

An Extended Tam Model to Evaluate User's Acceptance of Electronic Cheque Clearing Systems at Jordanian Commercial Banks

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Abstract: Electronic cheque clearing systems (ECCS) are being used with increasing frequency in many countries, including Jordan. However, there is relatively little research on developing models enables an understanding of factors that have influenced ECCS acceptance. The study population consist of ECCS users from the central bank of Jordan and 24 commercial banks in Jordan which comprise 24 banks, a stratified random sample were drawn from ECCS users from the central bank of Jordan and 11 commercial banks, whereas 304 valid questionnaire were collected out of 420 distributed questionnaire. Collected data were statistically analyzed using SPSS package to investigate the relationship between dependent variable ECCS acceptance and independent variables: system quality, information quality, perceived ease of use, and perceived usefulness, on the other hand to investigate the relationship significant between independent variables. The main study conclusions that ECCS acceptance is positively associated with independent variables mentioned earlier. The major study recommendation that business sectors should pay attention to the major role of users' acceptance in determining the success of information systems application, in addition to importance of future investigation in the perceived value of ECCS by banks customers' perspective.

Key words: Electronic cheque clearing systems; technology acceptance model; acceptance.

INTRODUCTION

The demands of new payments and clearing methods coupled with regulatory changes in banking are forcing clearing operations to move away from the traditional paper clearing stream to an electronic data based and even electronic image exchange based for quicker clearing and resultant accelerated deposits and returns (Calisir and Gumussoy, 2008; Agarwal *et al*, 2009).

Motivated by these, the central bank of Jordan has adopted ECCS as the main tool for clearing cheques between commercial banks in 2007, although, all commercial banks in Jordan start applying ECCS, and the diffusion of these technologies by financial institutions is expected to result in a more efficient banking system. However, there is relatively little research on developing models enables an understanding of factors that have influenced ECCS acceptance. Hence, there is a heightened need in IS research to understand the factors that impact an individual's decision to use such technologies.

The primary purpose of this research is to analyze and extend knowledge regarding influential factors that affect users to accept ECCS, in the light of technology acceptance model (TAM), and to develop a model that can be used to analyze user acceptance in the context of developing economy such as Jordan. Furthermore, this research anticipates contributing to the literature on ECCS; a model of factors that influence users' acceptance of ECCS.

2. Electronic Cheque Clearing Systems:

Bank cheques are probably the most widespread type of documents, with nearly one hundred billion cheques circulating all over the world every year (Hancock and Humphrey, 1997; Madasu and Lovell, 2005). The cheque evolved over many years, but cheques transactions are still increasing throughout the world in spite of the overall rapid emergence of electronic payments by credit cards (Madasu and Lovell, 2005; Pasupathinathan *et al*, 2005). Accordingly, the banking industry is committed to maintaining the quality and integrity of cheque clearing, to ensure a high level of customer service and transparency.

Electronic cheque clearing system (ECCS) is the latest in the series of technological wonders of the recent past. Clearing is about passing instructions to another participant with a view to obtaining finality of payment

(Clacher, 2006). This typically occurs at a clearing house under established rules and procedures which include not only the operational requirements on those clearing institutions but also how settlement for the underlying values is to be obtained.

The automatic clearing of a bank cheque involves extraction and recognition of handwritten or user entered information from different data fields on the cheque such as courtesy amount, legal amount, and date.

ECCS is defined as the process of inter-bank cheque settlement by using both cheque electronic records and scanned copy of the cheque (Pasupathinathan *et al*, 2005), once the teller in the bank of first deposit (BFD) receives the cheque item, the scanned copy is sent to the paying bank through central bank to be technically and financially cleared through high speed secure connection lines, the reply for that action to pay or reject the cheque is generated from the paying bank to the central bank and then will be sent to BFD (Jresat, 2007). On the contrary to the traditional cheque clearing process, this held at the central bank clearing center with the physical attendance of all banks' representatives.

Cheque imaging by ECCS involves the scanning of a cheque to create a digital image which can be transferred through a data link, CD-ROM or cartridge (Madasu and Lovell, 2005; Pasupathinathan *et al*, 2005; Clacher, 2006). Cheque truncation is the electronic presentation of the essential details of a cheque without the cheque itself having to be physically presented. With cheque imaging and truncation, the physical cheques remain with the collecting bank or with the central bank if the collecting bank commissioned the central bank to do the imaging on its behalf (Clacher, 2006).

