Core Banking System Implementation Framework: the Case of Ethiopia

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Abstract

A core banking system networks branches and allows customers to operate their accounts in any of the bank's branches. The objective of this paper is to identify the challenges and the critical success factors during core banking system implementation and to design a core banking implementation framework. The samples chosen for this research includes staff members of 5 banks and external consultants who have participated in the implementation of core banking systems. Purposive sampling, semi-structured questionnaires, semi-structured interviews, and descriptive statistics were used to collect and analyze data. The critical success factors identified in this paper were used to design an implementation framework for core banking system. A two round Delphi method was conducted to validate the implementation framework. The findings of this research will be of use to the banking industry, vendors, and academia for further research.

Keywords: Core Banking System; Critical Success Factors; Critical Failure Factors; Implementation Framework

1. Introduction

Banks are in a dynamic state using information technology to meet business goals, to improve financial performance and stay on top of the competition. Banks are facing challenges in the current environment. Customer needs and expectations are changing rapidly and satisfaction levels decrease by operational issues. Digital channel adoption is growing globally. Bank management teams have to do more as competition continues to escalate among traditional banks as well as ambitious new entrants [1].

A core banking system networks branches and allows customers to operate their accounts in any of a bank's branches. Core banking system is a solution which reduces manual work and increases efficiency. It is an application which is accessed by all of a bank's branches and manages customers' accounts. Core banking functionalities include deposit accounts, loans and payments. These services are made available through multiple channels such as ATM, mobile banking, Internet banking and branches [2]. There are currently 19 banks in Ethiopia. At the time of this research, 17 banks have implemented core banking system. These banks have upgraded their traditional systems to more modern and centralized core processing systems.

But the core banking implementation in most banks face challenges such as budget and time overruns, which are common while implementing a system. Such challenges don't allow banks from growing and giving an efficient and effective service to their customers.

Experience shows that there is a high failure rate of core banking system implementation. It is estimated that 25% of core banking system implementations fail without any results while 50% do not achieve the intended objectives (where cost and implementation time double). Some of the reasons for such failures are insufficient information collected during the requirement gathering phase, the banks don't have clear objective defined, and scope change in the midway of a project. Only 25% of the implementations can be considered successful [3].

This paper identified the challenges faced during core banking system implementation, critical success factors (CSF), critical failure factors and best

practices from literature and designed a core banking system implementation framework.

2. Literature Review

A project is considered to fail when it doesn't bring the expected results and when the implementation team is unable to meet the requirements of time and budget [4]. A project is successful if it satisfies the needs of the intended customers [5].

Most core banking system implementations face challenges midway through the project. This can happen due to lack of coordination and communication between the vendors and the bank's project management team. Inadequate information gathered during the requirement phase, inability of the banks to identify the important requirements, and scope changes are additional challenges faced during a core banking system implementation [3].

Problems which occur during the different phases of implementation include integrating with an ageing existing system in the development phase, seamless and smooth transition with zero error in the implementation phase, user training and coping with resistance to change in process and work culture in the development and testing phases, localization and customization of a solution to suit the unique requirements of a bank, matching expectations and deliverables and incremental changes leading to cost and schedule overruns [6].

Other problems include lack of support and understanding about the relevant details by top management, vendor over promise and over sale, lack of system users to foresee future business expansion and hence failing to provide the information in the requirement analysis document, unwillingness of system users to conduct proper acceptance test, and reduced commitment of vendor in correcting errors reported at the test phase [7].

A research in [8] at the Commercial Bank of Ethiopia in 2013 shows that 38.5% of customers were dissatisfied with core banking system with regards to reduction in error on transaction, improvement of business doings in the bank, and flexibility of service provided. A usability test showed the existence of poor efficiency and low level of satisfaction of core banking systems in commercial banks in Ethiopia [9].

