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**Type of the Paper:** Research Paper.

**Type of Review:** Peer Reviewed.

**Indexed in:** OpenAIRE.

**DOI:** <http://doi.org/10.5281/zenodo.1481300>.

**Google Scholar Citation:** [IJMTS](#)

## How to Cite this Paper:

Krishna Prasad, K., & Ushadevi, P. (2018). A Study on Mobile banking Financial Transaction of Major Nationalized Banks in India. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 3(2), 100-119.

DOI: <http://doi.org/10.5281/zenodo.1481300>.

**International Journal of Management, Technology, and Social Sciences (IJMTS)**

A Refereed International Journal of Srinivas University, India.

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## A Study on Mobile banking Financial Transaction of Major Nationalized Banks in India

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### ABSTRACT

Adopting new technology in the banking sector is very useful for the growth of banks in India. The bank is the main financial institution that provides the digital technology-enabled services to the customers in an effective manner. Because of competition today each and every bank is providing modern and innovative services to attract a number of customers. Mobile banking (also known as M-banking) is latest technology or novel technology, user-friendly, and widely used concept in Electronic banking that is used to accomplish cashless financial transactions, fund transfer, credit applications and payment of bills, taxes etc. remotely through mobile devices like smartphones, PDAs, and tablets. The uncommon increment in the utilization of mobile phones in both urban and rural areas provides exciting opportunities for the development of cell phone based banking. But in India, a developing country, mobile banking is limited to only some fields such as SMS due to lack of facilities, security issues, poorly performing internet connections and because of high priced. In this paper, we present a comparative study on Mobile Banking transaction of major banks in India. In this paper, we analyzed and discussed portable banking money/financial transactions, using ABCD analysis and based on the analysis we made a few proposals/recommendations to cell-phone enabled banking service contributor. This will encourage the scientist/researcher to find the gap between the traditional and digital method of financial transactions in India.

**Keywords:** M-banking, Digital technology, ABCD Analysis, Financial Transactions, Wireless Communication Technology.

### 1. INTRODUCTION :

The brisk or quick improvement of the portable media transmission industry alongside remote innovation and web made another correspondence innovation named as 4G or Fourth Generation with properties as speed or tweaked/customized administrations/services, interactive multimedia and sound, predominant quality video, and quick broadband web [1-3]. Versatile/cell-phone banking is a basic, sheltered and quick service given by banks or other money related establishment which enables its clients to direct monetary exchanges remotely utilizing a cell phone. At first the dominant part

of banks began with only short message service based banking services to drive the transaction messages to the customer. After the evolution of smartphones, various operating systems to mobile phones and many apps, the Bank and other financial institutions adopted some of the new technologies like fund transfer, utility bill payments, ticket booking, mobile/DTH recharge etc [4-10]. Real Banks have created a portable application which encourages bank's customers to get account clarifications as passbook and other transaction details with the assistance of their advanced cells/tablets whenever it might suit them without visiting the Banks. It's a

convenient way to access account details while on the move. Fourth Generation (4G) remote portable innovation structure is a latest remote electronic gadget standard with features like improved data conversion scale, high security, modified and unavoidable administrations /services, smart intuitive media, voice, video, remote web and other broadband services with quick and effective [11]. This 4G technology can be affectively used in order to successfully implement and deliver mobile banking services worldwide. Cell-phone based banking (m-managing an account) is seen as one of the most recent internet and mobile enabled money services to its clients. Despite the fact that Automated Teller Machine (ATM), phone, and Internet based banking are managing an account benefits outside the banks and offers effective conveyance channels for customary money, versatile/cell-phone banking is the most up to date circulation channels built up by the banks in many developed and developing nations with more accentuation on omnipresent nature of administration accessibility [12]. A German organization Paybox in a joint effort with Deutsche Bank at first propelled cell-phone based banking in late 1990. Initially decade of the 21 century, some developing nations began presenting cell-phone based banking benefits in that Kenya was the main developing nation presented m-managing an account benefit with more importance on everywhere available services called M-Pesa, in 2007.

In the current system of cell-phone banking just client/user name and secret password or One Time Password (OTP) is regularly utilized for verification purposes. Security is the one of greatest worry for the across the board utilization of cell-phone based banking account money services. As number of cell-phone user clients increments quickly and exponentially, a solid confirmation instrument winds up basic. Location data can be utilized as one of the factor of validation/authentication purpose. In Location Authentication recover client's present area and further process that information to get more data close to their present area and to validate against person's asserted personality. All together gain area data iBeacon or GPS can be viably utilizing

relying upon the separation inclusion factor. Location based validation is the exceptional strategy to demonstrate singular people character or legitimacy on by distinguishing or identifying client nearness at a different areas utilizing a few images, unique highlights or utilizing extraordinary items. Location based verification can be affectively connected with the end goal to benefit propelled services to clients, which incorporates a few services like Digital Deposit, Mini loan services, Advanced ATM Security, Advanced Bill Payment, Credit Card Security and Auxiliary Services.

