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## **Factors that Affect Banks' Acceptance of Electronic Cheque Clearing System: Evidence from Ghana**

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### **Abstract**

Although cash is the major form of payment system used in most developing countries, with the current trend in value of cheques processed through ECCS, it is a matter of time for cheques to become the dominant payment system. With the upward trend in the adoption and usage of ECCS in many countries, it is important to study the nature of the technology and understand factors that influence banks to accept the system.

Previous research in e-banking adoption and acceptance has directed attention towards e-banking channels other than ECCS and level of analysis used is usually focused on the individual rather than the organisation. This study addresses these research gaps

by exploring banks' acceptance factors among Ghanaian Banks. Using Technology Acceptance Model which is expanded with System Quality, Information Quality and Trust, the researchers undertook the study from the perspective of positivism, adopting a quantitative methodology to achieve the objectives. The research examined 25 commercial banks and 5 savings and loans companies which have different ways of adopting the technology.

A survey instrument was used to gather data and Structural Equation Modelling (SEM) using Partial Least Squares (PLS) as the statistical model to analyse the data gathered. The findings supported all the hypothesis presented and showed that Perceived Usefulness and Perceived Ease of Use are the major factors influencing banks' acceptance of the technology. Trust, IQ and SQ also affect banks' acceptance of ECCS positively but indirectly through PEOU and PU. The level of significance of PEOU was marginally lower compared to the level of significance for PU. The study therefore concurred with previous studies 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 acceptance than belief about ease of use.

**Keywords: Bank; Cheque; Clearing; Acceptance; Technology**

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## **INTRODUCTION**

Prior to the emergence of Information Technology (IT), traditional payment system was mainly cash payment until cheques surfaced and became the major payment method used by individuals and corporations. Cheques are used increasingly to make purchases over the counter as well as to pay bills. Cheques are the most patronised non-cash forms of payments in Ghana, with cheques worth of 96.8B cedis presented in 2014.

Cheques allow users to make payments for small as well as very large amounts at any time of the day, without needing to obtain cash. They also allowed users to pay bills without visiting physical locations designated by service providers such as utility companies and other major billers. Thus Cheques offer more choices regarding the time and location for making payments and, at the same time, reduces the risk of theft and loss associated with cash payments [1]. In developing countries cheque continues to be the major payment model although the case may be different for some advanced developed countries with several payments options. Cheque payments are the preferred method for medium and high value transactions. This is mainly because it provides the payee an assurance of guaranteed payment as the payments are generally made to the payee's account before goods or services are delivered to the payer.

Hitherto, clearing cheques drawn on different banks was tedious and time consuming as clearing houses required physical cheques from all banks to be sorted manually, perused and accepted by the various banks before values are transferred. This required that the cheques be physically moved from the collecting bank to the paying bank as part of the clearing process. With this practice, cheques were cleared using several days.

However the demands of new payment and clearing methods coupled with regulatory changes in banking are forcing clearing operations to move away from the traditional paper clearing stream to electronic data based and even electronic image exchange based route for quicker clearing and resultant accelerated deposits and returns [2]. Nowadays, banks have made a compulsion for the use of Cheque Truncating System (CTS) to save much time and effort for depositing cheques. Another interesting electronic clearing innovation, the Automated Clearing House (ACH), designed to provide a very low cost electronic payment mechanism, has been very successful in automating many types of recurring payments [3]. Electronic Cheque Clearing system is a payment innovation that has been introduced in developing countries considering the fact that payments innovation is a critical driver of economic development and is influenced by banks, non-banks and regulators [4].

The problems associated with the manual clearing systems in Ghana and the determination of the Bank of Ghana (BoG) to improve cheques clearing led to the decision to migrate to Cheque Codeline Clearing with Cheque Truncation (CCC) under new Rules published by BoG. Ghana moved away from the traditional paper based clearing into the electronic clearing in 2010. In view of this, there is a heightened need especially in Africa to study the process of cheque truncation and assess the determining factors of banks' acceptance and the challenges facing parties arising from the technologies used.

There are clear evidences of the introduction of e-banking systems which have failed to achieve the intended benefits especially in Ghana. For instance E-Zwich was introduced prior to ECCS, but statistical evidence [5] and literature suggest that the patronage has waned drastically since its introduction in 2008. Both Agyeiwaah and Antwi identified some factors that hindered the successful implementation of the technology in the country. It is on this premise that the study seeks to explore the factors that influence banks to accept ECCS which was also introduced by the central bank to reduce the usage of cash as a payment system.

Many studies published on e-banking are mostly related to e- banking adoption and acceptance, security and risks of e- banking system. Focus has also been centred on either the final consumer of the e-banking service or the service provider (Banks) [6]. Thus most of the current literature on e-banking directs their focus towards e-banking systems other than the ECCS which is widely used especially in developing countries. Again, the level of analysis in used in technology acceptance research is usually

conducted at the individual or the micro level. This study seeks to close this gap by studying the widely used but scarcely researched technology, conducting a meso level analysis and studying the factors that affect banks' acceptance of ECCS.

Also, limited number of studies have been conducted in an attempt to understanding ECCS. Al-Shibly studied users' acceptability using an adapted model of TAM and revealed that with ECCS, beliefs about the system's usefulness are more dominant in shaping user satisfaction than beliefs about Ease of Use. The study indicated the need for further research to consider Trust and User satisfaction as influential factors in determining user acceptance of ECCS. This limitation was partially solved by Alsoof who explored ECCS success by including User satisfaction as an influential factor. Unlike the study by Al-Shibly, Alsoof studied the effects of system and information quality on user satisfaction. The study revealed that the greater the perceived system quality of ECCS, the higher the ECCS success, agreeing with earlier study by Rai, Lang, and Welker. There is therefore the need to empirically study ECCS acceptance using Trust as an influential factor.

