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The core banking software (CBS) implementation challenges to maintaining quality services of e-banking: an exploratory study on Indian banks

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ABSTRACT

The Indian banking system is embracing the Information Communication Technology (ICT) to moderatethe current culture of banking sector to cope with the newchallenges in the banking sector around the world. Many procedures in the currentbanking system are in the progressing to upgradation and implementing new technology based CBS system to improvement and finding the competitiveness, workingquality, efficiency, and banking regulations. However, these initiatives are very challenging for banking infrastructure. This research study is focusing to identify in current moderate digital banking culture the challenges that Indian commercial banks encounter in the process of CBS System.

This study to found that consensus on new requirements, the role of technology, the role of ICT, the role of quality service of Software in banking sectors, the employee role about ability, capacity, knowledge &credentials, the banking software flexibility& objective for user friendliness and to identification new requirements.The employee skills upgradationthe functionality to migration are the big challenges faced by the Indian banking structure.

The outcome of this research may help to the bankers, academician or banking experts to exploring the challenges in banking system. This study will also helpful for the banking practitioners to concentrate onchallenging area of digital banking to better implement and upgrade the core banking software with upgraded technology in future. To improving the quality of service for software implementation in core banking service.

Keywords-e-Banking, Core Banking Software (CBS), Operational Efficiency, Software Efficiency

I INTRODUCTION

The global bankingorganizations of the world are going through the technological shifting due to modern advance technology. The relentless effort of the banking organizations to giving modern services to the customers with improving the previous services, new innovations, and cost-effectiveness way to finding the benefits of advancement in Information Communication Technology. In the current banking system, the relationships between banking organizations and their users &customers are critical (Seybold, 2001); now here advance technology of banking industries plays a key role in that interaction. For example, now days the current

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technologies is focusing to self-services system, likemobile banking, self-operating services (like fund transfer, account updating), ATM (Debit Card, Credit Card), POS, SMS Banking, core banking services and all of these mechanisms are implementing to maintaining and serving the users in different ways. The technological advancement enable to closing each other (employee and customer) and long-term services with public dealing (Chairlone, 2009). For electronic banking, the advance technique are implementing trough the Information technology, called Core Banking Systems (CBS).

Core banking software services of a banking system, an backbone of the e-banking, to determines for bank offering to costumer and service usersand how impressing they become service friendly.The software developers of CBS are continue modifying new features, tools, functionalityor technology to modify the moderating banksand earning competitive advancement in the competitive enviourment of the current economic world. However,The Core Banking Service implementation, like as all other large Information Technology investment projects, costing, time durability and complexity of implement. Due to that reason, initially 35% of the Core banking software projects were successfully installed and remaining experienced cost and specify to overrun and others failed (Adamson I., 2003). Day by day technology is improving that's way banking system including the employee, software services, working style needs to moderate. There are many challenges in implementing Core banking Software.

This study is focusing to identify the all challenges, which are intruppiting or breaker of the technology. The identified and mitigate to all those which are processing to pointing challenges will be resolve in smoother services of CBS implementation or upgradation with advance feature that will introducing the highest performance, service quality management and virtually customer satisfaction related to core banking software.

II CBS LITERATURE REVIEW

The Core banking software initially identify to implementin the 1970s and has installed through different individuals to significant changes over the running system; the current Core Banking Software has the capability to processing of real-time, multi-channel & integration (Krećа&Barać, 2015). The basic functionality of Core Banking Software is to performingon basic services of banking system(Chairlone, 2009). Abbate (1999) defined a CBS as "*a back-end system that processes daily banking transactions, and posts updates to accounts and other financial records*."

Recently Hariharan (2015) has provided the following functional definition of Core Banking Software.

"Core Banking System is the software used to sustain banks, most common dealings which include providing service loans, opening new accounts, cash deposit, and withdrawals, account self-updating, calculating interests, client& service provider institutions relationship management and maintenance action of recordsinformation for the banks transactions and intracion."

Zineldin (2009) has implements four core levels of Core Banking Service (Figure 1). Each of the CBS levels has incrementing functionality than its predecessor. Most of the Indian Banks has level 2 Core Banking Software (CBS), except few one with level 4.But currently few banking service are trying to access Level 3 and Level 4 banking service.

