

**EX-POST EVALUATION OF BANKING SYSTEMS AND SERVICE  
DELIVERY IN COMMERCIAL BANKS IN KENYA: CASE STUDY OF  
NATIONAL BANK OF KENYA**

**LAWRENCE K. MWAI**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
BUSINESS ADMINISTRATION (MBA), SCHOOL OF BUSINESS, UNIVERSITY  
OF NAIROBI**

**2019**

## DECLARATION

I declare that this research project is my original work and has not been submitted to any other College, Institution or University for an academic award.

Signature.....

Date .....

**Mwai, Lawrence Karue**

**D61/79153/2015**

This Research Project has been submitted for examination with my approval as the University supervisor.

Signature: ..... Date.....

**Prof. James M. Njihia**

Associate Professor,  
Department of Management Science,  
School of Business,  
University of Nairobi.

## **DEDICATION**

I dedicate this Research Project to my beloved family for their endless support and encouragement during the years of my study.

## **ACKNOWLEDGEMENTS**

I take this opportunity to thank my supervisors, Prof. James Njihia and Mr. Lelei for their relentless guidance and interest in my work. I also thank my friends Edward, Rispah, Patriciah and Leonard for their support during our studies. Special thanks to my lovely wife Lucy for her undying love and encouragement during the time I was doing the project. I also thank my children Robert, Gabriel and Keynan for the many times that they queried whether am done with the university project and this made me remain focused to complete the project.

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## **ABBREVIATIONS AND ACROMNYS**

<b>CBK</b>	: Central Bank of Kenya
<b>CBS</b>	: Core Banking System
<b>CPM</b>	: Critical Path Method
<b>ERP</b>	: Enterprise Resource Planning
<b>HIS</b>	: Health Information System
<b>ICT</b>	: Information and communication technologies
<b>IS</b>	: Information System
<b>NBK</b>	: National Bank of Kenya
<b>PERT</b>	: Program Evaluation Review Technique
<b>ROI</b>	: Return on Investment
<b>SDLC</b>	: Software Development Life-cycle
<b>UNCTAD</b>	: United Nations Conference on Trade and Development

## **ABSTRACT**

This study examines how commercial banks in Kenya carry out ex-post evaluation of their banking systems. It describes the evaluation elements that are considered key by various stakeholders and also examines whether those elements are actually taken into consideration during the evaluation. The study examines whether evaluation carried out after implementation of a banking system has any impact on service delivery in the banks. The researcher used a case study of National Bank of Kenya which is one of the commercial banks to seek answers to the research questions. Data was collected from respondents using open ended interview guides and review of some project documents. Findings of the study revealed that ex-post evaluation should lead to some corrective actions being taken to rectify system parameters, improve its functionality and cleanse data that is hosted in the system. Stakeholders expect some benefits to be realized from the ex-post evaluation exercise and such benefits include enhanced system performance and availability, improved revenue, cost savings and better system usability. The study established that ex-post evaluation of a banking system impacts service delivery. However, evaluation alone does not result into better service delivery, but when evaluation is followed by appropriate actions, service delivery is impacted. The study suggests that with further exploration, a model can be developed to be used by commercial banks in Kenya to conduct action-oriented ex-post evaluation so as to ensure that such an exercise impacts service delivery positively.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

In the recent years, IS projects are increasingly acknowledged as key projects that are supposed to contribute to improved service delivery among other benefits such as increased savings, increased efficiency, decreased transaction costs and improved market performance for organizations, (UNCTAD, 2008). Determination of success of IS projects has shifted to the role that the information systems play in an organization. Irani (2002) observed that any IS should improve efficiency and effectiveness of the organization thereby offering the firm competitive advantage in its operating environment. Evaluation of IS contributes to its success by providing insights that help an organization to improve the functionalities and performance of the IS and thereby fulfill its objectives (Platisa & Balaban, 2009).

Information and communications technology (ICT) has brought a complete paradigm shift on customer service delivery in the banking industry (Tasmin & Aliyu, 2012). Commercial Banks in Kenya, like other market-oriented firms are continuously seeking to identify, understand and satisfying customer desires so as to nurture long-term customer relationships in a way that is also profitable (Slater & Narver, 2000). According to Ramayah et al (2010), service delivery is the business component that is concerned with the interaction between providers and clients where the provider offers a service, and the client either finds value or loses value as a result. Quality of service delivered is known to be an index of an organization's competitive advantage.

Evaluation of an IS by an organization is important in examining growth performance and service delivery resulting from specific ICT projects. Cytonn (2018) observed that commercial banks in Kenya depend for their growth and sustainability on four drivers. One key driver is increased adoption of technology to improve efficiency. The other drivers are innovation, diversification of revenue streams and growth of the middle class.

In view of the great value attached to IS in the modern organizations, this study intends to explore how post implementation evaluation impacts IS success and by extension service

delivery. The investigation will be informed by two theories namely: the DeLone and McLean IS success model and the Organization Learning theory. Unlike systems like Enterprise Resource Planning (ERP) and Health Information System (HIS) which have been adequately studied, there is an observed shortage of literature on core banking systems (CBS) and this has informed the focus of this study.

### **1.1.1 Evaluation of Information Systems**

Beynon-Davies et al (2000) described evaluation in general terms as the process of assessing the worth of something. Evaluation of information systems has been considered as the process of establishing the worth of IS projects to an organization using quantitative and/or qualitative techniques (Willcocks, 1992). Al-Yaseen et al (2004) considered evaluation of IS as the process of determining what a system accomplishes in comparison to its stated goals. Evaluation focuses on the impact that an IS has in an organization's performance. Gemmill and Pagano (2003) asserted that after critical business systems have been implemented in an organization, there should be evaluation conducted not as a reaction to a major crisis but as the norm.

Evaluation of an IS is a process that can take place continuously or at different points within a project. Al-Yaseen et al (2004) and Yusof et al (2008) posited that at different stages in the lifecycle of an IS project, there should be specific type of evaluation that is performed. This would provide the opportunity to have different views of the evaluation process. According to the timing, evaluation has been generally differentiated as evaluation before (ex-ante evaluation), during (continuous evaluation) and evaluation after (ex-post evaluation) the implementation of an IS project (Remenyi, 1999). Ex-ante evaluation is considered as the predictive evaluation performed in order to estimate and evaluate the impact that an IS will have in future while ex-post evaluation assesses the value of an already implemented IS.

Ex-post evaluation also referred to as post implementation evaluation or retrospective evaluation is usually concerned with assessing financial and non-financial value of an IS after its implementation (Remenyi, 1999). Kaplan and Maxwell (2005) noted that post implementation evaluation of IS focus on impacts such as costs and benefits, timeliness,

completeness, error rates, user satisfaction, and behavior changes of the users. Various researchers such as Al-Yaseen et al (2004), Gemmell and Pagano (2003) have considered ex-post evaluation in terms of what an IS accomplishes in relation to its stated goals, whether it has closed gaps in data integrity issues, whether it is offering scalability and flexibility for the organization to quickly roll out solutions that meet customer needs and what is the users' perception of its overall effectiveness post implementation evaluation should therefore be both qualitative and quantitative so that it can bring out all aspects of how successful the project was.

Ex-post evaluation should also determine if an organization has reaped any benefits that improve efficiency and effectiveness of its operations. A study done by Bahia and Nantel (2000) proposed six attributes that can be used to evaluate an IS namely: accessibility, reliability, cost, effectiveness and assurance, tangibles and service portfolio. System uptime, availability and ease of interfacing to new technologies while being secure should also be key parameters that are evaluated since they have direct impact on service delivery.

### **1.1.2 Service Delivery**

Cambridge Dictionary defines service delivery as the act of providing a service to customers, (Cambridge University Press, 2008). Ennew et al (2016) noted that service delivery has been increasingly identified as a key factor in differentiating organizations and building competitive advantage. Organizations are adopting the increased functionalities of systems and the power of ICT to improve their service delivery (Coombs & Miles ,2000).

According to Scheneider and Bowen (1985) Service delivery involves customers and employees. Service delivery is affected by technologies adopted by an organization from perspectives of both the employees and customers who are the main users of the IS in place. Service delivery and customer satisfaction are highlighted by Tasmin and Aliyu (2012) as key parameters that firms use to ascertain how technology is effective in furthering their objectives of increasing market share through customer acquisition and retention.