This paper contains six segments. Segment 1 portrays starting introduction of cell-phone based banking services. Section 2 clarifies related research of cell-phone based banking money transactions and it additionally covers few difficulties looked by portable saving money services like securities. Section 3 depicts research objectives and methods, which knows the commitment made by this paper to other research networks. Segment 4 portrays diverse money related exchanges and services of versatile keeping money in real open division banks of India with its highlights. Area 5 makes Analysis of cell-phone based baking's account money related exchanges utilizing ABCD analysis and based on the examination and we additionally make a few suggestions to cell-phone based banking service contributor. Segment 6 finishes up the paper through conclusion. This will assist the researcher with finding the research gap between the customary and advanced cell-phone based banking services in India.

## **2. RELATED RESEARCH :**

In literature, many related examinations are accessible, which for the most part centers around conceptual study on cell-phone based banking services. Specialists utilized different terms for portable/cell-phone banking services, Amin et al., (2006) alluded cell-phone managing an account as pocket keeping banking, Ivatury and Mas, (2008) as branchless banking system, while Donner and Tellez, (2008) called m-installments, m-exchanges, m-fund and Liu et al., (2009) named as m-banking [13-16].

Veijalainen et al., (2006) contend, the principle main thrust for the quick acknowledgment of little cell phones is because of the capacity they offer for acquiring services and running applications at whatever point, anyplace or universally or even while progressing or moving [17]. Shaikh, (2013) expressed in his exploration that the expanded and sensational utilization of PDAs provoked numerous money related foundations or banks and specialist organizations to present cell-phone based banking services with an account benefits alongside some non-monetary exchange to broaden their customer reach with the intension to hold and fulfill existing clients, obtain new clients, enhance their incomes and to give new business openings [18]. Mari Suoranta et al., (2003) concentrated on their exploration on examining dispersal and adopters of cell-phone based banking services. They made an observational study on these new type of banking services and discovered that specific statistic trademark and the favored correspondence method of clients, effects on the reception and future use of cell-phone based banking services [19]. Jukka Riivari, (2005) expressed that cell-phone based banking services as an intense advertising apparatus to manufacture continuous and commonly remunerating association with new and existing clients and this qualities was the explanation behind financial institutions crosswise over Europe to exploit cell-phone based banking services [20]. Mari Suoranta et al., (2005) reviews that new technological advances in banking sector will act as driving force for mobile banking services adoption. Based on empirical inference of the study, the paper proposes a model based on conceptual theory, aggregates different factors affecting the mobile banking [21]. The exploratory study of Vijayan et al., (2005) [22] examines the consumer's intention to adopt mobile banking services or any new services based on three commonly used theories as Technology Acceptance Theories (TAT). This examination gets more significance because of the factor that money related organizations are confronting gigantic test to draw in guests to their site and consequently

profiting new services and new learning or hypothesis can assist investors with fishing or pull in more customers into cell-phone based banking services.

Lee et al., (2003) [23] performed eight meetings to gather records from members and presumed that there are a few elements which are viewed as positive and negative state of mind for reception of portable managing an account, in which relative favorable circumstances and similarity were affecting elements and seen hazard and customer past experience was non impacting factors.

Thakur, R., and Srivastava, M. (2014) [24] arranged an exploration paper with an aim to discover useful reliance or connection between adoption readiness (AR), seen hazard and use intention of cell-phone helped payment framework in India and furthermore to know the created model dauntlessness of organized association with various clients gathering. In their proposed model, five out of six speculations was completely bolstered dependent on various supporting builds and then again one theory was mostly upheld Nayak, Nath, and Goel (2014) [25] arranged a paper with an intention to know or investigate distinctive elements that impact or bolster the acceptance characteristics or practices Indian clients for encountering cell-phone based banking services and paper additionally makes diverse suggestions for portable saving money administrations suppliers to improve cell-phone based banking services to hold their current clients and to obtain new clients.

Jain, J. (2013) [26] utilized an irregular/random sampling of 100 individuals in Rajasthan of India, with the end goal to distinguish factors affecting the acceptance and use of cell-phone based banking benefits by Customers in Southern Rajasthan. He discovered that shoppers are not kidding about the danger of directing managing an account by means of a remote channel, estimated as far as generally security and dependability of the services advertised. Notwithstanding, due to different issues in m-keeping money framework, this isn't generally acknowledged by South Rajasthan bank client. He likewise discovered that customers get

discouraged by the confused capacities while getting to the mobile managing an account services which lead them to the disappointment level as no appropriate direction is to be given to them [26]. Sathye, M. (1999) and Mattila, M. (2001) have contended that one of the greatest obstructions for the development of on the web or additionally cell-phone banking framework is complex security instrument. In mobile banking transactions confidentiality of traffic, of location and of the communicating parties address are important for privacy [27-28].

