

THE IMPACT OF E-COMMERCE ON THE EFFECTIVENESS OF ACCOUNTING INFORMATION SYSTEM IN SAUDI COMMERCIAL BANKS

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ABSTRACT

This study aims to determine the impact of electronic commerce on the accounting information system in Saudi commercial banks this study analyses the data collected from 11 banks listed under the Saudi stock exchange (Tadawul). This study relies on an applied study to test hypotheses upon Saudi commercial banks, in order to identify the impact of e-commerce on the effectiveness of accounting information system in Saudi Commercial Banks. The study employs a design questionnaire, which will be distributed to financial managers and employees in the financial sector in accounting departments in Saudi commercial banks that are listed on the stock market. Following the completion of questionnaires by participants, statistical software (SPSS) was used to conduct statistical analyses. Based on these insights and observations, the research study proposes that the commercial banks in Saudi Arabia adopt progressive managerial practices that facilitate the effective usage of AIS in the context of e-commerce. These managerial practices include learning and development programmes to address the lack of adequate IT skills, knowledge of systems, and confidence in the usage of such systems for extended benefits. True potentials of the AIS in Saudi commercial banks can only be realised through improved understanding of system goals, operational requirements and adapting the applied accounting standards to meet the requirements of online banking.

Keywords: Commercial Banks, Accounting Information Systems, Electronic Commerce, Saudi Stock Exchange (TADAWUL).

INTRODUCTION

In recent years, there have been rapid developments in the use of technology, which have informed a generation of innovative techniques in the field of business and electronic commerce. The Internet now plays a key role in the completion and implementation of e-commerce business. Developing websites and creating an online presence have made it easy to reach a larger number of customers and to implement the completion of transactions during a shorter time period. Companies are frequently using the Internet to market their products and services. This includes expanding the scope of their activities in order to increase the potential market for their products or services (Muir & Douglas, 2001).

Accounting and auditing professions have been affected by the emergence of e-commerce. The processes of sales and purchases made through the Internet still need accounting, while validation requires the use of fast and accurate accounting information systems. The registration of processes that have been securely and responsively dealt with highlight the benefits of e-commerce to accounting information systems. However, security breaches, such as electronic theft of credit card balances or consumer identities, have raised doubts about reliability and security in the procurement process through the Internet. This has forced professional associations and bodies for accounting to study the means and methods that promote trust and safety in operations carried out through corporate sites online.

It is essential that banking websites provide reliable and secure services to customers

(Web Trust), which gives consumers confidence to conduct operations across sites that bear this official stamp of confidence. However, this process requires the provision of protection to the company website, in order to safeguard its accounting information systems from penetration. The process must be effective throughout Internet transactions, until they are safely completed. This requires information system accounting that is reliable in conducting immediate operations and is capable of issuing the appropriate information accurately and swiftly.

E-commerce affects several areas, including financial banking services operations, as electronic operations are running automatically at any time and from any location. Therefore, e-commerce has had a large impact on accounting systems. This has led to the necessity to study these effects in order to investigate the response of these systems and their adaptability with operations offered by the bank over an Internet network. Commercial banks have used information technology to dramatically improve the efficiency of payment systems and reduce the cost of banking services, helping clients to execute transactions quickly (Nicolaon, 2000).

Accounting systems are associated by selling and buying operations, which are made through modern means of communication and subsequently validated and included in the system (Katab, 2002). Also, accounting information systems in commercial banks must effectively and efficiently cope with electronic business processes conducted via the Internet. These factors are further defined below (Wang & Strong, 1996):

The rationale for the study can be formulated using the following questions:

Is E-Commerce impacted on the effectiveness of accounting information systems in Saudi commercial banks?

BACKGROUND OF THE STUDY

This review seeks to bring out the process of evolution of e-commerce in general as well as in the context of the Kingdom of Saudi Arabia (KSA). Findings of prior research studies on use of e-commerce in the KSA are analysed to provide the theoretical foundation to the current research. Significance of e-commerce to the development of Saudi economy and the role of e-commerce in the development of banking within the KSA are other areas covered by the review. The literature review also extends to the barriers to the adoption of e-commerce in the KSA and the relationship between accounting systems and development of e-commerce. This review is expected to provide theoretical insight for finding answer to the research question on the role of accounting systems in the promotion of e-banking in the KSA.

Evolution of E-Commerce

E-commerce has developed significantly during the recent times and it has been incorporated into the systems of many financial institutions to improve the efficiency of their operations. There has been a significant increase in the number of people marketing online, and banks and financial institutions have sought to use this opportunity to the online customers to expand their client base (Turban et al., 2010). According to Turban et al. (2010), electronic commerce is one of the fastest gains of information technology and it has led to fundamental changes in the ways businesses can run effectively and efficiently. The expectations of the clients have also increased because of the ease in transacting online using Internet rather than using the traditional means of conducting business (Earl, 1988). Banks and financial institutions are keen to offer innovative services and meet the expectations of their customers although their static objectives in some instances differ with the preferences of the clients (Chaffey, 2007). This has forced the financial institutions to install and maintain efficient accounting systems. It was also necessary that they have reviewed these systems so that they

can improve their adaptability to e-commerce and thus improve the quality of their online services (Whelan, 2007). In the KSA, initially slow adoption of efficient financial systems has impeded the rapid progress of e-commerce. However, recently in order to adapt themselves to the global trends, banks and financial institutions in KSA have brought in considerable changes in their accounting systems, so that adoption to e-commerce could take place at a faster pace (Sadiq et al., 2004). Because of the impact of globalisation, the banks and financial institutions in the Kingdom have started streamlining their accounting systems to be in alignment with the International Financial Reporting Standards (IFRS). This move has enabled the banks and financial institutions to align with changing forms of business to international standards swiftly through increased adoption of e-commerce (Ramaswamy, 1996).

The impact of e-commerce on improved efficiency of accounting systems in banks has been the focus of a number of earlier research studies (Al Qudah, 2011; Holden & El-Bannany, 2004). These studies, both empirical and theoretical have tried to examine the effects of e-commerce on the financial and accounting standards followed in various jurisdictions. Findings of these prior studies suggest that the financial institutions cannot prosper unless they start conducting their business transactions online. The findings also suggest the increased role of e-commerce with its threat on the use of current financial reporting and accounting standards. Although, many banks in KSA had several restrictions on use of e-commerce, banks in general are now opening their business avenues to pave way for the adoption of improved e-commerce (Sadiq et al., 2004). As such, there are no static accounting standards that determine the ultimate financial reporting requirements of various banks and financial institutions.

Development of E-Commerce in Saudi Arabia

Study by Sadiq et al. (2004) included a survey that focused on the development and effects of e-commerce in the KSA. The findings of this study suggest that KSA has strict norms in securing the conduct of transactions by social, political and religious institutions within the Kingdom. This national culture acts as a barrier to effect changes that would include some global trends infiltrating the national culture of the Kingdom. However, the strategic place and the uniqueness of the Saudi Arabian economy have forced it to start acknowledging the new e-commerce trends developing in the other parts of the world. Apparently, Saudi Arabia because of its dealing with many other nations in terms of trade faces the necessity to align its financial standards to meet a global threshold and adoption of e-commerce has been found to be indispensable in this process. Although the concept of e-commerce was received with a positive attitude on its introduction in some respect, there were barriers to its adoption such as religion. The barriers to the adoption of e-commerce have entrusted with the management and people in KSA the responsibility of implementing and controlling e-commerce in a legitimate way. The need for faster adoption of e-commerce for ensuring a rapid economic development has necessitated the people to enhance their skills to deal with e-commerce. This has provided an impetus among the people to adopt e-commerce in the best possible way. Sadiq et al. (2004) are of the opinion that Saudi's business structure had to change in order to accommodate the challenges of the changing business world.