## **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **Cheque Truncation System/Electronic Cheque Clearing System**

Sreedevi [7] defined CTS as an online image based cheque clearing system where cheque images and Magnetic Ink Recognition (MICR) data are captured at the collecting bank branch and transmitted electronically without the actual cheque movement of physical cheques. Al Shibly also defined the automatic clearing of a bank cheque as the extraction and recognition of handwritten or user entered information from different data fields on the cheque such as courtesy amount, legal amount, and date. Given the definitions cited above, it can be gathered that ECCS involves the process of capturing bank cheques electronically and transmitting them to other banks without physical movement of the cheques.

Electronic Cheque Clearing System (ECCS) also known as the Cheque Truncation System (CTS) involves the process of inter-bank cheque settlement by using both cheque electronic records and scanned copy of the cheque. 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 sent back to BFD.

Generally, Cheque truncation is the process in which the physical movement of cheque within a bank, or between banks and clearing house is replaced by electronic records. Implementation of CTS usually brings all the participating banks to a common platform in the cheque processing operations. Cheque truncation is one of the ways to compress the clearing cycle to provide faster clearances of local and intercity cheques [7]. The

system enables banks to enjoy greater efficiency and provide better service to their customers.

Cheques are written orders from account holders instructing their banks to pay specified sums of money to named beneficiaries. When customers deposit their cheques to the collecting banks, the scanned copy is sent to the paying bank through the central bank to be technically and financially cleared through high speed secure connection lines. The digital image can also be transferred through a data link, CD-ROM or cartridge. The collecting banks or the clearing house will capture the transaction electronically and transmit the transaction as part of the transmission of the digital images. The centre of the cheques clearing process is the clearing house, central bank, monetary agency. The role of these institutions is to verify the cheque clearing process and enforce financial procedures, regulations and laws, as well as to monitor and follow up their implementation.

Truncated cheques will then be presented to the drawee's bank electronically for verification. The reply for that action to pay or reject the cheque is generated from the paying bank to the central bank and then sent to collecting bank for final payment to the customer. The physical cheques are kept at the collecting bank or the clearing house although the drawee bank may still be able to examine it in order to make payment decisions.

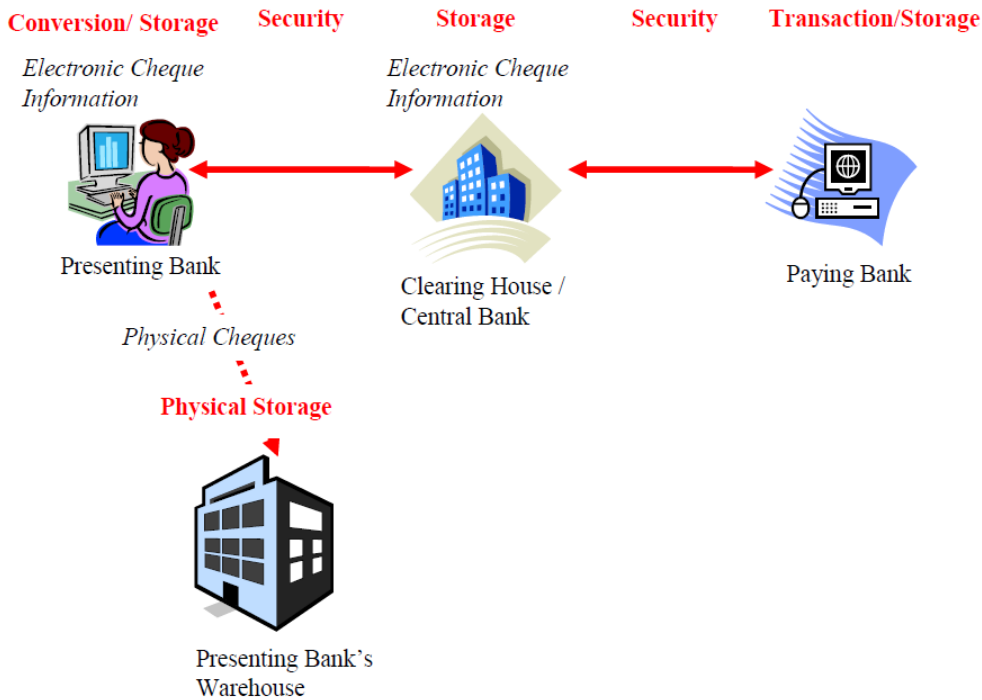
There is no change to the traditional practice pertaining to the writing of cheques by payers, the deposit of cheques by payees, the schedule of making funds made available by banks and returning of unpaid cheques to payees.

## **Research Theory**

Technology Acceptance Model (TAM) developed by Davis [8-10] is an extension of Theory of Reasoned Action (TRA) by Fishbein and Ajzen and the Theory of Planned Behaviour (TPB) by Ajzen. TAM is an information system theory that models how users come to accept and use a technology. TAM explains the relationship between beliefs (perceived usefulness and perceived ease of use of an information system) and users' attitude, intentions, and actual usage of the system. TAM posits these two theoretical constructs; perceived usefulness (PU) and perceived ease of use (PEOU) as fundamental determinants of user's acceptance of an information system [8].