**3. RESEARCH OBJECTIVE AND METHODOLOGY :**

The main objectives of the research are given below.

- To study cell-phone based banking framework’s money related transactions of major prominent Banks in India which includes private and public sector Banks.
- To analyze cell-phone based banking framework’s money related transactions using ABCD Analysis
- Based on the analysis recommendations on mobile banking services.

Methodology of the examination depends on Banks official website analysis and research results are dependent on investigation of public

sector Banks site and suggestions dependent on the investigation.

**4. MOBILE BANKING FINANCIAL TRANSACTIONS OF MAJOR PUBLIC SECTOR BANKS IN INDIA :**

In order to realize the true benefits of mobile banking and to effectively implement it, fast accessible, without delay, web associations are specifically accessible to all locations without any restriction in location place and time. A number of existing or future technologies that enable connections between mobile devices and other information appliances and between mobile devices and the Internet are through the series or generation of 1G, 2G, 3G, 4G and upcoming 5G technologies. As the mobile communication technology moved from generations to generations speed, broadband capacity, bandwidth, availability increased. Fourth Generation (4G) technology is characterized by advanced personalization, high speed, all IP-based, high speed, ubiquitously available services. Table 1 describes the different facilities available for financial transaction using mobile in major public sector banks in India. Table 2 shows fund transfer limits of various nationalized Banks in India.

**Table 1:** Facilities available in Major Nationalized Banks in India

Sl. No	Bank name	Facilities available	Mobile Bank App
1.	State Bank of India	<ul style="list-style-type: none"> <li>• Funds transfer (within and outside the bank)</li> <li>• Immediate Payment Services (IMPS)</li> <li>• Enquiry services (Balance enquiry/ Mini statement)</li> <li>• Cheque book request</li> <li>• Demat Enquiry Service</li> <li>• Bill Payment (Utility bills, credit cards, Insurance premium),</li> <li>• Donations, Subscriptions</li> <li>• Mobile /DTH Top up</li> <li>• M Commerce (Merchant payments, SBI life insurance premium)</li> <li>• Mobile Banking Service over SMS</li> <li>• Mobile Banking Service over USSD (Unstructured Supplementary Service Data)</li> </ul>	State Bank Anywhere

2.	Andhra Bank	<ul style="list-style-type: none"> <li>• Balance Inquiry</li> <li>• <b>Mini Statement</b></li> <li>• <b>Funds Transfer</b></li> <li>• <b>Mobile Recharge /DTH.</b></li> <li>• <b>Utility Bill Payments</b></li> <li>• <b>Credit card Services</b></li> <li>• <b>Cheque Services</b></li> </ul>	Abtej
3.	Allahabad Bank	<ul style="list-style-type: none"> <li>• Balance check</li> <li>• Fund Transfer</li> <li>• IMPS, ALL payments</li> <li>• Balance Enquiry</li> <li>• Mini Statement:</li> </ul>	mPay, Allmobile
4.	Bank of Baroda	<ul style="list-style-type: none"> <li>• Fund transfer</li> <li>• Recharge &amp; Bill pay Mobile recharge, DTH recharge, Data card recharge, Utility bill payment, Credit Card (BOB card) payment, Bharat Bill Payment System</li> <li>• Account Balance- Mini statement-360 degree view of account.</li> <li>• Cheque book request, Stop Cheque, Cheque status enquiry</li> </ul>	mConnect-Plus
5.	Canara Bank	<ul style="list-style-type: none"> <li>• Balance enquiry,</li> <li>• Mini statement,</li> <li>• Intra bank funds transfer and interbank funds transfer through IMPS</li> </ul>	CanMobile
6.	Corporation Bank	<ul style="list-style-type: none"> <li>• Instant Term Deposit /RD opening</li> <li>• Instant Blocking and Unblocking of Debit Card</li> <li>• Detailed view of your Account with latest balance &amp; Mini statement.</li> <li>• Fund transfer.</li> <li>• Cheque book request</li> <li>• Status inquiry of Cheque</li> <li>• Stop cheque</li> <li>• Account statement on email (in pdf format)</li> <li>• Foreign currency exchange rates</li> <li>• Transaction History view &amp; Transaction complaint Management</li> <li>• Request for New Savings Account, Current Account, Loans, Credit card etc</li> <li>• Branch &amp; ATM Locator</li> <li>• Bill payment using Bharat Bill Payment System (BBPS)</li> </ul>	Corp EASE
7.	Union Bank	<ul style="list-style-type: none"> <li>• Balance Enquiry</li> <li>• Mini Statement (last nine transactions)</li> <li>• Fund Transfer</li> <li>• IMPS Fund transfer using Mobile No. and MMID</li> </ul>	UMobile

