

THE IMPACT OF ELECTRONIC PAYMENT ON SAUDI BANKS PROFITABILITY: CASE STUDY OF SADAD PAYMENT SYSTEM

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ABSTRACT

Electronic payment system has made significant impact on banks Profitability in general and in Saudi Arabia in particular. Our study in this respect reveals that banks profitability predominantly capitalizes on e-payment pillars such comprising Convenience, Choices Verities, Cost Reduction, Speedy Payments, Security, and Accessibility. This paper presents a case study of Saudi electronic payment system (SADAD) to analyze its impact on the Saudi banks' profitability. SADAD was initiated by the Saudi Arabian Monetary Agency (SAMA) to be the national Electronic Bill Presentment and Payment (EBPP) service provider for the Kingdom of Saudi Arabia (KSA). The main objective of SADAD is to facilitate and modernize bills payment transactions for end consumers through all channels of the Kingdom's Banks. The electronic payment (SADAD) system's impact is studied with reference to banks profitability by mainly focusing on Return on Assets (ROA) and Return on Equity (ROE). This study presents varied opinion on e-banking and profitability which is apparently divided into three groups i.e. one group argues there is no link between technology and profitability, the second group argues the opposite while third group agrees that there is link between profitability and technology with reference to network impact. We in this study have followed this line of arguments and present an empirical study of Saudi e-payment system (SADAD); firstly by developing pillars of electronic payment system based on literature survey, secondly examining the impact of electronic payment on the banks profitability based on empirical data collected in Saudi Arabia and finally develops relationship between e-payment pillars and pillars of bank profitability. This study is built on hypothesis, tests and analyses of the results to reach at conclusions.

Keywords: *Electronic payment, Profitability, pillars, ROA, ROE, stored-Value Cards, cards, smart cards, Biometric Payments, SADAD System.*

1. INTRODUCTION

The concept of E-Payment is not new. Electronic transfer of money as a result of transaction between two parties has been in practice for a quite some time however its use varies among different countries as well as among business while carrying out transactions. The simple definition of E-payment, a part of e-commerce, means electronic payment for buying and selling goods or services through the Internet (American Education E-Payment Definition, 2008). A formal definition says "e-payment is one in which monetary value is transferred electronically or digitally between two entities as compensation for the receipt of goods and services." An entity refers to a bank, business, and individual consumers. However it is obvious that any payment that is not transacted by paper based instruments is considered as e-payment transaction (Armash&Saljoughi, 2010). E-payment has grown steadily by replacing the traditional payment ways mainly because of wide spread use of technology and sense of security that technology is making it possible. This paper examines the benefits of e-payment system that have rendered fruits to many banks around the world and focuses on the use of SADAD (Saudi E-payment System) to highlight to what extent Saudi banks have benefitted from the system. Why e-payment has become popular and what benefits it renders are well recognized however we have not seen any robust model in the literature that provides pillars of technology and relates it with profitability. Although indirect measure of profitability through cost savings does offer appealing arguments, for example according to American Education E-Payment Definition (2008) the US banking environment has seen the use of checks declined from 85% of non-cash payments in 1979 to 59% in 2002, while electronic payments grew to 41%. Of course there is an element of cost saving both for banks and the user of banking service in this example however we further go into the system of profitability measurement resulting from e-payment systems. In line with our objective we concentrate on the literature to identify pillars that support e-payments and present an empirical study of implication of SADAD in order to develop a model that links pillars of e-payment with the profitability pillars. We will then make arguments how this model can be applied for benefit of

those which are not part of e-payment system. The model we intend to develop will be of rudimentary nature as we have not yet come across any such model from the literature, though there are number of factors discussed in the literature to support e-payment systems worldwide. From the study of literature on e-payment we can find six factors that have contributed toward the acceptability of e-payment system. We discuss these factors in some details and will construct a model that integrates two groups of pillars i.e. pillars of e-payment resulting the effectiveness of service and profitability pillars. The link between technology and profitability is not an obscure factor as Onayet *al* (2008) consider e-banking has positive impact on banks' revenues. They mentioned that "Internet has changed the dimensions of competition in the retail banking sector. It has also provided opportunities for emerging countries to build up their financial intermediation infrastructure".

2. PILLARS OF E-PAYMENT

From the discussion in the literature we can find six factors considered important for the effectiveness of e-payments. These factors are convenience, choices variety, cost reduction, speed of transaction, security, and accessibility. Relying on their importance as evident from literature we have put them together to provide a model which organizations can apply to construct an e-payment system that aims at profitability. The elements of our proposed model are highlighted as follows.

2.1 Convenience

The most important factor that attracts business customers to use e-payment is its convenience. There are number of businesses which believe in efficient transaction to enhance their turnover. According to Birch and Young (1997) convenience in transactions provides access to competitive returns and prices. There is no second opinion regarding this provided all other factors are present in the system. We believe that where e-payment system has not yet reached to its full potential is due to lack of computing facilities and absence of other factors discussed in the following sections.

2.2 Choices Variety

Success of Internet banking depends upon choices variety as defined by Tan & Teo (2000) that Internet banking permits customers with wide variety of choices to execute different banking transactions on the Internet via bank's web site. In support of that Sokolov (2007) further provides the most common choices that electronic payments can offer are 1) electronic cards, 2) phone and mobile banking, 3) call centres, 4) home banking, 5) corporate banking, and 6) Internet banking.

Similar evidence in choices variety is evident from Aliaskari *et al.* (2011) study on electronic banking. Their study provides following underlying reasons for the development of electronic banking; 1) not depending on the specific working hours, 2) not depending on the specific location, 3) interaction rate, 4) reduction of costs, 5) simultaneous access to several banks and high quality of information, and 6) increase in security and reduction of uncertainty. Their finding encompasses many factors mentioned above that implies choices variety in e-payment is indeed a vital element of for Internet banking.