Shin and Lee [10] suggested an application software package life cycle model for applications purchased from vendors. Application software package life cycle model consists of 3 phases: project formulation, application software package selection and acquisition, and installation, implementation and operation.

The implementation methodologies used by Oracle and Temenos outlined some of the critical success factors as roles divided between the bank and vendors. These critical success factors have not been specified as part of the methodologies they use to implement their products. The designed framework in this paper is expected to solve this shortcoming by embedding these critical success factors into the application software package life cycle model for a better and effective implementation of a core banking system.

Not many researches have been done on core banking system implementation issues. There is also no research on core banking system implementation issues done in the Ethiopian context. However, a research result on the impact of core banking system on user satisfaction in Commercial Bank of Ethiopia is presented in [8] and a research result on quantitative usability measurement of core banking system is done in [9].

There are also researches [28, 29, 30] on assessment of core banking solution and impact of core banking on banks' customers and user satisfaction in those banks. A research was also done on risk management practices towards enhancing the success of core banking upgrading projects in commercial banks of Kenya [31].

3. Data Representation and Analysis

The sample consists of 130 staff members of 5 banks (2 public and 3 private) and external IT consultants, who participated in project

implementation. It included 89 core banking system implementation project team members, 9 project managers, and 32 project steering committee members. Semi structured interviews and questionnaires were used as primary data collection methods.

The responses to the semi-structured questionnaires were rated using Likert scale. Descriptive statistical analysis was used throughout the analysis process. A total of 119 questionnaires were distributed but only 77 questionnaires were completed and returned by respondents which is a 65% response rate. Interviewees included 11 employees of the 5 banks. Table 1 shows percentage of sample response by bank. Table 2 shows sample population response by category.

Table 1: Response by Bank

Bank Name	*Response (in %)*
CBE	19
DB	17
NBE	26
AIB	14
WB	18
FFX	5

Table 2: Response by Category

Category	*Sample Size*	*Questionnaires returned*
Project managers	6	4
Project steering committee members	30	18
Project team members	83	55
Total	*119*	*77*

The critical success factors were categorized into 5 and ranked. Rank was given based on the percentage of frequency of agreement given by the respondents for each critical success factor. The survey result shows that out of 15, 10 were identified as critical success factors. Table 3 shows the critical success factors in their categories.

Table 3: Critical Success Factors Identified

Product Selection
Clearly establishing goal, objectives, outcomes and benefits expected from the project before selecting the core banking software and its vendor.
Product Evaluation
Research the success of the short listed vendors and their products.
Requiring short listed vendors to demonstrate proof of concept before the final selection is made.
Top Management Support
Closely monitoring the progress of the project by the project steering committee and by top management.
Project Management
Proper involvement of IT and Project steering committee during implementation.
Minimum customization of the proposed system during implementation.
Involvement of experienced and dedicated core banking project managers.
Organizing experienced and knowledgeable project team for implementation.
Proper and adequate end user training.
Vendor Commitment
Support and commitment of the vendor during the implementation of a core banking system.

4. The Proposed Solution

4.1 Implementation Framework

The designed framework is based on application software package life cycle model. Figure 1 shows the implementation framework, classified into application software package lifecycle model phases and the sequence in which the critical success factors should be implemented. Sequences are represented by the arrows.

Project governance represents “Experienced and knowledgeable project manager” CSF and is the basis

for all the critical success factors. The involvement of the project manager from "Project formulation" up-to "installation, implementation and operation" phases plays a vital role in the success of a project.

