

## **Effect of five key factors on the implementation of core banking system (Case study: Bank of Industry and Mining)**

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### **Abstract:**

The purpose of this study was to investigate and analyze the key factors affecting the implementation of the core banking system in the Bank of Industry and Mine. The researcher has tested the hypotheses by using the method of applied research, using correlation type and using the standard questionnaire. The questions from the managers and experts involved in the implementation project of 150 people have been questioned by a sample of 107 people and using the Morgan formula. In this research, key factors influencing the success of core banking systems implementation were identified, among which were five senior management support, the best project management method, business process reengineering, final user training, and vendor support. The main influential variables are selected from the research literature and their effect on the implementation of the core banking system has been analyzed. The results of the research indicate that senior management support and best project management methods and end user training have had the greatest impact on the success of the core banking system.

Keywords: Core Banking System <sup>1</sup>, Implementation, Key Factors, System Integration, Bank of Industry and Mining

### **Introduction:**

The use of information technology in the electronic banking industry has reduced the geographical and temporal distance between the bank and the customer, as well as the reduction of the cost of providing banking services and transferring money and increasing competition between banks and improving the quality and optimization of the banking industry. Accordingly, the use of a core electronic banking system that has certain capabilities will lead to the superiority of a bank in competing with other banks (Abdali and Amirabadi, 2013). The core banking system is a fundamental solution for focusing the core business activities of the banking business, which, on the one hand, enables communication with other organizational systems, and on the other hand it provides services through various channel (Rafizzadeh And Shahsavari, 2013). The implementation of a core banking system is usually time consuming and costly. Implementation is usually expected to be longer than scheduled, data transfer from old systems to new systems often has a complex process, and there is always a list of problems and obstacles on the way. Implementation efforts involve many resources in the organization and cause disruptions to the organization. In order to adapt to the new system, changes in business processes lead to stress and disappointment in the organization if not properly managed.

Failing to access key times and dates creates a tedious atmosphere for the project team, staff and management. The main objective of this study is to examine the challenging issues during the implementation of the core banking system and the key factors necessary for its relatively successful implementation.

### **Statement of the problem:**

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In recent years, the banking industry has changed dramatically due to major changes that have taken place in the areas of technology and communications. This has led to increased competition and the provision of e-banking services (Abdali and Amirabadi, 2013) Also, the scope of electronic banking activity is highly developed and banks are determined to use all the capacities created in this area. On the other hand, new business methods are based on information technology services (Rafizadeh and Shahrivari, 2013), and, accordingly, electronic banking has enabled banks to use advanced technology to provide services (Muller, 2008) and allows the use of different kinds of electronic channels (Moghadasi, 2010; Rafizadeh and Shahsavari, 2013). On the other hand, more and more e-banking growth has created banks with a large number of separate systems. The number, variety and complexity of information systems, the increasing number of data and banking transactions, has highlighted the existence of a core, high-reliability system to support the business of the bank (Mansouri, 2015). Therefore, banks have turned to using core electronic banking (Abdali and Amirabadi, 2013). The principle of integration in electronic banking requires the existence of a core information system with a strategic role in the banking business, as the core banking system. In recent years, a large part of the banks has pushed their systems toward a core banking system (Zimmerman, 2011). Today, the use of a core banking system for the world's banks and the banking business is inevitable (Central of the Bank of Iran, 2015; Rafizadeh and Shahsavari, 2013), but the concept of a core banking system and its efficiency for many Individuals are not yet known, and therefore optimal utilization of investments made in this section is not taking place (Mahtabi, 2014). Core banking systems are a complete information and operational system that fully supports micro-operations to banking operations (Abdali and Amirabadi, 2013). In the meantime, the successful implementation of the core banking system remains a theoretical and managerial challenge. Many researchers have studied the challenges of implementing various information technology systems. These challenges and problems affect the implementation of the core information technology system projects (Sad, 2011). In Iran, in addition to the world, electronic banking is in the process of progress, and our country's banks are also moving towards the implementation and centralized of banking systems. Of course, the successful implementation experience due to the same issues and problems encountered in the implementation process is few in the banks of the country, and Iranian banks are also struggling with the various problems of integrating their banking systems. On the other hand, the key factors for the successful implementation of basic IT systems, such as the core banking system, can be of great importance for understanding and solving problems and challenges encountered during the implementation process.

### **Importance and necessity of research:**

Now, the question is what is essentially what the need for system change is core to the banking system. Although banks have used a variety of information technology systems in their entirety for many years. What is the reason for moving to such a system? A new technology storm such as mobile phone, cloud computing, Big data, and virtual user interconnection and service requests 7\*24 has become a major challenge that is beyond the reach of scattered banking systems (Skinner, 2013). On the other hand, banks, in addition to increasing customer demand, face rapid market changes, and the complexity of banking systems makes it difficult to adapt to changes, so simplifying and modernizing banking systems is not just a matter of cost or productivity. It also includes the stability of the entire business (Fabah, 2008). Therefore, banks must address three key requirements: focusing on the customer, integrating risk management across the organization, and re-thinking the business, and these three issues can only be achieved through the deployment of a core banking system (Sins, 2011). On the other hand, the implementation and implementation of systems is one of the most important and most challenging stages of the system's cycle (Sins, 2011). Research shows that there are many issues in the area of integration, adaptation, and management of change in the implementation of the system (Rose, 2011). Big banks have very important challenges and issues for the full implementation of the core banking system and the abandonment of all their old systems (Rabie, 2010).

The figures presented in relation to the failure or lack of access to the implementation of information technology systems, resulting in losses and inefficiencies have been significant. Sungupta (2003) notes that one-third of the information technology projects have never been successful, and the rest have often failed to achieve their goals. Research in the US industry shows that a large number of licensed software have not yet been put into operation (Sad, 2011). Gartner's consulting services show that 42 percent of licensed customer relationship management systems have not yet been installed. The term "software" is used to describe the

software purchased by an organization and not use it. The benchmark rate for the 10 analytical process software packages is an average of 39%. (Gartner 2003). Ellit et al. (2006), quoting a survey by Wiswick (1998), said 42 percent of IT projects were outdated before they were completed. Another study by Gross et al. (1999) suggests that inefficient systems alone have led US companies to spend \$ 85 billion in cost-effectively. Bradley and Lee (2007) reported unsuccessful implementation attempts by the Fox-Mayer Pharmaceutical Company, the European cellular phone, Dell Inc., and the company's materials business. They also showed, according to Stephen (1999), that Hercy Food Company, after spending \$112 million on an organization's resource planning system project, was not able to supply Halloween orders in 1999, resulting in a 19% decrease in seasonal earnings Have had.

