MFO2 MFO3 MFO4 MFO5	0.832 0.939 0.576 0.640 0.383	0.50	0.77
CMS	CMS1 CMS2 CMS3	0.713 0.969 0.697	0.64	0.80
PLE	PLE1 PLE2 PLE3	0.812 0.885 0.824	0.71	0.86
SI	SI1 SI2 SI3	0.605 0.699 0.737	0.50	0.66
TMS	TMS1 TMS2	0.847 0.804	0.68	0.62
ITM	ITM1 ITM2 ITM3 ITM4	0.853 0.859 0.909 0.848	0.75	0.91

Table 5: Convergent Validity

In addition, according to Hair et al. (2010), the factor loading should be more than 0.7. In table 5, the factor loading of MFO3, MFO5, and OR1 are less than 0.7. As a result, the model was adjusted through the following process:

- If MFO5 was deleted, the result shown no output.
- If MFO3 was deleted, then the factor loading of MFO5 became 0.350, (it was 0.385), AVE did not changed.
- If MFO5 and MFO3 were deleted at the same time, the result shown no output.
- If OR1 was deleted, the results shows that both of the factor loading and convergent validity decrease in the same construct.

As noted, MFO3, MFO5, OR1 have factor loading above of 0.3, therefore, the three items were not removed from the model. According to (Hair, Black, Babin, Anderson, & Tatham, 2006), the factor loading between 0.3 and 0.4 is considered as significant, which is the minimal accepted loading, as well as the factor loading between 0.4 and 0.5 is considered as more important. So the convergent validity is acceptable.

Discrimination Validity analysis

Discriminate validity were tested using AVE square root and the correlation coefficient matrix, as shown in Table 6. Diagonal line Indicates the square root of AVE, other values mean the correlation coefficient of the constructs in the row and column.

	PE	OR	MFO	CMA	PLE	SI	TMS
PE	0.70						
OR	0.30	0.80					
MFO	0.78	0.35	0.89				
CMA	0.62	0.49	0.77	0.69			
PLE	0.24	0.36	0.33	0.60	0.60		
SI	0.63	0.49	0.66	0.70	0.63	0.83	
TMS	0.49	0.58	0.58	0.62	0.60	0.88	0.64

Table 6: Analysis Results of Discrimination Validity

According to Fornell and Larcker (1981), the square root of AVE is required to be more than its correlation coefficient with another construct, this is all verified in the previous analysis, except 3 cases form a total of 21 which are the correlation coefficients of (PE with MFO), (CMA with SI), and (SI with TMS). In the case of (PE with MFO) square root of AVE is 0.70 and the correlation coefficient is 0.78, in case of (CMA with SI) square root of AVE is 0.69 and correlation coefficient is 0.70, in case of (SI with TMS) square root of AVE is 0.83 and correlation coefficient is 0.88. Therefore, the scale has an acceptable discrimination validity.

Model Fitting Analysis

Before drawn any conclusions or results for the hypothesis testing, the fit of the model must be analyzed. The analysis results for the fit of the model is presented in Table 7.

Based on what confirmed by (Hair et al., 2010), all the values within the limits are acceptable. The analysis results that are shown in table 7 indicate that the tested model has an acceptable model fitting.

Fitting indices	**Criterion** (Hair et al., 2010)		**Actual Indice value**	**Fitting effect**
	Acceptable	**Good**		
CMIN/DF	**2-3**	**<2**	**2.437**	**Acceptable**
RMSEA	**0.05-0.10**	**≤0.05**	**0.075**	**Acceptable**
NFI	**0.7 - 0.9**	**>=0.9**	**0.820**	**Acceptable**
CFI	**0.7 - 0.9**	**>=0.9**	**0.884**	**Acceptable**
IFI	**0.7 - 0.9**	**>=0.9**	**0.885**	**Acceptable**
RFI	**0.7 - 0.9**	**>=0.9**	**0.798**	**Acceptable**

Table 7: Model Fitting Indices

Hypotheses Testing

After the SEM was created by AMOS22 to analyze the hypotheses, the results is shown in Figure 3.