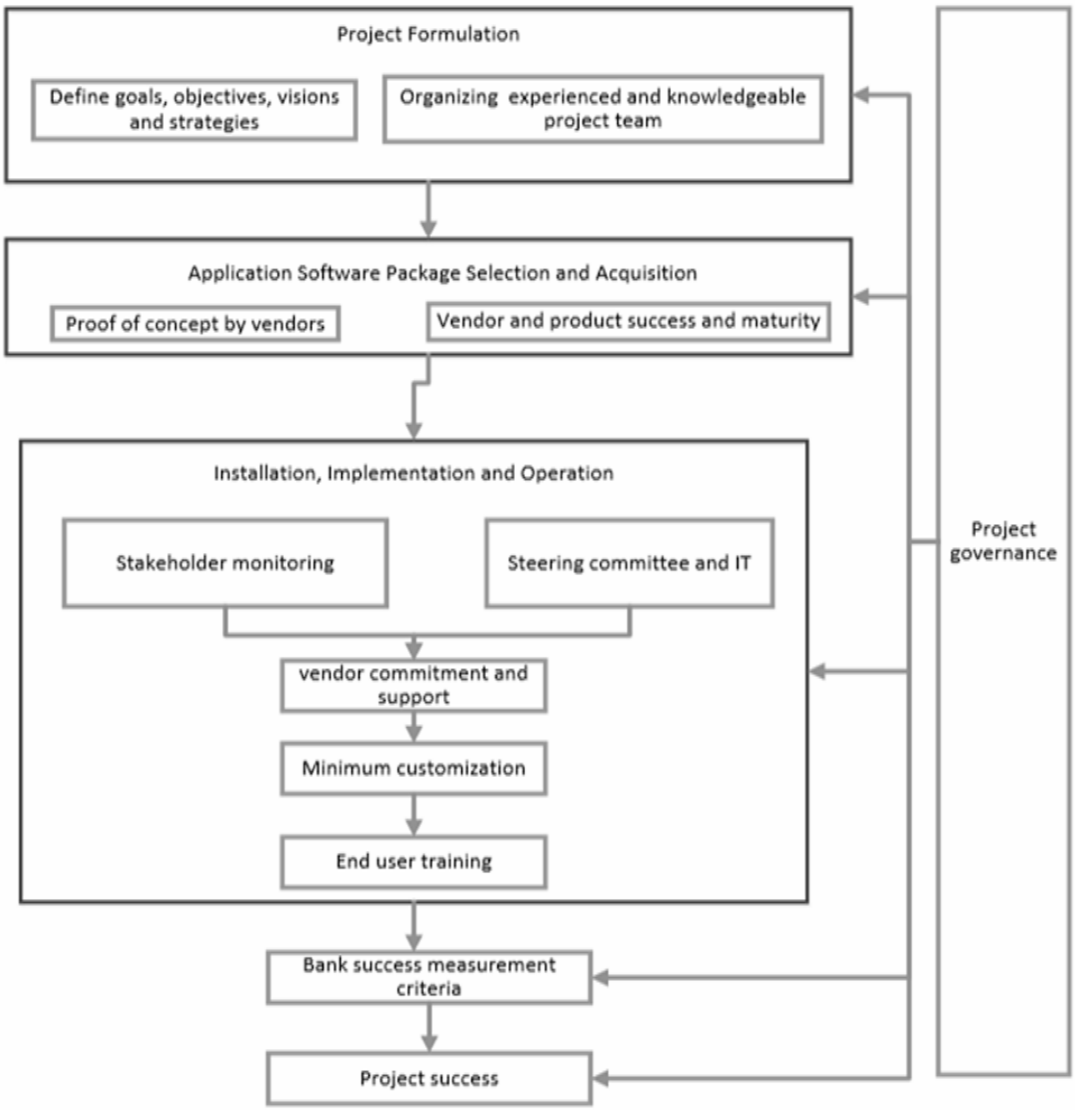

Figure 1: Implementation Framework

The project manager must have an experience and knowledge of project management such as planning, organization, monitoring and control of every aspect of the project. The project manager should motivate all involved to achieve the objectives of the project within the allotted time and cost [11]. The technical and administrative skills, commitment and competence of a project manager are the most critical components during the project life cycle [12].