The challenges of implementing the core IT systems are not just about banks, and other organizations, like universities, have many problems with business and organizational profits because of the lack of integrated IT systems. Bradley Valley (2007) has stated that universities often suffer from reduced revenue, wasting time, increased costs, and delay in the implementation of an integrated resource planning system. The University of Ohio has filed \$ 510 million in litigation for fraud and contract breaches (Sungini, 2004; Bradley Valley 2007). The University of Massachusetts faces a nightmare when enrolling students (Barry 2004; Bradley Valley 2007) and Indiana University has had trouble paying student grants.

Researchers believe that the new information technology systems are always susceptible due to the lack of computation of basic requirements, poor user interface, maladaptive design of an organizational culture system, and the rule of technology, rather than behavioral issues, low data quality, and operating costs. "(Plaud, 2000). In 2004, Schelin and Garseon conducted a comprehensive review of critical factors in the success and failure of IT projects and summarized the critical factors in the success and failure of IT projects in the private and public sectors in the United States. According to the definitions that were made, success Information technology projects are evaluated as if the project with the "cost" predicted at the "time" specified by the "target" of the IT project in the area of the bank (e-banking projects) were evaluated successfully and if one of These factors do not exist. The project fails. The bankruptcy project Electronic means that the bank has incurred a higher cost, or it will be completed at a longer time, or if there is no cost reduction (Salehi, Akhavan Kharazian, Sobhanifard and Farahmand,2013).

In light of the explanations given on the importance and integrity of the integrated information technology systems, we find that the implementation of such systems in organizations, especially banks, is not simple and easy to work and has challenges and also effective factors for success in implementation. Be Considering the importance of core banking in the banking industry, the likelihood of the implementation of such systems occurs clearly.

## **Research background:**

### **I) Development of IT systems in a bank:**

Following is the nature of the process of developing information technology systems in a bank that represents the initial steps of implementation.

- 1.System: There are many international vendors offering up-to-date banking solutions. Banks use two types of policies in order to meet the needs of a bank. One is the provision and development of banking systems from abroad and other supplies from the interior. Depending on the Banking Development Banking requirements, one or both of these methods or a combination of both are implemented.
- 2/. Decision-making: Deciding whether to change the banking system based on the needs and requests that are registered by the end user. Is being presented. The result may be one of the following: (1) development, (2) purchase, or (3) improvement of the current system parameters.
3. End-user requirements: All IT products and services should be in line with the bank's strategic plan and in order to facilitate its implementation. It is not acceptable to create services and systems that do not match the bank's strategies. As a result of this alignment, you need to ensure that the user's needs are clearly understood, fully documented and properly verified.
4. Technical documentation: The IT department has the task of maintaining the technical documentation and any development program in this area is to ensure continuity of services and support.
- 5/ Development: Development must comply with (1) technical documentation, (2) be carried out in a highly specialized development environment, and (3) in full compliance with the bank's standards. End-users often

focus on business system capabilities and tend to ignore security and compliance with laws and regulations. As a result, in any program designed, the security aspect and compliance with the rules and regulations and other standards of the bank, even if the intended user is not final, should be observed.

6/Processing processes and processes: Depending on the size of the development plan, it is necessary to make some changes in the methods and processes of the bank. It is very important to make sure these changes take place before the final product is implemented. Otherwise, information technology may encounter many post-development issues that may delay the launch of the product.

Final User Training: This is a very important step in the entire life cycle of development that is often overlooked by developers. That's why (a) you should keep in mind that these are used to provide end-user instructions. (B) Depending on the complexity of the system, the training may be from a simple presentation of a PowerPoint to a complete set of training materials; and (c) Support training sessions must be coordinated with the Bank's human resources department.

8. System Testing: The system before the environment The operation must be fully tested. This process may be a one-hour job involving a small number of employees or a very complex project that may include the whole organization. The scope and complexity of the testing phase depends on the scope and complexity of the project. Nevertheless, regardless of the size of the project, IT must always ensure that the proper test of the product is carried out.

9. Installation Instructions: The development team must have complete installation instructions in order to allow the systems and technical support Complete the installation without relying on the development team. This issue is very important to ensure complete separation between the production environment and the testing environment.

10. End User Manual: You must provide the final user manual for all developed systems inside. The quality of the final user instructions directly reflects the credibility of the information technology (Sad, 2011).

