

Easy Payments on Single Interphase Launching Optimal Solution in No Time (EPSILON)

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Abstract— As a part of Banking System, Mobile Banking is growing rapidly as it is very easily adoptive to the customers. Even yet there are number of issues to be solved like if a user has multiple accounts, he needs to have multiple banking apps which is considered to be ambiguous and even these apps failed in providing many services, which again leads to the crowds and queues at banks which is never solved still. These sorts of unsolved problems can be overcome by this proposed system called “EPSILON” app. This project aims at “Multiple account banking on a single interface”, avoiding complete crowds and queues at bank, providing easy and simple way for fund transfers, payment services and secure internet banking with anywhere all-time services.

Keywords: Mobile Banking, SMS Authorization Codes

I. INTRODUCTION

A. Overview

Mobile banking is a service provided by a bank or other financial institution that allows its customers to conduct financial transactions remotely using a mobile device such as a mobile phone or tablet. A bank is a financial institution that accepts deposits from the public and creates credit. Lending activities can be performed either directly or indirectly through capital markets. Banks are at the core of any economic system whether developed or developing. Essentially, a technologically advanced, transparent and efficient banking system is the need of the hour for the growing economy like India. In our country need for qualitative banking surpasses the conservative economic or financial logic as the financial inclusion is still a distant dream. In addition to the provision of traditional services, many social functions are attached to the banking system financial inclusion and inclusive growth. We all want easy access to our financial information and we want to be able to query and manipulate it on our own terms. We all want access to our financial information securely, immediately, both online and via mobile apps -- it's the idea of controlling our money on-the-go.

Internet banking is the latest delivery channel for financial services. Internet banking is a self-service that allows customers to perform financial activities over the Internet (Aladwani, 2001; Tan & Teo, 2000). There is not a single basic definition of Internet banking that is being used universally. There has been a lack of consensus in the definition given by researchers (Daniel, 1999; Sathye, 1999). Regardless of the differences in definition, Internet banking refers to many kinds of electronic services through which bank customers can request information and get most of the retail banking services via a computer. It is also commonly known as online banking or e-banking.

Internet banking has been defined from different school of thoughts by various researchers depending on their experience, nature and study environment. For this research,

Internet banking is defined as a self-service that enable bank customers to get access to their accounts and the latest general information on bank products and services, and conduct all financial transactions anytime from anywhere through the use of a bank's website.

Internet banking provides a change from the traditional way of face-to-face contact at a bank's counter during office hours to a remote way by online network connection anywhere at any time (24 hours a day, seven days a week). Internet banking provides many advantages for bank and customers as well. Therefore, many banks have invested heavily in Internet banking services. Although Internet banking provides many benefits, many individuals still refuse this service. Since the acceptance or rejection of new technology depends on the factors that influence individuals' behavioral intention toward this technology, there is a need to determine which factors influence individuals' intention to accept new technology. Internet banking like other new technology faces many problems associated with its acceptance. Yemeni banks, as other banks in the Middle Eastern countries, have suffered from problem of Internet banking rejection. So far limited studies have tried to deal with this problem. Therefore, this research investigated factors that influence individuals' acceptance of Internet banking services, and used Republic of Yemen as the sampling frame. This project provides an overview of this study; the background of the study, then present the research gap and opportunity, the research problem statement, research questions, research objectives, the justification of study and the motivations to conduct this project.

The Reserve Bank of India recently informed banks to encourage mobile banking. In coming days we will see more number of people getting addicted to the ease of mobile banking. Now a day's people do not want to waste their precious time but when it comes to the banks people has to spend most of their time standing in the queues. Keeping this in mind in order to help people of the society where everything is digital application EPSILON is designed to overcome major problems in a suitable way. Transactions through this banking app may include obtaining Account Balance Inquiry, Credit/Debit Alerts, Bill Payment Alerts, Transaction History, Fund Transfer Facilities, Minimum Balance Alerts, Funds transfers between a customer's or another's accounts along with the history user transactions. Mobile banking apps are being used around 7,610 times a minute, now consider this alongside the Competition and Markets Authority's (CMA) recent announcement regarding Indian banks having to offer the same customer service through its apps as can be found in high street branches.

II. BACKGROUND

A Literature review is a text of a scholarly paper, which includes the current knowledge including substantive

findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and do not report new or original experimental work. Mobile banking is a service provided by a bank or other financial institution that allows its customers to conduct financial transactions remotely using a mobile device such as a mobile phone or tablet. It uses software, usually called an app, provided by the financial institution for the purpose. Mobile banking is usually available on a 24-hour basis. Some financial institutions have restrictions on which accounts may be accessed through mobile banking, as well as a limit on the amount that can be transacted.

[1] Barnes(2002) indicated that WAP banking is another form of electronic banking that enables the user to communicate interactively with the bank. For this communication the client uses only GSM mobile phone with the WAP service. With its options and the method of controlling WAP banking reminds an easy form of internet banking. WAP is a standard for bringing internet-based content and advanced value added services to wireless devices such as phones and personal digital assistants.

[2] Clark(2008) stated that the mobile as a channels delivers convenience, immediacy and choice to consumers. But there are a large number of different mobile phone devices and it is a big challenge for banks to offer mobile banking solution on any type of device.

[3] Sharma and Singh(2009) found that the mobile banking users in India were more concerned with security issues like financial frauds, account misuse and user friendliness issue, difficulty in remembering the different codes for different types of transaction, application software installation and updating due to lack of standardization.

[4] Hayat(2009) suggested that for a banking regulator it's important to provide adequate protection for consumers, ensure economic stability, provide interoperability of electronic systems and guarantee security of transactions and anti-money laundering and know your customer principles must also be applied to mobile payments.