The center of the cheques clearing process is the clearinghouse, central banks, monetary agency or Federal Reserve. The roles of all these governmental institutions is to verify the cheque clearing process and enforce financial procedures, regulations and laws, as well as, monitor and follow up their implementation (Clacher, 2006).

The adoption of ECCS yields a variety of advantages (Madasu and Lovell, 2005; Clacher, 2006). First, the electronic processing and storage of cheque images is expected to result in improved efficiency of cheque clearing and in cost savings. Secondly, imaged cheques are easy to process, transfer and retrieve. Remote access to the image database through PC workstations allows instantaneous information retrieval to facilitate checking and investigation of cheque images. A study by electronic Cheque clearing house organization (ECCHO) found that the banks with (10) billion dollars assets, will save (7) million dollars as a result of clearing the cheque electronically, and banks with (1000) billion dollars will save (260) million dollar per year (Clacher, 2006; Jersat, 2007).

Although ECCS become the corner stone in conducting cheque clearing services in many countries, It is observed, There is limited number of studies that have been conducted in understanding ECCS users' adoption or usage intention, in this context is found limited for many countries, including Jordan (Jersat, 2007).

3. Literature Review:

The successful implementation of information systems (IS) is dependent on the extent to which such a system is used and eventually adapted by potential users (Davis and Venkatesh, 2000). IS implementation is not likely to be considered successful if users are unmotivated to use that type of technology (Davis and Venkatesh, 2000). If users are not willing to accept the information system, it will not bring full benefits to the organization (Davis, 1993; Davis and Venkatesh, 2000). The more accepting of a new IS the users are, the more willing they are to make changes in their practices and use their time and effort to actually start using the new IS (Davis and Venkatesh, 2000).

To predict, explain and increase user acceptance, organizations need to better understand why people accept or reject IS (Davis *et al*, 1986). In this regard, researchers have developed and used various models to understand acceptance of users of IS. Among the different models proposed the Technology Acceptance Model (TAM) (Davis 1989), adapted from the Theory of Reasoned Action (TRA) (Davis and Venkatesh, 2000), appears to be the most widely accepted among the information system researchers (Venkatesh *et al*. 2003; Wang *et al*. 2003).

The primary goal of TAM is to predict IS acceptance and diagnose design problems before user have experience with the new system. TAM suggests that when user encounter new IS technologies the two main factors influences how and when they will use the system. These two main constructs of TAM are perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness is defined as "the degree to which person believes that using a particular system would enhance his or her job performance" (Davis 1989). Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free from efforts" (Davis 1989). TAM proposes that two particular constructs, that are of primary significance for IS acceptance, perceived usefulness (PU) and perceived ease of use (PEOU) affect user's

attitude towards using the information system. Attitude directly relates to user's intention, which will in turn determine usage of the system.

TAM has much strength; including its specific focus on IS usage, the validity and reliability of instruments, and its parsimony (Davis and Venkatesh, 2000).

While basic constructs of TAM, PU and PEOU, have been considered primary determinants of individual's acceptance and use of technology. IS researchers have investigated and replicated these two constructs and agreed that they are valid in predicting user's acceptance of various IS systems (Venkatesh *et al* 2003). However, few of TAM studies have investigated the impact of system characteristics as antecedents to ease of use or perceived usefulness (Wixom and Todd, 2005). In their integration of the technology acceptance literature, Venkatesh *et al.* (2003) stress the need to extend this literature by explicitly considering system and information characteristics and the way in which they might influence the core beliefs in TAM, and might indirectly shape system usage. Recent studies that have used TAM as a theoretical framework have suggested to exclude attitude construct from the TAM model since it does not mediate fully the effect of perceived usefulness and perceived ease of use on behavioral intention as originally anticipated (Venkatesh, 2003).

Recently, DeLone and McLean, (2004) in a research study related to the dimension of IS success suggested that system quality (i.e. information and system quality) affects perceived usefulness, user satisfaction and system usage.

Further, Wixom and Todd (2005) developed an integrated model based on technology acceptance and user satisfaction literature. The model was tested using a sample of 465 users from seven different organizations regarding their use of data warehousing software. Findings showed that information and system characteristics explained 75% variance for system and information quality. They found that there was significant affect of information and system quality on PU and PEOU. Moreover, they suggested investigating the effects of the IT artifacts itself as an antecedent to ease of use and usefulness, and other related factors.