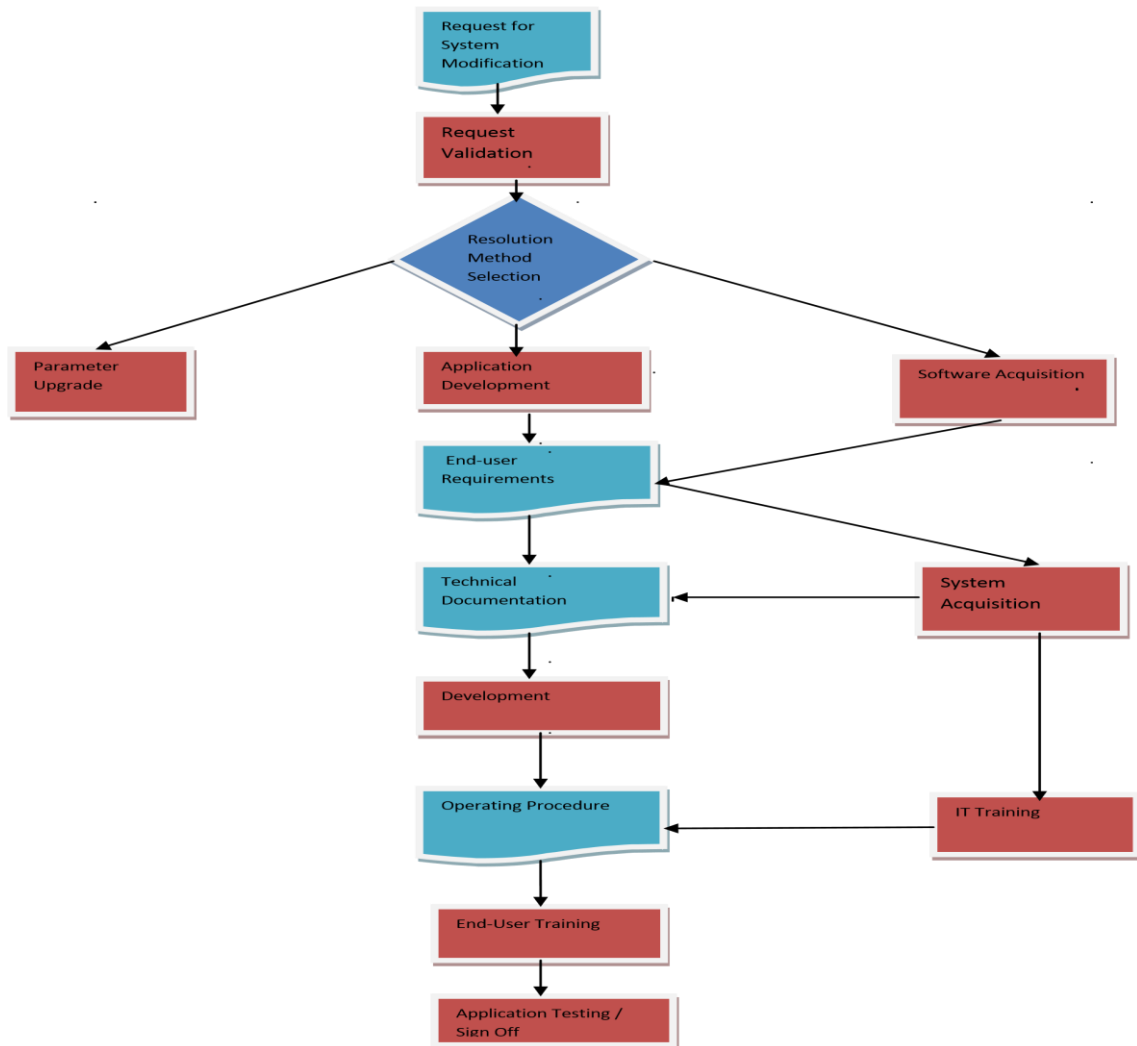


Figure 1. Life cycle of IT systems development (Sad, 2011)

Implementation of information systems innovations theoretically and management challenges continue. Experts have written some basic facts about the implementation of IT systems. Anyone involved in an IT



implementation project can provide explanations about stress and frustration at a time when the implementation project exceeds the budgeted costs, the time limit, the expected defect in the expected performance. Various studies provide a lot of significant figures. Welsh and Kennedich (2007) identified seven key factors affecting the implementation of basic IT systems projects (such as the implementation of an organization's resource planning or core banking system), with collective experiences of more than 100 organizations in this area: 1. Integration Inadequate chief executive officer (Planning to integrate the capabilities of the core banking system with strategic plans is not well defined. Leading executives do not have team commitments. There is no systematic and robust program to guide the organization in relation to the upcoming changes. Business Plans, poorly defined, not convincing, or lacking in obligations Are not suitable for the executive team.) 2.The poor governance structure of the project implementation team (Project management is not carried out through continuous implementation and improvement of the process. Process managers are not appointed. There is no proper response, or they lack the real power to make decisions. The poor decision among process managers from different business units leads to the creation of various process designs and system settings. The budgeting model is inefficient and has not been able to achieve the highest value. 3. Lack of focus on business processes (the best solutions are not implemented at the initial stage and there is no plan to replace them at a later stage. The implementation team does not understand the features of the system, and therefore non-solution solutions The performance criteria are not used or weak, resulting in a weak link between process design and business plan. Applications are static and inconsistent with changing business conditions. End-user acceptance challenges (initial education is inadequate. Change management process to accept end users with roles and processes. New chapters are inadequate. The structure and resources of end user support are inadequate. There is no lack of accountability and support for knowledge management and continuous education). 5. An inadequate organizational structure (the organization is not able to make changes in the definitions of the roles and organizational design needed to achieve the expected business plan. The organization is unable to resolve the talent gap (through recruitment / training). 6. Configuring or configuring issues (Unlimited roles and levels of access are defined, data access is limited and the system is limited. The system is too complex to display screens, routes and complex menus. Simple transactions are used.7. Data warehousing is not implemented, which limits the use of efficient data and the lack of optimal use of available data at the right time. The system during the implementation process, the custom action Makes it difficult to do, so it loses the ability to update, innovate, and maintain.)8. Infrastructure deficiencies (Hazy Operation niches are initially unpredictable, so it's possible to weaken the underlying business. The response time of the system is slow, prevents acceptance and eliminates productivity.

### **Measurement and success criteria of system implementation projects (software):**

The project management center defines a successful project in the form of the following formula:  $\text{Project} = \text{Program} + \text{Range} + \text{Budget} + \text{Quality}$  (Nachitaghi, 2006).

On the other hand, the Project Management Institute, in the new version of the Project Management Knowledge Management Faculty Knowledge Management (PMBOK) Handbook, has defined the use of knowledge, skills, tools and techniques extensively to meet the requirements of a particular project. MI, (2013). Therefore, the success of the project will be realized by combining good management and agreement among project stakeholders by the above formula. Although the literature on the success of IT systems projects has been derived from classical project management literature, the project's participants are in the same way as classical projects, projects Do not understand the scope of information technology systems. Usually, outside the project organization, stakeholders use cost and time tools to determine the success of the project, while for individuals who are within the project, reaching the scope determines the success of the project (Sad, 2011). In addition, the success rate of information systems projects is not high. Kendra and Tuplin (2004) have shown that, in total, 72% of the IT systems projects failed, and from 28% that remained successful, 97% had a dedicated project manager, 58% of a defined measurement system And used 46 percent of the project management method. A remarkable result of the studies is that the main reason for the success rate of the project's success was inadequate working relations (for example, distrust among team members who are responsible for the success of the project). By reviewing the literature in this area, project performance measurement systems or criteria for monitoring project performance are shown in the table below.

The criteria used to monitor the performance of the project	The author has stated
Time, cost and quality (IT system performance testing, operations)	Arthman & 1996, Fleming and Coupleman 1997Abba ; 2000 Project Management Association 2002W. Carry 1998Wat. 1999, Siem Reap, 2001, S 1997Seldon
Goal, business goals	, Stewart 2000, Nden 1999, Lido 1992Freeman & Bella , 2000, AMI 1998, Watriage 1997, Levy & Dior 2001 2000, Buccuck 1999Baccarat
Team performance	2000, Rin and Rayleigh 1998Liu and Walker
Financial performance: Net present value, discounted cash flow	1992, Freeman and Bella 2000Gardiner and Stewart
User satisfaction	1998Wattrage

Table 1. Project Performance Measurement Criteria (Kendra and Tuplin 2004)