### **1.1.3 National Bank of Kenya**

According to the Central Bank of Kenya (2018), there are 42 commercial banks in Kenya. Jointly, commercial banks own total assets of Kes.4.27 Trillion. National Bank of Kenya (NBK) is one of the public institutions and its audited books reflected assets worth Kes.114B as at end of 31st Dec 2018, (National Bank of Kenya, 2019). NBK is a public commercial bank in Kenya that is licensed and regulated by the Central Bank of Kenya to offer banking services to the public. It was incorporated in 1968 with a main objective of helping Kenyans to access credit so that they can control their economy after independence (National Bank of Kenya, 2012). NBK was initially a wholly-owned by the Government of Kenya but its ownership has been changing significantly since its listing at the Nairobi Stock Exchange. According to Central Bank of Kenya (2019), NBK is now wholly-owned by KCB Group a Kenyan non-operating holding company that owns banking subsidiaries in Kenya, Tanzania, Uganda, Rwanda Burundi and South Sudan.

NBK announced in September 2017 through a press release that it was carrying out a changeover of their core banking system, (National Bank of Kenya, 2017). According to the then bank's managing director, the new Core Banking System (CBS) would enhance the ICT platform to support the bank in its objectives of providing a wider range of product and improving customer experience. The upgraded CBS would enhance digital banking services for the customers and also enable the bank to increase its operational efficiencies and improve its compliance and risk management functionalities. The upgraded CBS was also meant to offer an Islamic Banking module that would seamlessly integrate to the conventional system while at the same time adhering to Shariah compliant practices. With these pronounced objectives, it will therefore, be possible to focus on whether post implementation evaluation of CBS was conducted, whether it focused on all aspects and whether it has had any impact on service delivery. It is nearly two years since the bank upgraded its CBS and this is a good duration to gather information about all aspects of this study.

## **1.2 Research Problem**

There is increased concern that IS projects do not deliver the benefits promised by project champions and the vendors (McKay & Marshall, 2001). This has resulted to managers of firms demanding for ways to evaluate the benefits and costs related to IS projects. According to Irani and Love (2001) and Yaseen et al (2004), there are various difficulties that firms face in measuring benefits and costs of IS and as a result, the evaluation process is not carried out or is carried out in an ineffective manner. Despite the difficulties in carrying out IS evaluation, there is a general consensus that a proper and systematic evaluation must take place prior to IS deployment, during implementation and after implementation (Remenyi, 1999).

NBK is one of the commercial banks that has carried out a major IS project in the last two years. The bank carried out a core banking system change over project in 2017. According to a news article “ICT hitch stalls customers at NBK” appearing in the Business Daily (2017, September 13), following the changeover of the NBK’s CBS, there was service outage which persisted for three days leaving thousands of customers stranded. This study will establish whether, the bank conducted a post implementation evaluation and if they did, what the impact on service delivery in the bank was.

Previous studies in relation with post implementation evaluation of information systems have been conducted by various researchers. According to studies by Gwillim et al (2005); Gomez and Pather (2012); Thomas and Fernandez (2008), in spite of the reported high value assigned to ex-post evaluations, only a handful organizations undertake it in practice. The same studies also identified barriers to post implementation evaluation of information systems. The barriers identified were related to negative perceptions by managers that there is no value or impact that such evaluation would have to the organization. Other studies by researchers such as Gable et al, 2008); Irani and Love (2001) had sought to determine whether there is a way to reliably measure impacts of ICT to organizations. The scope and approaches of IS evaluation studies vary and the researchers have had divergent views on appropriate measures of IS success.

Waema & Mwamburi (2009) carried out case study on seven Kenyan universities to establish the level of IS evaluation that was being carried out in institutions of higher learning. Ondego and Moturi (2016) carried out a case study on evaluation of the Kenya e-Citizen platform, an IS project whose objective is to offer Kenyan citizens an online gateway to government services. In both studies, they found that there was adequate ex-ante evaluations for the two IS projects, but on the other hand, they established that little or no post implementation evaluation was carried out. They posited that formal post implementation evaluation should be conducted for all IS projects so as to enable organizations to follow up and properly manage benefits and value that is supposed to be derived from a specific IS project.

Irani and Love (2001) specifically observed that there was limited research in the area of post-implementation evaluation. Waema & Mwamburi (2009) recommended that further research is required on IS projects from a process, outcome and context perspective. This study aims to contribute in closing research gaps by establishing whether post implementation evaluation of IS is being carried out in organizations in Kenya and if it is being carried out, does it have any impact on service delivery.

### **1.3 Research Objectives**

The main objective of this study was to establish the impact of ex-post evaluation of banking systems on IT service delivery of commercial banks in Kenya. Specific objectives were:

- i. To establish the evaluation process and criteria that should be used by commercial banks after implementing crucial banking systems.
- ii. To determine whether the outcome of ex-post evaluation of banking systems has any impact on service delivery in a commercial bank.

### **1.4 Value of the Study**

It is expected that the study will be of significance to commercial banks in Kenya by contributing to a better understanding and knowledge on the impact that ex-post evaluation of their systems would have on service delivery. The study will guide academicians and students on how further research can be conducted to fill any gaps that will be identified in this area of study. The study will also help CBK and the Government of Kenya in formulating guidelines in the area of regulation and security of crucial banking systems.



## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter contains review of literature related to various concepts and previous empirical studies that are pertinent to this study. It also contains a review of theories and models that have guided this study. It also highlights the research gaps and provides a critique of the theoretical and empirical literature.

### **2.2 Ex-Post Evaluation**

In the early days, success or failure of information system projects was determined by how the project adhered to set time schedule, budgeted costs and delivery of functionalities within the predetermined scope. Project managers were concerned with whether various phases of a project namely initiation, planning, execution and closure were handled within tolerable constraints of time and budget. According to Belassi and Tukel (1996), there was a tendency to measure success of projects based on how well planning techniques and tools such as Critical Path Method (CPM), Gantt charts and Program Evaluation Review Technique (PERT) have been applied in a project. Stakeholders had a deep conviction that good use of such tools led to better project management which resulted to project success. In many firms, IS evaluation was based on finance and economic based techniques such as cost benefit analysis and returns on investment (ROI). However, Wateridge (1995) observed that despite such scientific tools being applied by project managers, information system (IS) projects have continued to give stakeholders unsatisfactory results. According to the Standish Group (2015), 71% of projects failed or had major challenges upon completion. In modern days, any IS is considered a social system designed, used and influenced by people and therefore should be evaluated as such (Orlikowski & Iacono, 2001).

There is adequate literature from various studies describing how success of ICT projects is measured. Sauer et al (2007) provided a benchmark for successful IS projects which concluded that experienced project managers should be delivering two out of three projects within 7% tolerance of the original budget, schedule, and quality. Ceric (2015), however, observed that besides the three project implementation parameters, there are other critical factors that should be evaluated post implementation of any information system. According

to Gupta and Jalote (2008), a good evaluation framework should provide analysis of customer satisfaction levels. The framework would also identify the relationships between those satisfaction levels and system functionalities. It should also identify issues that are in critical need of attention, critical areas of improvement, and identify trends across various respondent profiles. Whyte and Bytheway (1997) had provided a framework for assessing systems using twenty-one attributes which mostly influenced users' perception of the overall effectiveness of a system. They also provided three key elements relevant to evaluation of a system – the Product, the Service and the Process. Prat, Comyn-Wattiau and Akoka (2014) provided a hierarchy of evaluation criteria for information systems. The hierarchy has 20 evaluation attributes that are grouped into 5 system dimensions namely goal, environment, structure, activity and evolution. Another researcher Gichoya (2005), posited that the best way to evaluate an IS after implementation is by reviewing the end products of IS which are the perceived benefits. Perceived benefits include provision of complete and useful information in a timely manner, ease of communication and system integration.