According to Wixom and Todd (2005), TAM provides limited guidance about how to influence usage through design and implementation. They further elaborated that as PU and PEOU are abstract concepts and provide general information to the designers. Therefore designers are unable to receive actionable feedback about the important aspects of the IS artifacts itself. They identified information and system quality significant constructs which can affect IS usage. Furthermore, Davis (1989) himself noted that future technology acceptance research needs to address how variables affect usefulness, ease of use, and user acceptance.

It can be argued that basic constructs of TAM, perceived usefulness and perceived ease of use, may not fully determine users' acceptance of ECCS, which therefore brings in the need to search for additional factors that may better predict and enhance the user acceptance of ECCS.

Another point that has not been explored well in TAM research is the role of system characteristics as external variables. Davis *et al.* (1989) did not include other factors explicitly into the TAM model that are expected to impact intentions and usage through PU and PEOU. These external variables could be system characteristics, organizational structure, training, and the like (Davis *et al.*, 1989). According to Davis (1989), external stimuli influence a person's attitude toward behavior indirectly by influencing his/her salient beliefs about the consequences of performing the behavior. Since system characteristics are external stimuli, they should influence beliefs (PU & PEOU) about using a system.

Besides, most of these empirical studies using TAM were conducted in developed countries and in industrialized world. Very few studies related to internet banking technologies were carried out to test the applicability of the model outside these regions (Wang *et al.*, 2003). Wang *et al.* (2003) conducted an empirical study on determinants of user acceptance of Internet banking in Taiwan. Pikkariainen *et al.* (2004) study in Finland, Therefore, it would be erroneous to assume that IS acceptance theories and models predict equally well in other cultural settings, especially in developing countries. The robustness of the models may vary across different cultures and thus need to be empirically tested.

4. Research Model and Hypotheses:

The proposed research model is presented in Figure (1). The incorporation of quality into the acceptance model must describe the dependency of user acceptance on system quality and information quality. According to Wixom and Todd (2005), TAM provides limited guidance about how to influence usage through design and implementation. They further elaborated that as PU and PEOU are abstract concepts and provide general information to the designers. Therefore designers are unable to receive actionable feedback about the important aspects of the IT artifacts itself. They identified information and system quality significant constructs, which can affect IS usage.

Based on the literature review a model of factors that influence users' acceptance of ECCS has been proposed. The model consists of system characteristics (Information and System quality), Perceived Usefulness, Perceived Ease of Use, and acceptance, that author posits will have an effect on ECCS acceptance in the context of Jordan.

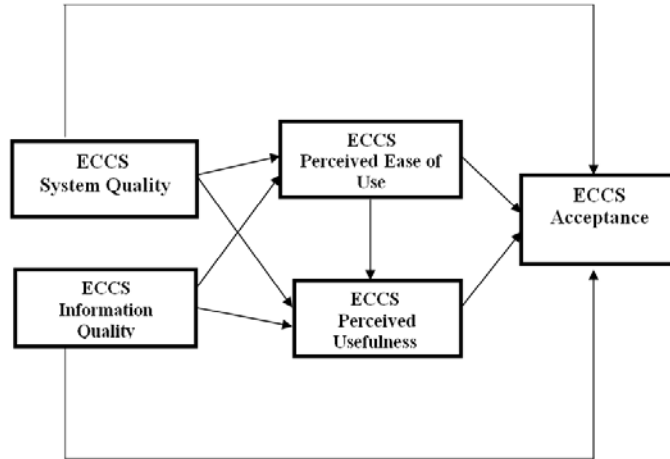


Fig. 1: ECCS Acceptance Model.

System Quality:

System quality refers to the technical details of the information system interface and quality of system that produces information output (DeLone and Mclean, 1992). Davis (1989) did not include system characteristics into TAM model, but he suggested including judicious system characteristics. According to DeLone and McLean (1992), technology characteristics singularly or jointly affect subsequent use and user satisfaction. Hence, it is assumed that system quality directly or indirectly through PU and PEOU, positively effects user acceptance of ECCS. Thus, this study postulates the following hypotheses:

- H1a. System quality will have positive effect on perceived ease of use of the ECCS.
- H1b. System quality will have positive effect on perceived usefulness of the ECCS.
- H1c. System quality will have positive effect on user acceptance of the ECCS.