		<ul style="list-style-type: none"> <li>• IMPS Fund transfer using Account No. and IFSC</li> <li>• IMPS Fund transfer using Aadhaar No.</li> <li>• Merchant IMPS Fund transfer</li> <li>• KVS Fee Payment</li> <li>• Mobile Recharge</li> <li>• Temple Donations</li> <li>• Fees payments</li> <li>• Stop Payment of cheques</li> <li>• Cheque status</li> <li>• Hotlist Debit Card</li> <li>• ATM/Branch Locator</li> <li>• Request to Bank for Cheque Book</li> </ul>	
8.	Syndicate Bank	<ul style="list-style-type: none"> <li>• Fund transfer using IMPS</li> <li>• Fund transfer within Syndicate Bank accounts</li> <li>• Debit card management</li> <li>• Value added services and bill payment</li> <li>• Balance Enquiry and Mini Statement</li> <li>• SMS and Email Statement Registration</li> <li>• Aadhaar Seeding</li> <li>• Request for Cheque book</li> <li>• View issued cheque status and Stop cheque payment</li> </ul>	Synd Mobile
9.	Indian Overseas Bank	<ul style="list-style-type: none"> <li>• Balance Enquiry</li> <li>• Mini Statement</li> <li>• Fund Transfer</li> <li>• Bill payments</li> <li>• Cheque requests, Stop cheque, cheque status</li> <li>• ATM Card blocking</li> <li>• Foreign Inward Remittance using IMPS</li> </ul>	IOB Mobile
10.	Punjab National Bank	<ul style="list-style-type: none"> <li>• View account transactions any time.</li> <li>• Fast and easy recharge and bill-payment options.</li> <li>• SMS Banking, USSD Banking or Missed Call Banking.</li> <li>• Payments mobility solutions for accepting cards. Accepts Rupay, VISA, Master, AMEX, DINERS.</li> </ul>	PNB Mobile

**Table 2:** Fund transfer limits of various nationalized Banks in India.

Bank Name	Fund Transfer limit
State Bank of India	Unlimited Funds Transfer Facility: SBI Freedom allows users to transfer funds with no monthly limit. The daily combined limit for funds transfer through IMPS (Immediate Payment Service) is Rs. 99,99,999. However, users can transfer only up to Rs. 50,000 per day in other banks using the application.

Andhra Bank	Per day limit is Rs 2, 00,000/- through App including all type of transaction done through application. Rs 5000/- per transaction for quick pay.
Allahabad Bank	Fund transfer Maximum Rs. 50000/- per transaction & Maximum Rs. 1 lakh per day.
Bank of Baroda	The transaction limits are Rs.50,000 per day and Rs.2.5 lakhs per month.
Canara Bank	Transaction limit: 50,000 per day, 5 lakh for neft/RTGS
Corporation Bank	Within Bank Transfer : No Limit Third Party Within Bank/IMPS/NEFT : Max amount per transaction : RS 1,00,000/- Max amount per day: Rs 1,00,000/- Cumulative fund transfer per day: Rs 1,00,000/-
Union Bank	A maximum of Rs. 2,00,000/day via the UMobile application and Rs. 5000/day using SMS Banking.
Syndicate Bank	Maximum of Rs.5,000/- per-day/per-customer, if transaction is initiated through SMS/IVR or NUUP platform. Maximum of Rs.50,000/- per-day/per-customer, if transaction is initiated through downloaded application. The cumulative limit is capped at Rs.50,000/- per-day/per-customer.
Indian Overseas Bank	Customers can transfer up to Rs.50,000/- in a single day.
Punjab National Bank	Rs. 50,000/- per day. However, through SMS & NUUP variants, limit is Rs.5000/- per day and through ATMs limit is Rs.10000/- per day.

**5. ANALYSIS OF MOBILE BANKING FINANCIAL TRANSACTIONS OF MAJOR PUBLIC SECTOR BANKS IN INDIA USING ABCD ANALYSIS :**

As opposed to PC, portable individual gadgets, normally with a settled presentation and console, are very much situated to give a useful answer for diminishing extortion and permitting the reasonable distribution of duty regarding pay from misrepresentation. Some measure of security is as of now part of the verification system of existing cell phones as an approach to forestall call burglary through password and subscriber identification module (SIM). Also, it is moderately simple and cheap for cell-phone makers to include extra components to guarantee safe transaction authorization. Public sector banks of India furnish monetary exchanges through cell-phone based banking system with security highlights username, secret password and OTP. The investigation of cell-phone based monetary exchange services of public sector

banks in India is analyzed utilizing Advantages, Benefits, Constraints, and Disadvantages.