Kramey (2007) uses the notion that the success of the information systems project is achieved by measuring two types of criteria, the criteria for project success, and the business value benchmark for the implementation of enterprise resource planning systems. The author focuses on the implementation of resource planning systems by Marcus et al. (2000): the project success criteria (in terms of timely implementation, budget, project boundaries and expected performance), and business value metrics ( In terms of business improvement, for example, inventory reduction, reducing the life cycle time and reducing the time to market). On the other hand, the concept of "success factors" was developed by Ronald Daniel of McKinsey Company and was published in 1983. In each organization, there are certain factors for the success of the organization, if the goals are related to the factors, the organization will succeed. In this context, the proper synonym of the word is crucial: key, decisive, strategic, and so on. Here, critical success factors can be defined as the factors or activities needed to ensure the success of a business or project. The critical success factors can be classified into four basic types: 1. Industry: Critical factors The success of the industry, which derives from the specific characteristics of the industry. 2. Strategy: The critical elements of the success of the strategy that derives from the chosen business strategy. 3. The environment: The critical factors of the environmental success of the economic or technological change are achieved.4- Time: The critical factors of non-permanent success that results from internal organizational changes and needs. Research on general factors Enterprise Resource Planning can be considered as a process or approach that tries to integrate all departments and functions of an organization into a core computer system and meet the specific needs of each sector. Most companies have a set of systems and processes (processes), hardware and system design specifically for their needs. The ultimate goal of a successful corporate resource planning system is a system solution that integrates various tasks and activities Is completely in the areas where information needs flow across sectors and actions taken by a department are followed up and taken appropriately by other sectors (Gables, 1998, and Kramy, 2007). The most important features of enterprise resource planning systems are the ability to automate and integrate business processes, share data and practices in the organization, and generate and access information in a real environment (Sad, 2011). Definition of Organizational Planning Systems: Organizational resource planning is an industrial term for a wide range of activities supported by a system that manages an important part of an organization's business, including product planning, component purchasing, inventory control, engagement with supply Suppliers, customer service and tracking orders. The organization's resource planning can also include applications for finance and human resources of a business. Typically, an organization resource planning system can include the analysis of significant business trends, re-training of employees, and new working methods (Atley et al., 2006). Implementing a resource planning system is an enormous complexity process and many conditions and factors potentially affect its implementation. These conditions can have a positive impact on the results of enterprise resource planning projects (Soja, 2006). The following table shows the results of some major research on the key factors affecting the successful implementation of the organization's resource planning system:

Writer / writers	Key Success Factors	Results
Burns et al., 1991	Environmental and methodology. Peripheral: Company activity, technology level, organization's willingness to change. Physiology: Implementation Approach.	Only two environmental factors, namely product technology and the organization's desire to change, were identified as key success factors for implementation.
Parr et al., 1999	Ten Selected Factors Associated with Management, System and Project	Three factors: the support of the project team and implementation processes, the existence of a project team that has the right balance between business and technical skills and commitment to change by all stakeholders as the main factors.
Holand & Light, 1999	factors in the form of 12 two strategic and technical groups	The authors highlighted the critical impact of previous systems and the importance of selecting the appropriate strategy for organizing resource planning
Steve and Pasteur 2000	Integrated implementation success model	The classification of factors must be strategic and tactical from an organizational and technical point of view.
Summers and Nelson, 2001	critical 22A wide list of success factors implemented	The most important factors are: senior management support, project team competence, inter-agency cooperation, clear objectives and tasks, project management, and inter-agency communication.
Nah et al., 2003	main factors 11 affecting implementation	Five important factors: management support; best project management method; group work; change management and culture programs.
Brown and Wesley 2003	key success factors 5	Senior management has been involved in the project; project managers have devoted themselves to the project; the main members of the team are decision makers; third parties fill the gap of expertise and transfer their knowledge; change management is associated with project planning and an attitude Satisfactory has dominated.
Al-Mushhri et al., 2006	Twelve agents are divided into three dimensions related to the launch, implementation, and evaluation phases.	A clear vision of business; Manage and re-engineer business processes; Leadership and commitment.
Ike and Madsen, 2005	Eight key factors affecting implementation have been investigated	Principles of project management, project evaluation capability, human resource management, business process reengineering, senior management support, cost and budget allocation, IT infrastructure and consulting services are the main factors affecting the implementation of the organization's resource planning project. .

Table (2): Key Success Factors for Implementing the Organization Resource Planning System

### Implementing a core banking system:

With regard to the literature and discussion of the various methods and procedures of various IT systems and the key factors affecting the implementation of IT projects, it is concluded that the appropriate method for

developing and implementing a core banking system as a The information technology system depends on many factors, such as goals, tasks, and timelines (Zimmerman, 2011). The implementation of a core banking system is very complex, time-consuming and costly (Sins, 2011). The implementation model has three basic steps, the first step is to focus on the architecture of the system, then think about the platform and then select the appropriate solution. The solution can be construction, purchase (inward or outsourcing) or a combination of both (Sirim, 2013). The first step is to select the bank's mapping, commitment, and governance policies in the implementation of the system (Zimmerman, 2011). In the next step, the correct definition of the business and the creation of a common understanding of the impact of that business on the financial performance of the bank is very important (Sins, 2011). Then, the factors affecting the implementation of the core banking system should be thoroughly investigated and the appropriate solution to be foreseen (Rose, 2011), and by choosing an appropriate strategy for implementation, it is possible to implement a successful core banking system in a bank. (Rafizadeh and Shahsavari, 1394).

**Key factors affecting the implementation of a core banking system:**

The implementation of a core banking system, like all IT system implementation projects, such as core banking, is costly, time consuming and complex. A core banking system that has been implemented should respond to the bank for at least five years. Banks must focus on the main factors that create a successful experience (Rahman, 2016). Budget factors, 2011 Key factors influencing the successful implementation of a core banking system are compatibility, core compliance (compliance with regulatory and regulatory requirements) and customer orientation, which includes the following steps:

In the first stage, the bank needs to be evaluated, the requirements of the banks are assessed on the basis of the products and services they offer or want in the future, the human resources, the current and future infrastructure. Once the evaluation phase is completed, in the second step, consensus needs to be made on the modules concerned and its capabilities, a core banking system may contain all or some of the modules, then the bank is looking for a core market-oriented banking system to match Your needs go. At this stage, the challenges that are faced are that most systems are not fully compatible with the relevant corporate environment and culture, they do not have the flexibility and scalability to deal with new changes, and are frustrating and unfriendly for users. In the third stage, the challenges most often associated with the vendor are: the amount of credibility and supplier capability (vendor or contractor) for implementation, the ability to migrate data, the amount of system support, and so forth. Table 2-8 summarizes the results of the most important studies and studies on the challenges and key factors affecting the implementation of core banking systems.