Organizations evaluate their IS for various reasons and research on evaluation of Information Systems has been ongoing for over three decades, Melville et al. (2004). Evaluation process of IS, is a fundamental and critical activity that needs to be conducted thoroughly in all phases of an IS project to ensure that it will deliver a solution that builds a strong reputation with the customer, (Irani, 2002). According to Conford and Klecun-Dabrowska (2001), evaluation of IS is a complex and challenging activity, and there is no established ideal way of carrying it out. Evaluation can focus on two categories of impacts namely financial and non-financial impacts Walter and Spitta (2004). The researchers, however, recommended that further in-depth empirical research on ex-post evaluation should be conducted to give a holistic view as to why and with which problems do practitioners employ different evaluation approaches.

## **2.3 Service Delivery**

Many authors and researchers such as Schneider & Bowen (1985); Tasmin and Aliyu (2012) have viewed good service delivery as provision of service that is dependable, reliable, flexible, expandable, affordable, and consistent over time at a location that suits the customers. An IS that helps in service delivery is one that provides information that is authentic, credible and useful to the user which is presented in format that can be understood (World Meteorological Organization, 2014). In banking, Beck et al (2005) observed that some of the indicators of effective service delivery in banking are reduced cost of services to customers and increased use of banking services. According to Okoe et al (2013), low quality services in banking sector is as a result of lack of necessary ICT infrastructure. To improve service delivery, many organizations are adopting technology. ICT aids firms in their market-oriented approach in order to win and retain customers (Okoe et al 2013). Lepmets et al (2014) developed a service quality measurement framework for IT services where they categorized IT service quality measures into intrinsic and extrinsic measures. Intrinsic measures relate to quality of the IS and process quality while extrinsic measures consider customer satisfaction.

## **2.4 Theories and Models**

This section will deal with theoretical framework supported by a number of authors' views on the impact of ex-post evaluation of IS on service delivery.

### **2.4.1 DeLone and McLean Information Systems Success Model**

The DeLone and McLean Information Systems Success Model is arguably the most used model for the specification and justification of measuring dependent variables in information systems research. The model concluded that IS success is a multidimensional and interdependent construct, (DeLone & McLean, 2003). It provides six categories of measuring IS success as shown in figure 2.1 and asserts that the interrelationships among all the six dimensions must be taken into considerations and be systematically combined in order to come up with a comprehensive IS evaluation framework.

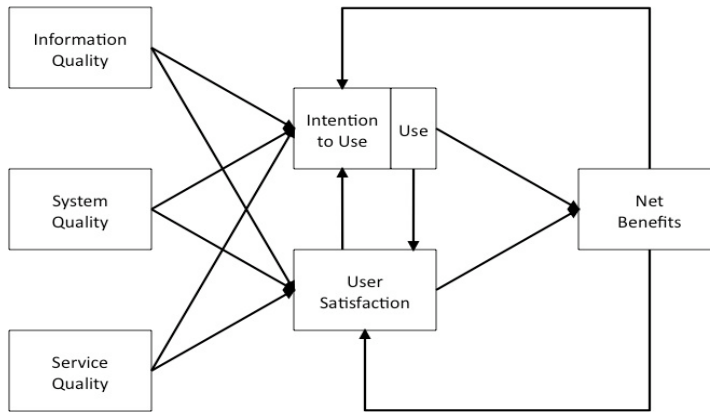


Figure 2.1: The Updated DeLone and McLean Information Systems Success Model (Source: DeLone & McLean, 2003)

Petter & McLean (2009) observed that since businesses have become more reliant on ICT in achieving success within their organizations, evaluation is necessary to determine if an IS is effective. The authors concluded that DeLone and McLean IS success model provides a framework that can assist in understanding effectiveness of an IS. Seddon & Kew (1996) tested the DeLone and McLean IS Success Model and concluded that system quality, information quality and usefulness of an IS contributed about 75% to the understanding of the overall user satisfaction. They however observed that a system that performs more important tasks is perceived to be more useful irrespective of its quality and therefore they added a category which they referred to as system importance.

The DeLone and McLean model has been criticized by several researchers who feel that the use construct is an inappropriate measure of IS success, (Gable et al, 2003). According to Seddon (1997), use of many information systems that are implemented by organizations is mandatory and therefore the extent of their use provides little information that lead to the determination of success levels. The type of IS being investigated in this study is one whose use is always mandatory and therefore there is a gap to be filled by establishing an appropriate model of ex-post evaluation for CBS.

The model will be very useful in this study because it will guide the researcher to determine whether the constructs and measures that were considered in the post implementation

evaluation done at NBK for the core banking system were systematically selected. Inquiry will be made to determine whether contingency variables such as the bank's size and structure, existing technological platform were considered during the evaluation. This study will utilize the DeLone and McLean IS success model because as Seddon and Kew (1996) observed, the model contributes to the understanding of IS evaluation by providing classification for the many IS evaluation measures and the interdependencies among the constructs.

#### **2.4.2 Organizational Learning Theory**

According to Zahller (2011), organizational learning theory states that organizations must change their goals and actions to reach those goals in order for them to be competitive in a changing environment. Tsang (1987) analyzed definitions of organizational learning by many researchers and found that majority of them entailed aspects that are concerned with knowledge, understanding and insights on one hand and behavioral changes in the organization emanating from lessons learnt on the other hand.

Pentland & Feldman (2005) observed that an IS project is a learning process at all stages. At post implementation stage, evaluation of an IS would typically result into documenting the information processing patterns and capacities of an organization, a critical element in traditional learning models. A typical example of organizational learning is that after an IS evaluation, the organization will realize that there are changing requirements which must be adapted to. Documentation of findings of the post implementation evaluation provides key lessons that can be used to improve project management processes within an organization. While an organization goes through a process of adapting to the new IS, Weick (1979) cautioned that an organization that adapts very well to its surrounding environment may be unable to adapt when the environment changes. As such, an enterprise that has just deployed a new IS should carefully consider the type of changes in the organization that have been necessitated by the new system (Baker, 2011).

One shortcoming in applying the Organization Learning theory to determine the impact of post implementation evaluation of an IS is that organization learning is a result of individual learning, (Nicolini & Meznar, 1995). There is need for more research to establish whether,

for example, post implementation evaluation of an IS can have an impact on project management processes based on documented lessons even though not many individuals in the organization get to learn that such an evaluation was carried out. The other problem with organization learning theory as observed by Pentland (1995) is that despite its intuitive connection with information systems, constructing a systematic framework within which the connections can be analyzed is difficult.

Despite, the aforementioned challenges, the theory will be applied in this study to investigate whether the organization under study documented lessons and/or made any adaptive changes following the post implementation evaluation of their core banking system.

### 2.4.3 IS-Impact Conceptual Model

A model developed by Gable, et al (2008) referred to as IS-Impact conceptual model is also appropriate in providing theoretical background of post implementation evaluation of IS. The authors noted that after an IS project, most organizations will ask themselves whether the new system has had any positive impact. The organization will expect that the investment, being long-term will yield continually flowing benefits in the future.

The model has 27 IS impact measures which were categorized into four constructs namely: individual impact, organizational impact, system quality and information quality, (Gable et al, 2008). This model got endorsement by researchers such as (Petter et al, 2012) who described it as “one of the most comprehensive, and comprehensively validated IS success measurement models”. Figure 2.2 is the model showing central connection between impacts to date and quality, thereby offering a holistic measure for evaluating an IS (Gable, et al., 2008).

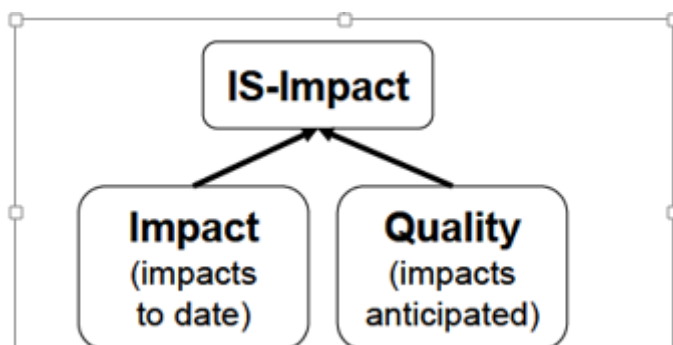


Figure 2.2: The IS-Impact Conceptual Model (Source: Gable, et al, 2008)

One of the shortcomings of this model is that it proposes evaluation of the impact of an IS as at specific date. Researchers such as Kaplan & Norton (1992) had observed that in practice, evaluation process should take a balanced score card approach with a feedback loop from evaluation. Improvements in the IS are done simultaneously with the evaluation, (Petter et al, 2012). However, this model is still applicable to this study in that it will guide the researcher to investigate success of the IS from the impacts anticipated and the benefits realized as at the time of evaluation.