2.3 Cost Reduction

Banks' profitability depends on various factors and one of them is cost reduction. The shift from checks to debit cards has lowered the transaction costs of processing and accelerated the clearing process (Evans and Schmalensee 2005). According to Sana, Haider, Sumra, and Manzoor (2011) e-finance has a significant impact on reducing cost in financial sector development of developing countries by spreading the breadth and enhancing the quality across financial services. Birch and Young (1997) evaluate the consumer part for e-banking and the consequences proved that consumers principally search for transactional efficiency, choice for core and non-core banking products and access to competitive prices and returns. Altunbas *et al* (1999) and Casuet *al* (2004) presented proof for cost reduction and productivity gains as a consequence of technological change for European Union banks. Joseph *et al* (1999) explored the use of technology in the delivery of banking services as it is being employed to reduce costs and eliminate uncertainties. Results indicated that consumers have perceptual problems with some aspects of electronic banking. According to a survey an estimated cost providing the routine business of a full service branch in USA is \$1.07 per transaction, as compared to 54 cents for telephone banking, 27 cents for ATM (Automatic Teller Machine) banking and 1.5 cents for Internet banking (Nathan 1999; Pyun *et al.*, 2002). Most of the work reported in literature on cost reduction strengthens our view of increased profitability as mentioned by Onayet *al* (2008) and we will show the same in case of SADAD in KSA.

2.4 Speedy Payment

One of the main benefits of the electronic payment mechanism is to enhance the speed of transferring payment between parties doing business. According to Tadesse (2006) the advantages of electronic payments are; 1) decline in transaction costs, 2) improvement of payment efficiency rank, 3) increase in convenience of making payments, 4) reduction in the prices of the trade of goods and services, 5) speedy payment which can be made remotely using various devices, 6) benefits for e-commerce, and 7) can be used for other purposes such as paying bills, taxes, etc. The speedy payments are among many factors that make e-payments attractive.

Speed however sometimes gets affected by many factors that must be tackled appropriately to keep the e-payment functioning well. For example website speed and downloading materials, user's computing hardware and connection techniques (Muylleet *al*, 1998). Our stance however goes beyond these factors and presents a model comprising six pillars.

2.5 Security

Security of online financial transaction is prime concern of any business. Security means protecting information and its vital components, including the electronic systems and hardware that are used, for storing and transmitting information (Whitman & Mattord, 2005). Information security is powerfully linked to the significance of information itself. The security and prevention of related risks is required when the information is threatened or attacked (Schneier, 2003). Calder and Watkins (2005) argued that security is considered as a business requirement; because it is related to the investment in the long-term, so business requirements are divided into four dimensions. First, information security protects the organisation's ability to function. Secondly, it enables a safe operation of applications implemented on the organisation's IT systems. Third dimension is that information security protects the data that organisation collects and uses. Fourth information security safeguards the technology assets used by the organisation. Information security is not only useful for routine technical or business uses but also can be considered important for legal matters. According to Pipkin (2000) information security is actually becoming a legal requirement for organizations to sufficiently guard their business assets, protect information about individuals in their supervision or in their clientele. Failing information security implies legal suits on privacy violation. According to Cooper (1997) and Daniel (1999) another important factor affecting the acceptance and adoption of new innovation is the level of security or risk associated with it. Even in countries where Internet banking has long been established, one of the most important factors slowing progress on e-payments has been the consumers' concern for security of financial transactions over the Internet. An empirical survey by Sathye (1999) of Australian consumers confirmed this fact. We deduce that electronic payments can only be successful provided there is complete security in transactions pertaining online payments, hence making it one of the vital pillars.

2.6 Accessibility

Yang and Jun (2002) recommended a mechanism comprising seven dimensions for measuring the quality of online service. These are; 1) reliability, 2) access, 3) ease of use, 4) personalization, 5) security, 6) credibility, and 7) responsiveness. According to O'Connell (1996) access to the Internet is an important requirement for the implementation of electronic payment and Internet banking. As computers and Internet is used in all aspect of life therefore opportunity for Internet banking is becoming easily accessible. Lack of access to computers considered as one of the probable reasons for the slow implementation of Internet Banking. The Saudi government in a shift to encourage consumers to embrace information technology has encouraged purchases of computers in the last two years. Joseph *et al* (1999) emphasized accessibility one of the six elements to measure the quality of banking services. The six elements they presented are 1) accessibility; 2) convenience/accuracy, 3) feedback/complaint management, 4) efficiency; 5) queue management, and 6) customization. In the light of literature six factors discussed are interlinked for the effective e-payment system and therefore integrate them in the form of pillars that can hold the system of e-payment for successful service delivery within banking environment as shown in the form of following Diagram 1.