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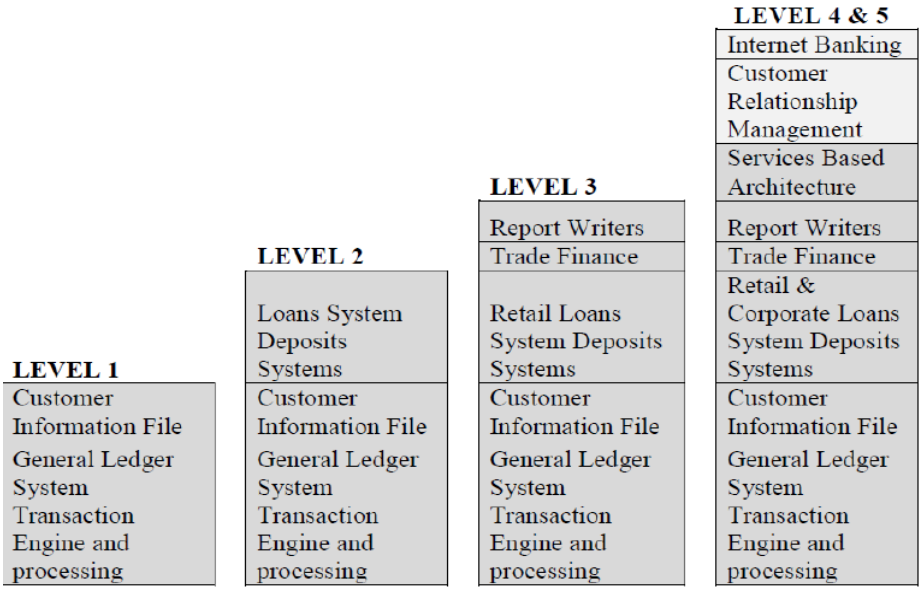
Core Banking Software Levels



As well as other software system in banking service, Core banking software needs to be regularly moderate, updating and upgrading for higherquality, greater responsible, to getting independent platform, adding a new features, function and module to full-fill new expectation and for functionality acceptance. There are many key application for Core banking software moderation, (Zineldin-2009, Blanchard-2008) advancement of using software technology&less maintenance service for existing services& technology; some of existing technologies which can't access new needs; organizational changes to acceptance challenging in the business infrastructure and new software services; better quality services and compliance.

The Core Banking Software system implementation project is, like as all other huge Information Technology, which have been large fund investment, high costly, time-consuming and complex projects on ground level. The key challenges in Core banking software services point out of its main entities involved in banking services.

The main challenge to implement on ground level that is the current internet infrastructure in India. Many of rural area banking system is unable to work Couse of network problem. This is the biggest challenge to implement completely CBS in whole country. No doubt after the CBS system our Banking infrastructure is magical changes on retail banking and commercial banking. Now we are living in 21 century and Indian economy is one of the highest growing economy of the world. After November 2016 Government of India demonetization, change the banking scenario. Now government of India is focusing for the cash less economy. This is very amazing idea for development to Indian economy and controlling the black money. To implement the government policy we must identify the current banking infrastructures and information technology.

The bank management and banking service users and the Core banking software itself. The banking institution managements, in the initial steps, which needs to assess basic necessary services of the banks, technology, offering current service or futureexpected services, its work force, current and future digital banking infrastructure. For the second phase, to develop skills, quality, modify technology friendly, a consensus on the module and capabilities of a Core banking software. Few of them may wish all encompassing Core banking software and few of them like few functions of Core Banking Software (Zineldin 2009).

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After the required moderate Core Banking Software, the banking management will try to implementation the current Core Banking Software for to accessing their requirements and expectation. The key challenges they facinghas often advance software or features hasn't match on their key requirements and banking services, Core Banking Service hasn't flexible and adjustable, its scalable technology to cope with new challenges to changes on new infrastructure of technology, less of skills to running the system properly. Employee felling about the new system, boring user interface, uneasy, unfriendly cause of knowledge& experience.