## **2.5 Empirical Review of Post Implementation Evaluation of IS**

In this section, a few empirical studies as well as case studies are reviewed within their contexts and focusing on identified outcomes.

Studies by Zhu et al (2010) and Al-Yaseen et al. (2010), though their context were different posited that managers are searching for appropriate ways to carry out evaluation of IS projects after implementation so as to ascertain the value they offer organizations in order to justify continuous expenditure on IS. They also provided insights on factors that should be considered in ex-post evaluation. Such factors include organizational readiness, vendor support and how users have adjusted their original operational processes to effectively use the new system. Zhu et al (2010) had studied what led to post-implementation success of ERP systems in the Chinese retail industry. In the research, 100 retailers who had deployed ERP systems were studied. The researchers highlighted the importance of evaluating how effective project management was during implementation and also need to review if there are sound system configurations in place. Al-Yaseen et al. (2010) had carried out a study on post-implementation evaluation of health care IS in developing countries. The study found that only about 31% of health care institutions carried out any type of IS evaluation.

Case studies by Beimborn et al (2007); Mandal and Gunasekaran (2003) provided good insights on aspects of IS ex-post evaluation where they posited that ICT alignment to business objectives should be assessed after a new IS has been implemented. They observed that measuring the effectiveness of a new IS is done by asking questions such as whether the objectives of the new system were realized fully, whether all system functionalities are

available and whether the estimates and project information were accurate. Mandal and Gunasekaran (2003) had studied how a water company that served a whole state in Australia managed a full implementation of an ERP system. The study concluded that since requirements of IS and organization structures usually change continuously even after completion of a project, ex-post evaluation activities are key to the acceptance of any new IS. Beimborn et al (2007) had carried out a case study of how a new credit system affected customer satisfaction in a named German credit cooperative bank.

A case study by Taye (2016) was conducted to investigate the effectiveness of Core Banking System (CBS) in Ethiopia with particular reference to Buna International Bank. The case study is close to the research problem in that it focused on post-implementation evaluation of a CBS and the impact of such activities to service delivery for an Ethiopian bank. The research followed CBS implementation project that had been implemented in 2012. It recommended use of six parameters to determine effectiveness of all the system modules. These parameters were flexibility, cost, speed, reliability, assurance and awareness. The study established that customer service delivery was adversely affected after the new CBS was implemented. Reliability of the system was rated low by the respondents who lamented on frequent unavailability of ATM services following the implementation of the new CBS. Positive impact on service delivery was noted by cost reduction where customers felt that they could access banking services via POS and online banking without travelling to a branch.

## **2.6 Summary of the Literature Review**

This chapter focused on various aspects of post implementation evaluation for information systems. From the literature reviewed, it is evident that the purpose of such evaluation is to establish whether an IS project has had impact to the organization. The evaluation is also meant to document lessons that can help the organization in improving the new IS and also improve in management of future IS projects. Various attributes of an IS that should be evaluated after implementation include the user perception, the system functionality, costs, benefits and lessons. The key attributes have been used in developing the conceptual model of this study.



From the various empirical studies as well as case studies that were reviewed, it is clear that there is adequate literature that focused on what attributes should be evaluated and also on the impact of various information systems to organizations. There is also adequate literature on why organizations are not carrying out post implementation evaluation and what should be done to encourage more managers to carry out such evaluations. The research deficiency noted and which becomes the focus of this study is to investigate whether organizations that have conducted post implementation evaluation reaped any benefits from such efforts and what was the impact of that evaluation to the overall success of the IS project.

There are many researchers who have recommended that in-depth studies should be carried out to outline a practical model that can inform decision makers on the benefits of conducting systematic and formal post implementation evaluation.

## **2.7 Conceptual Framework**

According to Kombo and Tromp (2009), a conceptual framework can be termed as a set of broad ideas and principles accrued from an inquiry of relevant fields which is used to lay a structure for presentation. It is therefore a tool used in undertaking research whose purpose is to aid a researcher to effectively communicate and provide deeper understanding of the field being scrutinized.

Conceptual framework for this study is derived from studies by researchers such as Irani and Love (2001) and Green and Keim (1983) who suggested that post-implementation evaluation has numerous possible outcomes that would benefit an organization such as improvements in subsequent IS projects practice, evaluation of staff and stakeholders involved in all phases of IS project, quality assurance in complying with user objectives, improvements in the effectiveness and productivity of the IS and cost savings. Figure 2.3 is the conceptual framework for this study.

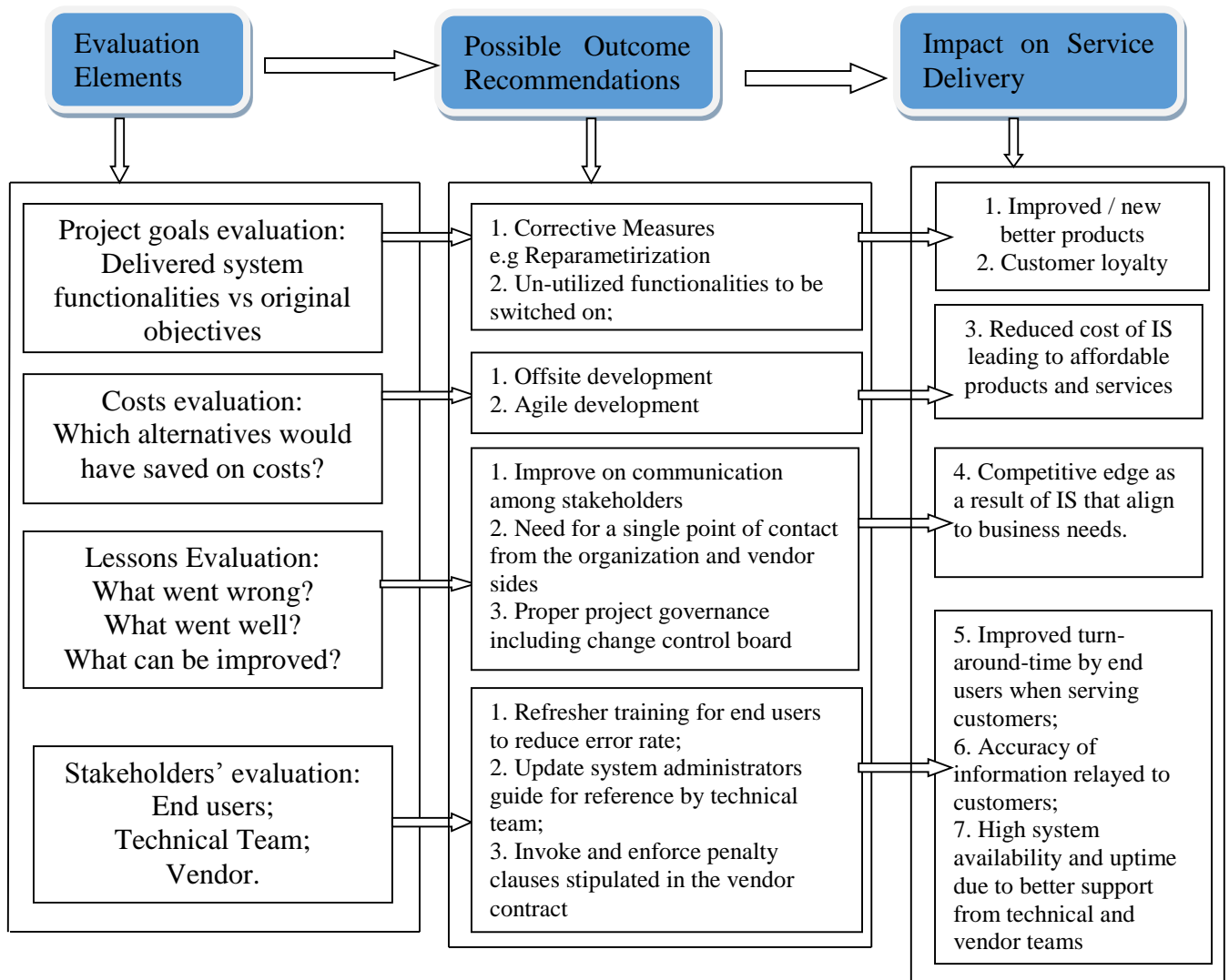


Figure 3: Conceptual Framework: Adapted from Irani & Love (2001).