Information Quality:

Information quality is related to the quality of information that the ECCS delivers to its users (DeLone and McLean, 2004). Information quality determines the success of a website design (Shih, 2003). As ECCS provide users means to access information systems directly by performing transactions. Therefore, ECCS can be viewed as information systems. Previous studies used information quality to measure IS success (Iivari, 2005), measuring e-commerce success (DeLone and McLean, 2004), and e-shopping acceptance (Shih, 2003). Shih (2003) postulated that perceived information quality positively affect PEOU, PU, attitude, and user acceptance of e-shopping. Therefore, based on theoretical and empirical support from IS literature, it is assumed that information quality positively affects PU, PEOU, and user acceptance of ECCS, this study leads to the following hypotheses:

- H2a. Information quality will have positive effect on perceived ease of use of the ECCS.
- H2b. Information quality will have positive effect on perceived usefulness of the ECCS.
- H2c. Information quality will have positive effect on user acceptance of the ECCS.

Perceived Usefulness:

Perceived usefulness (PU) defined as “the degree to which a person believes that using a particular system would enhance his/her job performance” (Davis, 1989). According to TAM PU is a significant factor that effects user acceptance of information system (Davis, 1889; Davis *et al.*, 1989). Several researchers provide evidence of significant effect of PU on IS acceptance and usage (Davis, 1989; Pikkarainen *et al.*, 2003; Wang *et al.*, 2003). Hence, ECCS that users think are useful are more likely to be accepted by the users. Therefore, this study proposes the following hypothesis:

H3. Perceived usefulness will have positive effect on user acceptance of the ECCS.

Perceived Ease of Use:

Perceived ease of use (PEOU) is defined as “the degree to which a person believes that using a particular system would be free of efforts” (Davis, 1989). TAM posits that PEOU is important factor that effect IS acceptance, either directly or indirectly through perceived usefulness (Davis *et al.*, 1989). Venkatesh and Davis (2000) found that PEOU have positive direct effect on user acceptance of IS. Thus, if online banking systems are easy to use they are more likely to be accepted by the intended users. Thus, this study postulates the following hypotheses:

H4a. Perceived ease of use will have positive effect on perceived usefulness of the ECCS.

H4b. Perceived ease of use will have positive effect on user acceptance of the ECCS.

5. Methodology:

Population and Sample:

The population of study consisted of employees of the central bank of Jordan and all commercial banks licensed and working in Jordan, and these comprise 24 banks. As this research linked success of ECCS with the reaction of users (specifically to their sense of ECCS impact.), knowledge of ECCS is assumed and expected in the target population. Accordingly, subjects for this study were then chosen using a stratified random sampling based on their knowledge of ECCS. Only employees using ECCS in their work were included in the samples. From the sampling frames of the 24 banks and the central bank of Jordan, a total of 420 subjects were chosen as samples. The sample size was acquired from the table of Sekaran, (2006) that simplified the sample size decision to ensure a good decision model.

Measures:

To ensure the content validity of a scale, the items selected must represent the concept about which generalizations are to be made. Therefore, validated instruments adapted from prior studies were used to measure the study variables. The items used to measure usefulness and ease of use were adapted from Davis, (1989) and Sun and Zhang, (2006). The items used to measure system quality and information quality were adapted and refined from Seddon and Yip, (1992) and Wixom and Todd, (2005).

Data Collection:

The study used a self-administered questionnaire to measure the study variables. The questionnaires were pre-tested and distributed to members of the postgraduate students and academics who are in the information systems area of specialization. The respondents were asked to critically evaluate the questionnaire with regards to its objective, contents, clarity and ease of completion, and they also assist in translation and validating the Arabic version of the survey which distributed to ECCS users. After the pre-testing stage, a modified questionnaire was developed for the purpose of conducting a pilot study. The questionnaires were also translated to Arabic to cater for banks staff.

The pilot study was carried out in three banks. Ten questionnaires were distributed to each bank with high volume of check clearing. About 20 questionnaires were collected and they were found reliable. Prior to the actual fieldwork, the questionnaires were refined and rephrased accordingly. The modified questionnaires were then distributed to employees of the selected banks. A total of 420 questionnaires were distributed, and 304 were returned giving a 74 percent response rate, which represent fair rate according to Sekaran, (2006).

