OBSTACLES TO IT INTRODUCTION IN THE SUDANESE COMMERCIAL BANKING INDUSTRY

M. O. Shereif Mahdi, Ph.D.
Assistant Professor of Management, Dhofar University
Department of Management, Marketing & Information Systems, Sultanate of Oman
email: m_mahdi@du.edu.om

Abstract - This paper draws on empirical research conducted in Sudan to examine the process of management of IT and organizational change in Sudanese Banking Industry (SBI). The study used dual methodology which included quantitative and qualitative techniques and focused on presenting findings on the process of managing and implementing IT in the SBI. Deductive and inductive data present very strong evidence to support the hypotheses that *the General Managers do not view IT change as a key element of their work and this limited involvement constrains the process of change*. Decision-making process to implement IT in the SBI was a top down model, and the main reason for the adoption of IT in Sudanese banks was to provide better banking services.

Keywords: Mixed Methods, IT, Technological Change, Banking, Developing Countries, Sudan.

INTRODUCTION

Wide-ranging introduction and implementation of information technology (IT) is a major challenge facing business organizations seeking to sustain competitive advantage in dynamic business markets. This challenge is compounded in developing countries where business organizations deal with problems such as lack of investment and inadequate involvement in the process of management of new technology and change. Although banking has been established in Sudan since a hundred years ago, little is known about the daily operations of banking and the development of IT in the Sudanese Banking Industry (SBI). Discovery of oil in 1990s has been a major driver for the Sudanese economy and the value of such a discovery has attracted international investors and overseas interest. Production of crude oil reached about 345,000 barrels per day (bbl/d) in June 2004, compared to 270,000 bbl/d during 2003. Crude oil production has been rising steadily since the completion of a major export pipeline in July 1999 and is expected – by Energy Minister Dr. Awad Al-Jaz – to exceed 500,000 bbl/d in 2005. Sudanese oil output may reach 750,000 bbl/d by the end of 2006 provided that increases in production advance as intended [11]. Growing international activity around oil exploration and extraction spotlighted traditional banking methods that rested on manual operations with a low level

of technology investment. This, along with a movement from a centralized state-regulated economy to free market economy (1992-1998) following the formulation of a Comprehensive National Strategy (CNS) in 1992, highlighted the need for change [8]. This paper presents the findings from a study on the management of new technology in Sudanese Banks. Combine questionnaire and interview data for cross validation are used to develop, illustrate, and corroborate both questionnaire and interview results against each other. The paper focuses on the process of managing IT and organizational change in the SBI. Quantitative and qualitative data present very strong evidence to support the hypotheses that *the General Managers do not view IT change as a key element of their work, and this limited involvement constrains the process of change*. The paper begins with research objectives and methodology, briefly examines literature on issues about the process of management of technology and organizational change and then provides an analysis and a discussion of research findings about the management of technology and change in the SBI.

RESEARCH OBJECTIVES AND METHODOLOGY

This paper considers the process of management of IT and change in the Sudanese banking sector. The purpose of the study centers on addressing the following questions: What were the reasons for the introduction of IT in the SBI? Who initiated the idea of change? To what extent have local managers been involved in the process of managing the implementation of IT in the SBI? In answering these questions, data had been collected and analysed from 25 banks (from a total population of 27 banks) in the SBI. Out of 54 distributed questionnaires in 27 bank head-quarters in Khartoum, 49 responses were received. This represented a 90.7% response rate of the respondents targeted. The study used mixed methodology, which included quantitative and qualitative techniques. Questionnaire data were used to describe aspects of the change management process, and qualitative data from interviews were employed to develop, explain, and support questionnaire findings. Although it was not possible to secure appointments with 11 banks in the SBI, appointments were carried out with 18 banks, including the Electronic Banking Services Company (EBS) and the Bank of Sudan (BOS), representing 62 per cent of the SBI.

LITERATURE REVIEW: THE PROCESS OF MANAGING IT AND ITS CHANGES

Prior to the development of research objectives, and methodology, literature was explored on this field. The theoretical part discusses issues on the process of IT management and theories of organizational changes. Burnes [5] argues that there is an agreement about corporations, which faces incomparable levels of change. Therefore, the competence of managing the process of organizational change must be a central part to organizational capability [3,17]. In an investigation of the adoption of new technology, Dawson [9]