Young & Ridley (2003) supported the findings of Sadiq et al. (2004) by underlining the revolution that e-commerce have created globally and more specifically in the developing countries. The recent work of Al Ghamdi et al. (2013) shows a rapid and significant development in the field of e-commerce within the KSA. However, the authors do not find any significant impact of cultural factors. On the other hand, Al-Gahtani et al. (2007) found culture has a significant role to play in e-commerce adoption in the KSA. The authors found

that some of the behavioural intention and usages deterrents had real impact on IT adoption in KSA. This view is supported by Silivius (2010) who states that Saudi firms are still grounded in traditional Arabic and Islamic socio-economic business practices and have not embraced technology to its fullest capacity. Therefore, Al Ghamdi et al. (2013) differ from other researchers on the development of e-commerce in KSA. However, the impact of Saudi culture on the adoption of e-commerce at a rapid pace cannot be ruled out. According to Al Ghamdi et al. (2013), development of this form of business in other parts of the world would have, inevitably, led to the establishment of developed e-commerce in KSA. This is because of the trade relationship KSA has with several other countries, and it is highly likely that the business of the country would be seriously affected with the failure of the country to acknowledge the positive impact of e-commerce on international business. Such failure would result in the underdevelopment of the economy when the leadership of the Kingdom fails to establish sound and efficient trading links with other nations. It is to be recognised that adoption of e-commerce would enable the Kingdom to provide the essential services required for the prosperity and wellbeing of the people (Gefen & Straub, 2000). Failure to adopt e-commerce would also cut off trading partners who are essential in running the economy of the Kingdom. Travica (2002) also suggested the positive impact of e-commerce on the development of an economy. According to Travica (2002), diffusion of e-commerce would mark the beginning of a new marketing revolution. This is because businesses would prefer to make their markets grow in a global platform, and they will seek to incorporate methods that will make this possible through e-commerce.

Al Ghamdi et al. (2013) have attested the extended use of e-commerce in the context of KSA. The Kingdom has witnessed the growth of many aspects of e-commerce and presently, the business growth is being measured in terms of the extent to which the businesses have embraced e-commerce. The reason behind such development is the large dependence of businesses on online customers and the ability of the customers to transact businesses online.

Communications and Information Technology Commission (CITC, 2012) provides the status of the development of Information and Communication Technology (ICT) infrastructure in the KSA. The report reveals that the Kingdom has the most developed Information and (ICT) infrastructure in the region and the businesses operating in the country have drawn significant benefits from this infrastructure to facilitate the development of e-commerce. In fact, the report released in 2012 showed that the retail and wholesale sectors accounted for 21.5% of the total engagement (employment) in the private sector.

This report reveals other factors that make the Kingdom an ICT hub in the Gulf and Middle East region. The demographic base of the Kingdom contains people below the age of 24 and this implies that the young generation has a tendency to adapt to e-commerce and online buying habits. Businesses and banks find the younger generation as a target segment for promoting their products online, because of the increased affiliation of the young people to Internet and related devices.

Significance of E-Commerce to the Economy of Saudi Arabia

Saudi Arabia is the biggest hub of business within Gulf Cooperation Council (GCC) countries and most of the imported goods are handled in sea and airports of KSA before being transported to other countries (Al Shehri Mohammed, 2012). This is the reason for e-commerce to take shape in KSA even before in other countries in the region. Since KSA is the central point for trading in the GCC countries, the government is under an obligation to incorporate various administrative procedures governing trade that would enable the government to maintain its control in the region. Moreover, because of its political control, it was possible to establish economic control over various sectors of trade that would have been beneficial for

the whole of the region with e-commerce being indispensable in this respect. Braganza (2000) observes that there are different elements that need to be followed in creating a network that will have legitimacy even in competitive markets. According to Braganza (2000), these things should not be carried out at the expense of other people, but should follow a method that ensures that all parties are satisfied. Braganza (2000) applies these sentiments to the issue of online commerce, and he is of the opinion that an online business should not be let to prosper by denying other people the access to the Internet. In addition, the author is of the opinion that there should be ethical competition in order to legitimise the business.

In this light, KSA did not seek to deny other nations access to the e-commerce facilities, but it sought to help other countries to rely on the networks available. However, the Kingdom recognised that business is all about competition and therefore strengthened their online database so that the country becomes superior to those of the competitors. These systems were also made more efficient and because of the superiority of the systems the competitors and other countries in the region were made to rely on the online and e-commerce systems developed by KSA (Sadiq et al., 2004).

The following figure 1 shows the status of businesses in KSA as compared to Gulf Cooperation Council (GCC) countries. As illustrated by this figure, KSA has a bigger business potential than other countries (Sacha Orloff Consulting Group, 2012).

GCC retail & e-retail sales 2011

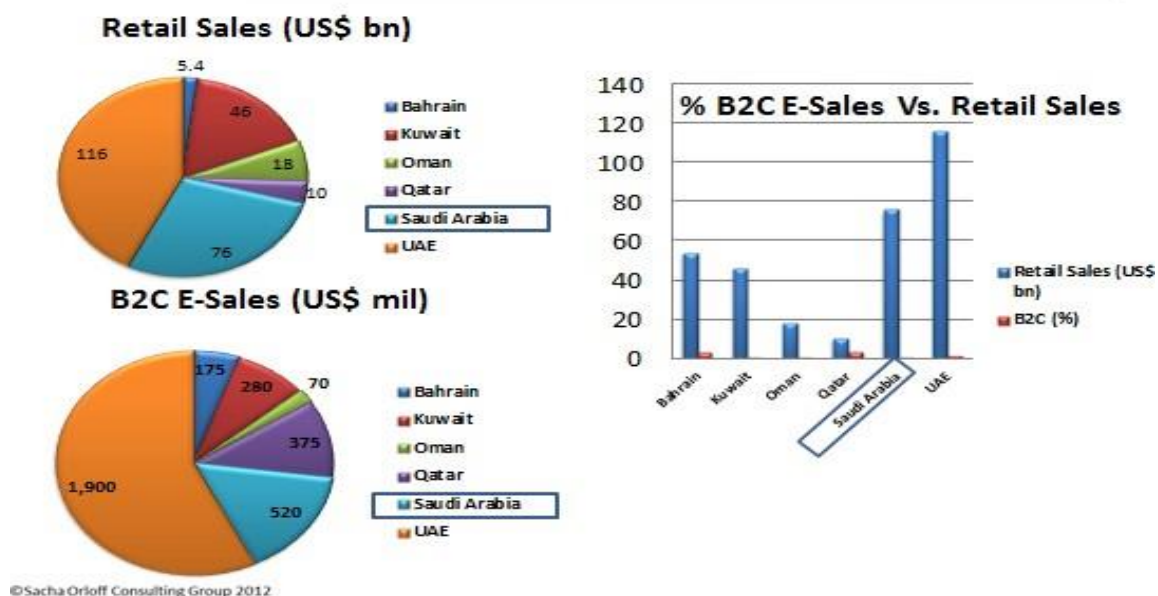


Figure 1
COMPARISON OF BUSINESS IN SAUDI ARABIA WITH GULF COOPERATION COUNCIL (GCC) COUNTRIES

E-Commerce in Banking Operations

There are many national and international banks operating in KSA. Most of these banks operate as branches of banks of other countries. The operation of these banks sets KSA as an economic hub of the region. These international banks operating in KSA have brought with them skills and expertise in working under a developed e-commerce environment. KSA could learn from their capabilities and adapt to the new standards of e-commerce expected by them. As such, KSA is expected to move with the economic milestones of other countries of the world and therefore, adoption of e-commerce by other countries will imply that KSA also

should adopt it. This is because it would be difficult to transact businesses in different ways within different branches of the same bank. All activities of the banks will be expected to follow a similar blue print so as to accomplish the overall organisational goals. The following Table 1 shows the number of different banks and their branches in KSA.