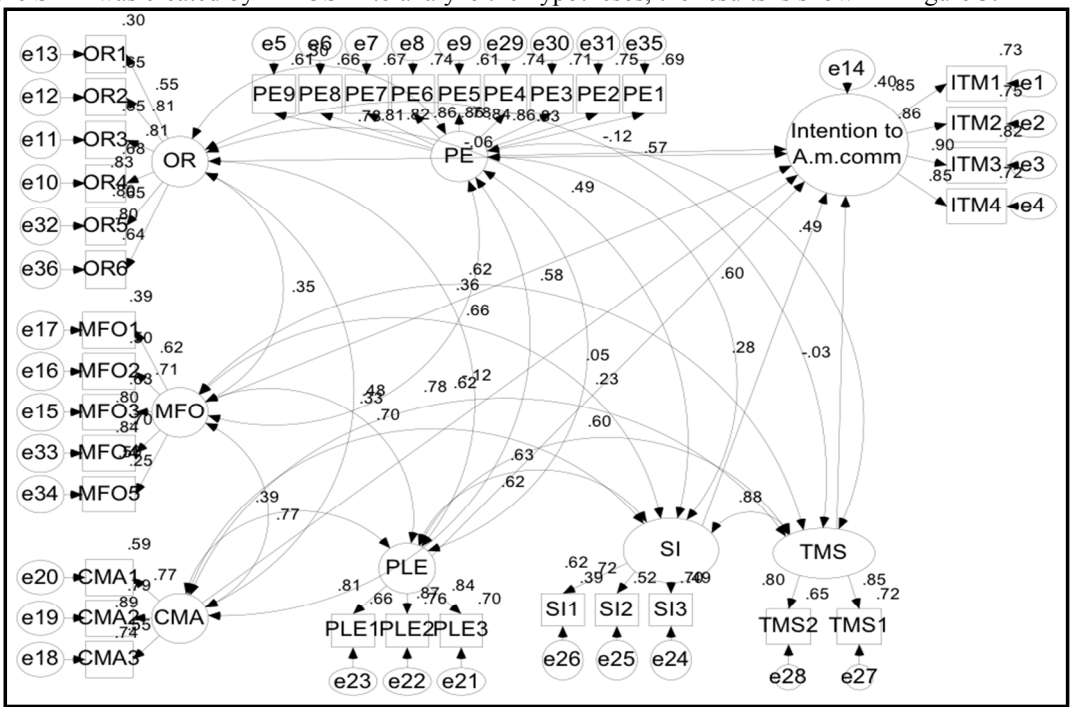

Figure 3: The results of the analysis

In addition, the influence coefficient of variation and its significant level was obtained. Table 8 shows the path validation results of the proposed model. According to the results in table 8, hypothesis H1,H2,H4,H5, and H7 were rejected, however, H3 and H6 were accepted.

Hypothesis	From	To	Coefficient	Type of Correlation	P-value	Hypothesis Support
H1	PE	ITM	-0.113	Negative Correlation	0.301	NO
H2	OR	ITM	-0.051	Negative Correlation	0.504	NO
H3	MFO	ITM	0.609	Positive Correlation	***	YES
H4	CMS	ITM	-0.129	Negative Correlation	0.388	NO
H5	PLE	ITM	0.054	Positive Correlation	0.557	NO
H6	SI	ITM	0.348	Positive Correlation	***	YES
H7	TMS	ITM	-0.029	Negative Correlation	0.904	NO

Table 8: Path Validation Results

Discussion

According to the pervious analysis, the results show that H1, H2, H4, H5, and H7 were rejected. This section will discuss the results and illustrate the reasons behind such rejection. In case of H1, besides PE, there are other factors may affect, for example, some risks may prevent users from using MEB, just PE is not enough for participants' to get their final adoption decision of MEB. For H2 and H4, OR and CMS may also not be priority attention of participants. In case of H5, it can be concluded that the perceived risk is very important for participants to not use MEB, but not a necessary condition. In case of H7, ITM may be affected by understanding the importance of TMS.