**About ABCD Analysis:** Many techniques are available in the writing of research papers, to examine the individual qualities, system traits, and effectiveness of an idea or concept, the effectiveness of a method to know its merits and negative marks and furthermore business esteem in the general public. The individual traits or organizational effectiveness & techniques in a given surroundings may be studied the usage of SWOT analysis, SWOC evaluation, PEST analysis, McKinsey7s framework, ICDT version, Portor's 5 force model and so on. Recently a new model is introduced to these analysis areas called ABCD analysis framework [29], which is utilized for dissecting business, business system, new technology, new model, new idea/concept etc. In the qualitative evaluation the use of ABCD framework, the new idea or new system or new strategy or new generation or new model or new concept is further analyzed studied or analyzed using



critical constituent elements. In the quantitative evaluation the use of ABCD framework [30], can be utilized to assign appropriate score or rating for each critical constituent elements, which is calculated through empirical research. The final score is calculated and based on the score the new idea or new system or new strategy or new generation or new model or new concept can be accepted or rejected. Consequently, ABCD evaluation framework may be used as a research tool in these regions and is easy but systematic study or analyzing method is essential for business concept or systems or models or ideas or strategy evaluation [29-46].

The ABCD analysis effects in an organized listing of Business or new Model with reward (advantages), Benefits, Restriction/Constraints, and drawbacks/Disadvantages in a systematic way or form. The complete framework is divided into various issues, the area which new model is focused. Different key properties and influencing the territory of the new model might be distinguished and broke down under every region of issues recognized previously. Later some of the critical constituent element for each identified issue is recognized and analyzed and which is shown in Figure 1. This framework of examination is simple and also offers a guideline to identify and examine the effectiveness of the new model in this context. As per ABCD analysis various determinant issues related to Mobile Banking Financial Transactions are: (1) Security issues, (2) User-friendly issues, (3) Process issues [46].

(1) Security Issues :

Security is very important in the Mobile Banking Financial Transactions. An ideal security refers that a system which is impossible for an intruder to break or access the system. In the Authentication process, security refers safeguarding the user personal data used for the authentication process, which includes Password, and One Time Password (OTP. The affecting factors of Security issues include Password, and OTP under key properties or levels like user level, network level, and Database level are determinant factors under the

constructs Advantages, Benefits, Constraints, and Disadvantages of the new model.

(2) User-friendly Issues :

The user-friendliness of Mobile Banking transactions means that client should ready to gain admittance to the framework easy or effectively without recalling that anything or exceptionally least measure of information. The affecting factors under key properties like Response time, Access time, Automatic Process, Speed, and Availability are determinant factors under the constructs Advantages, Benefits, Constraints, and Disadvantages of the new model.

(3) Process Issues :

Process Issues ensures that client should ready to complete authentication process without any fault, fast and completely. The affecting factors under key properties like Atomicity, Consistency, Isolation, Availability, effort free, and High durability are determinant factors under the constructs Advantages, Benefits, Constraints, and Disadvantages of the new model.

Every determinant issue has sub-issues called key characteristics utilized for breaking down the favorable circumstances, advantages, limitations and impediments; the four develops of the structure. The variables influencing the different determinant issues of Mobile Banking Financial Transactions for each key property inside four builds are inferred by a subjective information gathering instrument to be specific, center gathering technique and are recorded in Table 3.