From the Table 1, it may be observed that there are many banks in the Kingdom, and incorporation of e-commerce in KSA will make these banks compete effectively with banks operating in other regions. Failing to recognise this will lead to a situation that these banks might be forced to close down their operations in KSA. In order to avoid this situation, Saudi Arabian government may have to adopt e-commerce at a rapid pace (Saunders et al., 2009).

Table 1 BANKS OPERATING IN SAUDI ARABIA	
Name of Bank	Number of branches of commercial banks in Saudi Arabia
National Commercial Bank (NCB)	279
Riyadh Bank	201
Saudi French Bank	75
Arab National Bank	134
The Saudi British Bank (SABB)	68
Al Jazira Bank	26
Holand Saudi Bank	43
Saudi Investment Bank	36
Al Rajhi Bank	431
Samba Financial Group	65
Bank Al Bilad	63

Source: Saudi Arabian Monetary Foundation 2012

Al-Shehry et al. (2006) posit that the adoption of e-government can only take place after e-commerce has been tested and tried. This implies that businesses have to try the adoption of e-commerce and institutionalise it at acceptable levels so that such adoption can become a platform for forming e-governments. In doing this, the accounting systems and standards must be made foolproof reflecting the situations on the ground (Romney & Steinbart, 2012).

E-Commerce and Accounting Information Systems

Omar (2012) argues that the accounting information systems of any country assume an important position in the manner in which financial institutions conduct their business. According to Omar (2012), adoption of a fixed accounting system for a country is critical, as it marks the economic maturity of the country. Omar further suggests that any country with a fixed accounting system is likely to manage its finances in terms of taxes, government revenue and other related affairs efficiently. Omar (2012) notes that hotels in the Gulf region had continued to rely on the economic systems of KSA and the relationships between the governments and hotels were found to be productive. However, operations of hotels present many challenges to their business. Many times, tourists visiting the country make payments in foreign currencies. Fluctuation in currency exchange rates are likely to affect the financial accounting systems since the accounts had to be changed to provide for differences in the exchange rates (Harrison & Horngren, 1992).

Such situations present a number of challenges in dealing with the manner in which finances are handled in international businesses. Most tourists and business travellers used to carry cash while travelling to sustain their stay, and they might lose the cash due to theft, as the thieves are likely to know that tourists carry large cash. Therefore, in order to safeguard the interests of tourists and other business travellers, changes in the accounting information

systems needed to be updated in all countries to meet international standards. This implies that people could travel all over the world safely as they could get their money that is waiting in the countries they are visiting. This has been made possible by money transfer services such as MoneyGram, MasterCard and Western Union. This is one of the distinct advantages of e-commerce (Purwadi, 2008; Choe, 1996).

Karthikeyan (2010) notes that e-commerce has become the modern form of business. Study by Karthikeyan (2010) focused on various forms of accounting in the world and the findings of his study predicted that the accounting systems of the world were in a period of revolution. The findings also suggested that business success in future would be measured by the manner in which businesses could adopt e-commerce. This is applicable in the case of KSA, since a large number of business transactions in the Kingdom are entered into using the system of e-commerce.

Challenges and Barriers to E-commerce

According to Al Maghrabi (2011), e-commerce has continued to emerge successfully in the global context. It provides a new market and channels of distribution for various businesses in all sectors, and it enhances sales, internationalises openings and meets the targeted marketing. Commercial banks in KSA recognise this contribution, and they know that they have to align their operations with the above opportunities available while practicing e-commerce. It is necessary that the banks need to adopt e-commerce to meet the competitive business world with an endurance best fitted for financial institutions (Kim & Davidson, 2004).

Report of the Saudi Ministry of Commerce (2001) reveals the sizes of different Saudi markets (including e-commerce and retail market) can be considered as the '*next-step*' for Saudi businesses. Sadiq et al. (2004) in their work support this view. However, a slow uptake of e-commerce has been observed among the business community of KSA at the time of their study by (Sadiq et al., 2004). However, as mentioned earlier there has been a change in the adoption of e-commerce by businesses to remain globally competitive. Some of the reasons that are cited include factors such as lack of knowledge, structure of organisation, logistics, price, infrastructure and support of the government. Saudi Commercial banks have observed that organisations that are most active in the usage and implementation of e-commerce patterns are large organisations that are found in the sector of manufacturing. On the other hand, small and medium enterprises (SMEs) are not as active as large corporations in the matter of adoption of e-commerce (Taylor & Murphy, 2004). Al Otaibi & Al Zahrani (2003) observe that e-commerce has remained a novel model of business for Saudi Arabian retailers. The authors observed that there are no national case studies that exist to showcase e-commerce as something that can be used for growth of sales and expansion of businesses. To counter this argument, Aladwani (2003) states business environments are in need of tangible results that try to show the manner in which businesses incorporate e-commerce as part of their operations. Aladwani (2003) observes that the accounting standards of KSA in the banking sector have accommodated e-commerce and a lot of banking transactions are carried out through electronic means. However, until there is some visibility that will be induced around the e-commerce's model of success, the retail sector will favour implementation of traditional business models and pathways of retail that do not hinder competition. However, such a step is likely to reduce maximisation of profit opportunities and international expansion (Ghashghai & Lewis, 2002).

The Comparative Internet Usage between Saudi Arabia and Gulf Cooperation Council (GCC) Countries in 2012 served as a benchmark to know about the Internet users in the region Figure 2.

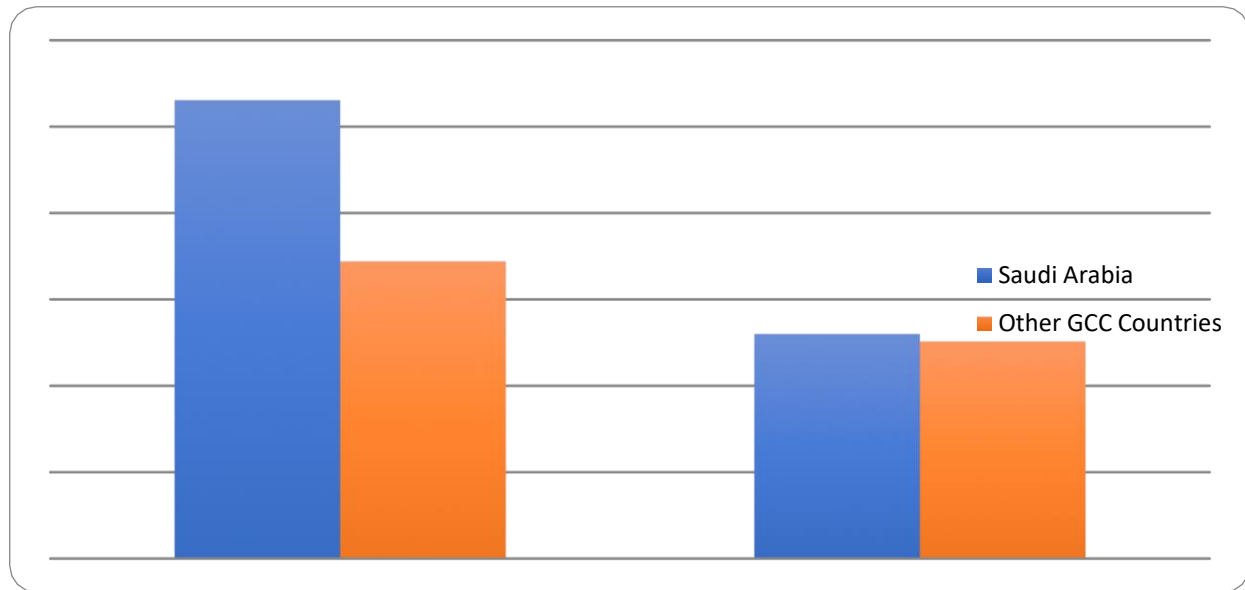


Figure 2
COMPARATIVE STATEMENT OF INTERNET USERS SAUDI ARABIA AND GULF COOPERATION COUNCIL (GCC) COUNTRIES IN 2012

As per Internet World Stats (2012), KSA has an estimated population of 26,534,504 out of which 13,000,000 uses Internet. Rest of the GCC countries have an estimated population of 17,200,473 out of which 12,567,484 uses Internet (Internet World Stats, 2012). From this information, it can be derived that compared to the population of Saudi Arabia, the Internet users are at a lower percentage of 49% as compared to the other GCC countries. The rest of the GCC countries are way ahead with 73% of the population accounting for Internet usage but they have a lesser population. The rest of the GCC countries led by Qatar have a healthy average Internet usage. Considering the huge population of KSA and the constraints it faces within the country, Saudi Arabia has done considerably well to reach these figures which are expected to rise in the coming years (Silvius, 2010).