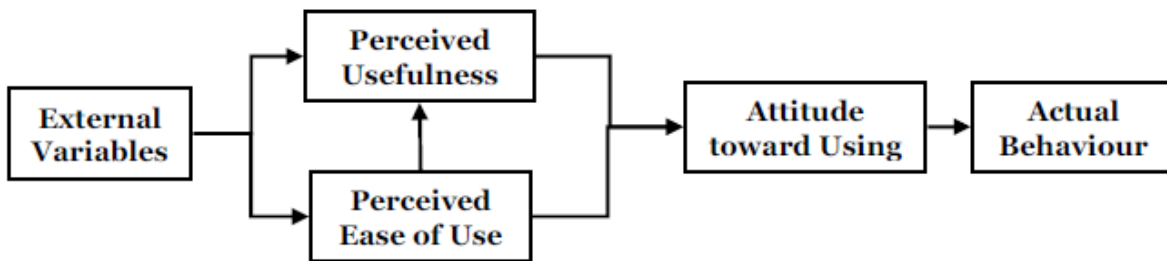
One limitation that led to the development of TAM was the time gap between the assessment of behaviour and the actual behaviour in the TRA and TPB. TAM model comprised two main factors, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). Perceived Ease of Use measures the degree to which an individual conceives minimal effort to be able to use a technology while Perceive Usefulness measures the degree to which their performance on a job is enhanced by a technology [8]. TAM accepts the influence of external variables on an individual hence, their inclusion in the

model. The model further suggests that, the intention of an individual to adopt a technology is determined collectively by Perceived Usefulness and Perceived Ease of Use which in turn influences attitude and subsequently an actual behavior (Figure 1).



**Figure 1:** Cheque Truncation Model – Authors Construct.

In the context of ECCS, a study of user acceptance of ECCS in Jordan by Al Shibly found that perceived usefulness, perceived ease of use, information quality and system quality had positive effects on user’s acceptance of ECCS. Also, in evaluating ECCS usage in Jordanian banks, Alsoof by using TAM found that there was a positive relationship between User satisfaction and perceived usefulness and perceived ease of use. Both studies highlighted the need to include other factors in the TAM such as trust for future research (Figure 2).



**Figure 2:** Technology Acceptance Model (TAM) [8].

The purpose of this study is to empirically explain the critical determinants that influence banks' acceptance of ECCS in Ghana. To this end, the TAM theory integrated with other factors such as information quality, system quality and trust is deemed fit to achieve this purpose. This is because the model has been tested as a much superior model compared to TRA and TPB in understanding e-banking usage behaviour.

### **Trust, Important Factor Influencing User Acceptance**

Trust has been defined in multiple disciplines reflecting its complex nature, although the definitions vary across the disciplines. Rousseau define trust, firstly, as a perception about others' attributes and, secondly, as a related willingness to become vulnerable to others. With greater trust, people can resolve their uncertainty regarding the motives, intentions, and prospective actions of others on whom they depend [9] as well as save money and effort, because trust reduces monitoring and legal contract costs. Morgan and Hunt defined trust as something that arises when one group or individual believes in the reliability and integrity of the exchange partner. Other approaches to trust were suggested. Mayer [10] defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". Rousseau, Sitkin, Burt, and Camerer reveal that, regardless of the underlying disciplines of authors, confident expectations and willingness to be vulnerable are critical components of all definition of trust. In the case of ECCS banks and customers make themselves vulnerable to the actions of the internet. Both the banks and the consumers are willing to be dependent upon the internet, based on the expectation the internet will deliver a seamless process of cheque clearing and perform effectively as planned.

### **Trust and TAM**

The connections between trust and TAM have been widely discussed in literature in that the relationships between PU, PEOU and trust are hypothesized in many online based business settings. In particular, a model of Trust and TAM was well defined in online shopping setting. This model explicitly indicated their relationship as trust is an antecedent of PU, PEOU is an antecedent of Trust and trust has a direct influence on behavioural intention to use. Trust is one of the determinants of PU, especially in an online environment, because part of the guarantee that consumers will sense the expected usefulness from the website is based on the sellers behind the website. Moreover, trust is recognized to have positive effect on PU since trust allows consumers to become vulnerable to e-vendor to ensure that they gain the expected useful interaction and service [11]. While consumers initially trust their job performance, they will believe the online service is useful.

On the other hand, PEOU is hypothesized to have influence on trust because PEOU can help promote customers' favourable impression on e-vendors in the initial adoption

of online service and further, cause customers to be willing to make investment and commitment in buyer-seller relationship.

## **Conceptual Model and Hypothesis Development**

Drawing upon IS existing literature, this study suggests that using TAM alone to measure ECCS success and wide acceptability may not fully capture the various factors. Alsoof explained that ECCS success is a joint function of system and information characteristics and acceptance. This is because the success of any system has a direct relationship with its acceptability. The study therefore adapt the two factors of the DeLone and McLean Information Success Model (i.e. perceived system and information quality) which characterises the success of a system to study the success of ECCS that lead to its acceptance.

Taylor and Todd explained that TAM can be applied to examine the behaviour of inexperienced and experienced users, with different emphasis on the determinants of intention. In addition, TAM has been used in longitudinal studies that confirmed that both PU and PEOU remain significant determinants of behavioural intention over time, as well as the significant influence of perceived ease of use on perceived usefulness. This evidence implies that TAM is appropriate for predicting the acceptance and continuous usage of information system. However, researchers suggested that there is the need for TAM expanded with additional factors or incorporated with other IT acceptance models to provide an even stronger model and account for specific task. When applied in the context of ongoing use, continuing capability to overcome obstacles would be necessary for continuance intention. Hence, Trust, information and system quality will be integrated and tested as additional factors influencing users' acceptance of ECCS.

IQ and SQ represent two aspects of e-resource characteristics and serve as independent variables in the model. IQ and SQ are beliefs about resources themselves rather than beliefs about using resources [12].

Trust is essential in any social interaction that involves uncertainty and risk. For any user to accept and use ECCS the users should first trust that the system would work as planned. This is the major reason why this study suggests Trust is an additional factor to determine users' acceptance of ECCS. Conceptually this study postulates that Information quality, System Quality, perceived ease of use, perceived usefulness, and Trust are key drivers of users' acceptance of ECCS.