RESULTS AND DISCUSSION

Respondents' Profile:

Table 1 provides a summary of the respondents' profile. Male respondents represented a slightly higher percentage of the completed sample (approximately 66%) compared to female respondents (approximately 33%). The majority of the respondents (approximately 65%) were aged less than 35 years.

The completed sample was composed of well-educated individuals, as illustrated in table (1); only 7.6% out of total respondents hold post graduated degrees. The majority of respondents hold bachelor degree with percentage 62.8% out of total respondents, and 26.6% out of total respondents hold community college degree. And only 3% out of total respondents had secondary education.

Table 1: Respondents' profile.

Characteristic	Item	Frequency	Percentage %
Gender	Male	203	66.4
	Female	101	33.6
Age	Less than 25 Y	72	23.9
	25 Y less than 35 Y	125	41.5
	35 Y less than 45 Y	81	26.9
	45 Y less than 55 Y	21	7.0
	55 Y and more	2	0.7
User's Education Level	Secondary	9	3.0
	Community College	81	26.6
	Bachelor	191	62.8
	Master	19	6.3
Banking Experience	PhD	4	1.3
	Less than 1 Y	34	11.2
	1 Y less than 5 Y	100	32.9
	5 Y less than 10 Y	38	12.5
	10 Y less than 15 Y	64	21.1
Cheque's Clearing Experience	More than 15 Y	68	22.4
	Less than 1 Y	93	30.8
	1 Y less than 5 Y	118	39.1
	5 Y less than 10 Y	45	14.9
Banking information systems' Experience	10 Y less than 15 Y	33	10.9
	More than 15 Y	13	4.3
	Less than 1 Y	40	13.2
	1 Y less than 5 Y	101	33.4
ECCS Usage by hour	5 Y less than 10 Y	46	15.2
	10 Y less than 15 Y	73	24.2
	More than 15 Y	42	13.9
	Less than 2 hrs.	36	11.9
On average, I spend approximately --- hours/day working with ECCS	2 hrs less than 4 hrs	50	16.6
	4 hrs less than 6 hrs	71	23.5
	6 hrs less than 8 hrs	105	34.8
	8 hrs and more	40	13.2
	From 0 % to 20 %	39	13.0
	More Than 20% to 40 %	56	18.7
	More Than 40 % to 60 %	56	18.7
	More Than 60% to 80 %	66	22
	More Than 80% to 100%	83	27.7

As shown in table (1) 44.1% out of the respondents have banking experience less than five years, and 55.9% out of the respondents have banking experience five years and more. As for respondents experience in check clearing 69.9% out of total respondents have less than five years experience, and 30.1% out of total respondent have experience five years and more.

The respondents were mostly experienced banking information systems users. Approximately 53.4% of the respondents had more than 5 years experience in using banking information systems. 34.8% of the respondents spend approximately 6 hrs less than 8 hrs. Per day working with ECCS, and 27.7% of respondents spend approximately more than 80% up to 100% of there daily work using ECCS.

Research Findings:

The reliability of the questionnaire was tested according to Cronbach alpha measurements. The reliability coefficient (alpha) of the independent variables was as follows: perceived system quality (80 percent); perceived information quality (70 percent); ease of use (72 percent), usefulness (83 percent), and ECCS Acceptance (74 percent). The reliability coefficients of all the five variables were above 0.70, which concurs with the suggestion made by Sekaran (2006).

The Pearson correlation coefficients among the variables were presented in Table 2. The bi-variate relationships indicated that most of variables were significantly correlated with each other and the correlations were all less than 0.80.

From the table 2, there are statistical significant relationship among all the variables, the strongest relationship, in order of sequence, were between usefulness and acceptance ($r = 0.65$), usefulness and ease of use ($r = 0.63$), and ease of use and acceptance ($r = 0.61$). The relationship with medium strength were between system quality and usefulness ($r = 0.54$), system quality and ease of use ($r = 0.49$), system quality and acceptance ($r = 0.48$), information quality and usefulness ($r = 0.45$), and information quality and acceptance ($r = 0.46$). Lastly, the relationship with the lowest strength were between information quality and ease of use

($r = 0.35$), and information quality and system quality ($r = 0.36$). All the statistically significant relationships were positively related (for example an increase in one variable is associated with an increase in another variable).

Regarding analytic strategy for assessing the predictive model, path analysis is an appropriate multivariate analytical methodology for empirically examining sets of relationships in the form of linear causal models. In general, the value of the path coefficient associated with each path represents the strength of each linear influence.