The Third phase, the Core Banking Software implementation has combine effort of Banking management and users (Haller &Heuberger, 2009). The modifychallenges includes whether the user & its capabilities, qualifying and installations& uses, to migrating data, to supporting Core Banking Software, the vendor& user is training to understand the service for installation, maintenance and implementation etc.

Table 2: Challenges of CBS implementation

S. No.	The Challenge	Details	resource
i	Functionality of CBS (efficiency of software to meet requirements and expectations)	Functionalities and stabilities of Core Banking systems.	Pretorius, & Pretorius, 2008) (Bogaerts, 2011; Haller &Heuberger, 2009, Kenneth C. Laudon, 2012;Malan,
ii	Basic core requirements to reaching unanimity within the organization (what is actually needed?)	Mutual agreement of functional requirements within the implementation team and management based on service accordingly	Bogaerts (2011),
iii	The cost and Financial condition for Expenses	Information systems project costs include with hardware, software, workspace and training.	(Kenneth C. Laudon, 2012)
iv	The Ability of the business to adjustment with new system	To understanding how organization business process adjusted with the new system.	(Pretorius, Malan& Pretorius, 2008)
v	Availability of skilled personality	Whether the organization has essential technical skilled personnel or expert to training the staff.	(Haller &Heuberger, 2009; Kenneth C. Laudon, 2012)
vi	The vendor capabilities and credentials	Whether vendor showed required capabilities and credentials at the time of implementation of CBS.	(Haller &Heuberger, 2009; Kenneth C. Laudon, 2012; Malan, Pretorius, and Pretorius, 2008)
vii	System Flexibility	Whether the new system has the ability to accommodate business requirements and acceptance to by the institution.	(Kenneth C. Laudon, 2012; Bogaerts, 2011; Haller &Heuberger, 2009; Malan, Pretorius, & Pretorius, 2008)
Viii	Migration of data	Transferring data = "data migration" How smooth the data migration was?	(Kenneth C. Laudon, 2012; Haller &Heuberger, 2009; Malan, Pretorius, & Pretorius, 2008)
ix	User friendliness for Interface	Reliability and comfortability with new technology. To identify whats level of satisfaction that end-user feel about new implemented systems?	(Bogaerts, 2011, Kenneth C. Laudon, 2012)

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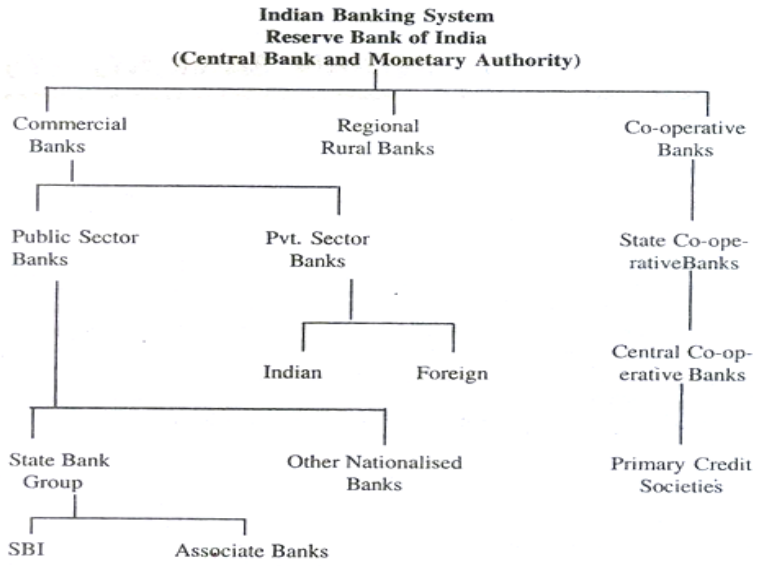
III THE INDIAN BANKING SYSTEM

The modern infrastructure of Indian banking infrastructure, originated at the 18th century. The first bank among the organised banks introduced like the Bank of Hindustan, itsestablished in at 1770 and liquidate at 1829–32. Another bank the General Bank of India, which founded at 1786 but that bank failed at 1791.[1][2][3][4]