Source	Describe	Challenges and key factors
, Haller 2011, Bogart, 2012Lauden, ) , Malan & Petrael 2009& Hubberger, (2014, Gartner, 2011, Gartner, 2008	Various features of the core banking system	Ability (system capability to meet the requirements and expectations) Features of various core banking systems
, 2011, Gartner, 2011Bogartz, ) (2014Gartner	Mutual agreement of functional requirements in the implementation and management team	Achieving the organization's (bank) integrity is about what the organization needs
, Gartner, 2012Load & Lodging, ) (2011and Gartner, 2014	Project information costs include hardware, software and software costs work space. Project management allocates a budget for the project and monitors it	Cost and financial conditions
, Malan & 2012Load & Lodging, ) , 2014, Gartner, 2008Petraeus, (2011Gartner,	How does the bank's processes work with the new system?	Bank Business Compatibility with New System Center (Configuring)
, Haller & 2012Load & Lodging, )	Does the organization have skilled or	The availability of skilled



, Malan & Petraeus, 2009Iberger, (2008	expert human resources?	human resources
, Iioberger, 2012Ludhne & Lodden, ) , 2008, Malan & Petraeus, 2009 , Khan 2014, Gartner, 2011Gartner, , 2012, Mopel, 2017and Chaudhuri, , 2015, Kiriyoki, 2015MOSAU, , Helouf and Belacho , 2016Najiran, (2015, Harrys, 2017	Did the seller display the capabilities and credits required during implementation?	Credits and Support and Salesperson Support
, Bogart, 2012Load & Lodging, ) , 2009, Haller & Hubberger, 2011 , Gartner, 2008Malan & Petraeus, (2014, Gartner, 2011	Does the new system have the ability to meet the business needs of the organization (the bank)?	System flexibility
, Hallen & 2012Load & Lodging, ) , Malan & Petraeus, 2009Hobberger, (2014, Gartner, 2011, Gartner, 2008	Data transfer is called "Data Migration", which aims to understand the structure of data from the previous system to the new system. How accurate was the immigration data? In the old system, data may be ) incomplete, inconsistent, misleading, or irrelevant. For data transfer, understanding existing constructs, clearing and mapping existing data into information fields in the new system) / Translator	Data Migration (Data Convert)
, Bogart, 2012Load & Lodging, ) (2014, Gartner, 2011, Gartner, 2011	How satisfied is the end-user with the new system?	Establishing end user friendly communication
, 2015, MOSAU, 2012Mopel, ) , Helou 2016, Najiran, 2015Kiriyoki, , Azizi, 2014, 2017and Blaccheu, (2013	The quality and training provided, the ease of use of the user system	User training
, 2015, Kiriyoki, 2012Mopel, ) (2014, Manjushiri, 2016Najiran,	How to re-engineering, redefining engineering, and applying practical re-engineering processes	Recycling business processes

Table (3): Challenges and key factors affecting the implementation of core banking systems

### Core Banking System in the Bank of Industry and Mine:

Concerned about the absence of a core (integrated) banking system, due to the nature of the Bank's development of the bank from many years ago, it created many challenges and a significant number of Island systems. Based on the same prerequisite, which itself has caused a lot of cost to the bank, the bank has sought to achieve a comprehensive solution and fulfill the desire to achieve a core banking system. Many efforts were made in this regard, but failed many times. For example, the ExMbil system implementation project, in which, it was attempted to implement 6 years, but the bitter experience of failure was created for the same reasons as the study based on it, and the implementation of the ExMbil system also failed, and the failure is similar to Previous failures were added to unsuccessful bank records .Therefore, in the light of the above, a summary can be summarized as one of the challenges the bank has ever encountered with regard to the implementation of a core banking system: 1- Lack of integrity, 2- Non-coverage Functional and non-functional requirements, 3- No customer-specific view, 4- Data and information fragmentation, 5- Weakness in the preparation and presentation of reports, especially reports of management significance, 6- Lack of modular architecture and optimal design, 7- Non-use of day technology, 8 - Inefficient supply. Given the challenges and issues posed by the lack of integration in the banking systems

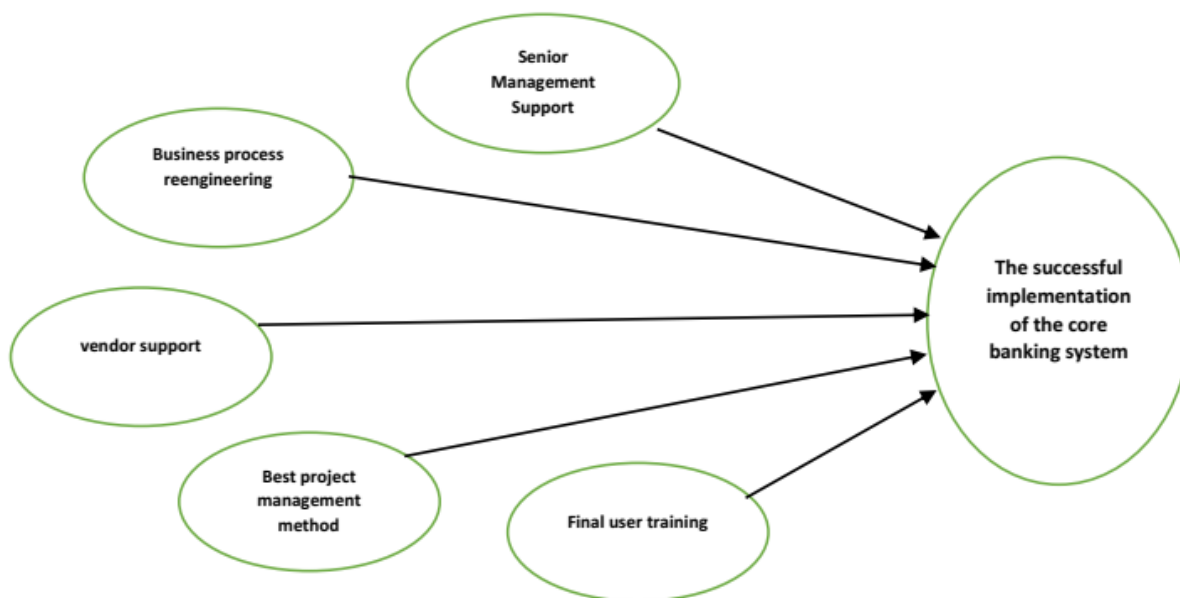
of the industry and mining, this bank During a four-phase schedule and operational measures to implement core banking system has.

Key measures mentioned during the implementation of various phases of the implementation of the core banking system are as follows: 1. Understanding the bank's requirements and gap analysis with the capabilities of the core banking system provided by the seller (TOSAN). 2. Localization, customization. Adaptation and development of systems based on the agreed gap analysis results. 3. Production and testing of the process model (main business processes) of the bank (acceptance, evaluation, supervision, collection of claims, claims and claims). 4-System acceptance testing. 5. Acceptance of management systems (unit beneficiaries, inspection and supervision, anti-money laundering, risk management, business intelligence); 6. User training. 7. Data transmission (customers, deposits, facilities, currency). And ... through the interfacing tables and the input of information in the foreseen systems) 8. Supply and equipping the branch network 9.-Equipping and testing the operating environment 10.-Implementing the main maneuvers and implementation 11.-Operation and supporting.