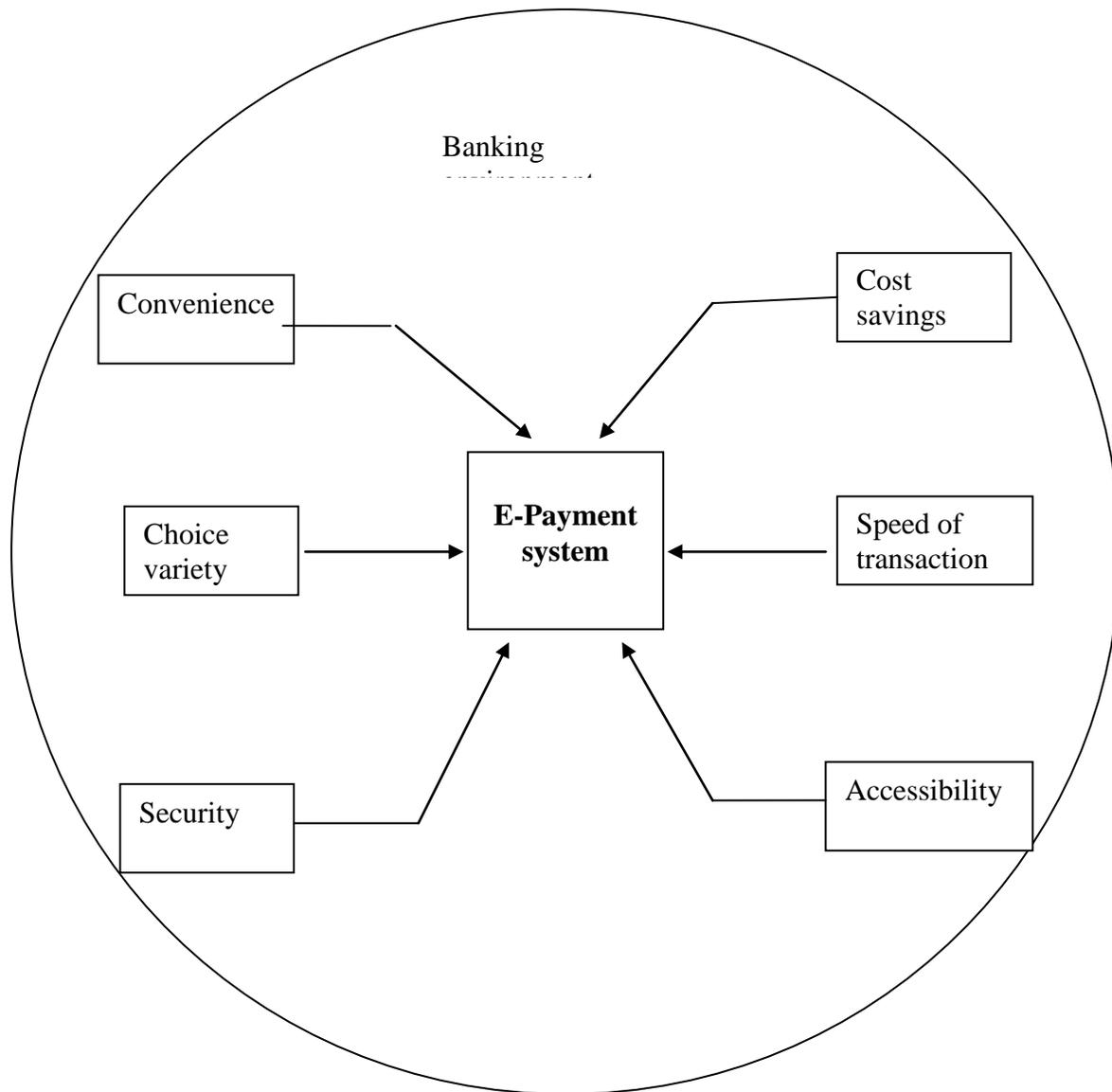


Figure 1: Diagram showing pillars of e-payment system

Above diagram provides a complete network that can bring about profit of e-payment. Similar views are presented by Berger (2003) that network effect brings about equivalent contribution to profits. Berger's (2003) elements of network are electronic payments, security investment and information exchanges. Having developed the rudimentary model of e-payment pillars we now turn our attention towards bank's profitability pillars to complete banks' profitability pillar which would then be proved through empirically with reference to Saudi banks.

3. E-BANKING PROFITABILITY PILLARS

In this section firstly we attempt is to establish link between IT and bank performance (in terms of profitability) in the light of literature and then we will concentrate on constructing pills of bank profitability.

There is general thinking that IT improves performance; a) by reducing operational cost and b) by facilitating transactions among customers however Shirley and Mallic (2006) work suggests opposite. On the other hand Kozak (2005) examined the impact of the progress in IT on the profitand cost efficiencies of the US banking sector during the period of 1992-2003. Kozak's research in 2005 shows a positive correlation between the levels of implemented IT and both profitability and cost savings. Certainly the argument whether IT influences profitability or not does not seem to have reached conclusion. One argument in this respect is the difference in measurement and econometric methodologies (Shirley and Mallick 2006 cited Berger 2003, Tom 1998). The other argument is that banking service is heterogeneous and focuses of many studies reporting positive technological impact has been the product specific

(Shirley and Mallick 2006). Shirley and Mallick (2006) though suggest that for individual bank both the cost and network effect are positive however for the industry this effect can vanish due to competition. Certainly competition influences profitability however at the same time creates healthy business environment where those organizations flourish that provide excellent service to their customers. With this in view the scope of this research is product specific, i.e. e-payment and its impact on profitability with reference to Saudi Arabian banks' performance. Our stance is in line with Onayetal (2008) that there is considerable impact of e-banking on banks' revenues. According to UBPR (Uniform Banking Performance Review) there are predominantly two major indicators of profitability i.e. ROA (Return on Assets) and ROE (Return on Equity) that determine any bank's ability to generate profit (Koch & MacDonald, 2006). ROA and ROE in our case are used as two pillars for measuring profitability of the e- banking systems.

3.1 Return on Assets (ROA)

Return on assets (ROA) is a financial ratio that shows the percentage of profit that a company earns in relation to its overall resources. It is commonly defined as net income (or pre-tax profit) / total assets. ROA is known as a profitability or productivity ratio, because it provides information about management's performance in making use of their assets to generate income. ROA is one of the all-time favourites and perhaps the most widely used measure of overall corporate financial performance (Rappaport, 1986). Nevertheless Rappaport (1986) gave a cautious note that ROA tends to get affected by inflation in such a way that ROA may increase even when assets are not utilised in a better way. There is detailed discussion on this issue in the literature as reported by Rappaport's (1986), Kaya (2002), Kunt and Huizinga (1998), Kaya (2002), Jiang, Law and Sze (2003) and Atasoy (2007). All determined that ROA is affected positively by inflation rate. This is one of the reasons that the two components of profitability measure ROA and ROE (Return on Equity) are to be analysed simultaneously and so we have declared both ratios as pillars to measure banks' profitability in this research which will give us balanced figures.