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter covers the research methodology that was used in the study. It begins by describing the research design and the justification of the selected design. The chapter then outlines the selection criteria of the subjects of study. Finally, the chapter describes the data collection techniques and tools that were used, and how the data was analyzed.

### **3.2 Research Design**

A research design is the framework that relates the problem statement of the study to the data to be collected and the conclusions to be drawn from the findings (Rowley, 2002). Creswell (2003) described research design as the framework and methods adopted by researchers to highlight all facets of their studies which include assessing the general philosophy behind the inquiry as well as detailed data collection and analysis procedures. Research design allows researchers to make their plans in ideas that are grounded in appropriate literature which is recognized by the audiences that read or support the proposals for research. According to Kothari (2004), research design guides the researcher on how to collect, analyze and interpret the data in a manner that is coherent.

The study was a qualitative research that followed explanatory strategies focusing on research area of banking system which is relatively not known well. It was a study which sought to explain the impact of ex-post evaluation of core banking system on service delivery in commercial banks in Kenya. The researcher explored in depth the events, activities and processes of ex-post evaluation in one commercial bank. The use of a case study was found to be a suitable methodology since according to Rowley (2002) and Stake (1995), case studies are suitable for exploratory, descriptive or explanatory research because they provide answers to 'How?' and 'Why?' questions. Further, according to Ghauri (2004) when the area of research is relatively not well known, case studies are very useful.

### 3.3 Case Study Selection

The study used National Bank of Kenya as the case study. The choice of NBK is consistent with the research question in that it is among the commercial banks in Kenya that have recently carried out a major core banking system implementation project.

### 3.4 Data Collection

Primary and secondary data was collected from multiple sources such as personal interviews and perusing project documents. There was focus on individuals, groups and the organization as a whole. Primary data was collected through open-ended interviews. Though there were various data collection tools that would have been used, the researcher preferred interviews as recommended by Yin (2003) since respondents' knowledge and perceptions was a critical part of the data required from the respondents. Open-ended interviews helped to gather the respondent's views and experiences in their own words, instead of forcing their responses to fit into choices among categories that have been pre-established (Kaplan & Maxwell, 2005). The interviews were conducted to sixteen respondents from various categories of bank's officers as shown in Table 3.1.

*Table 3.1: Interview Respondents Matrix*

<b>Respondent Category</b>	<b>Total Number of bank officials in the category</b>	<b>Number of Respondents</b>
Executive Management	12	3
Managers from support functions	24	3
Customer facing officers at Head Office	34	4
Project Team Members	18	2
System users at Head Office	72	4
<b>Totals</b>	<b>164</b>	<b>16</b>

Secondary data was collected from various project documents relating to the core banking system upgrade project. Other bank documents such as customer feedback surveys, helpdesk reports, audit reports and risk logs that may have contained information relating to the NBK project could not be accessed.

### **3.5 Validity and Reliability**

According to Yazan (2015), a case study should ensure the data collection tools should maximize four conditions related to design quality namely: construct validity, internal validity, external validity, and reliability. Validity is when outcomes obtained from the data analysis represent the phenomena under investigation, (Mugenda and Mugenda (2003). Reliability is the extent to which a research instrument gets similar results after repeated judgements, (Kothari 2004). In order to ascertain the validity of the constructs, the researcher when conducting the interviews clarified the meaning of the statements that were being offered by the respondents. The researcher endeavored to increase the reliability of collected information by pursuing comparable feedback from different respondents. This was done by comparing and contrasting feedback from two or more participants from the same department in the bank and also by collaborating it with data available in the documents that were perused.

### **3.6 Data Analysis**

Yin (2003) contends that there are five techniques from which a researcher can choose to analyze data collected from case studies. The techniques are: explanation building, pattern matching, logic models, time-series analysis and cross-case synthesis. These techniques can be applied within any of the three general strategies of analyzing case study evidence namely: developing a case description, relying on theoretical explanations and thinking about rival explanations (Yin 2003). The strategy that was applied in analyzing data for this case study was developing a case description using explanation building techniques. The data gathered was first analyzed to construct explanations and a case description so as to make complicated aspects of ex-post evaluation understandable. Classical content analysis techniques was used as proposed by Kohlbacher(2006) where the researcher reduced texts to produce a matrix of unit-by-variable using codes of interest that were deduced from the conceptual framework of this study. The outcome of the data analysis was a model that explains the impact that ex-post evaluation had on service delivery at NBK during the core banking system upgrade project.

## CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATIONS

### 4.1 Introduction

This chapter presents the findings and analysis of data collected as per research methodology set out in Chapter three. Data was gathered from interviewing various officials of National Bank of Kenya who had been selected based on their involvement in core banking system upgrade project. There was secondary data collected from project documents that was used to validate the respondent's responses. Data analysis is done as per recommendations by Ghauri (2004) in that it starts with simple narrative about how ex-post evaluation was carried out. The next step is to rearrange data and code it into conceptual categories or thematic areas so that it can be interpreted and related to the research questions.

### 4.2 Respondents Characteristic

#### 4.2.1 Functional Divisions of the Respondents

Primary data of the study was collected by interviewing sixteen respondents that were selected from eight out of twelve divisions of the bank as shown in Table 4.1. The study achieved a response rate of 100 percent from the targeted respondents.

*Table 4.1: Distribution of Respondents across Bank's Division*

<b>Division</b>	<b>Frequency</b>
Managing Director's Office	1
Finance Division	2
ICT Division	3
Credit Division	2
Operations Division	3
Retail Banking Division	3
Islamic Banking Division	1
Risk and Compliance	1
<b>Total</b>	<b>16</b>

Source: Research Data

### 4.2.2 Management Level

In this section, the study aimed to establish the respondents' cadre in the bank. The results are given in Table 4.2.

*Table 4.2: Management level of the respondents*

Management Level	Frequency	Percentage
Executive Management	3	19
Senior Management	5	31
Mid-level Management	4	25
Non-Management	4	25
<b>Total</b>	<b>16</b>	<b>100</b>

Source: Research Data

From Table 4.2, it was clear that management levels of the respondents were well distributed with 50% being on top management and the other 50% being in low level of management.

### 4.2.3 Banking Systems Experience

In this section, the study aimed to establish the respondents' experience with banking systems. The results are given in Table 4.3.

*Table 4.3: Banking systems experience of respondents*

No. of Years	Frequency	Percentage
Less than 5 years	3	19
5-10 years	5	31
10-20 years	5	31
Over 20 years	3	19
<b>Total</b>	<b>16</b>	<b>100</b>

Source: Research Data

Table 4.3 shows that the selection of the respondents followed a normal curve and therefore their responses could be deemed as fair representation of the views of the unit of the study.

### **4.3 Ex-Post Evaluation of Banking System at National Bank of Kenya**

The study established that National Bank of Kenya (NBK) implemented a new core banking system (CBS) in September 2017. The implementation project had commenced in July 2015. This section is the case description of how ex-post evaluation was carried out at NBK.

#### **4.3.1 Project Objectives**

According to the executive managers who were interviewed, the main objective of the project was to offer the bank a system that would resolve the many pain points that were being experienced by users because of shortcomings of CBS that was in place then. Different respondents had different specific objectives that they wanted achieved by the implementation project. For instance, one senior manager in the operations division said that his main objective was to have improved efficiency in the back office processes by introducing as many straight through processes in the system as possible.