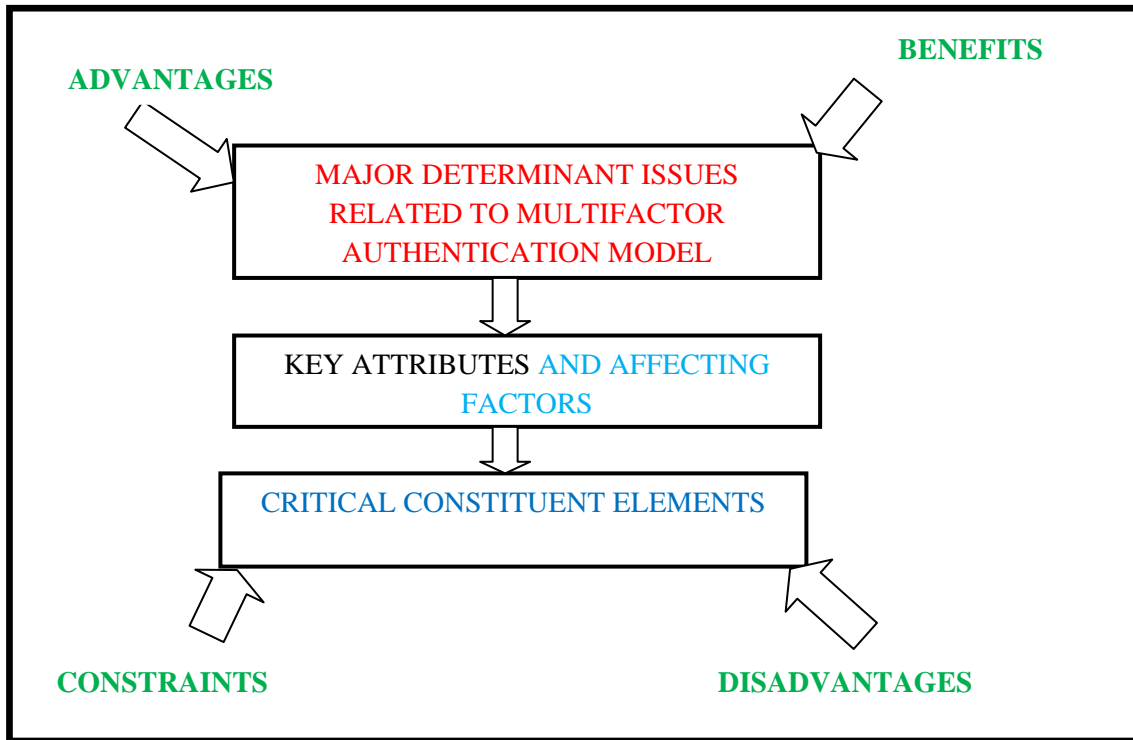


Figure 1: Block diagram of Issues affecting the Mobile Banking Financial Transactions

Table 3: Analysis of Mobile Banking Financial Transactions

Determinant Issues	Key Attributes	Advantages	Benefits	Constraints	Disadvantages
Security Issues	User level security	Easy to safeguard using lock pattern, lock based on image, pin based lock for mobile phone	increases demand of smart Mobile, new type of pattern lock or mobile lock softwares	High Security of the cell-phone based banking transactions are questionable	Acceptance by the user
	Network Level Security	Non-reversible, Non-Revocable Hash code,	Customer faith increases Can attract new customer	tampering of data	Network failure due to some uncontrollable circumstances
	Database Security	Advanced encryption and decryption algorithm are used	Database is easily manageable	Database table requires values in encryption form	Database failure, Server failure
User-friendly Issues	Response time	Increased rate of growth of authentication process	Increased customer pool	Requires high configuration system and efficient algorithms	Hardware and Software cost

	Access time	User Instantaneous authentication	Reduced Queuing, Reduced waiting process	Requires good network, memory, and processor	Hardware and software cost
	Speed	Increased Authentication/ Mobile banking user request per unit time	Increased customer satisfaction, retention and acquiring new customers becomes easy	Requires high configured system and reduced time complexity	Hardware and software cost, High bandwidth network,
	Automatic process	Minimum prior information of the system required	Increased customer satisfaction,	Ability to make difference between registered and unregistered user, processing power	Utilization of the hardware and software resources are too high complex backend design of user interface
	Availability	Ubiquitous authentication	Reduced request queue	Dedicated server and network	24 × 7 working server
Process Issues	Atomicity	Authentication process Rollback or Commit at the time of system failure	Authentication failure is very rare or practically zero.	Need of good fault tolerance techniques.	Requires separate programme for database protection /safeguards
	Consistency	Ensures consistent state at the time of system failure	Authentication process ensures consistency,	Need of good fault tolerance techniques.	Database management and safe guarding requires extra efforts and cost
	Isolation	Authentication process gets isolation property	Enhanced user trust and satisfaction	Need for good lock-based concurrency control system	Database management and lock-based concurrency control requires extra cost
	Availability	Ubiquitous authentication	Reduced request queue	Dedicated server and network	24 × 7 working server
	Effort free	User freely and easily interacts with authentication system	User enjoys working with system, Increased user trust, and	Requires navigational and narrative user interface, Input should	Complex design of user interface and programme increases cost

			satisfaction	be selective rather than enter	
	Durability	Changed Password and Biometric-ID durable for long time	Revocability can be done easily, if password or finger-id is compromised	Need of good fault tolerance techniques.	Database management and safeguarding requires extra efforts and cost

### 6. SERIOUS INGREDIENT ELEMENTS AS PER ABCD MODEL :

The important constituent factors of determinant issues are listed beneath the four constructs - advantages, benefits, constraints and disadvantages of the ABC model and tabulated in Tables 4 to 7.