According to Kraemer et al. (2006), effective online banking is an important reason for the development of e-commerce happening among Saudi traders, as this has a reverberation effective on the readiness to make online transactions. Whereas the Saudi Arabian Monetary Agency (SAMA) controls online businesses, its structural and network structure has not yet been established effectively to enhance online payment capacity of customers. This structural issue prevents increase in online activities among e-commerce businesses (Devaraj et al., 2002). There are other consumer-related factors like security, trust and access to online banking facilities, which negatively impacts the proliferation of e-commerce. This in turn affects their inclination to online purchases and ease with which they could purchase goods and services online.

According to Mohdshaari (2008), the banks have continued to experience many challenges and competition and they tried to meet the competition and challenges by introducing new accounting systems. As a result of this, banks have continued to adopt new and innovative technology as well as other complex accounting standards that ensure that the accounts are recorded in the most efficient manner possible for keeping records. Mohdshaari (2008) is of the opinion that these challenges have led largely to the formation of new and effective financial accounting standards. Presently, there are complex accounting standards that translate one country's accounting procedures to that of another country, and the results are translated in the local standards. This has been a major facilitator of e-commerce in all

stages of business transactions, and many people have used them in transacting business deals (Melinda & Stephen, 2001; Laudon & Laudon, 2005).

LITERATURE REVIEW

ALRefree (2012) explains that e-commerce has a variety of uses related to accounting information systems as follows:

1. Using of electronic commerce appropriate accounting provides information about the appropriate substances available.
2. Using of electronic commerce to provide accounting information for decision makers through gave sufficient and complete information on available alternatives, as well as provide information on customer satisfaction with the services provided banking.
3. Using of electronic commerce in Islamic banks and a way to control the evidence, such as “user name and password.

Alsharayri (2011) confirms that there are many benefits of Accounting Information System (AIS) such as:

1. The use of accounting information system gives more safety and more reliable than the traditional system.
2. The use of accounting information system has a few errors.
3. Increasing the share of companies in the market of electronic commerce.

ALDayah (2009) finds a range of results, including the size of the company in terms of number of employees and the size of revenues and the amount of capital the greatest impact on company's use of accounting information systems, as well as the use of accounting information systems will lead to achieving the qualitative characteristics of the financial statements and increase the quality of those data in terms of data accuracy, suitability, reliability, and obtained in a timely manner.

Almokadmh (2005) emphasises the importance of information extracted from the accounting systems characterised by high speed and accuracy, which helps decisions makers in making correct decisions.

ALQashi (2003) study aimed “*effectiveness of accounting information system in achieving security, assurance, and Reliability in e-commerce*”. The study concluded as:

1. E-commerce has affected all professional fields in general and on the accounting and auditing profession in particular.
2. Providing safety, reliability and confirmation only through the establishment of a system linking the company's accounting system and its electronic.

Zinedine (2003) discusses the multiplicity of forms and methods of electronic payment. These can be classified into two main groups: ‘*smart cards*’ (smart cards) and ‘*cash computer network*’ (network money). He explains that smart cards are known to be digital (digital purse) plastic cards containing a micro-processor, which can be downloaded to a certain cash value. The value of the balance decreases when it is used to buy goods. Furthermore, these cards do not need a permit to transport their value, or any part of their value via the Internet.

Nearo (2000) contends that the purpose of proving the evidence of the electronic processes is not different from the conventional processes, but what sets it apart is the need to verify stability. Furthermore, he stresses that the validity of the operations guide depends on the effectiveness of internal control systems, as well as consistency and completeness in the system.

SIGNIFICANCE OF THE STUDY

The importance of this research study results from the significant development in information technology used through trade operations in short periods of time, which leads to a decrease in the cost of operations. Accounting systems could be seen as the backbone of accounting for events and processes that have been in the range of the bank. The importance of accounting systems has grown due to their increased role within commercial banks, which has developed as a result of overlapping electronic commerce with several other areas. This includes financial banking services, which in turn have affected the mechanisms of accounting systems and the resulting information necessary for decision-making (Kaled, 2004).

This research study will be important in determining the extent to which the Saudi Arabian business environment relies on e-commerce. It will also determine the effects of e-commerce on accounting systems by studying the perspective of the providers of electronic banking services, which are provided to banking customers who use e-commerce. The viewpoint of the Accounting Standards and instructions given by The Saudi Arabian Monetary Foundation (SAMF) will also be investigated.

RESEARCH OBJECTIVE

The main objective of this research is to identify the changes which are necessary to develop accounting systems in Saudi commercial banks. These changes result from applying e-commerce applications to banking, as there are close links between e-commerce and the production of information systems and accounting systems. The objective of the study is:

1. To study the impact of electronic commerce on the effectiveness of accounting information systems in Saudi commercial banks.

Hypotheses of The Study

After reviewing previous studies and the conclusions of their theoretical frameworks of research hypotheses, we can formulate and divide the hypotheses of research in this area as follows:

H₁: There is no impact of e-commerce on the effectiveness of accounting information systems in Saudi commercial banks.

RESEARCH METHODOLOGY

The research methodology depends on the links between theoretical and applied studies, as described below:

Theoretical Framework

In regard to the importance of the research and the nature of the problems, the objectives and hypothesis will depend on a review of previous studies that are of relevance to the research. Previous research studies published in seminars, conferences, magazines, and periodicals, alongside other relevant references, will be consulted before analysing pertinent concepts and applying them to this study.

Applied Study

This research relies on an applied study to test hypotheses upon Saudi commercial banks, in order to identify the impact of e-commerce on the effectiveness of accounting information system in Saudi Commercial Banks. The study employs a design questionnaire, which will be distributed to financial managers and employees in the financial sector in accounting departments in Saudi commercial banks that are listed on the stock market. These eleven banks are shown in Table 2. Following the completion of questionnaires by participants, statistical software (SPSS) was used to conduct statistical analyses.

Name of Bank	Number of branches in Saudi Arabia
National Commercial Bank (NCB)	279
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Source: Saudi Arabian Monetary Foundation 2012

RESULTS, ANALYSIS AND DISCUSSION

The methodology chapter outlined the research methods, data collection tools and analytical tools used for the purpose of further analysis of the research objectives. This chapter provides a detailed analytical overview of the findings from the primary research. The first section of the chapter deals with results and findings of the primary research and the next section provides an analytical interpretation of these findings that help in answering the research questions.

Data Analysis

8-1-1 Sampling description

The sampling was done for all the major commercial banks in KSA. There were 296 sample questionnaires which were distributed amongst these banks. Out of them the survey team could analyse a handful of them whose numbers are mentioned in the Table 3 below. A total of 100 people were analysed amongst the eleven chosen banks based on which the research analysis was conducted.