Now a dayThe State Bank of India is the oldest and largest bank series in India, still successfully existence. Many banks series like SBI, are also running in India under Govt. of India and private bank. Initially its identify as the Bank of Calcutta at June 1806. At 1809, TheBank of Calcutta renamed as The Bank of Bengal. The Bank of Bengal was one of the bank in three initial organised banks. All initial bank funded by a presidency government (British India), the other two bank were introduce like The Bank of Bombay and The Bank of Madras. Presidential government in 1921 merged the started three banks. The merged introducing bank named The Imperial Bank of India. After the Independent of India The Imperial Bank of India,introduce like The State Bank of India at 1955. For many years at initially implementation of banking system in British India the presidency banks acted as quasi-central banks, as latertheir successors, until the Reserve Bank of India[5] was introducing at in 1935, under the Reserve Bank of India Act, 1934.[6][7] Then all banks has been working under The Reserve bank of India.



STRUCTURE OF INDIAN BANKING SYSTEM

In 1960, Indian Government pass an ACT related to The Government of Indiahas control of eight state-associated regional banks under the SBI Act, 1959. All those banks are now called its associate banks.[6] Few subsidiary bank initially controlled by regional state. In 1969, the Indian government nationalized the 14 major private banks. In 1980, the new 6Banks that are more private were nationalized.[8] These banks, which nationalized, are the majority of lenders in the Indian economy. Those are dominating the banking sector because of their large series and widespread networks.[9]

The Indian banking sector has widely classified banks into scheduled and non-scheduled banks. The scheduled banks classified into nationalized banks like State Bank of India and its associates; Punjab National banks and its associated, national banks under government, Regional Rural Banks (RRBs); foreign banks; and other Indian

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private commercial banks.[7] The term of commercial banks refers to both scheduled and non-scheduled of commercial banks, whichregulated under the Banking Regulation Act, 1949.[10]

Generally, Indian banking is fairly mature in terms of series, services, product range, capability accessibility even though reach in rural India, and to the BPL (below to poor line) family still remains as a challenge. To beating this challenge Government of India started many schemes for zero balance scheme like student account, farmer account, one family one account. That's way bank has been successful to hit the target. But latterly bank faces the challenge about maintaining the account. Minimum expenses are not full filling by that type account. Many accounts has no balance accordingly. This type of challenge is also a big issue to maintaining the account by banking sectors.

The government of India has started to develop initiatives to address, through the State Bank of India and some other national bank like PNB, BOI, UCO, UBI, BOB, ALAHABAD Bank etc spreading its branch network and through National Bank for Agriculture and Rural Development (NABARD) with facilities like microfinance and economic chains.

The growing of development for the Indian banking organization has been tremendous improvement over the past decade. As well as the world economy growth from the global financial meltdown, India's economy has been one of the economy in very few economies of the world to maintain stability resilience while continue to providingfast growing opportunities to be matched by developed economy around the world.

IV RESEARCH DESIGN

There are very limited research finish in Core banking software in Indian banking system an exploratory advance research according to the modern requirements &advance approach hasbeen undertaken to modification and implementation (Zikmund, Babin, Carr, & Griffin, 2010).

To convenience and the sampling methodologyhas been usedfor its technical requirements, cost effectiveness, expanses, availability of resources to implement and hugeimolmented applicability in ICTsystems research. To analyzing of the relateddata, the exploratory influenced factor analysis, whichhas been completed with extraction methodology and Promax methodology. In case of maximum Likelihood extractionanalysis hasbeen used because it allows to new researchers for testing of the statistical significance of effectiveness to load, to calculatingthe correlations ofavailable factors and computingthe confidenceintervals for the properties are using in related study. The Promax rotation methodology, an oblique methodology of rotation, which used in the reflective research.[11]

To collecting the data, the structured of implemented questionnaire survey methodology, and face-to-face interview process has been used. The initial questionnaire used to collect on a demographic data and the secondary questionnairewhich are used to collecting the data on behalf of different constructs using the 5-point scale ranging likethe (1) strongly disagree"to (5) "strongly agree". Themajor study was conduct and the feedback was using to design approach and testing the effectiveness of questionnaire.[12]

There are various type of banking used in current Indian banking sectors. Few are here

A. API driven banking back-end: DBS

Digital Banking Services (DBS) provides a robust set of capabilities that supply customer-banking functionality to enrich and expand your existing systems and their abilities. DBS comes out of the box with logic to enable

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channel specific functionality, data persistency, and cross channel / cross business services orchestration. This all to streamline high-performance omni-channel experiences with rich and interactive data that normally would not be available directly from the core banking or back-end systems.