3.2 Return on Equity – ROE

Monteiro(2006)stated that ROEisperhapsthemost importantratioan investorshouldconsider. The fact that ROE represents the end result of structured financial ratioa nalysis,alsocalled Du Pontanalysis(Stowe, Robinson, Pinto&McLeavy,2002;Correia,Flynn,Uliana&Wormald,2003; Firer,Ross,Westerfield& Jordan,2004).ROE is the amount of net income returned as a percentage of shareholders equity. Return on equity measures corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. ROE is expressed as a percentage and calculated as:

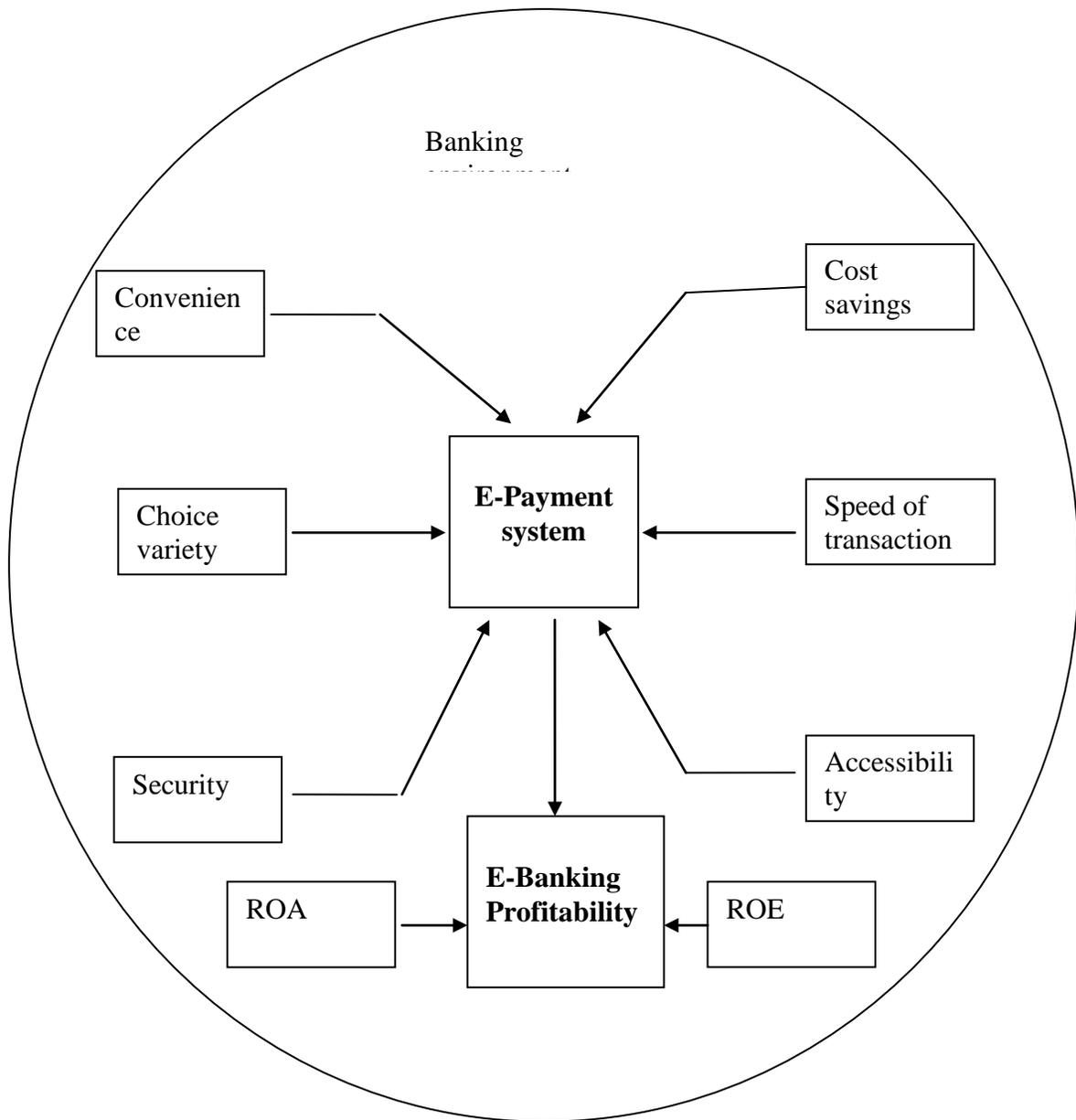
Return on Equity = Net Income/Shareholder's Equity.

Chirwa (2003) used data from Malawi banking sector for the 1970-1994 period and found that; ratios of credits to total assets and ratio of sight deposits to total deposits affected both ROA and ROE positively. Albertazzi and Gambacorta (2006) stated that ROE was affected positively by the ratio of stock market capitalization to GDP and negatively by stock market volatility, depending on their study covering data from ten developed countries for the period of 1981-2003. Tunay and Silpar (2006) found that ROE was affected positively by the ratios of equity and non-interest expenditures to total assets, national income and concentration ratio and that ROE and ROA were negatively affected by the ratio of deposits to stock market capitalization in Turkish banking sector in the period of 1988-2004. We have so farlooked into the rationale of ROA and ROE in measuring profits and provided evidence that both should be carried out simultaneously to reduce the impact of inflationary trends upon profitability measure. Our focus in this research is rather specific to find link between e-payment and its impact on bank profitability. E-payment is result of technology and we have already provided discussion from the literature that technology improves efficiency which in turn results profitability. We further combine both factors to develop link between e-payment and bank profitability and produce complete model that puts both e-payment and profitability pillars together.