In the 'project formulation' phase, the project manager should clearly understand the requirement and the project scope of the bank. The project manager should ensure that the scope is defined to include all the necessary functionalities required of the system and that it is clear to all stakeholders. If the scope is clearly defined at this phase, challenges such as scope creep would not occur.

The project manager is responsible for the selection of a well suited core banking system for the bank. Understanding the requirements expected from the system will help the project manager in selecting the best fit product, which meets the expectations of the bank without going through heavy customization. Requiring vendors to demonstrate proof of concept will enable stakeholders to see some functionalities of the system in action.

A well composed project team, including both IT and business owners, is crucial to the success of a

project [13]. Experience should be the major criterion during team formulation, especially from the business side. This is because an employee who has worked the longest clearly knows the functionalities required from the system.

The project manager should prepare a project plan that is organized and effective. S/he should consider all the necessary current conditions which might affect the project. S/he can do this in the 'project initiation' sub-phase, under the 'project formulation' phase. The project plan document should be shared with all the team members.

In the 'installation and operation' sub-phase, the project manager should make sure that the communication between the users and the vendors is happening accordingly. The project manager should ensure that workarounds are being proposed as a solution prior to product customization.

a. Project Formulation Phase

'Define goals, objectives, vision and strategy' represents clearly establishing goals, objectives, outcomes and benefits expected from the project before selecting the core banking software and its vendor. Defining goals, objectives, vision and strategy are done in the 'analysis of needs' sub-phase and helps in preparation of a solid RFP document. A solid RFP document enables a bank to select the best fit core banking product.

Goals and objectives of the project should be clearly understood both by the project team and by the organization [14]. One of the most important project management critical success factors is clear and realistic objective [15].

Clearly establishing goals, objectives, outcomes and benefits expected from the project avoids accepting unrealistic deadline from vendors and purchasing software that doesn't meet the bank's requirements. Clear and realistic objective is one of the three most cited critical success factors [11].

If a bank clearly identifies which functionalities are to be performed by a core banking system, it will not experience scope creep. Hence, one of the causes for project time and budget run will be avoided.

The purpose of the project must be clear throughout the stages of the project [16]. Nasir and Sahibuddin [17] consider clear objective and goals to be one of the three most critical success factors which contribute to a project's success.

b. Application Software Package Selection and Acquisition Phase

'Proof of concept by vendors', which represents "Requiring short listed vendors to demonstrate proof of concept before the final selection is made" CSF ensures that vendors comply with the listed requirements. It helps in ensuring the feasibility of the system to a bank's requirements. This is done in the 'application software package selection and acquisition' phase.

'Vendor and product success and maturity', which represents 'Research the success of the short listed vendors and their products' CSF, helps in giving an insight on malpractices.

Researching the success of short listed vendors and their products helps in understanding the level of experience the vendor has, the challenges and problems the vendor faced with other projects, and the best practices the vendor used with its successful project implementations. This critical success factor gives a clear image about the vendor to the bank.

The three crucial factors for the selection of a vendor are the ability to meet quality standards, the ability to deliver the product on time, and performance history [18]. Requiring vendors to demonstrate proof of concept gives a bank the chance to see the functional capabilities of the system.

c. Installation, Implementation and Operation Phase

'Stakeholder monitoring', which represents 'Closely monitoring the progress of the project by the project steering committee and by top management' CSF, is when the concerned higher officials of an organization devote time to review plans, follow up results, solve management problems and be aware of the project status and interfere when it is necessary

[19]. When top management doesn't participate in the project, the chance of a project failure is high [20].

According to Zwikael [21], top management support is one of the critical success factors. Top management support helps in effective decision making, managing risk, and in authorizing business process changes [19]. It is necessary for top managers to get behind the project and make clear to all involved in the project that they anticipate a successful completion of the project [22]. Top management should provide flexible and adequate access to organizational resources [23].

Top management is one of the important factors for the success of IT projects. This critical success factor ensures top level interaction among project team members and project steering committee members and vendors to facilitate successful implementation [11].