Although the path coefficient can be estimated in many ways, multiple regression analysis has been used by most empirical applications of this methodology (Hair *et al*, 2006). In regression analysis, multicollinearity can be controlled in two ways: (1) correlation between independent variables should all be less than 0.8 ; (2) variance inflation factors (VIF) should be less than 10 (Hair *et al*, 2006).

In this study, multicollinearity was ruled out because the correlations between independent variables were all less than 0.8 and the VIFs were all less than 10.

The stepwise multiple regression results for the path associated with the variables were presented in Table 3. For testing H1a and H2a, a regression analysis was conducted to check the effects of System quality and Information quality on perceived Ease of Use. The results presented that perceived System quality and Information quality both were predictor variables ($F=56.05$, $P=.000$, $R^2=0.38$). For examining H1b and H2b, a regression analysis was performed to check the effects of System quality and Information quality on usefulness. The results indicated System quality and Information quality both were predictor variables ($F=59.95$, $P=.000$, $R^2= 0.63$). For testing H4a, a regression analysis was conducted to check the effects of ease of use on usefulness. The results showed ease of use was predictor variables ($f = 70:37$, $P =.000$, $R^2= 0.49$).

In order to identify the most important independent variable that explains the acceptance of ECCS variable and to test hypothesis H1c, H2c, H3, and H4b, a multiple regression analysis was carried out.

The regression analysis shows that 59 percent of the variance in acceptance of ECCS is explained by the four factors (system quality, information quality, Perceived ease of use, and perceived usefulness). The regression model is significant in explaining acceptance; the F ratio of 174 is highly significant ($p > .001$). The standardized Beta values for system quality (0.45), for ECCS information quality (0.43), for perceived usefulness (0.54), and for Perceived Ease of Use (0.33) also indicate that perceived usefulness has more impact than system quality, information quality or Ease of Use. Overall the results indicate support for the hypothesis H1c, H2c, H3, and H4b. Thus the findings of the regression models are illustrated in Exhibit 1

Table 2: Correlations and alpha reliabilities of the measures

Variables	1	2	3	4	5	Reliability
1 System quality	1	0.36**	0.49**	0.54**	0.48**	0.80
2 Information quality		1	0.35**	0.45**	0.46**	0.7
3 Perceived Ease of Use			1	0.63**	0.61**	0.72
4 Perceived usefulness				1	0.65**	0.83
5 Acceptance					1	0.74

** Correlation is significant at the 0.01 level

Table 3: Regression results for predicted path relationships

Hypothesis	Dependent variable	Independent variables	B	R2	P	Result
H1a	Ease of Use	System quality	0.45	0.3	0	Accept
H2a		Information quality	0.3	0.08	0	Accept
H1b	Usefulness	System quality	0.43	0.25	0	Accept
H2b		Information quality	0.46	0.38	0	Accept
H4a		Ease of Use	0.57	0.49	0	Accept
H1c	Acceptance	System quality	0.45	0.59	0	Accept
H2c		Information quality	0.43		0	Accept
H3		Usefulness	0.54		0	Accept
H4b		Ease of Use	0.33		0	Accept

7. Discussion, Conclusion, and Implication for Further Research:

This study was designed to break new ground and explore the determinants that influence the user acceptance of ECCS. This research tested the thesis that that ECCS acceptance is a joint function of system and information characteristics, usefulness, and Ease of Use. Earlier studies have not framed the user acceptance determinants based on the four dimensions collectively. Hence, our study has established the significance of examining the user acceptance by framing determinants according to the relevant quality dimensions in a collective manner and thus, ensuring that the user acceptance can be better explained in an electronic context such as the ECCS.

Perceived Usefulness is the most significant determinant affecting acceptance of ECCS. This finding is consistent with various past studies (Davis *et al.*, 1989; Venkatesh *et al.*, 2003). As such, perceived usefulness has a significant effect on ECCS acceptance, suggesting that the Technology Acceptance Model could also extend into on-line banking such as the ECCS.L