**Table 4:** Advantages of Mobile Banking Financial Transactions

Sl. No	Issue	Factors affecting	Serious Ingredient Elements
1	Security Issues	Mobile/Smart Phone	Structure of locking pattern Password strength
		Techniques used for authentication	Password strength of mobile banking service provider OTP complexity/structure of the mobile banking service provider
2	User-friendly issues	Increased rate of growth of authentication process	Time required for fetching password and decrypting Network speed for OTP Speed of Matching function
		Increased Authentication request per unit time	Ability of concurrent authentication
		Ubiquitous authentication in user-friendly issue	The system used for authentication Availability of network
3	Process Issues	Authentication process Rollback or Commit at the time of system failure	Strength of RDBMS RDBMS transaction atomicity property
		Ensures consistent state at the time of system failure	Strength of RDBMS RDBMS transaction consistent property
		Authentication process gets isolation property	Strength of RDBMS
		Ubiquitous authentication in process issue	RDBMS transaction atomicity property The device used for authentication process Availability of network
		User freely and easily interacts with authentication system	Simple user interface Navigational and narrative interface
		Changed Password and OTP	Management and maintenance of

		durable for a long time	Database
			Safeguarding of database

**Table 5:** Benefits of Mobile Banking Financial Transactions

Sl. No	Issue	Factors affecting	Serious Ingredient Elements	
1	Security Issues	Increases demand Cloud Drive, Mobile, Pen drive, and laptop	Usage of mobile phone for authentication process	
			Increased customer faith and attracts new customer	Security in all aspects of network
				Simple and easy way to input
		Efficient memory use, Database is easily manageable	Time is taken for authentication process	
			One hash code for comparison and matching	
			Cryptographically Encrypted Hash code	
2	User-friendly issues	Increased customer pool	Quality of multifactor authentication model	
			Response time	
			Simple method of inputting	
			Speed of authentication process	
		Reduced Queuing and Reduced waiting process	Good access time	
			Simple method of inputting	
			Speed of authentication process	
		Increased customer satisfaction, retention and acquiring new customers becomes easy	Good Access time	
			Good Response time	
			Simple method of inputting	
			Speed of authentication process	
		Increased customer satisfaction,	Automatic process	
Good Access time				
Good Response time				
Simple method of inputting				
Speed of authentication process				
3	Process Issues	Authentication failure is very rare or practically zero.	Strength of RDBMS	
			RDBMS transaction atomicity property	
		Ensures a safe state at the time of system failure	Ability of the system to handle crashes or failures	
			Strength of RDBMS	
			RDBMS transaction consistent property	
		Enhanced user trust and satisfaction	Ability of the system to handle crashes or failures	
			Strength of RDBMS	
			RDBMS transaction atomicity property	

			Protected and private authentication process
			Isolation transaction property of DBMS
		Reduced request queue	Availability of authentication system
			Availability of network
			Speed of authentication
		Increased user trust, happiness, and satisfaction	Simple user interface
			Navigational and narrative interface
			Speed of authentication
			Effort free input and process
		Revocability can be done easily if password or Finger-id is compromised	Fast fingerprint-id change option
			Fast password change option
			Hash code representation of fingerprint features and password

**Table 6:** Constraints of Mobile Banking Financial Transactions

Sl. No	Issue	Factors affecting	Serious Ingredient Elements
1	Security Issues	High Security of the Mobile Phone is questionable	Mobile phone pattern lock rigid structure and strength of password
		Good network architecture	Connectivity and security
			Redundancy
			Standardization
			Disaster recovery
		Growth	
1	Security Issues	Cryptographically Hash representation of username and password	The strength of Hash code.
			The rate of difficulty for decrypting Hash code.
2	User friendly issues	Requires high configuration system and efficient algorithms	RAM size
			OS and its architecture (32bit Or 64-bit)
			Processor used
			Single processor/ Multiprocessor
			Clock speed
			Time and space complexity of algorithms used.
		Ability to make difference between registered and un-registered user and Processing power	The features used for identification purpose
			RAM size
			Processor used, Clock speed
			Single processor/ Multiprocessor
		Dedicated server and network in user-friendly issue	Time and space complexity of algorithms used.
			All the features of server required for efficiency
	All the features of network required for efficiency		

3	Process Issues	Need of good fault tolerance techniques.	Strength of RDBMS
			RDBMS transaction's atomicity, consistency, and isolation property
			The fault tolerance technique used in RDBMS.
		Dedicated server and network	The strength of lock based concurrency control used in RDBMS
			All the features of server required for efficiency
		Requires navigational and narrative user interface Input should be selective rather than entering	All the features of network required for efficiency
Te explanation displayed in user interface			
			Navigational control used in interface