On the other hand, H3 and H6 had been accepted, accordingly MFO and SI both positively affect ITM in Saudi organizations. The users' of mobile devices in Saudi Arabia gives priority to MFO, and SI which affect users' ITM. As results of the research showed that the most important factors are MFO which is aligned with the results of (Alfahl, 2016) and SI as confirmed by (Alfahl, 2016; Venkatesh et al., 2003; Venkatesh et al., 2012)

The Resulted Model and Future Work

Based on the results of this research, we propose that there are intermediate factors influencing intention to adopt MEB in Saudi organizations. If the indirect effect is greater than direct effect then the mediating is satisfaction (Kaufman, Kaufman, & Maclehose, 2009; Kaufman, Kaufman, MacLehose, Greenland, & Poole, 2005). As a result, the model in figure 4 was proposed and the following hypotheses were also propose to be tested in future research:

H8: MFO mediates the relationship PE, OR, CMS, PLE, and TMS with intention to adopt MEB.

H9: SI mediates the relationship between PE, OR, CMS, PLE, and TMS with intention to adopt MEB.

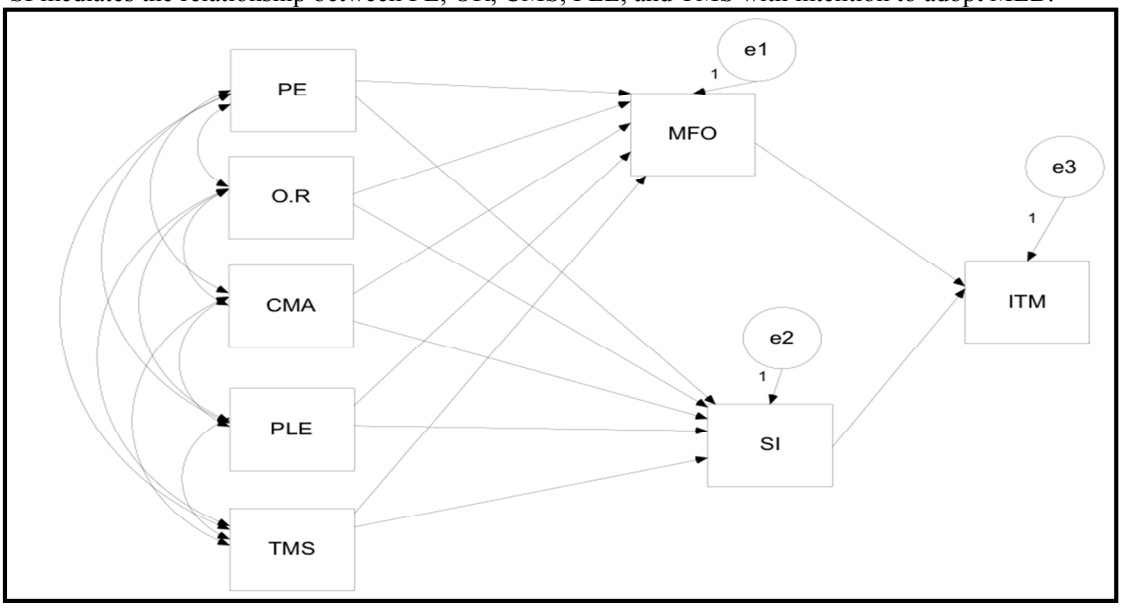

Figure 4: The proposed MEB adoption model

Conclusion

In the literature, there are a number of models were suggested which include the factors that affects the intention to adopt MEB. In this research the mCommerce organizational adoption model (Alfahl, 2016) were tested within Saudi organizations. The results of the research showed that the most important variables are MFO and SI that affect the intention to use MEB in Saudi organizations. MFO can include all the important features of MEB and the new business opportunities for organization that can be offered by MEB. Moreover, it seems that in Saudi Arabia, the SI has great effect on such adoption.

References

Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation, 29*(2), 130-141.

Alfahl, H. (2016). Mobile Commerce Adoption. *International Journal of Innovation in the Digital Economy, 7*(3).

Alfahl, H., Sanzogni, L., & Houghton, L. (2012). Mobile Commerce Adoption in Organizations: A Literature Review and Future Research Directions. *Journal of Electronic Commerce in Organizations, 10*(2).