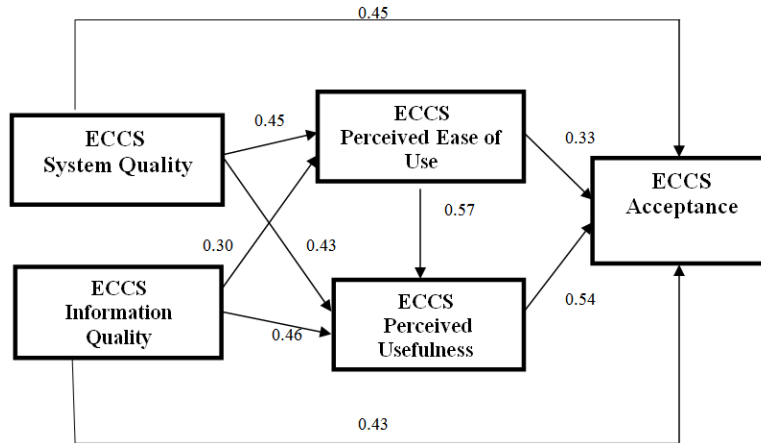


EXHIBIT. 1: Empirical research model.

The finding showed that system quality is significantly related to ECCS acceptance. Researchers in the area of conventional IS are generally regard system quality to be a highly important characteristics of all interactive computer systems (Rai *et al.*, 2002), independent of the specific application the system was designed to support. In turn, the finding of this research suggests that the greater the perceived system quality of an ECCS, the higher is the ECCS acceptance, agreeing with the literature noted above. However, there were no past studies about the impact of system quality of ECCS on user acceptance. Therefore, this research contributes to some extent to the current knowledge about the impact of system quality on user acceptance. The finding showed that information quality is significantly related to ECCS acceptance. There were no past studies which link information quality with ECCS acceptance. Nevertheless, Delone and Mclean (2003) put forward information quality as a major dimension for evaluating the success of IS. Our research adds to the literatures by identifying that level of ECCS information quality is significantly associated with users' acceptance in the ECCS context.

The results showed that perceived ease of use is positively related to ECCS acceptance. This finding was consistent with past studies (Davis *et al.*, 1989; Venkatesh and Davis, 2000). Our results suggest that in contexts where effective task execution substantially depends on the system such as the case with ECCS, beliefs about the system usefulness are more dominant in shaping user satisfaction than beliefs about Ease of Use. As we knew from previous research, perceived usefulness was always an important determinant of attitude in TAM, and it may mediate the influence of perceived ease of use on attitude. Indeed, perceived ease of use has long been recognized as a basic requirement for system design (Davis *et al.*, 1989). Another interpretation is that difficulty in using systems is becoming less of a concern as they are increasingly user-friendly. In addition, since systems are more common and standardized nowadays, the users have become increasingly competent in using them. Accordingly, in the planning and development of ECCS systems, software developers should pay attention to practical functions and extend key features that are frequently required.

A competing model that strengthens the theoretical and empirical foundations has been developed. Our study has been carried out in an eastern setting unlike earlier studies and this makes research in the area of technology user acceptance more comprehensive.

Finally, this study suffers from a number of limitations. First, this study merely developed and validated an ECCS acceptance model using user perspective as the level of analysis. Future research may develop ECCS acceptance models using other stakeholders and levels of analysis.

Second, the use of self-report scales to measure study variables suggests the possibility of a common method bias for some of the results. Future research should employ both objective and subjective measures, and examine the correspondence (or lack thereof) between them.

Future research is needed to identify other factor that may impact ECCS acceptance, such as trust and satisfaction. Despite these limitations, the present study provides valuable insights into the study of ECCS acceptance.

Appendix 1: Instruments

System Quality:

ECCS allows information to be readily accessible to you.
ECCS makes information very accessible.
ECCS is easy to use at the first time I access.
ECCS can be integrated with other banking systems
ECCS can flexibly adjust to new work demands.
ECCS returns answers to my requests quickly.
ECCS is versatile in addressing needs as they arise.

Information Quality:

ECCS provides sufficient information
Information content provided by ECCS meet my needs
ECCS outputs is presented in a useful format
ECCS provides reports that seem to be just about exactly what I need
ECCS produces comprehensive information.
ECCS provides up-to-date information about cheque clearing process
I get form ECCS the information I need in time
I'm satisfied with the accuracy of the ECCS
ECCS information clear
ECCS information accurate
ECCS provides the precise information

Perceived Ease of Use:

Learning to operate ECCS is easy for me
I find it easy to get ECCS to do what I want it to do
It is easy for me to become skillful at using ECCS
I find ECCS easy to use

Perceived Usefulness:

Using ECCS enables me to accomplish job's tasks
Using ECCS enables to perform work's requirements more quickly
Using ECCS improves my job performance.
Using ECCS in job increases my productivity.
Using ECCS enhances my effectiveness in the job.
Using ECCS makes it easier to do my job.
Using ECCS improves my ability to make good decisions.