explains how long-term decision initiates new services and products to implement new technology, or to change organizational structures that are generally made by top management. Laudon and Laudon [13] argue that information technology and organizational change are highly intertwined and technology is one of the major drivers for organizational change. Mintzberg [15] acknowledges that, in reality, some organizations pursue 'umbrella strategies', which means 'the broad outlines are deliberate while the details are allowed to emerge within them.' Rothwell [18] argues that, in general, during the course of implementing new technology, 'employment policies could be said to have become more closely linked to business policy, if only by having to react more directly than before towards it'. Managers or analysts who attempt to adopt, introduce, and implement changes in information systems technology must take an overall approach that considers all factors involved in organizational change [13]. Decision for adopting new technology and the process of implementing change takes time and is likely to be influenced by contextual factors both within and outside the organizations [9]. Information technology, as a particular type of change, has raised a number of issues around the design of technology and the way in which outcomes are shaped by the technical parameters of technology or the social dimensions of change management [7]. Despite the consensus that organizations are facing unprecedented levels of change, a number of studies reveal how successful change has shown great difficulty and a very high failure rate [2,4,6,20]. On this count, there is considerable debate in the literature about the effects of technology on change processes [16]. In the case of Sudan, there has been a lack of infrastructure, low levels of expertise, limited investment for many years, and the absence of a comprehensive technology strategy for banking. The country has been spotlighted in the international media in the last 18 months because a new crisis in the western Sudanese region of Darfur started and created nearly a million refugees. In November 2004, security and humanitarian relief protocol had been signed between the government and Darfur rebels in Abouja-Nigeria as a first step to end the conflict in western Sudan. Continued instability over the past two decades, claimed – directly or indirectly through famine – as many as two million Sudanese lives. Recent peace agreement between the government and the Sudan People's Liberation Army (SPLA) has lead to substantial investment in both production facilities and new exploration initiatives in the country. In January 2005, after official signing of the peace accord, Kuwait Foreign Petroleum Company, Marathon Oil Corporation, and Total SA renewed their exploration rights in southern Sudan. Stopping Sudan's internal conflicts could greatly help the country's economy and lead to lifting various international sanctions against Sudan, and also encouraged foreign investment. Over time, however, this situation must change and yet, the adoption and implementation of technology cannot be understood outside of the context in which it takes place [19].

Over the past two decades, banks have continued to develop international electronic banking services and products through the development and use of advanced IT systems,

for example, digital banking that allows customers to access statements, pay bills and transfer funds through Internet connections are now commonplace in Western industrialized countries. Harris [12] argues that this has resulted in greatly increased levels of competition in the industry. In 2004, banks remained one of the largest investors in new technology within a society that is increasingly dominated by service industries [14]. Harris [12] points out from an information technology survey carried out by the *Financial Times* that total expenditure on IT systems by European banks alone exceeded $21 billion in 1999. IT applications in banks have increased processing capacity by automating tasks previously accomplished manually. Furthermore, Dixon [10] argues that corporate banking is likely to be further transformed by new technology throughout 2000s. Marlin [14] for example, estimates that U.S. banks will spend $1.4 billion on new technology by 2006 (the figure stood at $800 million in 2003). Many of the current IT initiatives are aimed at improving customer 'remote' services with wireless technology becoming an increasingly important tool. The Association for Payment Clearing Services (APACS) with full support from UK banking industry and card issuers, required customers to use the Chip and Pin by inserting their personal identification number (PIN) on a special keypad located close to the EPOS [1]. Introduction of Chip and Pin System affected the vast majority of face-to-face transactions and removed the burden and responsibility of shop staff to confirm the identity of a cardholder and compare the customer signature to that on the card. As far as Sudan is concerned, the Bank of Sudan (BOS) took the initiative to introduce EPOS system through the Electronic Banking Services Company (EBS) in Sudanese Banks in 1999 and the installation was expected to be completed by the end of 2007.

RESEARCH FINDINGS: INVOLVEMENT IN THE INTRODUCTION OF IT IN SUDANESE BANKS

In the questionnaire survey, respondents (General Managers (GMs) and IT Managers (ITMs)) reported the reasons for the introduction and implementation of IT in the SBI as displayed in Table 1:

Table 1: Reasons for implementing IT.

Reasons for implementation	Responses	Cases (GMs & ITMs)	
	Pct	Pct	Count
To provide better banking services	46.2	85.7	42
To comply with the directives of the BOS	29.7	55.1	27
Investment decision	17.6	32.7	16
Following other banks examples	6.5	12.2	6
Total Responses	100.0	185.7	91

The main reasons for the adoption and implementation of IT in Sudanese banks were the need to provide better banking services, as well as to comply with the directives of the BOS. BOS established its Banking Technology Department (BTD) to concentrate on initiating and implementing technological projects within the banking sector. Another important role of the BTD is to act in a supervisory and regulatory role for the central bank, over other banking institutions, in the area of IT. BTD is the body through which BOS passes its policies and directives in relation to IT to other banks.