### Conceptual model:

By reviewing the research literature, a significant number of key factors are critical to the successful implementation of IT systems, especially the core banking system, and are vital for concluding the efforts made to successfully implement a core banking system. In this regard, considering the main objective of this study, namely studying the key factors affecting the implementation of the core banking system in the Bank of Industry and Mining, it has been determined that some of these factors, apart from the main factors influencing the implementation of the core banking system, Which was the basis for the formation of the hypotheses and conceptual framework of this research This framework is based on the studies of Welsh and Kennedich (2007), Kermoy (2007), and Sad (2011), which has been studied in the literature on this subject. On this basis, these factors are: 1) Senior Management Support (2) Business process reengineering (3) vendor support (4) Best project management method (5) Final user training, presented as a conceptual model in Figure 3:

Figure 3. The Conceptual Model of Research (Source: Sad 2011)



### Methodology of research:

The method of this research is to apply the research in relation to the purpose and according to the research method, the research is correlational using the causal model. To test the conceptual model of the research, PLS, a variance-driven path modeling fan, has been used. This technique allows examining the relationships between hidden variables and measures (visible variables) simultaneously. This method is used when the sample size is small or the distribution of variables is not normal. In PLS models, two models are tested: external models (structural) and internal models (measuring models). An external model that determines the

hypothetical structure of the variables (theoretical structures that cannot be observed directly) and the internal model that the relations between measured variables or markers are variables that are directly observable and the variables that are assigned to them an approximate estimate is used (Hooman, 2008, p. 34). For data collection, the existing approaches were examined using the library method and the research foundations were formed and then the most important tool was the questionnaire. It is standardized and based on the five Likert range. By field method, the required information was collected through a questionnaire. As the title of the research suggests, data collection was made among the community of managers and experts of the Bank of Industry and Mines in the area of implementing a core banking system. The total number of statistical population during the fieldwork operation is 150. The sample size of Kirchsey and Morgan formula is 108 people. Sampling method in this research is probably done in a systematic way, first, a list of the population of 150 people was given to the researcher and then the researcher with a random selection interval  $K$  attempts to select probabilistic sample members (according to equation  $K = n / N$ ). After deleting the questionnaire, 107 questionnaires were left and analyzed.

### Validity and reliability of the measuring instrument:

In order to evaluate the validity of the study, the questionnaire and its content were reviewed by the researchers and experts. Correctional views were taken into consideration. To evaluate the content validity, two CVR and CVI forms were used by experts of this field and appropriate corrections were made to the question. The letter is included. In order to analyze the internal structure of the questionnaire and to discover the constituent elements of each construct, structural validity was performed using a confirmatory factor analysis tool. Structural validity implies how the results are obtained from the scale used for the predicted test for hypotheses. This work is evaluated with convergent and distinctive validity (Khaki, 2007, 291). Structural Equation Modeling (SEM) has been used in data processing. SMART PLS software version 2 was used for data analysis. The results of this method are presented in the table. In addition to the variables in this table, their validity and reliability are also indicated. Usually, the first criterion that is controlled in measuring models is the internal consistency reliability. The traditional standard for this Cronbach's alpha is above 0.7 and indicates the intrinsic reliability of the indices belonging to each of the variables in the research. The AVE criterion represents the mean of the variance shared between each variable with its own indices. Simply put, AVE shows the degree of correlation of a variable with its own indicators. As indicated in the table, all constructs studied have an average extracted variance higher than 0.5. The Cronbach's alpha is a traditional criterion for determining the reliability of the variables. In the modeling of structural equations by partial least squares method, SEM-PLS is used to measure the internal stability of variables from a more modern standard than the Cronbach's alpha, called composite reliability, to this indicator of the Dillon Goldstein. A composite reliability value greater than 0.7 indicates an intrinsic stability for measuring models and indicates a value below 0, 6.

Combined reliability	Mean Variants Extraction (AVE)	Cronbach's alpha coefficients	Variables	Symbol
0.871	0.631	0.804	Core Banking Implementation	A
0.880	0.787	0.729	Senior Manager Support	B
0.925	0.674	0.902	Best project management method	C
0.874	0.635	0.808	Reengineering business processes	D
0.933	0.701	0.914	Final user training	G
0.889	0.669	0.837	Vendor support	H

Table 4: Validity and reliability indices of research variables

Before entering the testing stage, hypotheses and the conceptual model of the research, it is necessary to ensure the accuracy of the models for measuring the exogenous and endogenous variables. With the

confirmation of convergent validity and divergent validity tests, it can be claimed that this reflection measurement model has variable validity. According to the results obtained from this section, all the indicators related to the test of reflective measurement models were evaluated and the model was corrected and all tests were performed on the model.

**Research findings:**

Descriptive Findings: The demographics of respondents are presented in Table 5. , 73.8% of the respondents and 26.2% of respondents were female. 9.3% of respondents were between 26 and 30 years old, 26.2% were between 31 and 35 years old, 26.2% of the respondents were 36-40 years old, and 38.3% of them were over the age of 40 years. 8.2% of respondents with diploma education, 38.3% of respondents have undergraduate degrees, 54.2% are masters and 4.7% have PhD degrees. , 6.5% of respondents with a history of activity under 2 years of age, 13.1% of them are between 3 and 6 years old, 25.2% of 7 to 10 years, 22.4% of those aged 10 to 14 years, over 14 years of service experience.

Percent	Abundance	Quantity	Variable	Row
26.2	28	Female	Sex	1
73.8	79	Male		
9.3	10	26 to 30 years old	Percent	2
26.2	28	31 to 35 years old		
26.2	28	36 to 40 years old		
38.3	40	Over 40 years old		
2/8	3	Diploma	Education	3
38.3	41	Bachelor		
54.2	58	MA		
4.7	5	P.H.D		
6.5	7	Less than 2 years	Experience	4
13.1	14	3 to 6 years old		
25/2	27	7 to 10 years old		
22/4	24	10 to 14 years old		
32.7	35	Over 14 years old		