Respondents from finance division explained that their main objective was to have better system parameters that would enhance management information for accurate and timely reports. The project manager and another respondent who was part of the project team said that their objective was to deliver the new system within the defined scope, schedule and costs. Respondents from retail division said that their objectives were to ensure that customer service was enhanced through reduced downtimes of the system and easy to use functionalities which would improve turn-around time per transaction. They also wanted to ensure revenue collection in the system was guaranteed. Other objectives that were highlighted by the respondents include enhanced security of the system, resolution of data integrity issues, compliance to statutory regulations and integration capabilities.

#### **4.3.2 Ex-post Evaluation Process**

After the new CBS was implemented, the project team embarked on what the project manager who was a respondent in this study termed as “post go-live activities which were primarily meant to determine if the new CBS had been properly implemented”. According to data collected from the respondents of this study, ex-post evaluations commenced almost immediately after the go-live of the new CBS. Various bank divisions had appointed



representatives to work with the project team and the system vendor to check on whether the system was working well. Representative from finance informed the researcher that immediately after the go-live of the new CBS they noticed anomalies in the mappings of the chart of accounts which required urgent remediation. A respondent from retail division said that from their perspective, “a few hitches were experienced in the first three days, but thereafter, to a large extent, the new CBS enabled users to serve their customers seamlessly although there were some product mapping and other parameters that required to be corrected”. A respondent from Islamic banking division expressed frustrations on how their customers were suffering because their data was not properly migrated from the previous system.

Following many such complaints from various stakeholders, the executive and senior management of the bank had to sanction a workshop to evaluate the whole CBS implementation. The workshop was held in May 2018 which was eight months after go-live of the new CBS. All affected divisions of the bank were asked to nominate representatives who together with the project team and representatives from the system vendor company held formal and extensive discussions on all the functionalities of the system that had been scoped and whether they had been delivered in the new CBS. Most of the respondents considered this workshop as the actual ex-post evaluation that was carried out.

#### **4.3.3 Ex-post Evaluation Elements**

Respondents also explained that they had specific elements of the evaluation that they were interested in. The project team members expected the evaluation to focus on project objectives. That is, was the new CBS delivered on schedule and did it deliver the scope that had been defined for it? The project manager also hoped that the evaluation would enable him “to document lessons from the project that would help in subsequent projects”. According to a respondent from the finance division, they wanted the evaluation “to determine if the chart of account that they submitted to the project team is actually what was implemented”.

The credit division representative explained that they expected evaluation to focus on integrity of loans data and ease of use of the system among other elements. Accuracy of information stored in the new CBS was an evaluation element that was mentioned by all the

executive management respondents. Mid-level managers and non-management staff who were interviewed expressed their views that usability of the system and improved functionalities were the elements that they wanted to be focused on during the evaluation. Respondents from finance and retail divisions mentioned revenue collections improvements as a key element of ex-post evaluation.

There were a few mentions of evaluating the cost savings that the new CBS had brought. This came mainly from executive and senior managers who participated in the study. Several respondents especially from operations and credit divisions wanted improved efficiency in processes to be part of the new CBS evaluation. Risks and vulnerabilities that the new CBS exposed the bank to also required to be evaluated. This was according to respondents from risk and compliance, ICT and Managing Director's office.

A few respondents especially from retail and Islamic banking divisions wanted an evaluation of whether users were well trained to use the new CBS as well as capacity of the bank's ICT team to support the users whenever they had system issues. A respondent from finance division expected an evaluation of whether the vendor deserved to be paid all his dues based on how they were supporting the bank after the new CBS went live.

#### **4.3.4 Benefits of the Ex-post Evaluation**

The study sought to determine if the participants of the evaluation process had specific benefits that they expected to realize as an outcome of the evaluation process and whether the benefits were actually realized. Many respondents expected that the system would offer more accurate information after the evaluation. A large number also explained their expectations in terms of the system offering improved and efficient processes and also becoming easier to use. The other expected benefit of evaluation and which was highlighted by the retail division representative was that "the products available in the system would be relevant and flexible". Respondents from retail division and the executive management expected the evaluation to resolve revenue leakages in the system and improve revenue collections.

Most of the respondents explained that they expected the evaluation to result into actions that would lead to resolution of the outstanding issues that they had reported. After the evaluation,

a good percentage of the users felt that the expected actions were taken but could not totally resolve the issues. Respondents had varied opinions with some saying that the evaluation helped in a big way while others felt that there was just some little impact. To validate the respondents' views, the researcher perused project documents such as the post go-live issues log. It was noted that during the formal ex-post evaluation workshop, there were 226 open issues that required resolution. Out of the 226 issues, 28 were marked as critical and required immediate resolution while the other 198 were to be resolved within six months.

After sixty days, the list of critical issues had reduced to thirteen which implied that 54% of the issues had been resolved. Review after six months showed that the open critical issues were 7 while other open issues had reduced to 64. In other words 155 issues which translated to 68% resolution after ex-post evaluation. To further determine if the evaluation had helped in resolution of issues, the researcher had also sought to review risk logs and audit report that was done on the system, but was informed that the report is confidential. Such non-disclosure was also a hindrance in accessing customer survey feedback and helpdesk system reports which would have provided a good view on impact of the ex-post evaluation in service delivery at NBK.

Other benefits that were expected by respondents included cost savings, reducing system downtimes, reducing fraud exposure and also help the bank to comply with regulators. The executive management respondents explained that the evaluation should have ensured functionalities that were not being utilized but which would have caused the bank to reduce head count in some divisions would benefit the bank in cost savings. Compliance with the regulators was explained as a factor of timely and accurate reporting which was a factor of data accuracy and efficient processes.

System uptime and availability was explained to be a factor of fine tuning the new system, having well equipped technical staff and also having responsive vendor. Benefit of reduced system downtimes was mentioned by many respondents as one of the factors that would have a great impact to service deliver at NBK.

#### **4.4 Impact of Ex-Post Evaluation of Banking System on Service Delivery**

The main objective of this study was to establish the impact of ex-post evaluation of banking systems on IT service delivery of commercial banks in Kenya. To this end, the study interviewed NBK officials who were involved in an ex-post evaluation of a core banking system implementation project to understand the process and impact.

##### **4.4.1 Process and Criteria for Ex-Post Evaluation of Banking Systems**

The study aimed to establish the evaluation process and criteria that should be used by commercial banks after implementing banking systems. Data that was collected from the respondents contained many aspects of ex-post evaluation process and elements. First, the respondents highlighted that ex-post evaluation of a banking system should commence immediately after the new system is switched on. The study established that like any new system, there were post implementation issues that required to be addressed immediately. Further, the project manager had maintained a log of system functionalities been reported not to work as expected even before the system change over. These issues were recorded as not delivered, but were categorized as not critical for system go-live. Resolution of these issues was being tracked by bank's management and some of the respondents considered this as part of ex-post evaluation.

Respondents of the study observed that immediately after new banking system started being used, there was no focus on elements of ex-post evaluation that are meant to determine if the project as a whole was a success or failure. The focus was noted to be on elements that would ensure services that the bank was able to offer before the new system are still available to the customers. The other element that respondents said must be evaluated immediately after new system is switched on is accuracy and integrity of financial and non-financial data to ensure there was no omissions or unintended changes to data during the migration from legacy system to the new system. The respondents said that after assurance of service availability and accuracy of migrated data, ex-post evaluation can then focus on other elements.

The respondents had many expectations of what ex-post evaluation should have focused on. Some of the expectations were very specific to their functional areas. For example, the

finance representative said that they wanted the chart of accounts built in the new system to be evaluated to confirm that it was exactly what the finance team had requested. The study had to conduct a thorough content analysis of the various responses given by the respondents. The analysis resulted into ten categories of evaluation elements listed below:

1. Accuracy and integrity of data hosted in the system
2. Project Objectives
3. Improved functionalities
4. Efficiency of processes in the new system
5. System uptime and availability
6. Usability of the system
7. Flexibility of customer products
8. Revenue Improvements
9. Cost savings
10. Statutory compliance and Risks mitigation

The study further made an inquiry to find out the extent to which actual evaluation focused on the areas that the respondents had interest in. From the data collected, it was revealed that expectations of the bank officials were highly met during the evaluation exercise. Finally, the study sought to document any challenges or issues that respondents had faced during the ex-post evaluation process. One of the challenges highlighted was time constraints. Individuals who are responsible of ensuring normal business is running as expected are the same individuals that would be required to carry out the ex-post evaluation. The other challenge was vendor related. The respondents explained that detailed ex-post evaluation was carried out when the vendor had already left the site and therefore there were a lot of challenges communicating with the vendor's technical team. The vendor also claimed that most of the system issues that were highlighted by the users were out of scope of the project and therefore could only be resolved at extra costs.