Table 3 SAMPLING DESCRIPTION		
Name of Bank	Distributed	Analysed
National Commercial Bank (NCB)	34	20
Riyadh Bank	28	10
Saudi French Bank	30	10
*Arab National Bank	25	0
*The Saudi British Bank (SABB)	25	0
Al Jazira Bank	30	10
Holand Saudi Bank	27	10
Saudi Investment Bank	37	20
Al Rajhi Bank	20	10

*Samba Financial Group	25	0
Bank Al Bilad	15	10
Total	296	100

*I have not received

The sample population for the present research study was selected using the non-probability sampling method as discussed in the research methodology section. The sampling size consisted of 100 participants who worked in the commercial banks in KSA. The graphs below provide an insight into the key aspects of the sampling unit. These include the years of experience, specialisation, qualification, job title, and extent of participation in decision making.

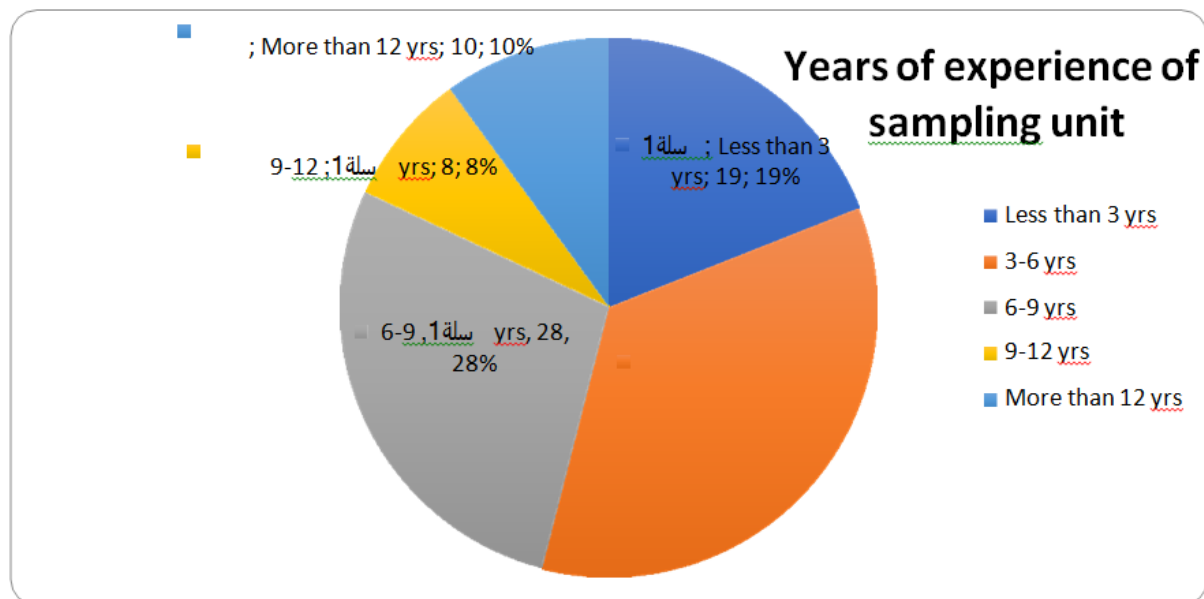


Figure 3
YEARS OF EXPERIENCE OF SAMPLING UNIT

The Figure 3 reflects that the majority of the participants in the sampling unit had 3 years to 9 years of working experience.

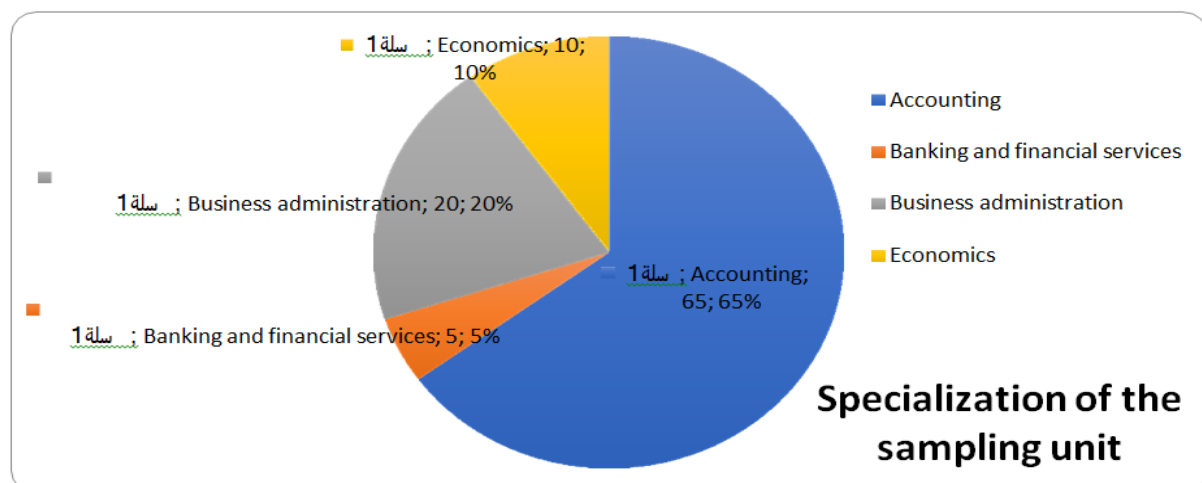


Figure 4

SPECIALIZATION OF THE SAMPLING UNIT

The Figure 4 gives 65 out of 100 participants in the sampling unit were specialised in accounting. This indicates that most participants had a good understanding of accounting systems and practices.

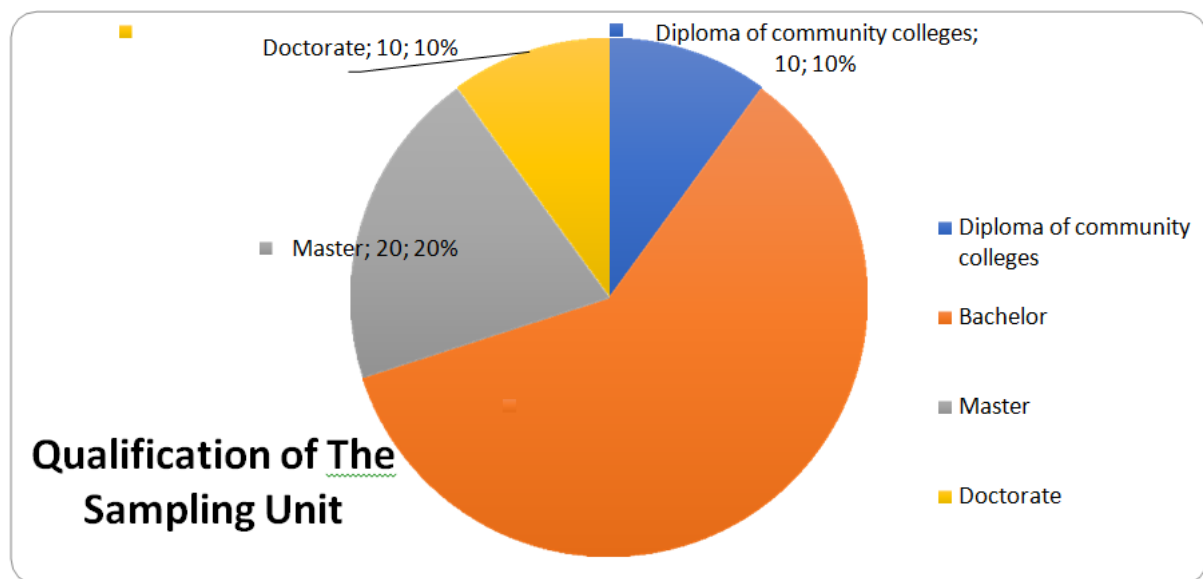


Figure 5
QUALIFICATION OF THE SAMPLING UNIT

A majority of the participants in the research study held bachelor degrees and only 20 held master's degree as Figure 5.