**Perceived Usefulness:** PU measures the degree to which a person believes that using a particular system would enhance his/her job performance [8]. Several of the existing literature have established the significant effects of PU on IS acceptance and usage [12]. Pikkarainen found that PU had a direct effect on internet banking usage. People use online banking services because they find that using banking web sites enhances



the productivity of their banking activities and that they are useful for performing financial transactions. Gerrard and Cunningham explained that PU depends on the type of banking services such as checking bank balances, applying for a loan, paying utility bills, transferring money abroad, and obtaining information on mutual funds. This study will use Davis' definition of perceived usefulness. The proposed relationship between PU and behavioural intention is based on the theoretical argument by Wang, Guriting and Nelson, Soud and Faisal. Wang discovered that PU effect Taiwan's intentions to adopt e-banking systems significantly. In other words, PU has a significant relation with behavioural intention. Hence, the greater the PU of using e-banking services, the more likely that e-banking will be accepted by users [13]. From this argument the hypothesis below has being postulated:

**H1:** PU will have positive effect on bank acceptance of ECCS.

**Perceived Ease of Use:** The term "perceived ease of use" is defined as the "degree to which a person believes that using a particular system would be free of effort" [8]. Davis, [8] claimed that all other things being equal an application perceived to be easier to use than another is more likely to be accepted by users. As such PEOU is a major factor that affects acceptance of information system [8]. Igbaria, Guimaraes, and Davis believe that ease of use refers to their perceptions regarding the process leading to the final e-banking outcome. In simple terms the ease of use refers to how easy is the e-banking used. Consult also affirmed that the drivers of growth in e-banking would be determined by the PEOU which is a combination of convenience provided to those with easy internet access, the availability of secure, high standard e-banking functionality, and the necessity of banking services. Venkatesh further highlighted that with increasing direct experience with the target system individuals adjust their system-specific ease of use to reflect their interaction with the system. He added that PEOU in the case of e-banking can be quoted as savings of time, money, and convenience. As a result, the current study will utilize the definition of Davis [8] to define perceived ease of use.

**H2:** PEOU will have positive effect on PU of ECCS.

**H3:** PEOU will have positive effect on bank acceptance of ECCS.

**Perceived Information and System Quality:** According to Petter IQ is the desirable characteristics of the system outputs such as management reports and Web pages. Information quality is often a key dimension of user satisfaction measurement and it is crucial for both the use and the impact of any IS.

The original study by DeLone and McLean used both system and information quality to measure the usage and the user satisfaction of information systems. Their study postulated the use and user satisfaction can be used to determine the success of any IS. However recent studies have tried to conceptualized the model integrating them into the TAM model to assess users' acceptance of technology. Al Shibly posited that information and system quality do not have a direct relationship with users' acceptance

but indirectly influence users' acceptance through perceived ease of use and perceived usefulness. He integrated system and information quality as an external variables influencing the factors originally developed by Davis [8]. Alsoof also extended the TAM model including the system and information quality as an influential factor. In this study the researchers decided to explore system and information quality as an additional factors influencing banks' acceptance of ECCS.

The items for measuring perceived information and system quality were adapted from Petter; Lee; Prybutoka, Zhangb, and Ryan.

**H4:** IQ will have positive effect on PEOU.

**H5:** IQ will have positive effect on PU.

**H6:** IQ will have positive effect on bank acceptance of ECCS

**H7:** SQ will have positive effect on bank acceptance of ECCS.

**H8:** SQ will have positive effect on PEOU.

**H9:** SQ will have positive effect on PU.

**Trust:** Stewart defined trust in electronic commerce as the subjective probability with which consumers believe that an online transaction with a web retailer will occur in a manner consistent with their expectations. Lack of trust has been proposed to be one of the main reasons for consumers' decision to not engage in electronic commerce [14].

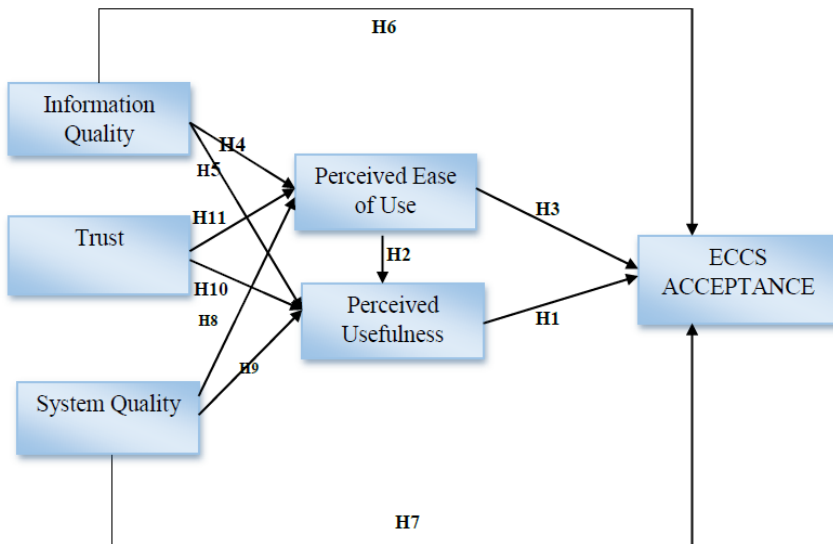
Trust has been identified as a key driver for adoption and acceptance of IS due to its relevance to deal with two critical conditions of digital means: uncertainty and risk of vulnerability. Trust is defined by Schoorman as "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other party will perform a particular action important to the trust or, irrespective of the ability to monitor or control that other party". Thus, in uncertain scenarios trust reduces vulnerability and helps the human need to understand the social surrounding of the interchange which means identifying the what, when, why and how others behave. This is probably the reason why trust has been validated as an important variable in studies concerning online commerce, and particularly in online services, as it is the case of this study.