#### **4.4.2 Impact on Service Delivery**

The core objective of the study was to establish whether the outcome of ex-post evaluation of banking systems has any impact on service delivery in a commercial bank in Kenya. Findings from the case study of NBK revealed that bank officials at different management had clear

distinct interest in the evaluation process. For example, executive management was firmly interested in almost all evaluation attributes while non-management staffs were less concerned by aspects such as flexible products, revenue improvements, costs savings and project objectives.

Data collected showed that majority of the respondents expected that ex-post evaluation of the core banking system would focus on improved functionalities. The other most preferred elements of evaluation were usability of the system, uptime and availability of the system and accuracy of data held in the system. These attributes were noted to contribute significantly to service delivery to the bank. Respondents explained that after the evaluation, there were improvements in system functionalities which enabled them to serve their customers better and hence improved service delivery. They further explained that service delivery was also improved after the evaluation because there were reduced system downtimes which ensured that customers could access services throughout the day.

The study also inquired whether ex-post evaluation resulted to some specific actions being taken by the bank. Respondents felt that less than half of the expected actions were taken. The action which was given least attention was data clean-up while revenue assurance review received highest attention. One example that was given by the representative from retail division was that immediately after the new core banking system started being used, a number of existing customers could not use their cheque books because their accounts had been mapped to wrong products. However, re-parameterization was done immediately after evaluation and the customers were able to use their cheque books again and get normal service. This restored their loyalty to the bank.

Another example came from the ICT division who informed the researcher that during post implementation evaluation, it came to their attention that the branches of the bank that operate 24 hours a day had not been informed that the new system was accessible to them for 24 hours 7 days a week. With the legacy core banking system, those branches had to serve their customer off the system from around 10pm to 6am to allow for end of day processing in the system. The new system had capabilities to allow users to connect to it and post transactions even when end of day processing was ongoing. After the evaluation, the

branches were informed of this new feature and were able to offer better services to the customers day and night. Such examples demonstrated that ex-post evaluation had a big impact on service delivery. The respondents of the survey indicated that their perception of how the project met their objectives improved by an average of 12% after the ex-post evaluation. All respondents felt the ex-post evaluation that was carried out had an impact on service delivery.

#### **4.5 Discussion of the Findings**

Researchers in the 20<sup>th</sup> century like Kumar (1990) and Avgerou (1995) had observed from their surveys that ex-post evaluation of information systems was rarely done formally. In the rare cases where it was done, it was for the purpose of formalizing the process of project closure rather than assessing the impact of an IS or its effectiveness, or for organizational learning. Even in the early 21<sup>st</sup> century, very few companies engaged in ex-post evaluation of IS projects according to study by Gwillim et al (2005). The case of NBK, therefore demonstrates a paradigm shift, where organizations put in deliberate efforts to conduct ex-post evaluation of an IS project to assess impact or effectiveness of the new system. However, for NBK, it is evident that formal ex-post evaluation was sanctioned mainly because of the problems that the new core banking system brought about. As such, recommendations by Gemmell and Pagano (2003) that ex-post should be conducted as a normal project process are still not adopted by commercial banks in Kenya.

Recent studies such as those by Venable et al (2012) observed that ex-post evaluation had started to be conducted and there were specific criteria that organizations were following. The criteria included aspects such as cost and time resources that were spent in the project, effectiveness of the new system, risks that the new system exposed the organization to, and benefits of the new system as perceived by stakeholders. Findings of this study revealed that respondents in the bank understood the concept of post implementation evaluation of a system. The participants demonstrated that they had expectations of what the evaluation would focus on, the actions that they would expect to be taken after the evaluation and the benefits to be realized from the process.

Findings of this study reveal that bank’s main aim of carrying out the ex-post evaluation was to determine actions required to ensure that the CBS upgrade project achieved its intended objectives. Gwillim et al (2005) had posited that the main objective of ex-post evaluation should be to measure the actual impact of the project on business performance. This study also confirmed observations by Petter et al (2012) that improvements in IS are done simultaneously with the evaluation. With this finding, the study established that the IS Success conceptual model that was developed by Gable et al (2008) is not an appropriate model to be used for ex-post evaluation of banking system by commercial banks in Kenya. This is because the model presupposes that the impact of a system can be measured at a specific time, yet in reality, banks continuously improve their systems even as evaluation is in progress.

From the study it was clear that the DeLone and McLean Information Systems Success Model as described by DeLone & McLean (2003) is very applicable in ex-post evaluation of banking systems for commercial banks in Kenya. The six distinct dimensions of measuring success of an information system proposed by the model were noted to resonate well with the attributes that were derived from the responses by the participants of the study as demonstrated in table 4.4.

*Table 4.4: Relationship between Evaluation attributes and DeLone and McLean IS Success Model constructs.*

<b>Evaluation attributes</b>	<b>DeLone and McLean IS Success Model constructs</b>
Accuracy and integrity of data hosted in the system	Information Quality
Project Objectives	System Quality
Improved functionalities	
System uptime and availability	Service Quality
Efficiency of processes in the new system	
Usability of the system	User Satisfaction
Flexibility of customer products	Intention to Use
Revenue Improvements	Net Benefits
Statutory compliance and Risks mitigation	
Cost savings	



Evaluation of accuracy and integrity of data hosted in the system could be matched with the Information quality construct of the DeLone & McLean IS success model. The respondents had mentioned in clear statements that ex-post evaluation should have resulted into some data cleansing actions that were meant to avail accurate and timely information to the banking system users and other stakeholders. Project objectives and improved functionalities that were evaluated after implementation of CBS at NBK can be said to have focused on system quality which is the second construct of the Delone & McLean IS success model.

Other attributes of ex-post evaluation in commercial banks in Kenya that were noted from this study were system availability and efficiency of processes. These two attributes were noted to be concerned with service quality. Indeed, when respondents were asked whether ex-post evaluation had any impact on service delivery, these two attributes were mentioned as what determined the impact of evaluation. The other constructs of the DeLone and McLean IS success model were user satisfaction, intention to use and net benefits. These constructs were all noted to match with some attributes that the respondents wanted to be evaluated. Some of the net benefits that were being sought after during the ex-post evaluation were revenue collections improvements, cost savings, control of frauds, risks mitigation and ability to generate accurate statutory reports in a timely manner.

The study could not establish any significant materials that were added to the organizational knowledge of NBK following the ex-post evaluation of CBS project. The respondents informed the researcher that there were no major changes in the organizational structure that were necessitated by the new system. As such, this study could not affirm literature by researchers of organizational learning such as Baker (2011) who posits that an enterprise that has just deployed a new IS should carefully consider the type of changes in the organization that have to be undertaken.

Data collected and analyzed from the study revealed that after implementation of a banking system, ex-post evaluation of core banking system had a great impact to service delivery. This followed a series of corrective actions that were taken following the evaluation. The new core banking system offered enhanced performance, flexibility and real-time interfaces

thereby increasing efficiency in service delivery and ease of access for customers (National Bank of Kenya, 2018).

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents summary of the findings, conclusions and recommendations to policy changes in the banking sector. Major limitations of the study and suggestions for further research are also discussed.

### **5.2 Summary of Findings**

The aim of the study was to establish the impact of ex-post evaluation of banking systems on service delivery of commercial banks in Kenya. To achieve the objectives of the study, the researcher sought to determine how the exercise of ex-post evaluation in a commercial bank in Kenya is carried out as well as the evaluation criteria that are followed. Finally, the study sought to determine if the evaluation has any impact on service delivery in such firms.