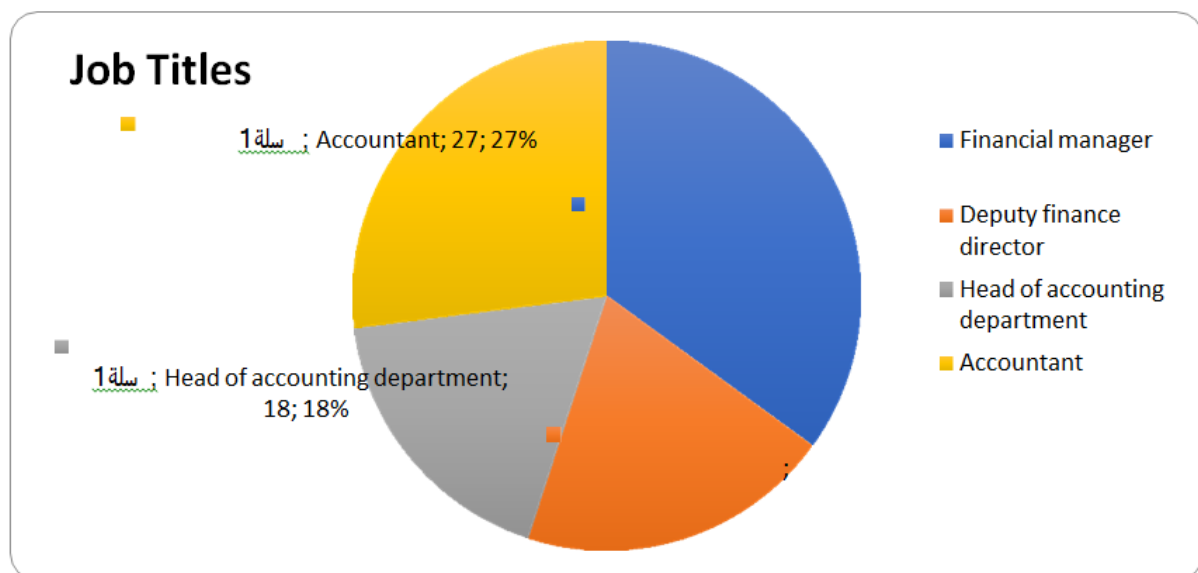


Figure 6
JOB TITLES

The Figure 6 reflects the designations held by the participants in their current organisations. 35 out of 100 were finance managers and 27 were accountants.

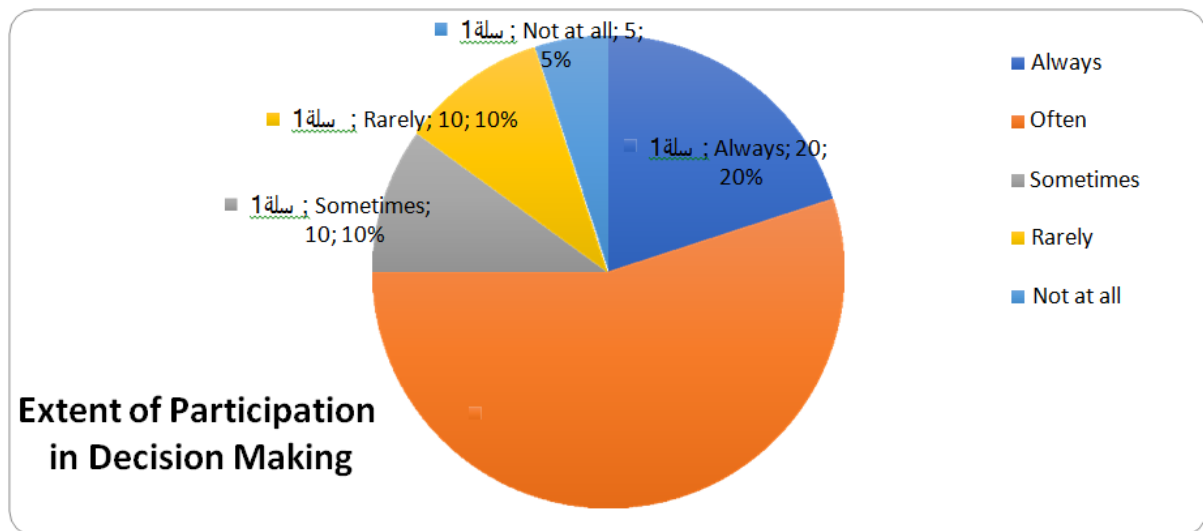


Figure 7
EXTENT OF PARTICIPATION IN DECISION MAKING

The Figure 7 shows the responses to the questionnaires 55 out of 100 participated in decision making process often while 20 stated that they participated in the decision making process always.

The following table provides the data analysis results of the responses to the questionnaire. The SPSS results of the data analysis to the responses to the given questions are provided in the following Table 4.

Table 4 DATA ANALYSIS RESULTS	
No	Statements
1	The power of accounting information systems link the organisational structure of the bank so as to provide the information necessary to achieve the goals of the department of planning, control and decision-making.
2	Accounting information appears the relationship between administrative activities with each other in the form of a set of appropriate periodic reports that help in achieving goals.
3	Accounting information systems contribute in enhancing the possibility of preparing plans to improve the work; as an effective contribution can be achieved and measurable according to the objectives of the bank and at all levels of management.
4	Accounting information systems provides senior management with sufficient information to compare the actual results with plans that set previously.
5	Providing detailed analytical and data needed by decision makers.
6	The system allows an analysis of positive and negative decision in order to distinguish between the adequacy and effectiveness of the decision
7	The ability of accounting information systems to adapt to the change in the strategic goals and environmental factors affecting
8	Accounting information systems allow the achievement of a balance between the degree of accuracy, detail and timeliness of reporting and accounting of the cost of the system so as to maintain operational economics.
9	Information extracted from the system helps different departments within the bank, such as marketing, finance, audit and others
10	Information extracted from the system contributes to the improvement of the bank's performance.
11	Assisting in the success of sub-systems such as the planning of budgets

The subsequent section provides an analytical overview of the participant responses to the 11 statements given in the questionnaire.

The power of accounting information systems link the organisational structure of the

bank so as to provide the information necessary to achieve the goals of the department of planning, control and decision-making.

Table 5 RESPONSE		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
77%	23 %	100

The sampling unit was asked about the power of accounting information systems linking the organisational structure with the objectives of the department of planning, control and decision making Table 5. 77 per cent of respondents believed that using the accounting information systems was the only way forward for the banking industry which will not only make them efficient but also provide the customers with a more convenient technology. They felt that it was important for the banks to campaign actively for the e-commerce solutions and advise to the people of KSA that having e-commerce will make life easier for them (Whelan, 2007). The participants acknowledged that there were problems in the social structure of society where socio-economic practices were still routed in the conventional manner and technology was not adopted in totality (Kim & Davidson, 2004; Sadiq et al., 2004; Ghashghai & Lewis, 2002). Based on this backdrop, the respondents agreed that the management accounting information systems gave them a ready tool to have all information stored in databases where they can use the system to get any information which they required. The management also saw the huge advantage of getting sales, operations, and turnover and profit figures at their fingertips which would help them in decision making (Kumar et al., 2000; Melinda & Stephen, 2001; Laudon & Laudon, 2005).

The positive samples of the respondents taken were 77% which meant that there were people in the group who were not totally convinced of the conventional approach being changed into modern day computing. The negative samples of the respondents to the statement indicate the preference for conventional approaches and this may be attributed to the lack of knowledge and skills in handling new and sophisticated AIS (Silivius, 2010).

Accounting information appears the relationship between administrative activities with each other in the form of a set of appropriate periodic reports that help in achieving goals.