3.3 Integrated Model Of e-Payment And E-Banking Profitability

In this section we complete our rudimentary model by integrating pillars of e-payment with the pillars of profitability, which we will prove empirically based on case of SADAD in Saudi Arabia. Study on banks' profitability refers back to Short (1979) and Bourke (1989) initiating discussion regarding factors influencing banks' profitability. According to Anyawaokoro (1999) the era of 1991 produced material evidence from the literature defining electronic banking utilizing computer technology. Almost a decade later Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization and operating revenues maximization. At this point we find implication of technology for profitability. We also see some studies on specific cases like US Click and Mortar Bank (Sullivan, 2000) did not find systematic evidence of a benefit of internet banking. Contrary to that Furst et al. (2002) find that federally chartered US banks had higher ROE by using the click-and-mortar

business model. Furst et al (2002) also examined the determinants of internet banking adoption and observed that more profitable banks adopt internet banking after 1998. Jayawardhena and Foley (2000) show that internet banking results in cost and efficiency gains yet very few banks are using it and only a little more than half a million customers are online in U.K. Since then there has been tremendous use of e-banking across the globe and in line with that the scope of discussion widened by adding more factors other than technology, which can influence banks' profitability however there is no conclusive evidence. For example Barth, Caprio Jr. and Levine (2004) discussing capital requirements and restrictions on banking activities did find a significant impact on bank's profitability. Ownership structure is another factor that came under discussion to influence profitability however empirical research to examine relationship between ownership structure and profitability gave mixed results (Saunders, Strock and Travlos, 1990; Altunbas, Evans and Molyneux, 2001; Iannotta, Nocera and Sironi, 2007 and Micco, Panizza and Yañez, 2007). Similarly Pasiouras and Kosmidou (2007) and Dietrich and Wanzenried (2011), found influence of macroeconomic, industry-specific and bank-specific, on profitability. From the above discussion we conclude that technology is the main factor that has positive impact on banks' profitability though other factors mentioned above cannot be ignored. In this regard we refer to James, A. (2009), a banker, who reported in vanguard annual report that "we should not destroy electronic-banking by looking at the negative aspects; we must strive towards perfecting it". Bearing this in mind we present our model to perfect the system of e-banking with the assumption that all other factors discussed in the literature constitute a bank's environment that can influence technology which in turn influences profitability. Based on this inference we integrate pillars of e-payment with pillars of profitability to give shape to our model as shown in Figure 2.



4. MODEL'S VALIDATION:

The model we have presented needs to be proven empirically in terms of, a) successful e-payment system that leads to the construction of six pillars around it, b) establish relationship between e-payment and profitability as network effect, and c) profitability measures to be built as pillars around it. For this purpose we construct three sets of hypotheses and sub-hypotheses in the following section in order to examine the validity of the model we presented. As mentioned earlier the model validation will focus on a case of SADAD payment system of Saudi Arabia. How SADAD works is given in Appendix 1 which readers may refer to for understanding the system, what follows is construction of hypotheses with specific reference to Saudi Arabian SADAD and implications for Saudi banks. Such study is of its first kind in Saudi Arabia which will not only benefit banking system here as well as contribute to studies that have shown impact of network effects upon banks' performance.

4.1 Hypotheses

H1: Success of e-payment (EP) system in Saudi Arabian banks leads to construction of six pillars to be integrated around it.

H1a: Successful e-payment system leads to convenience in transactions that increase business turnover.

H1b: Successful e-payment leads to choices variety to serve customers' diversified need.

H1c: Successful e-payment system leads to cost saving.

H1d: Successful e-payment system leads to speedy payment.

H1e: Successful e-payment system leads to security in transaction.

H1f: Successful e-payment leads to accessibility to technology.

H2: There is a positive relation between e-payment and profitability in Saudi banks.

H3: Profitability measure in Saudi banks leads to construction of pillars around it.

H3a: Successful e-payment leads to increased Return on Equity (ROE)

H3b: Successful e-payment system leads to increased Return on Assets (ROA).

4.2 Methodology and Data Description

The Research methodology applied was quantitative as main focus was on customers and employees of Saudi Arabian banks. Quantitative approach is frequently applied as deductive approach where the authors build up a theory and hypothesis and design a research strategy to test the hypothesis (Saunders et al., 2007). Research tool was a questionnaire with 32 questions. To determine the reliability Cronbach alpha coefficient was used. The results show that all coefficients are higher than 0.6 and show good reliability of questionnaire.

To collect primary data 500 questionnaires were distributed among the customers and employees of Saudi Arabian banks. A total of 420 questionnaires were returned. Statistical analysis of data was carried out using SPSS. The statistical characteristics such as frequency, percentage, mean and standard deviation were used in this study to analyse hypotheses.

4.3 Population of the study

The population of the study constituted all working commercial banks in Saudi Arabia, registered by the Saudi Arabian Monetary Agency (SAMA). We collected data for a period between 2002 and 2010 because this is the period that witnessed the major growth of e-banking services in Saudi Arabia.

5. DATA ANALYSIS AND RESULTS

Data analysis comprises sample's descriptive analysis and testing of hypotheses using SPSS.

5.1 Sample's Descriptive Analysis:

Table one provides information regarding the respondents of our questionnaire on four factors i.e. level of education, age, gender, and work experience to establish the reliability of data we have collected.