AlHaj Ali, E. I. (2005). *Mobile commerce adoption across the supply chain in businesses in New Zealand.* (Master Thesis), Auckland University of Technology (AUT), Auckland, New Zealand.

Bhatti, T. (2007). Exploring factors influencing the adoption of mobile commerce. *Journal of Internet Banking and Commerce, 12*(3).

Chang, S.-I., Peng, T.-C., Hung, Y.-C., Chang, I.-C., & Hung, W.-H. (2009). *Critical success factors of mobile commerce adoption: A study based on the system life cycle and diamond model.* Paper presented at the 8th International Conference on Mobile Business (ICMB 2009) Dalian University of Technology (DUT), Dalian, China.

CITC. (2016). *KSA ICT Indicators End of Q3 2016*. Retrieved from http://www.citc.gov.sa/en/reportsandstudies/indicators/Indicators of Communications and Information Techn/ICTIndicators-Q22016En.pdf

Davis, F. D. (1986). *A Technology acceptance model for empirically testing new end-user information systems: Theory and results.* (Doctoral Doctoral Dissertation), Massachusetts Institute of Technology, Cambridge, MA, USA.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

Dutta, A., & Roy, R. (2003). Anticipating internet diffusion. *Communications of the ACM, 46*(2), 66-71.

Elahi, S., & Hassanzadeh, A. (2009). A framework for evaluating electronic commerce adoption in Iranian companies. *International Journal of Information Management, 29*(1), 27-36.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA, USA: Addison-Wesley.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research, 18*, 39-50.

Grandon, E., & Pearson, J. M. (2004). Electronic commerce adoption: An empirical study of small and medium US businesses. *Information & Management, 42*(1), 197 - 216.

Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis*. Upper Saddle River, New Jersey.: Prentice Hall.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis* (6th ed.). New Jersey: Pearson.

Hassinen, M., Hyppönen, K., & Trichina, E. (2008). Utilizing national public-key infrastructure in mobile payment systems. *Electronic Commerce Research and Applications, 7*(2), 214-231.

Henten, A., Olesen, H., Saugstrup, D., & Tan, S. (2004). Mobile communications: Europe, Japan and South Korea in a comparative perspective. *info, 6*(3), 197-207.

Kapoor, K. K., Dwivedi, Y. K., & Williams, M. D. (2015). Examining the role of three sets of innovation attributes for determining adoption of the interbank mobile payment service. *Information Systems Frontiers, 17*(5), 1039-1056. doi:10.1007/s10796-014-9484-7

Kaufman, S., Kaufman, J., & Maclehose, R. (2009). Analytic Bounds on Causal Risk Differences in Directed Acyclic Graphs Involving Three Observed Binary Variables. *J Stat Plan Inference., 139*(10).

Kaufman, S., Kaufman, J., MacLehose, R., Greenland, S., & Poole, C. (2005). Improved estimation of controlled direct effects in the presence of unmeasured confounding of intermediate variables. *Stat Med, 24*(11).

Léger, P.-M., Cassivi, L., & Fosso Wamba, S. (2004). *Determinants of the adoption of customer-oriented mobile commerce initiatives.* Paper presented at the Twelfth International Association of Management of