Table 6 ACHIEVING GOALS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
62%	38%	100

The Table 6 above reflects the positive and negative response rate for the above statement. Overall the response of the participants indicated a positive rate of 62 per cent. The responses supported the role of accounting information in the backdrop of e-commerce operations and the presence of an accounting system will lend greater transparency for the management, up to date accountability to the customers and will help the management in getting periodic reports from the system. The positive rates can be attributed to factors such as increased satisfaction for the ease of availability of data, to comprehend and analyse data and most importantly have total transparency in the sharing of information (Purwadi, 2008; Ramaswamy, 1996; Romney & Steinbart, 2012). However, there is an underlying concern that sharing of data should be limited and information filtered in a hierarchical basis. Data accuracy and data consistency are some of the other issues raised by experts in this research context (Alfuraih, 2008; Mohdshaari, 2008).

Accounting information systems contribute in enhancing the possibility of preparing plans to improve the work; as an effective contribution can be achieved and measurable according to the objectives of the bank and at all levels of management Table 7.

Table 7 ACCOUNTING INFORMATION SYSTEMS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
80%	20%	100

The Accounting staff responded to the research question by stating that it streamlined their work as they knew the extent of their work, the data made available to them were shared within their department and cross department wise as well. The respondents had varied opinions with 60% responding positively for it while 20% felt that there were serious limitations to it.

There are 54.1 per cent people using internet facility which is a steady rise since 1997. Eventhough the Saudi Monetary Agency (SAMA) deals with the online business, there is a dearth of proper structural and network infrastructure which are preventing any online transactional activity (Devaraj et al., 2002). The group felt that the limitations need to be overcome to ensure a smooth transitional flow from conventional accounting practice to a modern day accounting information online system.

Accounting information systems provides senior management with sufficient information to compare the actual results with plans that set previously Table 8.

Table 8 ACCOUNTING INFORMATION SYSTEMS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
33%	67%	100

There were 33% who responded favourably but there were 67% whose response was negative. The latter half thought that it was not possible to get accurate data through which they can measure the current data with the goals and targets they had set earlier.

However the Financial Managers stated that it was a good measure to have comparative statements drawn so that based on the previous planning and targets set, the management would be able to view the actual results obtained.

The Heads of Accounting Department had his reservations as to the capture of previously set data stating that there are many times when there are market deviations and actual results can be different to the previously set data. They felt that the world economy which had seen recession many times were deterrents to such theories and were practically not feasible. During this phase it was difficult to stick to predictions (Davenport, 1998). However, they did comply with the view that accounting information systems in the current era had the potential to deliver accurate current results which could be compared with the previous planned data or targets (Choe, 1996). The reasons for deviations or total failure could be recorded into the system which would justify the results.

Kim & Davidson (2004) had pointed out how commercial banks in KSA recognised the contribution and potential offered by adoption of e-commerce practices. This offered the banks with the competitive edge to compete in the world market.

The optimistic group were of the view that the accounting information systems would be able to deliver sufficient key information to derive comparative statements periodically which would give an insight into the performance of the banks, their achievement levels and assess the reasons of their failure as well. This aspect has been perceived as one of the key

features driving the effectiveness of AIS in e-commerce in commercial banks (Al-qudah, 2011). There was an element of variance though, as the senior management had their reservations as to the basis of the comparative statements which would hold good or not. Therefore the degree of approval was neutral.

Providing detailed analytical and data needed by decision makers Table 9.

Table 9		
ANALYTICAL AND DATA		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
44%	56%	100

44% responded positively to the above statement, while 56% were on the opposite side. The most important component for any decision maker is to have data supplied readily and accurately. The decision makers need to have information projected to them in various formats which help them analyse the current situation which would be possible only through information available to them in macro as well as micro form. Braganza (2000) had stated that banks have become more efficient with their financial affairs whose credibility goes to the adoption of e-commerce and its related activities. The group felt that the younger generation are growing up with computers, internet and other modern-day communication tools which have greatly improved businesses. E-age banking and mobile banking have become more common for these groups which have a direct effect on the reach of the banks with their customers across the globe. All these are part of the accounting information systems whose credibility lies in these tools and the efficiency in which real time data is transformed into meaningful information through data analysis reducing any kind of data redundancies in the process (Holden & El-Bannany, 2004).

The decision makers were extremely happy at the ready availability of organised data being made available to them at the shortest possible time. For the remaining population who thought otherwise, it would take time for them to get used to the technology but there was hope as they could understand the dimensions the new era was taking (Kumar et al., 2000).

The system allows an analysis of positive and negative decision in order to distinguish between the adequacy and effectiveness of the decision Table 10.

Table 10		
ANALYSIS OF POSITIVE AND NEGATIVE DECISION		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
43%	57%	100

43% of the population responded favourably to the above statement where the decisions taken by the banking professionals in context of the various data analysis, interpretation were holding good or not. The decision makers welcomed the critical review of their decisions as it gave them a chance of analysing and weighing their own decisions with the result orientation. These results were depicted by the accounting information systems with respect to the implementation process of the decisions being taken. The bankers were able to comprehend the fluctuation in the global economy and how it affected the banking operations and the economy of Saudi Arabia.

57% of the population were not very comfortable with the process where they felt that management decisions were more spontaneous and were ruled by business intuitions rather than data analysis.

The ability of accounting information systems to adapt to the change in the strategic goals and environmental factors affecting Table 11.

Table 11		
STRATEGIC GOALS AND ENVIRONMENTAL FACTORS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
44	55	100

Table 11 reflects the response rates for the statement above. 44 per cent of the respondents supported the statement and felt that the AIS can be used effectively to increase the organisation's ability to adapt to changing business conditions. This view is supported by the belief that upgrading to e-commerce technologies can help the commercial banks improve its operational efficiency and increase its business potentials in terms of handling customer requests and catering to larger customer base (Qatawneh, 2012). The response data for this statement however, is not supported by the majority of the respondents who feel that the AIS cannot keep up with the changing trends of the existing business environment and it may fail to adapt itself to the emerging business needs (Romney & Steinbart, 2012).

Accounting information systems allow the achievement of a balance between the degree of accuracy, detail and timeliness of reporting and accounting of the cost of the system so as to maintain operational economics Table 12.

Table 12		
MAINTAIN OPERATIONAL ECONOMICS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
41%	59%	100

There was a 41% positive response to the above statement where people felt that there was a fine balance between data accuracy, timely reporting tools which kept the operational economics at bay. However the majority did not agree to such a scenario where the AIS could maintain a balance with operational economics just that they were receiving accurate data and timely information. They thought that there were further deviations which were not accounted for and the data supplied to them were incomplete. 59% of the population thought that the degree of accuracy being relied upon does not exist as the AIS does not take into account global phenomenon and the balance chord between operational economics and real time situation does not hold good. It was largely due to the fact that small and medium scale businesses were not as active as the bigger corporations as far as e-commerce was concerned (Taylor & Murphy, 2004). This was a major factor for all SMEs and some commercial banks of not being part of the systems where they get readily available information to equate with their operational economics (Al-Hanini, 2012; Wedyan et al., 2012).

Information extracted from the system helps different departments within the bank, such as marketing, finance, audit and others Table 13.

Table 13		
DIFFERENT DEPARTMENTS WITHIN THE BANK		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
42%	58%	100

42% of the population observed that it does help a lot when information extracted from the banks is being made available to different departments. The target population stated that there was a great deal of enthusiasm as people welcomed the system and knew that the system related data is real time data coming in from all corners of the globe which helped a lot in further decision making, planning and execution of business. This aspect has been recognised as one of the primary benefits of e-business and information management systems (Chaffey, 2007; Barczak et al., 2007).

Information extracted from the system contributes to the improvement of the bank's performance Table 14.