Table 1: Respondents' Demographic analysis

		Frequency	Percent
Level of Education	High school	170	40.47
	College	30	7.14
	Bachelor	211	50.23
	Master	8	1.9
	PhD	1	0.23
	Total	420	100
Age	Less than 25	50	11.9
	Between 25-35	198	47.14
	Between 36-47	109	25.95
	Above 48	63	15
	Total	420	100
Gender	Male	300	71.42
	Female	120	28.57
	Total	604	100
Work Experience	5 years and less	130	30.95
	Between 6-10 years	125	29.76
	11 years and above	165	39.28
	Total	420	100

From Table 1 it is clear that majority of our sample (over 52%) held bachelor or higher level degrees. The rest were either school leaver or studied up to college level. This suggests that respondents have a good level of education and

their replies to our question can be considered as significantly reliable. Similarly age group covered almost all strata of workforce starting from under 25 years of age to 48. Although percentage of male population was higher than female, which is only 29% in our survey, however we consider it quite healthy participation given the Saudi culture. Respondents' work experience also suggests that a vast majority (69%) has strong experience in banking service thus indicating that their replies to questionnaire are dependable for this research. Having explained the quality of primary data collected we now turn our attention towards research model testing.

5.2 The Model components

The proposed model comprises of two constructs as described below:

Electronic Payment Construct (EP)

Electronic pillars consist of the following six elements:

- Convenience (CON)
- Choice Variety (CV)
- Cost reduction (COR)
- Speedy payment (SPM)
- Security (SEC)
- Accessibility (ACC)

Profitability Construct (PF)

- Return on Assets (ROA)
- Return on Equity (ROE)

6. HYPOTHESIS TESTING

In the previous section we developed a theoretical model based on pillars of e-payment and reported the possibility of link between bank profitability and e-payment. In order to prove model empirically we developed hypotheses and in this section we will establish the relationship between the construct of the model through statistical testing. We used two methods to evaluate the hypotheses of the model in this paper. First method is standardized estimation coefficients (beta) and the second method is the coefficient of determination (R^2 value) which is an indicator to determine the degree of relation between e-payment and its pillars. Table 2 provides the results of the evaluation test for the data used in this study.

Table 3: Hypothesis Testing Results

Regression path	Test statistics	
	StandardizedBeta (β)	t- test R^2
Measurement Model1(Electronic Payment)		
CON EP	0.35	2.76
CV EP	0.28	2.56
COREP	0.34	2.37
SPMEP	0.31	2.25
SEC EP	0.33	2.34
ACC EP	0.38	2.16
Measurement Model2(Profitability)		
EP PF	0.31	2.1
ROEPF	0.35	2.44
ROAPF	0.37	2.05
Structural Model		
EP PF	1.03	11.09

a. Discussion and Analysis

6.1.1 E-payment (EP) and Convenience (CON)

Convenience (CON) was hypothesized to be positively associated with E-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.35 which shows that there is a positive significant relationship between Convenience (CON) and E-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.76. According to these results we conclude E-payment leads to convenience which agrees with the writing of American Education E-Payment Definition (2008) and Birch and Young (1997) whose study confirms that convenience in e-payment is a result of e-banking system.

6.1.2 E-payment (EP) and Choices Variety (CV)

Choices Variety (CV) was hypothesized to be positively associated with E-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.28 which shows that there is a positive significant relationship between Choices Variety (CV) and E-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.56. According to these results Choices Variety is part of E-payment which agrees with the finding of Tan & Teo (2000), Sokolov (2007) and Aliaskari et.al (2011) who considers Choices Variety as part of e-payment.

6.1.3 E-payment (EP) and Cost reduction (COR)

Cost Reduction (COR) was hypothesized to be positively associated with e-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.34 which shows that there is a positive significant relationship between Cost Reduction (COR) and E-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.37. According to these results Cost Reduction is part of E-payment which agrees with the findings of Sana Haider Sumra and Manzoor (2011), Joseph et al (1999) and Altunbas et al (1999) and Casu et al (2004) who consider Cost reduction as part of e-payment.

6.1.4 Speedy payment (SPM)

Speed Payment (SPM) was hypothesized to be positively associated with e-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.31 which shows that there is a positive significant relationship between Speed up Payment (SPM) and E-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.25. According to these results Speed Payment is part of E-payment which agrees with the findings of Muylle et al. (1998) and Tadesse (2006).

6.1.5 E-payment (EP) and Security (SEC)

Security (SEC) was hypothesized to be positively associated with E-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.33 which shows that there is a positive significant relationship between Security (SEC) and e-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.34. According to these results Security is part of E-payment which agrees with the findings of Whitman & Mattord, (2005), Calder and Watkins (2005) and Cooper (1997) and Daniel (1999).

6.1.6 E-payment (EP) and Accessibility (ACC)

Accessibility (ACC) was hypothesized to be positively associated with e-payment (EP). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.38 which shows that there is a positive significant relationship between Accessibility (ACC) and E-payment (EP), also the t-value of the hypothesized model was significant with a value of 2.16. According to these results Accessibility is part of E-payment which agrees with the writing of Yang and Jun (2002) and Joseph et al (1999).

6.1.7 Profitability (Pr) and Return On Equity (ROE)

Return on Equity (ROE) was hypothesized to be positively associated with Bank Profitability (Pr). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.31 which shows that there is a positive significant relationship between Return on Equity (ROE) and Profitability (Pr), also the t-value of the hypothesized model was significant with a value of 2.10. According to these results that profitability leads to Return on Equity which agree with Al-Shamrnari M. and Salirni A. (1998) profitability ratio especially ROE signals the earning capability of the organization. They also suggest that higher return on equity (ROE) ratio is appreciable as it is the primary indicator of bank's profitability and functional efficiency, and agree with Molyneux and Thornton (1992) who examined the profitability of banking zone on different countries. They took about 18 European countries' data during the 1986-1989 periods. They found a significant positive association between the return on equity and the level of interest rates, bank concentration and government ownership during their study.