Furthermore, the reason for the adoption and introduction of IT in some Sudanese banks was an investment decision, while respondents reported that a few banks were acting just as imitators (see Table 1). Interview findings revealed many other reasons for the introduction of IT in Sudanese banks. Views of interviewees are summarized in Table 2 as indicated below:

Table 2: Views of interviewees.

Interviewees	Summary of respondents' views
General Managers	Sudanese banks need electronic banking technology in all types of banking practices. There is no need to keep the bulk of our money in pockets as this technology will minimize fraud, misplacement and loss of funds, and most importantly, it will enable money to circulate within the banking sector.
IT Consultants	There is a need for banks to have standardized electronic banking services such as SWIFT to operate in global networks and international payment systems such as Visa and MasterCard to cope with the global standards and provide better banking services. Banking technology attracts customers as some have dealt with advance banking services in neighbouring Arab countries, Asia and many other western countries. They have no time to waste with the traditional or non-automated banks.
Top Officials	We need to improve the efficiency of the current banking system, the quality of services, and develop our ability to match the local and international systems.
Senior Officials	BOS decided to adopt a directive policy to impose the introduction of banking technology on all banks. They authorized all Sudanese banks to buy and implement reliable banking systems

Interview findings show how technology is needed in all types of banking practice whether administrative, accounting, statistical analysis, decision support or general banking services. Respondents indicated a growing competition between banks in the SBI and consequently at a macro business level, Sudanese banks required to have secure accounting systems and an up-to-date electronic banking service for commercial reasons. Such a service facilitates money circulation within the banking system and allows for greater control (of liquidity money) in the market. Those banks that have successfully adopted

IT in developing their electronic banking services can provide accurate financial data, protect individuals from fraud, preserve bank notes and coins from deterioration, and provide more rapid and higher quality services to customers. As a bank manager stated:

> I think Sudanese banks need this kind of technology. As a part of banking sector, we think there is a great challenge for us to introduce the technology because of the severe competition. There is no need to keep the bulk of our money in pockets. This technology will minimize fraud, misplacement and loss of funds, and most importantly, it will enable money to circulate within the banking sector (General Manager).

The introduction and use of new banking technologies are also important for the international development and activities of Sudanese banks. In order to be a part of global financial networks, SBI needs to cope with the requirements of international electronic banking payment systems such as the Society for World-wide Inter-bank Financial Telecommunications (SWIFT), Visa and MasterCard. This need was consistently raised as a key issue during interviews, as one IT consultant explained:

> There is a need for banks to have standardized electronic banking services in order to operate in global networks such as SWIFT and international payment systems such as Visa and MasterCard. I think there is a need to cope with international standards and provide better banking services based on scientific methods (IT Consultant).

Senior officials indicated how there are now widely accepted levels of international IT developments that banks have no option but to follow. Banks should cope with the demands of international practices and, in so doing, work to raise the quality and performance of the Sudanese banking industry. A number of senior officials argued that the main reason for the introduction and implementation of new technology is to improve the efficiency in Sudanese banks and provide better banking services to accommodate globalization within the industry. As an official reported:

> We need to improve the efficiency of current banking system and the quality of services, and develop our ability to match the local and international systems. We can not do this without these international changes; we can not live in isolation and stick to the old system (Top Official).

Similarly, another IT consultant stated:

> I think there is a need to cope with the international banking services for many reasons: to upgrade the banking sector performance, to provide better banking services, and to cope with globalisation (IT Consultant).

Furthermore, interviews revealed a perception that new banking technology is appealing to banking customers, particularly, Sudanese expatriates. IT consultants claimed that many Sudanese emigrants are now aware of the importance of new technology, especially those who have experienced banking transactions with IT in neighbouring countries including Egypt and Saudi Arabia, as well as other countries in Asia, Europe and USA. As one IT

consultant indicated:

> I think banking technology attracts customers and they are now aware of the importance of this technology. Some of them have seen and experienced advance banking services in Saudi Arabia, Egypt, UK and many other countries. They have no time to waste with the traditional or non-automated banks. So, to survive and avoid losing customers and market shares, banks have no choice but to introduce new technology (IT Consultant).

Survey findings demonstrate how the idea for the adoption and introduction of IT was initiated at the top managerial level of Sudanese banks specifically by General Managers, Bank of Sudan (BOS), and Board of Directors (see Table 3 below).

Table 3: Who initiates IT change.