The connections between trust and TAM have been widely discussed in literature in that the relationships between PU, PEOU, and trust are hypothesized in many online-based settings. For instance, Egea and González in their study of physicians' acceptance of electronic health care records (ECHR) systems postulated that perceptions of institutional trust exerted strong direct effects on physicians' PU, PEOU, and attitude towards the use of ECHR systems. However, their hypothesized relationship between trust and usage intentions was not supported, thus providing further evidence of the mediating value of attitude towards IT usage. Belanchea also in their study of e-government services adoption explained that trust is affected by PEOU and directly affects PU confirming that the inclusion of trust as a third belief into the TAM model is

relevant in the online context. The items for measuring trust were adapted from Lee and Turban; Cheung and Lee; Belanchea (Figure 3).

**H10:** Trust will have positive effect on PU of the ECCS.

**H11:** Trust will have positive effect on PEOU.



**Figure 3:** Research Model – Author’s Construct.

**METHODOLOGY**

In validating the hypothesis and the conceptual model, this research adopted a survey as an appropriate method. According to Creswell “survey provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of the population”. Hair, Black, Babin, and Anderson [15] also assert that it is appropriate to use surveys where the cause of a phenomenon is being studied. With reference to the objective of this study the “cause of the phenomenon” under study here is what influences banks’ acceptance of ECCS. A website was developed solely for the purpose of this survey to gather the data required. The link to the website was emailed to the respondents. This was done considering the busy schedules of Bankers. Assessing and answering the question online made it easy for the respondents and helped the researchers to reach many respondents. Responses were downloaded in excel format and uploaded into the statistical software for analysis. The link to the online questionnaires was emailed to 420 bank officials in 25 banks and 5 savings and loans companies in Ghana. Specifically, the email was sent to 15 officials from each bank and 9 officials from each savings and loans. 312 out of the 420 responded to the email and filled the questionnaire. After close scrutiny only 290 were considered for the analysis because 22 of the responses received were not acceptable for processing since they were defective basically questionnaires that were partially completed. The data

collection started from the 30<sup>th</sup> October 2014 and ended on the 12<sup>th</sup> of December, 2014. After entering coding and cleaning, the data was examined for missing values and outliers. The variables and cases were examined for percentages of missing values. This research therefore adopted Sekaran's recommendation, deleting listwise all cases with 25 per cent missing values from subsequent analysis. However, this did not lead to any significant decrease in the sample size, and the final sample was 290. Structural equation modelling (SEM) is a technique that allows separate relationships for each of a set of dependent variables. It provides the appropriate and most efficient estimation technique for a series of separate multiple regression equations estimated simultaneously [15]. The term 'structural equation modelling' is characterised by two basic components: 1) the structural model and 2) the measurement model. The structural model is the path model, which relates independent to dependent variables. The measurement model enables the researchers to use several variables for a single independent or dependent variable.

There are two main approaches to SEM. These are the covariance-based structural equation modelling (CBSEM), such as Linear Structural Relations (LISREL), and the variance-based approach, Partial Least Squares (PLS) [16]. The covariance-based approach enables researchers to construct unobservable latent variables, model errors in measurement, and statistically test a priori theoretical and measurement assumptions against empirical data. However, they involve constraints in the form of normality assumptions, sample size, model complexity, and identification and factor indeterminacy. In order to use the covariance-based approach, it is assumed that observed variables follow a specific multivariate distribution and that observations are independent of one another. Also critical is the sample size requirement of ten times the number of parameters to be estimated (for example if the number of parameters is 30 then the minimum sample size is 300).

SEM also addresses the issue concerning the dependence of statistical models on observed variables. Unobserved variables can also be included in Structural Equation Models, providing an additional means of bridging the gap between theoretical and statistical models. It is simply not the case that statistical models are confined to the realm of 'superficial appearances'. Latent variables, whilst not directly observable, can be identified on the basis of their observed effects and may be used to represent complex, multifaceted concepts that would otherwise be impossible to measure.

Pratschke debunked arguments from other realist concerning statistical sciences by explaining the benefits of SEM which provide much insights needed by critical realist in their research. He explained that Structural Equation Models combine qualitative, theoretical insights regarding causal mechanisms, on one hand, and quantitative data, on the other, permitting the evaluation of complex hypotheses involving networks of cause and effect relationships and concluded that statistical analysis particularly causal modelling are in principle consistent with critical realism.

## PLS Structural Equation Modelling (PLS-SEM)

PLS-SEM is a regression based modelling approach which uses a component-based (similar to principal components factor analysis) technique in analysing path models. PLS path models comprises of two sets of linear equations: the outer model also referred as measurement model and the inner model also referred to as structural model. The inner model specifies the relationships between unobserved or latent variables, whereas the outer model specifies the relationships between a latent variable and its observed or manifest variables.

Advantages of PLS are its ability to handle multiple exogenous and endogenous constructs at the same time, multi-collinearity among endogenous constructs, and an ability to create latent construct scores directly on the basis of cross products involving multi-item measures. In addition, by using multiple indicators PLS contributes to an increase in the variability and stability of the measurements with the attendant benefit of minimizing measurement errors. More importantly, PLS has no distributional assumptions and is useful in handling studies involving small sample sizes.

## RESEARCH FINDINGS

### Demographics Distribution

This section discusses the demographic profile of the banks and the respondents who took part in the survey. They have been profiled in accordance with their, average cheques cleared, position of participants, Cheque Clearing Experience of Respondents, etc. (Table 1).

**Table 1:** Average No. of Cheques Cleared per day.

	Frequency	Percentage
0-50 cheques	0	0
51-100 cheques	88	30.34
150 + cheques	202	69.65
Total	290	100.0

Respondents were further asked to indicate the average number of cheques their banks clear within a single day. 69.65% of the respondent indicated that the average cheques cleared in a day is over 150 cheques. 30.34% of the respondents indicated that their bank cleared 51-100 cheques within a single day. None of the banks surveyed clear less than 50 cheques in a day.