B. Products

Manage all customers' products, including Current Accounts, Cards, Deposits, Investments, as well as their respective balances, and product details.

C. Transactions

Use the Transaction capability to view the list of the executed transactions, pending holds and authorizations. You can perform a stacked search using dates, amount ranges, and transaction category.

D. Contacts

Create and manage a list of frequently used counter-parties (or beneficiaries). Contacts includes hooks to entitlements to add approval flows on the contact manager.

E. Products

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H. Notifications

Send notifications from another DBS capability or back-end system. Specific customers, users representing the customer, or a group of users or customers can receive notification.

I. Entitlements

Entitlement define what a user can do, how it can be done, and the constraints that apply when they do it. Including 3rd party access to accounts (from persons and systems), approval flows, service arrangements, sum and date limits.

J. Message Center

Enable secure communication between the bank and the customer, on every channel and devices. Including attachments, message workflows, and hooks to 3rd party CSR / helpdesk systems.

K. Actions

Run defined flows when a specific events is triggered. Bringing IFTTT functionality to banking.

L. Finding

The process and accessibility identify which are implementing in banking.

The Demographic Information

The respondents whose are participating in survey, which has been conducted male, whose are dominating (85%). The age of majority of participated respondents (80%) up-to 30 to 40 years. Most of them having Post graduate degree holder (83%). Almost 90% of the participant have the job experience(10 years); while only 10% of respondents have more than 10 years of job experience. The participated respondents were sharing their experience on behalf of Indian Banks (private and public banks of India).[13] The 51% participating respondent were using T-24, smart software(core banking software) for their banking operations.

Table 3.1: Demographics of Respondents

Descriptions Details		**Freq.**	**Percentage**
Gender	Participant Male	130	84.97%
	Participant Female	23	15.03%
Age (Year)	Below 30	13	8.50%
	30-40	123	80.39%
	Above 40	17	11.11%
Education	Bachelor	22	14.38%
	Masters	128	83.66%
	Others	3	1.96%
Service Length Year	Below 5	60	39.22%
	05 - 10	76	49.67%
	Above 10	17	11.11%
Type of Bank	Private	75	49.02%
	Public	78	50.98%
Banking Software	T-24	78	50.98%
	Flexcube	30	19.61%
	Kastle	23	15.03%
	EIBS	12	7.84%
	Intellect	10	6.54%

Factor Analysis

The factor analysis result is showing that the KMO measurement of sampling adequacy 0.746, in which well recommendation value of 0.6, for the Bartlett's testing of sphericity significant is:

$\chi^2(36)= 356.367$ and $p<0.5$).

The calculation for each identify item are 0.3 (earlier Table 2) to confirming shared items withsome common variation with other items. All of given identify results are indicatingidentify items are factorable.

The testing of KMO and Bartlett's

The Kaiser-Meyer-Olkin (KMO) Measurement of Sampling Adequacy		.746
Bartlett's Test of Sphericity	Approximately Chi-Square	356.367
	Df.	36
	Sig.	.000

TheResult of Factors Analysis

ITEMS to identify	*Factors identification related*			Communalities*
	The Software	The Vendor	Management	
Functionality (Capability of	.704			0.483

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software to meet requirements and expectations)				
System Flexibility	.636			0.578
User friendliness of User Interface	.817			0.591
Cost and Financial Terms		.585		0.411
Vendor capabilities and credentials		.807		0.559
Data migration		.612		0.421
Reaching unanimity within the organization on what is actually needed			.750	0.546
Ability of the business to adjust to the new system			.493	0.316
Eigenvalues	3.257	1.366	1.270	
Percentage of total variance	30.511%	09.933%	08.511%	
Cronbach's Alpha	0.765	0.711	0.700	