From the findings of this study, ex-post evaluation of banking systems in commercial banks in Kenya is currently a well-known concept. Most bank officials at all cadres are aware and involved in the evaluation process after a critical IS system is implemented. The study was able to establish the process followed and criteria used in ex-post evaluation of IS projects in commercial banks in Kenya. Immediately after a new banking system is implemented, there are several functional and non-functional issues that will be reported by different stakeholders. It was observed during data collection that some level of ex-post evaluation will be carried out by default to determine what caused the issues, their impact and how they will be solved. Depending on the number and sensitivity of the issues reported, a formal ex-post evaluation may be sanctioned by the executive management of the bank.

Even before the new system is switched on, project managers of banking system implementation projects in commercial banks will be having a log of known issues that are categorized either as deliverables after new system goes live or issues in a wish list that can be delivered if resources allow. With that, they plan for formal ex-post evaluation of the new system and involve stakeholders from various functional units of the bank to understand their views and ensure the issues are comprehensively addressed. Whether the ex-post evaluation

is sanctioned by the executive management of the bank or as a normal process of project closure phase, it was clear that there will be ex-post evaluation conducted for a banking system.

Stakeholders who participate in the ex-post evaluation exercise will be having their preferred attributes of the system or the project that they wish would become the area of focus. Findings of this study revealed a number of the elements included evaluation of what extent were the project objectives met, system functionalities and usability, system uptime and availability, accuracy of data held in the system, improvements in revenue collections of the system, efficiency of system processes and cost savings among others. It was observed that most of these elements are actually evaluated and stakeholders have expectations that once these attributes are evaluated, some corrective actions should be taken so that the project becomes successful.

The study also sought to determine whether the outcome of ex-post evaluation of banking systems has any impact on service delivery in a commercial bank. From the findings of the study, it was clear that service delivery in a modern commercial bank is a factor of system processes efficiency, functional effectiveness, uptime and availability as well as accuracy of information held in it. Ex-post evaluation focuses on such aspects of the system and where there are observed defects or anomalies; corrective actions should be taken if the evaluation exercise is to be of any impact to the organization. This study established that when ex-post evaluation of a banking system is conducted properly with the inputs of all the necessary stakeholders, followed by appropriate corrective actions, there is a measurable impact to the success of the project and as a result, there is an observable impact in service delivery.

### **5.3 Conclusion**

Commercial banks in Kenya, like many other firms, continue to invest heavily in improving their ICT environment so that they can reap the many benefits of technology such as improved service delivery, increased savings, increased efficiency, decreased transaction costs and improved market performance. However, these benefits can only be realized when IS projects that firms invest in are successful. Ex-post evaluation is a critical activity at the final phase of IS projects that is meant to contribute to success of IS projects. Its main focus

is on impacts of the project such as costs and benefits, timeliness, completeness, error rates, user satisfaction, and behavior changes of the users.

The research deficiency that this study intended to contribute in resolving was to investigate whether commercial banks in Kenya that have conducted ex-post evaluation for their banking systems reaped any benefits from the efforts. The study found out that indeed ex-post evaluation has a great impact to the overall success of an IS project. As evidenced in the data collected, there was improved delivery of service in commercial banks due to improved system functionalities, system uptime and availability as well in improved system usability. Impact to service delivery was observed where corrective actions were taken following the results of the evaluation. On areas where little or no action was taken after the evaluation, there was no observable impact. Commercial banks in Kenya should therefore adopt a structured mechanism of conducting ex-post evaluation of their banking systems and ensure necessary actions are taken after the evaluation so that the exercise impacts positively on service delivery.

#### **5.4 Recommendations of the Study**

Following the findings of this study, it is recommended that commercial banks in Kenya should find ways of ensuring that ex-post evaluation is always carried out for their critical information systems. Since such evaluation has been noted to have a direct impact on service delivery, the banks should include in their project management framework clear guidance on how such an activity should be carried out. Secondly, the Central Bank of Kenya should include in their supervisory policy mechanisms to audit whether banks that implement new banking systems have carried out proper ex-post evaluation. This is important to assure the regulator on the integrity of data held in the new system which is ultimately used in preparation of various statutory reports.

#### **5.5 Limitations of the Study**

The study used case study of NBK to determine ex-post evaluation practices and its impact on service delivery in commercial banks in Kenya. The limitations of the study are inherent from the methodology. By determining the process and elements of ex-post evaluation at

NBK, it is difficult to ascertain that other commercial banks in Kenya would follow same process or use the same evaluation criteria. The other limitation is that data collected could not be represented in numerical form. It was even difficult to express the sample size of this study in simple numerical form. The selection of the respondents may have left out key bank officials who would have proper data about impact on service delivery on the basis that they were not aware of or not involved in the ex-post evaluation of core banking system.

### **5.6 Suggestions for Further Study**

The study used a case study of one commercial bank to examine the process and criteria used by commercial banks to conduct ex-post evaluation of banking system and the impact such an exercise has on service delivery. There should be more research on this area using other approaches such as multiple case studies or a survey. Further research should also be conducted with the aim of developing a working framework or model describing the elements of ex-post evaluation that firms such as commercial banks can use effectively for such evaluation. There should be further research to determine how to overcome barriers to ex-post evaluation and determine ways of ensuring that appropriate actions are executed following the evaluation so as to get maximum value from the exercise. Further research should also be done to determine the impact of ex-post evaluation to business performance and profitability of organizations.

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## **Appendix: Interview Guides**

### **Interview Guide for Executive Management**

1. As a stakeholder of the CBS project, list the objectives that you wanted achieved by the project?
2. Regarding post implementation evaluation:
  - a. Did you sanction post implementation evaluation after the new system went live?
  - b. Which aspects of post implementation evaluation were you most interested in?
  - c. What aspects of evaluation were actually carried out as per your expectation?
3.
  - a. What benefits would you have expected to be realized from post implementation evaluation?
  - b. Which tangible or intangible benefits can you list that emanated from post implementation evaluation?
4.
  - a. Were there specific actions that you expected to be taken after post implementation evaluation?
  - b. Which of the actions were actually taken after the evaluation?
5. Was there any impact to service delivery that you feel are out of the post implementation evaluation that was carried out?
6. Were there problems, issues or challenges faced during post implementation evaluation?
7. To what extent were the initial objectives of the project achieved before and after the post implementation?

**Interview Guide for System users groups, customer facing bank officers and Functional heads.**

1. As a stakeholder of the CBS project, did you have clear objectives that you wanted achieved by the end of the project?
2. Are you aware of any evaluation that was done post implementation of the new CBS? If yes, were you involved?
3. a. Which aspects of the CBS upgrade project would you have wished to see evaluated after the new system went live?  
b. Which of the above named aspects evaluated as per your expectations?
4. a. What benefits would you have expected to be realized from post implementation evaluation?  
b. Are there tangible or intangible benefits that you can list that emanated from post implementation evaluation?
5. a. Were there specific actions that you expected to be taken after post implementation evaluation?  
b. Which of the above named actions were actually taken after the evaluation?
6. Have there been any improvements to the CBS functionalities that were as a result of post implementation evaluation?
7. Was there any impact to service delivery that you feel are out of the post implementation evaluation that was carried out?
8. Were there problems, issues or challenges faced during post implementation evaluation?
9. To what extent were the initial objectives of the project achieved before and after the post implementation?

## **Interview Guide for Project Team**

1. As a stakeholder of the CBS project, did you have clear objectives that you wanted achieved by the end of the project?
2. a) Are you aware of any evaluation that was done post implementation of the new CBS?  
b) If yes, were you involved?
3. a) Which aspects of the CBS upgrade project would you have wished to see evaluated after the new system went live?  
b) Which of the above named aspects were evaluated as per your expectations?
4. a. What benefits would you have expected to be realized from post implementation evaluation?  
b. Were there tangible or intangible benefits that you can list that emanated from post implementation evaluation?
5. a. Were there specific actions that you expected to be taken after post implementation evaluation?  
b. Which of the above named actions were actually taken after the evaluation?
6. Have there been any improvements to the CBS functionalities that were as a result of post implementation evaluation?
7. Were there specific lessons that were learnt and documented from the post implementation evaluation process?
8. Was there any impact to service delivery that you feel are out of the post implementation evaluation that was carried out?
9. Were there problems, issues or challenges faced during post implementation evaluation?
10. To what extent were the initial objectives of the project achieved before and after the post implementation?