6.1.8 Profitability (Pr) and Return On Equity (ROA)

Return on assets (ROA) was hypothesized to be positively associated with Profitability (Pr). Due to the questionnaire results and SPSS analysis, beta was found equal to 0.35 which shows that there is a positive significant relationship between Return on assets (ROA) and Profitability (Pr), also the t-value of the hypothesized model was significant with a value of 2.44. According to these results Return on assets is part of Profitability which agree with Bain (1956) who used the return on equity (ROE) as a measure of profitability on the grounds of data availability although he preferred the return on assets. Other researchers have argued for the use of ROA (Stigler, 1963).

6.1.9 Profitability (Pr) and Electronic Payment

Electronic Payment was hypothesized to be positively associated with Profitability (Pr). Due to the questionnaire results and SPSS analysis, beta was found equal to 1.03 which shows that there is a positive significant relationship between Electronic Payment and Profitability (Pr), also the t-value of the hypothesized model was significant with a value of 11.09. According to these results Electronic Payment influences Profitability which is in agreement with Siam (2006) who examined the effect of electronic banking in bank profitability in Jordan and Onay, Ozsoz and Helvacioglu (2008) investigation on the impact of internet banking on bank profitability.

The following Table 4 provides the summary of hypotheses results.

Table 4: Hypotheses Results

Hypotheses		Results
H1a :	Successful e-payment system leads to convenience in transactions that increase business over.	Supported
H1b:	Successful e-payment leads to choices variety to serve customers' diversified need	Supported
H1C:	Successful e-payment system leads to cost saving.	Supported
H1d:	Successful e-payment system leads to speedy payment	Supported
H1e:	Successful e-payment system leads to security in transaction.	Supported
H1f:	Successful e-payment leads to accessibility to technology.	Supported
H2:	There is a Positive Relation between e-payment and profitability in Saudi banks.	Supported
H3:	Profitability measure in Saudi banks leads to construction of pillars around it.	Supported
H3a:	Successful e-payment leads to increased Return On Equity (ROE)	Supported
H3b:	Successful e-payment system leads to increased Return On Assets (ROA).	Supported

7. CONCLUSION

The popularity of e-payment is evident in case of Saudi Arabia as level of transaction rose from 23% in 2003 to 91% in 2010. Such a huge increase of transaction in a short span of time confirms the reliability and popularity of SADAD payment system. The quantum of transaction can also be seen from the participants' point of view. According to a report by "Mufutron", there are over 80 enterprises both from government and private sectors that are part of SADAD e-payment system. Through SADAD e-payment the volume of financial transactions carried out stood at 43 billion Saudi Riyals in 2009 involving 67.7 million processes. This implies that e-payment lead to construction of all six pillars around the e-payment system that eventually contributed to technology lead profitability. We endorse the discussion in the literature that researchers are divided whether there is link between bank profitability and technology however there is consensus that product based analysis does confirm such relationship. We do not argue that technology alone can guarantee the profit if that was the case then why would Lehman Brothers and many others financial institutions would fail. Of course management's role in profitability is of vital importance and technology is just a tool that helps provided management utilizes it cost effectively for that purpose we have explained and developed the model that builds six pillars around e-payment system that eventually leads towards profitability. In line with that the current study presents a comprehensive and in-depth look at how electronic payment enhances the profitability of banks. Electronic payment with its pillars; Convenience, Different Choice, Cost reduction, Security and Accessibility has a significant role in enhancing banks' profitability which is noticed from the statistical analysis of the two factors ROA and ROE. This study presents empirical evidence from Saudi Arabian system of e-payment towards the use of technology and it benefits.

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Appendix 1

Saudi E-Payment System (SADAD System)

SADAD Payment System (SADAD) was established by the Saudi Arabian Monetary Agency (SAMA) to be the national Electronic Bill Presentment and Payment (EBPP) service provider for the Kingdom of Saudi Arabia (KSA). The core mandate for SADAD is to facilitate and streamline bill payment transactions of end consumers through all channels of the Kingdom's Banks. SADAD was launched on October 3rd, 2004. SAMA has mandated that all banks must accept bill payments at their branches whether the person paying is (banked or unbanked) "i.e. he/she does not need to be a customer of the bank where the bill is being paid." Pre-SADAD economics of bill payment placed an unduly large burden on banks, it was inefficient and slow. Banks also recovered a small portion of the cost through keeping the collected money for varying periods of 7-30 days after the bill was paid. Approximately 60-70% of bills are currently paid in cash at bank branches. Due to the high number of bills generated in the Kingdom, this results in high costs for banks in front office, payment processing, IT integration and reconciliation. In addition, consumers queue for a long time at banks' front office desks before paying their bills. Bill presentment and collection is largely manual and paper-based creating significant inefficiencies and overheads for billers and banks. Large billers have concluded bilateral agreements with banks in order to enhance bill payments collection. This enables consumers to use their bank channels to view and pay bills (without any bill consolidation). Therefore, it is required from every biller to connect to the 12 different banks operating in KSA and from banks to connect separately to every biller they are under contract with. SAMA works to rationalize all these connections through SADAD which is a single platform that link different billers and banks to enable the consumers to use the electronic channels of any bank. SADAD is now facilitating the payment of; high volume periodic/repetitive bills (e.g. utility bills, phone bills etc), and customer initiated payments, such as traffic fines etc.