The respondents were asked of their position in their various banks. 62.06% of the total respondents are clearing officers who are in direct operations with the clearing application and have first-hand understanding of ECCS. 31.38% of the respondents are

IT officers who perform system maintenance, upgrades and ensure system quality. 3.45% and 3.10% are marketing officers and Auditors respectively (Tables 2 and 3).

**Table 2:** Position of participants.

	<b>Frequency</b>	<b>Percentage</b>
Clearing Officer	180	62.07
IT Officer	91	31.38
Marketing Officer	10	3.45
Auditor	9	3.10
Total	290	100.0

**Table 3:** Cheque Clearing Experience of Respondents.

	<b>Frequency</b>	<b>Percent</b>
Less than 1 year	62	21.4
1-5 years	156	53.8
5-10years	44	15.2
10-15years	28	9.7
Total	290	100

To effectively give a true opinion of ECCS a respondent need to have cheque clearing experience in order to understand the dynamics of the entire system. The table above shows that majority (53.8%) of the respondents have 1-5years of cheque clearing experience. A combined total of 24.9% of the total respondents have over 5years experience with cheque clearing in Ghana. Considering that ECCS is less than five years old in Ghana, it means that these respondents had experience with the earlier system of clearing before the current system and can provide much insight to the factors that affect their acceptance of ECCS. 21.4% of the respondents have less than a year experience with cheque clearing Ghana (Table 4).

**Table 4:** ECCS Usage (hrs per day).

	<b>Frequency</b>	<b>Percent</b>
Less than 2 hrs	6	2.1
2-4hrs	46	15.9
4-6hrs	23	7.9
6-8hrs	140	48.3
8 hrs and more	75	25.9
Total	290	100

It is important a respondent of the questionnaire uses the system regularly and understand the various dynamics of the software and the hardware used in the clearing

process. The ECCS usage of the respondents gives a clear indication that 48.3% of the respondents use the system on daily basis for about 6-8hours. 25.9% of the respondents also use the system for more than 8 hours per day. Only 2.1% of the respondents use the system for less than 2 hours. This shows that the respondents are regular users of ECCS and stand in a solid position to explain that factors that influence their acceptance of the system.

**Perceive Usefulness and ECCS Acceptance**

Hypothesis 1 predicted that perceived usefulness will have a positive effect on bank’s acceptance of ECCS. As the results in Table 5 reveal, there is a positive relationship between perceived usefulness and banks’ acceptance of ECCS and the result was significant ( $\beta=0.8191$ ,  $p<0.01$ ). Hence, the hypothesis that perceived usefulness will have a positive effect on banks’ acceptance was supported.

**Table 5:** Perceived Usefulness Path to Banks’ Acceptance.

Perceived Usefulness Path to.	Hypothesis	Path efficient	Co-	t-value
Banks’ Acceptance	1	0.8191		17.6115***

\*\*\* $p<0.01$ , \*\* $p<0.05$ , \* $p<0.10$ .

**Perceived Ease of Use, Perceived Usefulness and Banks’ Acceptance**

The results of the relationships between perceived ease of use, perceived usefulness, and banks’ acceptance are presented in Table 6.

**Table 6:** Perceived Ease of Use Path to PU and ACC.

Perceived Ease of Use Path to.	Hypothesis	Path efficient	Co-	t-value
Perceived Usefulness	2	0.1598		5.024***
Banks’ Acceptance	3	0.1302		2.6651***

\*\*\* $p<0.01$ , \*\*  $p<0.05$ , \*  $p<0.10$

Hypothesis 2 posited that perceived ease of use and perceived usefulness will have a positive relationship. The result indicated the positive relationship between PU and PEOU ( $\beta=0.1598$ ,  $p<0.01$ ). This provides support for hypothesis 2. Also the result shows a positive relationship between PEOU and ACC and is significant. The result depicts that bank’s acceptance of ECCS in Ghana is influenced by the perceived ease of use of the system. Both Hypothesis 2 and 3 are therefore supported.

**Information Quality, Perceived Usefulness, Perceived ease of Use and Bank Acceptance**

The PLS results for the relationships between Information quality, perceived usefulness, perceived ease of use and bank acceptance are shown in Table 7.

As depicted in the table above the results indicate that information quality is a necessary factor that influences the perceived ease of use of ECCS ( $\beta=0.406$ ,  $p<0.01$ ). Hence hypothesis 4 is strongly supported. From the results it can be inferred that Perceived usefulness also possess a strong relationship with information quality of the cheque truncation system in Ghana ( $\beta=0.4007$ ,  $p<0.01$ ). Hypothesis 5 is therefore supported. Users of ECCS perceived that higher quality of information provided the system affects their perception on its usefulness and ease of use.

**Table 7:** Information Quality Path to PEOU, PU, ACC.

Information Quality Path to.	Hypothesis	Path Co-efficient	t-value
Perceived Ease of Uses	4	0.4063	4.9473***
Perceived Usefulness	5	0.4007	6.9728***
Bank Acceptance	6	0.0266	0.786

\*\*\* $p<0.01$ , \*\*  $p<0.05$ , \*  $p<0.10$

The hypothesis that information quality has a positive effect on bank acceptance was not supported by the result. The beta co-efficient is very weak and the t-value is not significant ( $\beta=0.0266$ ,  $p>0.10$ ). Although the direct effect of the relationship between information quality and bank acceptance in not supported the total effect (direct plus indirect effect) was supported. ( $\beta=0.4609$ ,  $p<0.01$ ). This means that information quality has positive effect on bank acceptance through perceived ease of use and perceived usefulness.

**System Quality, Perceived Usefulness, perceived ease of use and Bank Acceptance**

The PLS results for the relationships between system quality, perceived usefulness, perceived ease of use and bank acceptance are shown in Table 8.