Table 14		
IMPROVEMENT OF THE BANK'S PERFORMANCE		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
49%	51%	100

49% of the sample population believed that information imparted by the system was instrumental in the improvement of the bank performance. These commercial bank employees were young men and women having more than 3 years and less than 6 years of experience. All these young people were ardent believers of the system where they felt that the AIS was the sole reason due to which ready and accurate data was fed which contributed immensely to the success of the bank. The conventional people largely remained confined to their thought process which the younger generation thought would be a matter of time before they would see the benefits of the system. E-Commerce is really picking up for the youngsters and when they become future managers, the thought process and the line of doing business will change radically. KSA and its commercial banks are growing day by day and the adoption of these systems will bring the competitive edge in them which have already begun (Al-Shehry et al., 2006).

Assisting in the success of sub-systems such as the planning of budgets Table 15.

Table 15		
POPULATION THOUGHT THAT SUB SYSTEMS LIKE PLANNING OF BUDGETS		
Positive Response (%) (Agree)	Negative Response (%) (Don't Agree)	Total Number
46%	54%	100

54% of the population thought that sub systems like planning of budgets would not be appropriately done by taking help of the AIS. This convention came from the thought process that based on current data which was insufficient or incomplete as a whole did not serve a proper benchmark for the bankers to plan their budgets based on the given data. However 46% of the population was of the view that these obstacles were getting removed with increased participation in e-commerce and online banking activity which was changing the face of business. They supported the view that accounting information systems were serving as tools for bankers to gather data and make budget plans for the future. They were of the view that any logical system needed data analysis to know their current stand of business and how they were faring and based on that they could predict the future course of action and the planning of budgets as a result (Turban et al., 2010).

Analysis

The positive responses to the statements in the questionnaire highlight that accounting information systems has provided the commercial banks with the necessary information through which the banks can plan their next course of action. Modern day banking has seen e-transactions been conducted by the customers. There are payments being done by customers using net banking. Companies transfer funds to other parties through Real time gross settlement. All these e-commerce functionalities are a part of the accounting information system and the management can determine the exact value of transactions (Gefen & Straub, 2000). The group was of the view that the accounting information systems increased their productivity and helped them in planning their operations ahead of time. The decision makers were pleased with the fact that the results of all the stages were available to them which helped them take important decisions. Result driven quantifiable targets were achieved and reported to all concerned members and the reasons of any deviation were also calculated and figures available to the higher management. The decision makers were also pleased of the fact that

they could track each and every hierarchical level and accountability was there within the bank. All these were contributing factors for reaching the targets and objectives of the bank.

The accounting professionals however aired their reservation on the current status where there were no fixed accounting standards. Melinda & Stephen (2001) and Laudon & Laudon (2005) had critically observed that one country's accounting standards were translated into another country's accounting standards which again was translated into local standards. This practice was not good as the banks in KSA should follow a single standard accounting procedure at par with international standards which would lend credibility to the accounting procedure followed (Ghasghai & Lewis, 2002). However, there is no cause of worry as the government and financial authorities in Saudi Arabia are working towards a single financial accounting standard and e-commerce is facilitating the same (Kraemer et al., 2006).

The results and findings of the study reveal that most of the employees in the banking sector are sceptical about the usage of this system in e-commerce sector owing to perceived risks and operational limitations that might expose the banks to increased frauds and loss of data protection. It has been widely acknowledged that the effective usage and adoption of AIS for e-commerce in Saudi commercial banks would certainly increase the effectiveness of these systems (Karthikeyan, 2010; Abu-Musa, 2005).

The findings nullify the research hypothesis that there is no impact of e-commerce on the effectiveness of AIS in Saudi commercial banks. The statistical evidence suggests that there is significant relationship between e-commerce and AIS development, its application, operational efficiency and service potentials offered by the banks. The only limitation faced by the Saudi commercial banks in this context is widespread acceptance and a deeper understanding of how this positive relationship can deliver the desired outcomes in terms of banking services and operational efficiency. The next chapter concludes with the researcher's insights and inferences based on the findings of the study.

The research and findings chapter analysed the primary data using statistical tools and the analysis nullified the research hypothesis that there is no impact of e-commerce on the effectiveness of AIS in Saudi commercial banks. The chapter also highlighted the positive indications in context to the role of e-commerce and AIS in increasing operational efficiency and providing the commercial banks with enhanced potentials to cater to the customer needs and requirements. It can also be noted here that the KSA has become a major international economic hub in the Middle East. In the process there has been an influx of foreign banks opening their respective branches in the region. As this country is very conservative in their thoughts and movements, and has a limited access or openness to the outside world, these restrict the country's growth and development or do not contribute to the fullest improvement of the trade and business sectors. All these banks have e-commerce driven information which highly streamlines their operational flow making it extremely convenient for the customers. The smooth transition of raw data into meaningful information is what is needed for the hour for both financial managers and business administrators (Surmen & Dastan, 2007).

Implications

The respondents to the research questionnaire appreciated the readiness of data and its availability. Omar (2012) had expressed that for any mature economy it was essential to follow any one accounting standard. The respondents also expressed their willingness to adopt e-commerce and stressed on the adoption of international standards in lieu of e-commerce activities across the borders as well. However, this does not undermine the views of others who felt apprehensive on the way things can be controlled for increased efficiency and operational effectiveness. The negative views of the respondents reflect the constraints faced

by KSA in adopting and realising the true potentials of AIS.

Mohdshaari (2008) had stated that banks were still experiencing new challenges and competition which were being countered by introducing new accounting systems. This view was applauded by the financial managers and business decision makers as they felt that the decisions being taken and reviewed gave way to any existing loop holes in the system. This was evident through the results coming in lieu of the decisions made. They felt that this approach was scientific and logical as the system gave all the variations in data with the projected ones which can be interpreted as an okay decision or not okay decision. It can also be noted here that the availability of appropriate financial data at the fingertips from anywhere across the globe would be a big step in the achievement of the bank's goals. The availability of the right information at the right time would have a huge impact on the planning and strategies deployed (Elbarrad, 2012; Al-qudah, 2011).

The adoption of e-commerce in Saudi commercial banks has largely been guided by the growing number of people venturing online in the past few decades. The online customer base for these banks comprise of the younger generation locals who are tech-savvy and prefer to conduct their transactions online and the expatriates who prefer to have online access to their banking needs (Al-Jarf, 2013). The decision has also been influenced by the globalisation trend that has triggered the need for change (Sadiq et al., 2004). However, the pace of change within KSA has been slow on account of various cultural, religious and social limitations that pose difficulties in the widespread acceptance and adoption of new technology tools in the banking sector (Al-Gahtani et al., 2007; Silivius, 2010).

E-commerce and its co-relation to banking services in the present day have placed increased demand for high performance systems that align the customer needs with the bank's audit requirements (Sharkasi & Wynn, 2011). While such systems aim to reduce operational costs, increase efficiency and improve the quality of services provided by banks to its customers, the implementation of such systems can be costly and time consuming (Ismail & King, 2005; Al-Refaee, 2012). The success of such system implementation also depends on the IT skills and competencies of the workforce and the effectiveness in design in terms of its ability to meet the information requirements of the bank executives and other stakeholders (Wynn & Maldonado, 2007; Purwadi, 2008).

CONCLUSION

There is a greater need to identify skills gap and shortcomings that restrain the effective usage of these systems. This has to be combined with constant follow-ups to ensure that the systems work in coordination with the latest developments taking place in the technology sector to prevent misguided information flow or ineffective system usage issues. Further research studies in this context must focus on identifying the key parameters for effective implementation of AIS in e-commerce for the banking sector.

Based on these insights and observations, the research study proposes that the commercial banks in Saudi Arabia adopt progressive managerial practices that facilitate the effective usage of AIS in the context of e-commerce. These managerial practices include learning and development programmes to address the lack of adequate IT skills, knowledge of systems, and confidence in the usage of such systems for extended benefits. True potentials of the AIS in Saudi commercial banks can only be realised through improved understanding of system goals, operational requirements and adapting the applied accounting standards to meet the requirements of online banking.

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