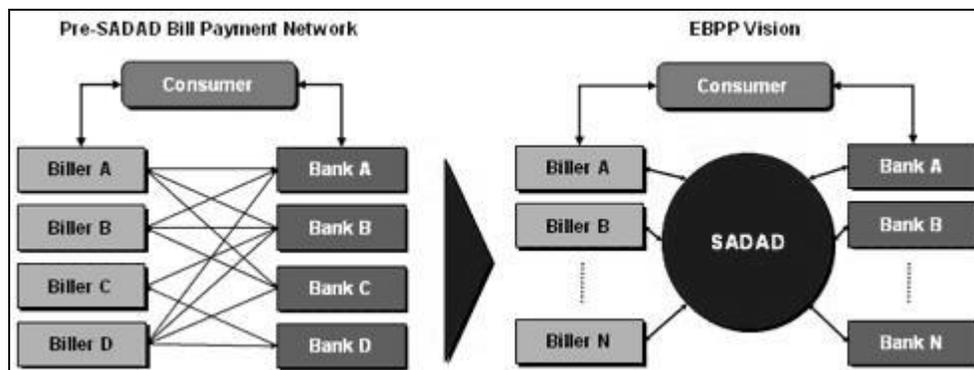


Figure 1: SADAD Payment System Framework

(Adapted from www.sadad.com/English/SADAD+SERVICES/AboutSADAD/, 2012)

Mechanism of working of Saudi E-Payment (SADAD) system

1. Billers send summary bills information to SADAD at a pre-determined schedule
2. SADAD validates data received and uploads it into its database
3. SADAD notifies Billers of any discrepancies
4. Customer requests bill(s) information through Bank channels(1)
5. The Bank forwards the request received to SADAD
6. SADAD retrieves bill information from its database and forwards it to customer
7. Customer selects the bill(s) to be paid and the respective amount(s)
8. The Bank debits the customer account and confirms the transaction
9. SADAD updates its database based on the Bank's confirmation(2)
10. SADAD notifies relevant Biller(s) accordingly
11. At the end of the day, SADAD initiates settlement instructions through SARIE
12. At the end of the day, Billers receive reconciliation reports from SADAD showing a breakdown of all transactions processed by SADAD
13. SADAD updates bills status to "settled".

SADAD SYSTEM BENEFITS

A market research has been conducted on behalf of the SADAD team by Pan Arab Research Center on a sample of 522 consumers in KSA. It showed that customers' main concerns were about time wastage, inconvenience of bill collection, bills past due and service cuts due to delay in bill processing.

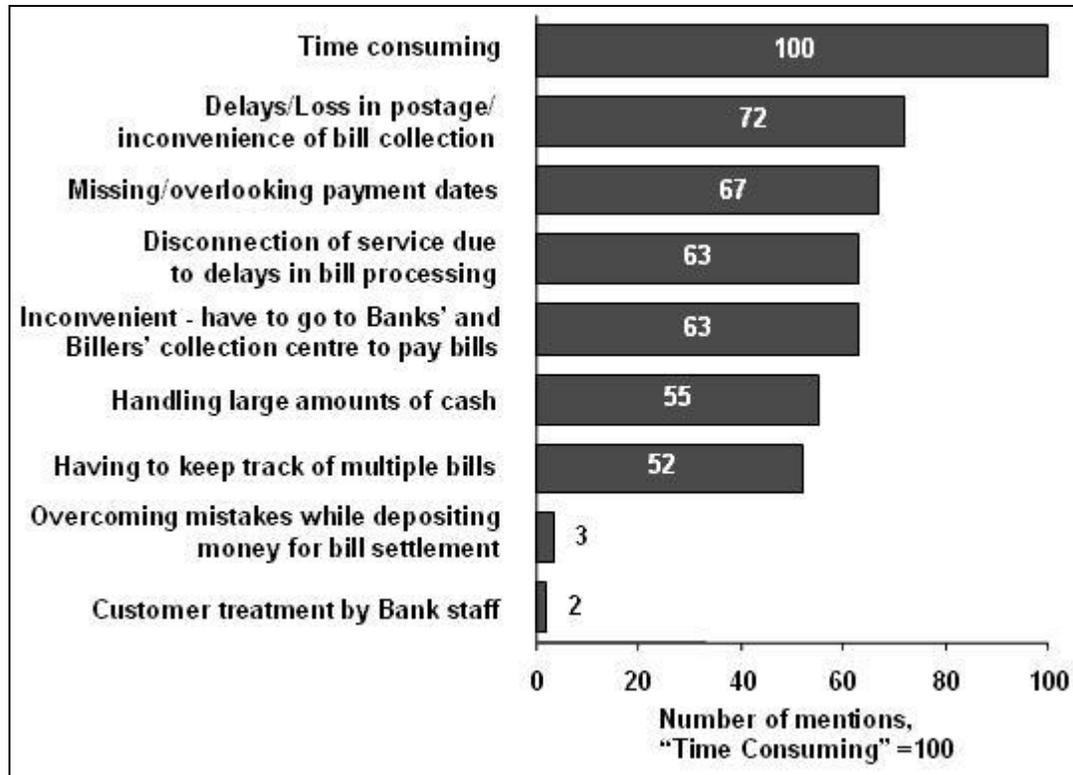


Figure2: Disadvantages of old payment systems
(adapted from www.sadad.com/English/SADAD+SERVICES/AboutSADAD/, 2012)

SADAD is contributing substantially to resolve or reduce the impact of such concerns:

- Time saving when paying bills: SADAD is significantly reducing the time spent by customers in paying bills, by reducing dependence on physical channels.
- Proactive reminder service: with SADAD, customers receive proactive messages regarding pending/unpaid bills while they might be doing other transactions at ATMs and online banking sites.
- Flexibility in payments: SADAD is dramatically increasing the flexibility available to customers in paying bills. SADAD is support a wide variety of payment channels, and also include the flexibility of allowing customers to use certain channels (e.g. ATM and POS) of banks where they do not have an account.
- Reduction in service cuts: as previously mentioned, the timeliness, accuracy and reliability of information provided by SADAD is reducing the instances that customers are unduly disconnected from service.
- Less cash handling: customers do not need to handle and carry cash as bills are paid by electronic methods.
- Bill Consolidation: Customers are able to view all bills from multiple billers at one place.