Technology (IAMOT'04), Washington D.C, USA.
López Catalán, B., & Díaz Luque, P. (2008). *M-commerce adoption: TAM vs technology provider perspective through cognitive maps.* Paper presented at the Building Bridges in a Global Economy, Salmanca, Spain.
Lu, M.-T., Tzeng, G.-H., Cheng, H., & Hsu, C.-C. (2015). Exploring mobile banking services for user behavior in intention adoption: using new hybrid MADM model. *Service Business, 9*(3), 541-565. doi:10.1007/s11628-014-0239-9
Mallat, N., & Tuunainen, V. K. (2008). Exploring merchant adoption of mobile payment systems: An empirical study. *e-Service Journal, 6*(2), 24-57.
Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173-191.
Molla, A., & Licker, P. S. (2005). Perceived e-readiness factors in e-commerce adoption: An empirical investigation in a developing country. *International Journal Of Electronic Commerce, 10*(1), 83-110.
Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192-222.
Nisar, T. M., & Prabhakar, G. (2017). Exploring the key drivers behind the adoption of mobile banking services. *Journal of Marketing Analytics, 5*(3), 153-162. doi:10.1057/s41270-017-0023-5
Nunnally, J., & Bernstein, I. (1994). *Psychometric Theory* (3rd ed.). New York: McGraw-Hill. .
O'Donnell, J., Jackson, M., Shelly, M., & Ligertwood, J. (2007). Australian case studies in mobile commerce. *Journal of Theoretical and Applied Electronic Commerce Research, 2*(2), 1-18.
OECD. (2007). *Mobile commerce*. Retrieved from
Park, S.-T., Im, H., & Noh, K.-S. (2016). A Study on Factors Affecting the Adoption of LTE Mobile Communication Service: The Case of South Korea. *Wireless Personal Communications, 86*(1), 217-237. doi:10.1007/s11277-015-2802-7
Premkumar, G., & Ramamurthy, K. (1995). The role of interorganizational and organizational factors on the decision mode for adoption of interorganizational systems. *Decision Sciences, 26*(3), 303-336.
Rogers, E. M. (2003). *Diffusion of innovations*
. NY: Simon and Schuster.
Sabherwal, R., Jeyaraj, A., & Chowa, C. (2006). Information system success: Individual and organizational determinants. *Management Science, 52*(12), 1849-1864.
Sait, S. M., Al-Tawil, K. M., & Hussain, S. A. (2004). E-commerce in Saudi Arabia: Adoption and perspectives. *Australian Journal of Information Systems, 12*(1), 54-74.
Sgriccia, M., Nguyen, H., Edra, R., Alworth, A., Brandeis, O., Rodrigo Escandon, . . . Seal, K. (2007). Drivers of mobile business models: Lessons from four asian countries. *International Journal of Mobile Marketing, 2*(2), 58-67.
Sharma, D., Murthy, R., & Sundar, K. (2006). *Government policies and regulations: Impact on mobile commerce in Indian context.* Paper presented at the Second European Conference on Mobile Goverment (EURO mGOV).
Snowden, S., Spafford, J., Michaelides, R., & Hopkins, J. (2006). Technology acceptance and m-commerce in an operational environment. *Journal of Enterprise Information Management, 19*(6), 525 - 539.
StatCounter. (2016). Mobile and tablet internet usage exceeds desktop for first time worldwide. Retrieved from http://gs.statcounter.com/press/mobile-and-tablet-internet-usage-exceeds-desktop-for-first-time-worldwide
Subramanian, G. H. (1998). A replication of perceived usefulness and perceived ease of use measurement. *Decision Science, 25*(5-6), 863-874.
Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144-176.
Teo, T., Chan, C., & Parker, C. (2004). *Factors affecting e-commerce adoption by SMEs: A meta-analysis.* Paper presented at the 15th Annual Australasian conference on information systems, Hobart, Australia.
Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly, 15*(1), 124-143.
Tiwari, R., Buse, S., & Herstatt, C. (2006). From electronic to mobile commerce: Opportunities through technology convergence for business services. *Asia-Pacific Tech Monitor*, 38-45.
Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. . *MIS Quarterly, 27*(2).
Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly, 36*(1), 157-178.
Yang, K. C. C. (2005). Exploring factors affecting the adoption of mobile commerce in Singapore. *Telematics and Informatics, 22*(3), 257-277.
Yaseen, S. G., & Zayed, S. (2010). Exploring critical determinants in deploying mobile commerce technology. *American Journal of Applied Sciences, 7*(1), 120-126.

Zeeshan, S. A., Cheung, Y., & Scheepers, H. (2007). *Developing a collaborative orgnizational mobile commerce model.* Paper presented at the International Conference on Business and Information, Tokyo, Japan.
Zheng, P., & Ni, L. (2006). Mobile application challenges *Smart Phone and Next Generation Mobile Computing* (pp. 407-512). Burlington: Morgan Kaufmann.

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