Table 5. Demographic characteristics of contributors to the research

Inferential Findings: In order to evaluate the key factors affecting the successful implementation of core banking, a conceptual model has been designed that presents this conceptual model in the case of estimating standard coefficients in Fig. 4 and in the meaningful state of the coefficients in Fig. 5. All variables of this model They are two hidden and explicit categories. Some variables are circular (or ellipse), and some of them are represented as squares (or rectangles). The ellipse or circle represents the measured and rectangular variables or the square of the displayed variables. (Hooman, 2008, 20). The obvious or observed variables (rectangles of the graph) are the variables that we directly understand and can measure, which in the questionnaire's research are in fact the obvious variables of the same questionnaire questions. Hidden variables Graph ovals are variables that we think we can use to measure obvious variables. The function of this variable is to simplify analysis or modeling as well as predict obvious variables (Sobhanifard and Akhavan Khazroian, 1394). Each variable in the structural equations model can be both an endogenous variable and an exogenous variable. The intrinsic variable is a variable that is influenced by other variables in the model. In contrast, an exogenous variable is a variable that does not receive any effect from other variables in the model but also affects itself .. In this graph, the numbers or coefficients They are divided into two categories: the first is called the equation of measurement, which is the relations between the hidden variables (ellipse) and the obvious variables (rectangles), which are called factor functions, and the factor loads indicate how much The variance of the indices is explained by its own variable. Based on the factor values obtained in Ref. 1, Figure 4-1, all the factor values of each variable with reflective indexes should be above 0.7 or very close to it. (Hir et al., 2010). Therefore, with respect to the obtained values, the factor loads for the variables with reflective indexes, as can be seen, are eliminated from the model based on

the factor load values obtained from the reflection measurement model. The questions of the components whose factor load are less than 0.7 are eliminated from the model. Regarding the values obtained from components with reflective indexes of questions, the BQ1 question from the senior manager's support, the question CQ3 from the variable, the best project management method, DQ2, DQ5, DQ6, and DQ7 questions from the business reengineering variable from the measurement model The reflection of the research is eliminated because, if the convergent and divergent narrative is not eliminated, the following model is questioned.

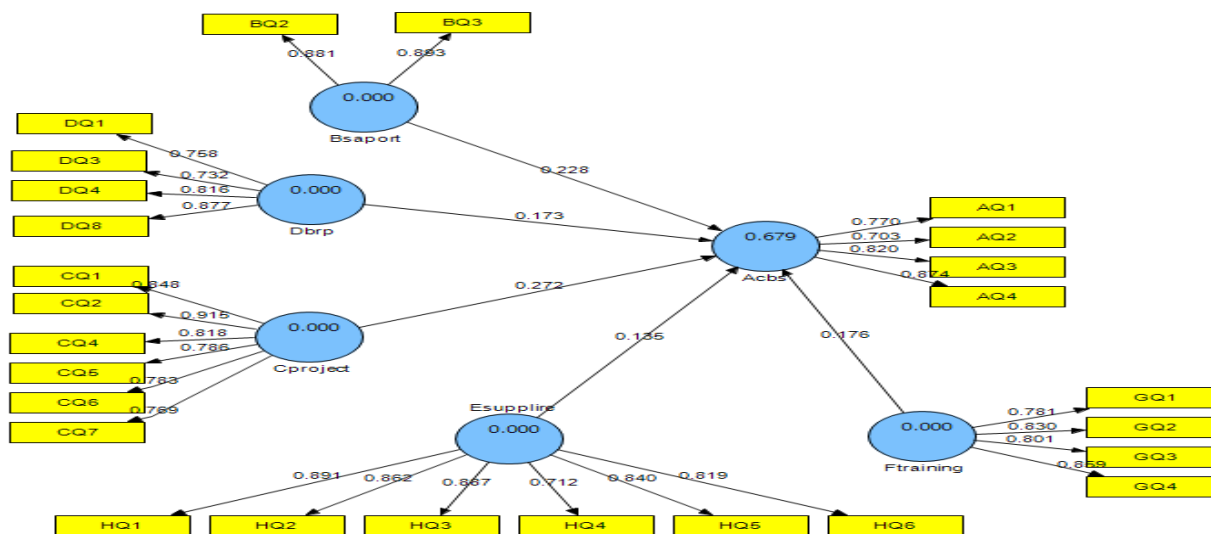


Figure 4. Model of research in the mode of estimating standard coefficients

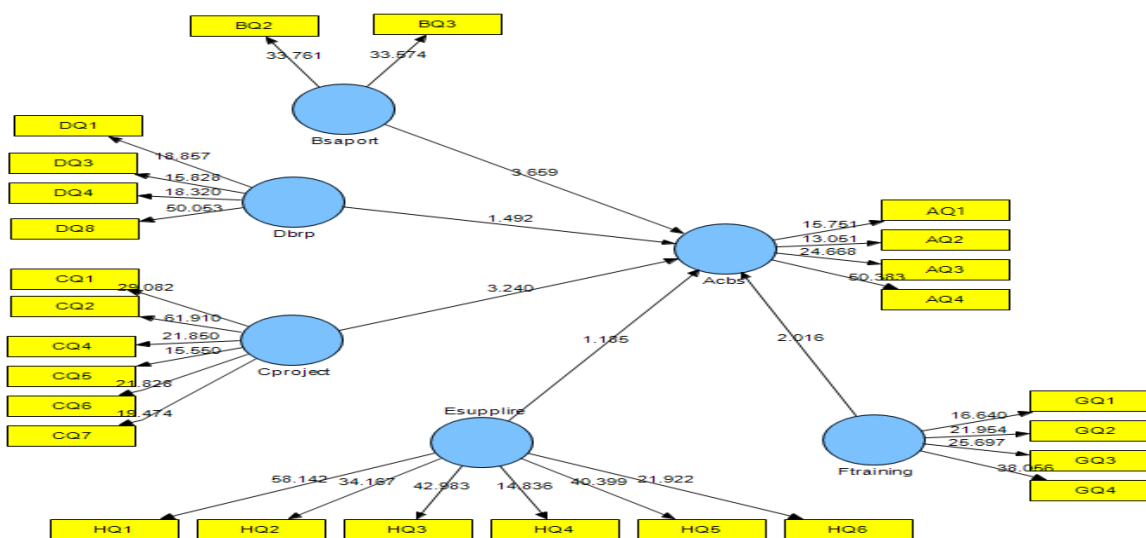


Figure 5. Research model in the meaningful state of coefficients

The criterion used in the structural part of structural equation modeling is R square and indicates the prediction value of the behavior of an outgrowth variable by one or more exogenous variables. The higher the criterion for the intrinsic variables of the structural model, the better the selection of the variables selected in the model. Chain (1998) has identified three values of 0.19, 0.33 and 0.70 as the criterion value for weak, moderate and strong values for the  $R^2$  or R square criterion.