Initiating the idea	Responses	Cases (GMs+ITMs)	
	Pct	Pct	Count
The General Manager	31.1	65.3	32
Bank of Sudan (BOS)	24.3	51	25
The Board of Directors	23.3	49	24
The IT Manager	19.4	40.8	20
The Trade Union	1.9	4.1	2
Total Responses	100.0	210.2	103

Thus, decision-making process about change in the SBI represented a top-down approach. These empirical findings support Dawson [10] as he explains how long-term decision initiates new services and products to implement new technology, or to change organizational structures, which are most likely to be made at the top management level. Interview findings further corroborated this, highlighting how BOS played a crucial role in initiating the introduction of new technology in the Sudanese banking sector. Senior officials point out how an introduction of banking technology was left for the management of each bank in order to decide how to bring about the change. In other words, while the idea was initiated at BOS and a policy for modernization developed by BOS, actual implementation of new systems was left to local senior bank managers. The strategic decision for changing was made by BOS, but the process of managing the change was determined at the local banking level. At interviews, senior officials provided specific illustrations of this. They argued that the BOS took the lead to promote the automation of Sudanese banks and to ensure the enforcement of this decision in the uptake of modern technology across the whole banking sector. BOS took the lead by adopting the concept of a comprehensive banking strategy. They established the Banking Technology General Administration in April 2000, which consists of IT Department that was responsible for the BOS internal systems; and the Banking Technology Department that was required to work closely with the banks in facilitating the introduction and implementation of new

technology. Moreover, EBS was also established to transfer the electronic banking knowledge from abroad into the country as well as taking the responsibility for the development and transformation of the Sudanese banking industry in general. Senior officials also indicated that the BOS is still the only initiating and leading body in the Sudanese banking sector, due to the absence of detailed planning within individual banks. They indicated that the BOS has resolved to introduce new technology and, therefore, authorized all Sudanese banks to buy and implement reliable banking systems. As an official stated:

> Eventually, the BOS decided to adopt a directive policy to impose the implementation of banking IT on the banks. They then instructed the banks to buy and implement reliable banking systems (Senior Official).

Table 4 illustrates General and IT Managers involvement in the process of managing the introduction and implementation of IT in the SBI. Null hypotheses presented for testing were as follows:

H_o: there are differences between the involvement of General and IT Managers in the process of managing the introduction and implementation of IT in the SBI.

H_1: there are no differences between the involvement of General and IT Managers in the process of managing the introduction and implementation of IT in the SBI.

A Mann-Whitney U test for statistical significance was used to test for significant differences between the involvement of General and IT Managers in the process of managing the introduction and implementation of IT in the SBI applying $p<0.05$ as statistical level of significance. A Mann-Whitney U test result (p-value 0.02, less than the critical value $p<0.05$) indicates significant differences.

Table 4: Respondents degree of involvement in the change.

Level of involvement	**General Managers**		**IT Managers**	
Respondents' Opinions	Pct	Count	Pct	Count
High*	52.2	12	80.8	21
Average	34.8	8	7.7	2
Low	4.3	1	3.8	1
No Involvement	8.7	2	7.7	2
Total	100.0	23	100.0	26
*Includes High + V. High.				

Findings indicates that more than three-quarters (21) of IT Managers considered themselves to be highly involved in the change process, while about half (12) of General Managers assumed that they were highly involved in the change process. IT managers are highly engaged in the change process, whereas more than a third of General Managers do not view IT change as a central part of their work and this partial involvement constrains

the process of change compared to their IT counterparts (p-value 0.02).

These findings suggest that the hypothesis of this study, which states that: *the General Managers do not view IT change as a key element of their work and this limited involvement constrains the process of change compared to their IT mangers*, is correct. General Managers do not see the process of introducing and implementing IT as their role. As managers, they typically assume that all IT/computer issues should be devolved to related experts such as IT Managers [19].

CONCLUSIONS

This paper presented findings from questionnaire and interview data about the process and management of organizational change of IT in the Sudanese Banking Industry (SBI). Findings suggest that the hypothesis is true and *General Managers do not view IT change as a key element of their work and this limited involvement constrains the process of change compared to their IT mangers*. Findings revealed that General Managers do not see the process of introducing and implementing IT as their role. As managers, they generally believe that IT/computer issues should be delegated to related experts such as IT Managers. The decision-making process to introduce new technology in the SBI was a top down model, whereas the details and the implementation process were left for the local senior bank managers. Moreover, respondents argued that the main reasons for the adoption and implementation of IT in the Sudanese banks were not only to provide better banking services, but also to comply with the directives of the BOS. We would argue that, managing technology and change would require senior management teams to consider carefully IT change as a major part of their responsibility, and that high level of involvement in the process of IT implementation is crucial for the completion of the information technology project in the SBI. Sudanese bank officials are urged to share ideas with their employees and engage trade unions in the change process. SBI need a radical change and should consider the introduction of common international electronic banking services. The implementation of Credit Cards and installation of ATMs throughout SBI would facilitate financial transactions and banking operations to both local customers and foreign investors alike. Foreign IT companies are encouraged to work closely with their Sudanese counterparts so as to comply with and satisfy Sudanese banking requirements.

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