Acceptance:

I like the idea of using ECCS enhances cheque clearing process
I have a generally favorable attitude toward using ECCS
I believe it is (would be) a good idea to use ECCS in the cheque clearing process

REFERANCES

- Agarwal, R., S. Rastogi and A. Mehrotra, 2009. "Customers' perspectives regarding e-banking in an emerging economy" *Journal of Retailing and Consumer Services*, In Press, Corrected Proof, Available online.
- Calisir, F. and C. Gumussoy, 2008, "Internet banking versus other banking channels: Young consumers' view ", *international Journal of Information Management*, 28(3): 215-221.
- Clacher, I., 2006. Challenges Facing Banking in Emerging Markets. A case study of the Tanzanian national payments systems. *Journal of Financial Regulation and Compliance*, 14: 112-118.
- Davis, F.D., 1989. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, 13(3): 319-40.
- Delone, W.H. and E.R. Mclean, 1992. "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research*, 3(1): 60-93.
- DeLone, W.H., E.R. McLean, 2004, "Measuring e-Commerce Success: Applying the DeLone & McLean Information Systems Success Model", *International Journal of Electronic Commerce*, 9(1): 31-47.
- Hair, J.F., W.C. Black, J. Babin, B., Rolph E. Anderson, and R.L. Tatham, 2006. *Multivariate Data Analysis (6 Ed.)*. Upper Saddle River- New Jersey: Pearson Educational International -Prentice Hall.

- Iivari, J., 2005. "An Empirical test of the DeLone-McLean Model of Information System Success", *The DATA BASE of Advances in Information Systems*, 36(2): 8-27.
- Jresat, N.F., 2007. *Economic Impact Of Applying Electronic Cheque Clearing Solution A Case Study - State Of Qatar (2001-2005)*. Unpublished Master Thesis, University Of Jordan, Amman, Jordan.
- Madasu, V., K. and B.C. Lovell, 2005. "Automatic Segmentation and Recognition of Bank Cheque Fields. Proceedings of the Digital Imaging Computing: Techniques and Applications, IEEE computer society.
- Pasupathinathan, V., J. Pieprzyk and H. Wang, 2005. Privacy Enhanced Electronic Cheque System. Proceedings of the Seventh IEEE International Conference on E-Commerce Technology.
- Pikkarainen, T., K. Pikkarainen, H. Karjaluoto, S. Pahnla, 2004. "Consumer acceptance of online banking: an extension of the technology acceptance model", *Internet Research*, 14(3): 224-235.
- Rai, A., S. Lang, and R. Welker, 2002. "Assessing the Validity of IS Success Models: An Empirical Test and Theoretical Analysis," *Information Systems Research*, 13(1): 50-69.
- Seddon, P. and S.K. Yip, 1992. "An Empirical Evaluation of User Information Satisfaction (UIS) Measures for Use with General Ledger Account Software," *Journal of Information Systems*, pp: 75-92.
- Sekran, U., 2006. *Research Methods for Business*. Fourth Edition, India, John Wiley & Sons, Inc.
- Shih, H., 2003. "An empirical study on predicting user acceptance of e-shopping on the web", *Information & Management*, 41: 351-368.
- Sun, H and P. Zhang, 2006. " Causal Relationships between Perceived Enjoyment and Perceived Ease of Use: An Alternative Approach", *Journal of the Association for Information Systems*, 7(9): 618-645.
- Venkatesh, V. and F.D. Davis, 2000. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies." *Management Science*, 46(2): 186-204.
- Venkatesh, V., M. Morris, G. Davis and F.D. Davis, 2003. "User acceptance of information technology: toward a unified view", *MIS Quarterly*, 27(3): 425-78.
- Wang, Y., Y. Wang, H. Lin, T. Tang, 2003. "Determinants of user acceptance of internet banking: an empirical study", *International Journal of Service Industry Management*, 14(5): 501-519.
- Wixom, Barbara H. and A. Todd Peter, 2005." A Theoretical Integration of User Satisfaction and Technology Acceptance", *Information Systems Research*, 16(1): 85-102.