R square	Endogenous variable
0.679007	Core Banking Implementation

Table 6. R squared or R2 (coefficient of determination)



As shown in Table 6, in the case of the R square values, the core banking implementation of the four key variables, the opening of the business process engineering, the best project management method, the support and support of the senior manager, and the training of end-users on the effect. And its behavior is predicted. The obtained value of R square is evaluated with a value of 0.677%. After examining the qualities of the measurement models and the structural model of the research, using the GoF benchmark, the quality of the whole model (or, as the old versions of fit of the fit) can be considered. . The general model consists of both parts of the measurement and structural model, which confirms that the fit test is complete in a model. In the PLS software, the fitting of the model was obtained from the Tenenhaus et al. (2004) formula in relation 2 below. This criterion is derived from the root of the product, the average of the coefficients of determination in the mean of the shared values of the research variables. Watzles et al. (2009) introduced three values of 0.01, 0.25, and 0.36 as weak, moderate and strong values for the GoF General Model Index. Given that the value of the index is slightly higher than the value of 0.36, it can be concluded that the overall research model has a very good fit for quality or to the interpretation of old resources.

$$GOF = \sqrt{\text{communality} \times R^2}$$

$$Gof = \sqrt{0.679 \times 0.196} = 0.3648067$$

To measure the relationship between the mechanisms in the model (structural part), use of t meaningful numbers is used, and if the values of these numbers are more than 1.96 and less than 1.96-, they show the correctness of the relationship between the structures and, as a result, the confirmation of research hypotheses At confidence level, it is 95% (Davari and Rezazadeh, 1392). As shown in Fig. 2, this indicator is meaningfully obtained by Bootstrap or Jack Fing. Given the path coefficients and the t value extracted from the figure, the table is presented. At 99% confidence level, the senior administrator's support variables (0.22) and the best project management method (0.27) on the core banking implementation variable and 95% confidence level The final user training variable of 0.17 on the core banking implementation variable has had a positive impact. However, the impact of two variables was not confirmed by the business process and supplier support and support on the core implementation of the core implementation.

Result	T value	Path coefficients	Main research hypothesis
Confirmed	3.65	0.227	1- The senior manager support variable affects the core implementation of the core implementation variable.
Confirmed	3.24	0.271	2- The variable of the best project management method influences the variable of core banking implementation.
Was rejected	1.49	0.173	3- The re-engineering variable of business processes affects the core implementation of the core implementation variable.
Was rejected	1.18	0.134	4- The supplier support and support variable affects the variable of core banking implementation.
Was rejected	2.015	0.176	5- The end user training variable affects the variable of core banking implementation.

Table 7. Results of research hypotheses

### Conclusions and suggestions:

Implementing and deploying systems is always one of the most important and challenging stages of the system's cycle (Thin, 2011). Research shows that there are many issues in the area of integrated, resilience and change management in the implementation of the system. Rose, 2011 (In this study, while referring to the accomplishments in the field of core banking implementation, we examined five key factors in core banking system <sup>2</sup>success in the Industry and Mine Bank. The results indicate that senior management support and the training of end users and best project management methods have had the greatest impact on

<sup>2</sup> CBS

the success of core banking system implementation. In this regard, the research results are consistent with the researches of Abdali and Amir Abadi (1392), Karami (2007), Musao (2015), Karikuki (2015), Rahman and Zuki (2016), Helou and Blacho (2017). Abdali and Amir Dabadi (2013) conducted a study titled "The Importance of Banking-Focused Banking Information Technology and its Implementation Steps (Case Study: Bank Ghavamin)" and supported the factors affecting the implementation of the core banking system at Gwain Bank. Senior Specialist Advisers, Banking Co-Managers, Producer Benefits, and Employee Engagement. Another study by Mosaev (2015) entitled "Factors Influencing the Implementation of Kenya Commercial Banking Banking Projects: A Study of the Bank of Lomit" The results of this research indicate that resource management factors Man, project scope management, risk management, top management support and vendor support mechanism on the implementation of core banking at Bank of Kenya affect Lmytd. Kariuki (2015) also referred to a study entitled "Strategic Factors Influencing the Implementation of the New Banking System in Kenya Banks". Supportive Leadership Support Factors, Project Team Competency, Best Project Management Techniques, Collaboration Between Bank Offices, Seller Engagement and Support, User Training Has re-enacted the engineering of business processes and change management. Also, Rahman and Zouki (2016), in a study entitled "Challenges for Core Banking, a Exploratory Study in Bangladesh Banks," General Managers, Technology and Vendor Collaboration In another study by Ella and B. The ETHU (2017), entitled "A Framework for the Implementation of Core Banking in Ethiopia", selected product agents (core banking solution selection), product evaluation, senior management support, project management, and the seller / contractor's support and commitment as factors affecting implementation. Have been selected. On the other hand, based on Karmo's findings (2007), it has been determined that senior management support, business process reengineering and end user training have been influential as key factors in the success of core banking implementation. The strengths of the reasons Not acknowledging the impact of business process re-engineering, respondents considered minimal customization and they did not have much knowledge of the new capabilities of the core banking system, which is why this factor is one of the key factors affecting The implementation of this system has been addressed in all research literature so far as b and maybe not considered. Due to the fact that the support agent and the vendor cannot be verified, it can be stated that the vendor has introduced demo systems and environments to the bank, which has made it into mind. The staff and staff of the bank are far beyond the realm and during the implementation process they have not been able to meet the expectations and demands of the bank's employees. On the other hand, according to the project schedule, there are four main maneuvers in the implementation plan for familiarizing and engaging employees of the bank. But the results of these maneuvers have shown that the staff are as good as they should and perhaps during our time The lights are not supported by the vendor, so the seller's support and support hypothesis has not been approved and rejected. In this regard, according to the results of this research, the following suggestion is proposed:

1. Ensure the selection of best practices for project management and the selection of those who have the most impact and participation in implementation and are suitable for this, and build a training program for the project team, end users and provide adequate funding for it and increase support for senior management for The implementation of the basic IT systems, which is one of the main reasons for the success of the implementation of the Bank of Industry and Mine, has been summarized and the generalization of the results of this support as a solution to other projects of this style and for the purpose of exploiting the bank.
2. Request for increased support and support from the dealer or contractor or the main manufacturer of the core banking system.
3. Requirements should be well understood, well-defined and written at the beginning of the project. Alternatively, the route or infographic of the project is clearly clear.
4. At the beginning of the project, implementation of the success criteria will be determined and these criteria will be measured at different stages of the project life cycle.
5. Ensure financing of the project before the start of the project and provide a budget for unforeseen costs.
6. A strong and experienced project team is selected in the type and size of the project that has the experience of implementing the system. This practice plays a key role in the success of the implementation.

7. In this study, five factors were examined. It is suggested that other variables observed in literature as factors affecting the implementation of the core banking system should be considered.

8. The role of foreign consultants and suppliers, and comparing them with domestic vendors, and examining the strengths and weaknesses of each one, can be the basis for other studies.

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