**The Extraction Methodology(Maximum Likelihood Methodology).*

***The Rotation Methodology (Promaxof Kaiser Normalization)*

**** The Factor loading is showing the pattern matrix results and theFactor analysis distributed in different three factors.[14]*

***** All of the nine items of given table are considering for the research study which are given below:*

- *First factorwhich has related to software challenges, like Core Banking Software functionality, usability, flexibility, stability, empowerment and user friendliness.*
- *The second factorvendor related items like vendor capabilities, data integration, data migration, and cost.*
- *The Third factor, which is internally reliable like earlier two factors as, achieved recommendation of Cronbach's Alpha of 0.7.*
- *All of the given three factors are togetherexplaining 49% (variances).[15]*

V. THE RELATED DISCUSSION

The E-Banking is aeffective procedure fadingto current structure in India and the globalbanking sectors. The traditional methodology of the banking process has been become obsolete.[16] The banking methodology are transferring the technology in form of shifting from the initial traditional manual systems to core banking services. We have given a lot of name to current banking system like CBS (Core banking system), e-banking (electronic banking), i-banking (internet), mobile banking (app based banking), all kind of banking depends on the information technology.The current Government (Govt. of India) is focusing to cashless economy. In case of cash less economy the core banking play a vital role for implementation of such technology. This study trying to identify the key challenges. That is identified throughthe literature review and expert interview with the IT professionals, usersof similar services and Bank employee.[17] This reveals studyto focusingthat the challenging

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source for Core banking software implementation like: Management orientation, related Software and user. The identifySoftware challenges seems to having ahigher power of explaining the variances, which are followed by service user& management related challenges.

The pre-dominant core banking software in Indialike Temenos' (24) followed by Flexcube and Kastle. The second largest using services is Smart Banking software. T24 is one of the banking organization to have a common Information Communication TechnologyInfrastructure Which can be implement among themselves on same platform. So secondly, the doubt related technology and expenses of moving to unknown or less known system software.[18] Consequently, such kind of weak position of Bank administration took an impact toll on its banking operational performance. Our study also reveals to focus that the Youngers dominate IT departments in the Indian banks. Somewhere the Information Technology sector irrespective of the advance technology based industry is lake of experiencedominated young in age, talented and educated but unexperienced.

A. The Implications of Management

The banking management need to consider all kind of challenges while selecting, implementing, and upgrading the Core Banking Software. In case of advance banking software technology, the most challenging part of Core Banking Software' is user interface, acceptance, comfortability and friendliness. If the user is interfacingabout procedure, complex and non-user friendly, that might be inthe poor performance to output. The necessary factor of the CBS functionality; whether it is full-fill all requirements of the bank to full-fill.[19]

The most important user's challenges is to the capability and credential. As well as the most of the Banks are using the foreign Core Banking Software system, which is very typical to use. Because all of the country have their own scenario, culture, banking system, rules and regulation, economic effectiveness andrequirements. Vendor support is essentialsfor fixing bugs, training, upgradation and maintenance.[20]

So that the Bank manager should choose a Core Banking Software which should be flexible and capable of working enviourment supporting to management essentials and capacity with excellent supportive vendor.

B. Theoretical Implications

This study is identifying the challenges related to the management; software and vendor together can explaining in 49% of the variation. Some of the case might be related to otherfactors, which are the future researchers make research to identify more modification. Finally there is a huge scope of research to identify related key challenges have impressive influence on current Core Banking Software performance. Current Indian economy environment needs to more impressive and devoted IT infrastructure to support of Cash less economy. The cash less economy is completely dependent on digital infrastructure for quality management system.

VI .CONCLUSION

Many financial service institutions of global banking are seeking to embracing or upgrading their core banking software services to improving the performance of services, competitiveness, comparing working style,efficiency, quality of service, other services and regulatory compliance. Even such kind of challenging initiatives are for all banking organizations. The sources of current challenges include IT based, management or service deployment and organizational, the software itself and users. To Mitigating the major three challenges

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during the implementation of core banking services which can be lead to faster, smoother and user friendly Core Banking Software implementation / upgradation and to achieving the operational excellence and qualitative. However, Information Technology world is very dynamical, growing and ever changing. There may be arise the new challenges to upgrading in current system or future system.

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