The researchers hypothesized that System quality will have a positive effect on perceived ease of use. The results indicate a positive effect on PEOU by SQ and is significant ( $\beta=0.1894$ ,  $p<0.01$ ). This means that users of ECCS in Ghana have the perception that the quality of the systems being used makes the entire clearing system ease to use. Hypothesis 7 is therefore supported although the path co-efficient is relatively low.



**Table 8:** System Quality Path to PEOU, PU, ACC.

System Quality Path to.	Hypothesis	Path Co-efficient	t-value
Perceived Ease of Uses	7	0.1894	2.4126***
Perceived Usefulness	8	0.3375	7.2566***
Bank Acceptance	9	-0.0166	0.3354

\*\*\*p0.01, \*\* p0.05, \* p0.10

In a like manner the hypothesis that system quality will have a positive effect on perceived usefulness was supported ( $\beta=0.3375$ ,  $p<0.01$ ).

However, the results as shown above indicates a direct negative effect on bank acceptance by system quality ( $\beta=-0.0166$ ,  $p>0.1$ ). The total effect on bank acceptance by system quality is however positive and significant ( $\beta=0.3093$ ,  $p<0.01$ ).

**Trust, Perceived Usefulness and Perceived Ease of Use**

The relationship between Trust, Perceived Usefulness and Perceived Ease of Use was also tested by the PLS procedure using the bootstrapping technique (Table 9).

**Table 9:** Trust Path to PEOU, PU.

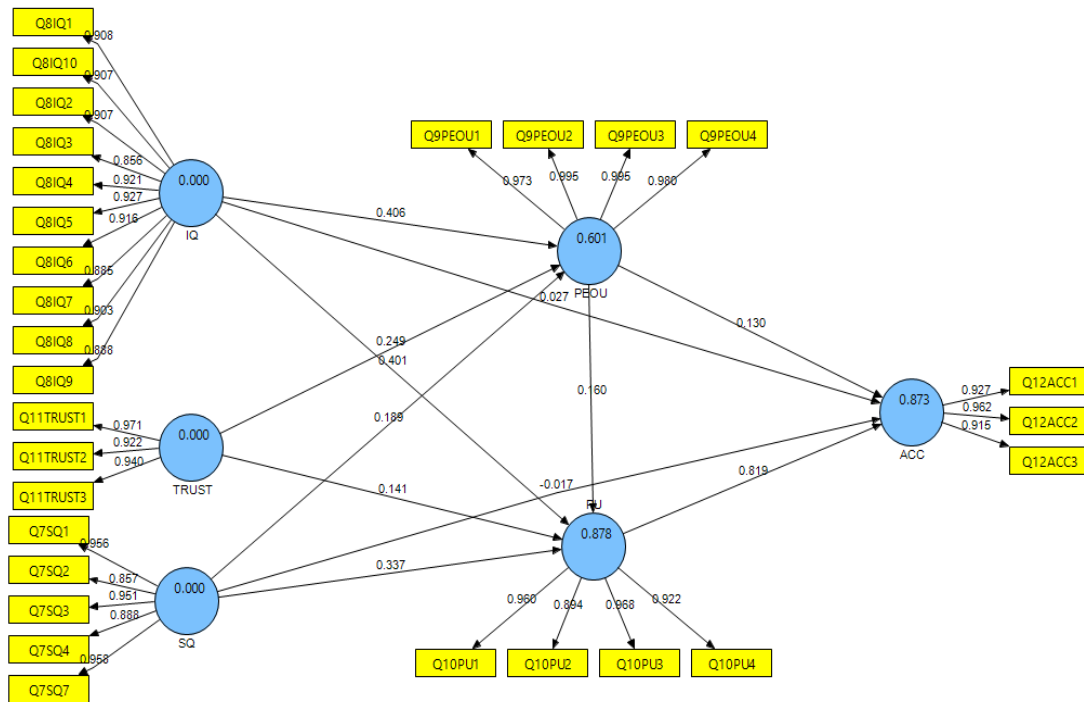
Trust Path to.	Hypothesis	Path Co-efficient	t-value
Perceived Ease of Uses	10	0.2489	4.6589***
Perceived Usefulness	11	0.141	6.0546***

\*\*\*p0.01, \*\* p0.05, \* p0.10

The results support both hypothesis 10 and 11. Hypothesis 10 indicated that the perceived ease of use of ECCS is positively affected by Trust. With a path co-efficient of  $\beta=0.2489$ , the hypothesis is significant at 99% significance level.

Also banks indicated that the perceived usefulness of ECCS in Ghana is positively influenced by the Trust that the system will work as planned. This is depicted in the results above ( $\beta=0.3093$ ,  $p<0.01$ ).

Although the researchers did not hypothesize any relationship between Trust and bank acceptance the result on total effects indicated that Trust positively affects banks' acceptance through the usefulness and the ease of use ( $\beta=0.1805$ ,  $p<0.01$ ) with a t-value of 6.7115 (Figure 4).



**Figure 4:** PLS Graph-Factors affecting Banks' Acceptance of Electronic Cheque Clearing System in Ghana.

## DISCUSSION OF FINDINGS

The main objective of this research was to understand the factors that influence banks' acceptance of electronic cheque clearing system in Ghana. This study was designed to break new ground and explore the determinants that influence the bank acceptance of ECCS. This research tested the hypothesis that that ECCS acceptance is a joint function of system and information quality, Trust, usefulness, and Ease of Use. Earlier studies have not framed acceptance determinants based on the five dimensions collectively. Hence, this study has established the significance of examining banks acceptance by framing determinants according to Trust and 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.

In order to achieve the main objective, hypotheses were developed for empirical testing using 290 respondents surveyed by an online platform carried out with a structured questionnaire. Interviews, Observations and physical participation were also used to investigate the process of cheque clearing. Structural equation modelling using PLS was employed to test the hypotheses and accomplish the objectives of the study.