**Table 7:** Disadvantages of Mobile Banking Financial Transactions

Sl. No	Issue	Factors affecting	Serious Ingredient Elements
1	Security Issues	User level security acceptance by the user	Security aspect is questionable in third party software
			Network failure
		Network failure	Single point of failure in hardware
			Power problems or issues
			Routing problems
		Tampering of data	Human error
			Un-authorized access to data
		Database failure or server failure	Network failure
Hardware failure			
File corruption			
2	User friendly issues	Hardware and software cost	File system damage
			Cost of RAM
			Cost of Processor
			Cost of the computer system
			OS cost
		Network cost	Authentication system cost
			Bandwidth cost
		High utilization of hardware and software	Data cost
			High utilization of memory and processor
		Complex backend design of interface	Space and time complexity
To design simple user interface for user			
24 × 7 service	High utilization of processor, and memory		
	More power consumption		
3	Process Issues	Requires separate programme for database protection/safeguards	Management of the database
			Essentiality of the Database protection

		Requires lock based concurrency control system	For acquiring isolation property of the database transaction
		Continuous availability of the server increases cost	Requirement of Ubiquitous availability of the server
			Requirement of efficiency of the system
		Complex design of user interface and programme increases cost	Requirement of effort-free authentication process

**Advantages**

- Mobile banking is available 24/7 – anytime, anywhere, anyplace and anytime.
- We can exchange funds, pay bills, financial records balance, trade cash without intrusions/proposals from anybody, holding up time and speedy turnaround on requests.
- It delivers paperless statements directly into customers.
- The customers will get loyalty rewards in the form of points or discount coupons for transacting via the mobile banking application.
- Shares real-time updates on transactions executed, provides multi-level security features like OTP to registered mobile for authentication via the banking application.
- Allow the customers to get in touch with bank staff using the banking app.
- A different option like chat and call is available at any point of time for help and feedback.
- Limit human blunders, mechanize forms and wind up focused utilizing a decent cell-phone based banking framework.
- Mobile banking is cost-effective, many banks offer paperless transaction service in less cost.

**Benefits**

- A ubiquitous service of banking transactions improves customer satisfaction, which internally influences on banking sector growths.
- Mobile Banking facility makes global expansion of the banking Financial Transactions.
- Mobile Banking helps to improve the brand name and reputation of the bank by

providing fast and secured services to its stakeholders.

- Extension of advanced cell clients improves the matter of cell-phone service provider organizations.
- Frequent password change policy, and other high security measures like OTP enhances customer faith over banking financial transactions.
- High quality of services can be provided to users with the aid of 4G mobile communication technology.

**Constraints**

- Lack of new Security measures like Biometric recognition can reduce the number customer using mobile banking services especially in public sector banks in India.
- Lack of newer technology support can become hindrance for the expansion of mobile banking services.
- Slow network speed also can become another hindrance for the growth of mobile banking services.

**Disadvantages**

- Mobile Banking is not available on all mobile phone.
- Mobile Banking apps are necessary to do transactions, which are available on the high-end smartphone.
- Regular use of Mobile Banking may lead to extra charges levied by the bank for providing the service.
- Mobile banking users are at risk of getting fake SMS messages and scams.
- The loss of a mobile device often means that criminals can gain access to mobile banking PIN and other sensitive information.



- Aside from this there are the standard dangers related with cell-phone based banking services incorporates hacking.

#### Recommendations of the Study

- Public sectors bank of India should adopt modern security measures like face based recognition or fingerprint biometric based recognition or any other biometric recognition system to enhance security features of mobile banking services.
- The transactions should not abort in between and incomplete transactions should not end with debit the money from user's accounts.
- Reimburse of money for failure transactions should take place within hours rather than within weeks.
- Speed of the transactions should increase to expand and improve mobile banking services in public sectors banks of India.
- Bank should minimize knowledge base input for authentication by using Biometric based authentication.
- User should able to authenticate without remembering anything.
- Authentication should happen by selecting rather than typing or entering knowledge base input.
- Bank should adopt new technologies like 4G/5G to enhance speed of transactions.

#### 7. CONCLUSION :

Mobile banking (also known as M-banking) is one of the new, user-friendly and widely used concept in Electronic banking that is used to accomplish cashless financial transactions, fund transfer, credit applications and payment of bills, taxes etc. remotely through mobile devices like smartphones, PDAs, and tablets. Even though, the public sectors banks of India adopted mobile banking facility, they lack in speed and some security features. All the public sectors banks of India provides some common services like Fund transfer using IMPS, Fund transfer within the Bank accounts, Debit card management, Value added services and bill payment, Balance Enquiry and Mini Statement, SMS and Email Statement Registration, Aadhaar Seeding, Request for Cheque book, and View issued

cheque status and Stop cheque payment. In this paper, we discussed and analyzed cell-phone banking money/financial transactions, using ABCD analysis and based on the analysis we likewise make a few proposals/recommendations to cell-phone enabled banking service contributor. This will encourage the scientist/researcher to find the gap between the traditional and digital method of financial transactions in India.

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