Akkermans and Helden [13] classified vendor support and commitment as a critical success factor. "Support and commitment of the vendor during the implementation of core banking system", represented as 'vendor commitment and support' in the framework, has been chosen as a critical success factor for core banking system implementation in this research.

According to the data collected, vendor commitment was one of the challenges faced by banks during core banking implementation. Disagreement between vendors and clients is normal. But these disagreements give birth to lack of trust, poor performance, extension of duration and budget in the long run. The causes for disagreements between vendor and client can be pricing issues and scope changes [24].

Stakeholders judge success of a project per their perspective, depending on their defined objectives and needs [25, 26]. Therefore, banks should have a project success measurement criteria defined. Project success measurement is the result of clearly identifying goals and objectives at the 'project formulation' phase. When banks align project implementation with their goals, the success rate of the project highly increases [27].

4.2 Implementation Guideline

a. Product Selection

Goals, objectives and expectations should be studied by the bank thoroughly for a period of time. This paints a clear image to the bank on the work to be done internally before selecting or implementing the core banking product, whether it is formulating or updating necessary strategies (business or IT) or identifying the requirements of the bank. Future interfacing with other systems and service delivery methods should also be identified thoroughly.

b. Product Evaluation

Vendors should install a prototype of their core banking and demonstrate proof of concept to the bank. Concerned end users, project managers, and project team members should participate in the proof of concept demonstration. Attendees of the demonstration should ask all the necessary questions during the demonstration, identify gaps and evaluate the core banking product thoroughly against their requirements.

Before finalizing the evaluation process, banks should thoroughly search the success or failure of the vendor in previous projects. All the above factors should influence the banks' decision in selecting and evaluating a core banking product and its vendor.

c. Vendor Commitment

Vendors should be committed to finishing the implementation of the project successfully. The contract between the vendor and the bank should clearly state the role of the vendor in the project in order to avoid misunderstandings down the road. Vendors should be attentive to the requests raised from the bank since it plays a vital role in the success of the project.

d. Project Management

The project manager should be capable of making decisions, leading his/her fellow project team members and fully reporting the project status to

higher officials and project steering committee members.

The project team members should be dedicated and open minded to work extra hours when necessary. The project team members should also be committed to the project and should have no other extra work.

The project manager should ensure the proper involvement of project steering committee members during implementation..

e. Top Management Support

Top management should also resolve issues, which need a higher level decision, in an effective and timely manner. Top management should also resolve disagreements between vendors and project team members in an efficient way.

Top management should compose the project steering committee, with the business users, project team members, project manager and the necessary senior officials. Top management should carry out attendance in steering committee meetings. Because important decisions regarding the systems are given in the meeting, all the project steering committee members should always attend the meeting.

f. Project Success Measurement Criteria

The success criteria measurement should mainly depend on the bank's objectives and scope. It should be composed of project objective, benefit, outcome, and project completion time line and budget achievement level.

5. Conclusion and Future Work

This paper is believed to contribute an important framework to core banking system vendors and implementing banks. It aims to avoid problems which arise during implementation of core banking systems and enhance the effectiveness of the product to banks.

The core banking implementation framework proposed in this paper is different from the traditional implementation processes in that it formulates a guideline on how to execute the critical success factors. It emphasizes the necessity of these critical success factors towards a successful core banking system implementation. Some critical success factors are listed as roles and responsibilities in the traditional implementation methodologies of vendors.

As banks move through dynamic IT infrastructure changes in the future, the core banking implementation framework will have to expand and more critical success factors, which are considerate of challenges brought by future technologies, will have to be included. The following are future works.

- Post implementation challenges faced by banks
- Core banking risk mitigation in banks
- Core banking system disaster recovery plan and strategies of banks
- Future of cloud core banking systems in Ethiopia
- Extensive validation of the designed framework

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