Perceived Usefulness is the most significant determinant affecting acceptance of ECCS. The result is consistent with various previous studies. As such, perceived usefulness

has a significant effect on ECCS acceptance, suggesting that the Technology Acceptance Model could also extend into e-banking such as the ECCS (Table 10).

**Table 10:** Result of Hypothesis Test.

Hypothesis	Effects	Path Coefficient	T Statistics ( O/STERR )	Remarks
H1	PU → ACC	0.8191	17.6115	Supported
H2	PEOU → PU	0.1598	5.024	Supported
H3	PEOU → ACC	0.1302	2.6651	Supported
H4	IQ → PEOU	0.4063	4.9473	Supported
H5	IQ → PU	0.4007	6.9728	Supported
H6	IQ → ACC	0.4609	0.7887(8.1062)	Partially Supported
H7	SQ → ACC	-0.0166(0.3093)	0.3354(4.5728)	Partially Supported
H8	SQ → PEOU	0.1894	2.4126	Supported
H9	SQ → PU	0.3375	7.2566	Supported
H10	TRUST → PU	0.141	6.0546	Supported
H11	TRUST → PEOU	0.2489	4.6589	Supported
	TRUST → ACC	0.1805	6.7115	

The findings also support previous studies and strengthen the area of knowledge that ease of use is a determinant of perceived usefulness. As we knew from previous research, perceived usefulness mediate the influence of perceived ease of use on attitude. One basic requirement for system design according to Davis [8] is perceived ease of use. The result highlights the need for software developers to pay attention to practical functions and extend key features that are frequently required.

The results showed that perceived ease of use is positively related to ECCS acceptance. This finding was consistent with previous studies. However, the level of significant ( $\beta=0.1302$ ) for Ease of Use was marginally lower compared to the level of significance for Usefulness ( $\beta=0.8191$ ). The results therefore concur with Al Shibly’s suggestion 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 acceptance than beliefs about Ease of Use.

The direct effect of System quality on ECCS was not significant but the total effect which includes the indirect effects shows that system quality indirectly influences banks’ acceptance of ECCS through PU and PEOU. Researchers in the area of conventional IS, have generally regarded system quality to be a highly important characteristics of the success of all interactive computer systems. Therefore, the finding of this research suggests that the greater the perceived system quality, the higher the acceptance. This concurs with recent literature by Al Shibly and Alsoof which highlight the need for users of ECCS to be provided with high quality systems to support their work at the Clearing House.

Studies linking information quality to ECCS acceptance is limited, however like system quality The finding showed that information quality is directly insignificant to ECCS acceptance but related to ECCS acceptance through PEOU and PU. DeLone and McLean put forward information quality as a major dimension for evaluating the success of IS. This research adds to the literature by confirming recent research that level of ECCS information quality is associated with users' acceptance in the ECCS context.

The research hypothesis indicated that Trust influence Ease of Use and Usefulness. The results confirmed what earlier researchers have asserted that trust exerts strong direct effects on perceived usefulness, perceived ease of use, and attitude towards the use of systems. In effect the result indicated that through PEOU and PU Trust is an influential determinant of ECCS acceptance with a Path Coefficient ( $\beta$ ) of 0.1805 which is significant at 99% significant level. Literature linking Trust to ECCS acceptance is non-existent, this research therefore extent current knowledge by identifying trust as one of the determinants of ECCS acceptance

## **CONCLUSION**

The primary purpose of the study was to analyse and extend knowledge regarding influential factors that affect banks to accept ECCS, in the light of technology acceptance model (TAM), to develop a model that can be used to analyse organisational acceptance in the context of developing economy such as Ghana, and also understand how Trust affects banks' decision to use ECCS. Results from the quantitative study indicated that perceived usefulness, perceived ease of use, Trust, system quality and information quality are the main influential factors of banks' acceptance of ECCS in Ghana. Trust, information and system quality affects bank acceptance through Perceived ease of use and perceived usefulness. The study concludes that business sectors should pay attention to the major role of organisational acceptance in determining the success of information systems application and makes a case for future research to focus on the perceived value of ECCS by banks customers' perspective.

Like any other research paper, this study has three main implications for research, practice and policy. For research and theory, the study makes significant contribution to Acceptance of Technology research by conducting the research on a meso level of analysis studying the organisation instead of the individual user which is usually the focus of acceptance research.

Also, the study goes a step above previous research in e-banking, investigating a novel system which has seen wide adoption in most continents including Africa. One central contribution of the study is the development of a simple model that illustrates the importance of Trust, ECCS quality and TAM variables as criteria for ECCS acceptance. The model provides a useful and pioneering insight into ECCS acceptance. The role of the two IS quality components (system quality and information quality) is not new.

However, the developed understanding of the dimensions of each of the two components in the context of ECCS, and in the presence of TAM variables, through theoretical integration, provides new material. The study provides useful insight of the role Trust plays in the context of ECCS acceptance.

For Practice, there are clear evidence of the introduction of e-banking systems which have failed to achieve the intended benefits especially in Ghana. For instance E-Zwich was introduced prior to ECCS, but statistical evidence [5] and literature suggest that the patronage has waned drastically since its introduction in 2008. Both Agyeiwaah and Antwi identified some factor that hindered the successful implementation of the technology in the country. Perhaps if these factors were known earlier by practitioners and policy makers, the technology would have been a great success. It is important for banks to accept technologies that affect their operations system before it can be implemented effectively. This study provides regulators, Banks and other services providers within cheque clearing system with useful insight, informing them that PU, PEOU, Trust, SI, IQ are the influential factors that affect banks' acceptance of ECCS. This will assist in the process of software development and upgrades.

For policy, a better understanding would be gained by policymakers as to what to consider in creating legislations which affect the clearing system within the country. At the firm level, this study hopes to provide findings that could be used as input for organizational policy and strategy in the management of resources.

### **Limitations and Future Research Directions**

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. Despite these limitations, the study provides valuable insights into the study of ECCS acceptance.

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