[5] Further, Banzal(2010) found that another major issue is the revenue sharing agreements between mobile service providers, banks, content providers, aggregators and other service providers like utilities, travel agencies, hotel industry, retailers etc. Gupta and Mittal stated that the connectivity with innovative modes of transaction in banking like ATMs, Internet

Banking and mobile banking always required lot of attentions from the side of service providers because a small interruption in the system may spread a very bad word of mouth and fear to the customers. Technical Committee Report.

[6] RBI(2014) described that the Mobile banking transaction is economical compared to the traditional banking channel in a big way keeping in mind the long term economic gains. Bank-specific applications and individual platforms have a major role in building brand loyalty, an alternate uniform/common platform, interoperability and similar seamless transactional experience to the users/customers of all banks would encourage mobile banking. Mobile banking is defined as a provision and ailment of mobile and bank services by using telecommunication device, the services may include keep in contact with bank to administer account

and access customized information (Tiwari and Bus,2007).Mobile banking is a channel through which a customer can interact with bank through device such as mobile and PDA (TommiLaukkanen, SuviSinkkonen, MarkeKivijärvi, PekkaLaukkanen, 2007). Mobile banking is seen as an extension to the payment system of bank which enables mobile network to extend its services in reach of customer (Gavin Troy Krugel, 2007).Mobile banking help customer to access their banks anytime. Through mobile banking application customer can check their account details, transfer money transitions, and can pay their bills while sitting at home and offices.(Infogile Technologies, August 2007).The continuous development and usage of mobile make people to become in habit for it and this force companies to come up with new mobile services. Some factors which nourished the mobile banking and due to which the need of mobile banking is felt are the economic development (globalization is leading to mobility),high density of mobile devices, powerful devices, high data transfer, attitude of new generation towards the use of mobile banking the need and wish.

[7]Online banking was first introduced in the early 1980s (Kalakota and Whinston, 1997),in which consumers were provided with an application software program that operates on personal computer (PC) which can be dialled into the bank via a modem, telephone line and operated the programs remotely on the consumer PC. However, the lack of Internet users, and costs associated with using online banking, stunted its growth. It was only in the late1990s that Internet Banking really caught on as the Internet explosion had made consumers more comfortable with making transactions over the web. During dotcom fallout, it became apparent that Internet Banking was not the panacea banks had thought it to be.

[8] Between 2001 and 2004 Internet Banking investment growth experienced a significant slowdown. Nevertheless the customer base for Internet Banking was growing steadily from2000 to 2005 (Accenture, 2005). Based on Forrester Research, Internet was the dominant channels besides the branch in 2007.

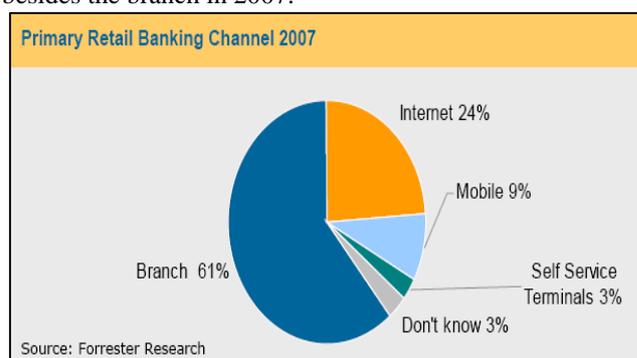


Fig. 1: Primary Retail Banking Channel 2007

With respect to Internet Banking, a common confusion exists between the terms of online banking, Internet Banking as well as PC banking. The terms Internet Banking and online banking are often used in the literature to refer the same things. According to Hamid et al(2007), online banking is another term used for Internet Banking. Both share the similar meaning. Internet Banking or online banking can be defined as the service that allows consumers to perform

banking transactions using a computer with an Internet connection(Lloyd, 2007).

[9] Thulani et al (2009) refer Internet Banking as systems that enable bank customers to get access to their accounts and general information on bank products and services through the use of bank's website, without the intervention or inconvenience of sending letters, faxes, original signatures and telephone confirmations. It is the types of services through which bank customers can request information and carry out most traditional retail banking services such as opening an account or transferring funds to different accounts, and new banking services, such as electronic online payments via a telecommunication network without leaving their homes or organizations.

[10] Aladwani, 2001; Daniel, 1999; Mols, 1998; Sathye, 1999 said it provides universal connection from any location worldwide and is universally accessible from any Internet linked computer (Thulani et al, 2009; Perumal and Shanmugan, 2004; Bradley and Stewart, 2003 and Rotchanakitumnuai and Speece, 2003). At an advanced level, Internet Banking is called transactional online banking (Sathye, 1999). On the other hand, PC banking is defined as a home banking whereby consumers supplied with a financial software package on disks, allowing consumers to fill in details offline and then to send them into the bank over the bank's private network. Unlike PC banking, Internet Banking or online banking does not require proprietary software or access to a private network (Hamidet al, 2007).

[11] Internet Banking has been regarded as the most important way to reduce cost and maintain or enhance services for consumers (Hua, 2009). By offering Internet Banking services, traditional financial institutions seek to lower operational costs, improve consumer banking services, retain consumers and expand share of customer. Internet is the cheapest delivery channel for banking products as it allows the entity to reduce their branch networks and downsize the number of service staff.

[12] The navigability of the website is a very important part of Internet Banking because it can become one of the biggest competitive advantages of a financial entity (Ortega et al.,2007). Internet Banking is a process of innovation whereby customers handle their own banking transactions without visiting bank tellers (Qureshiet al., 2008). Recent evidence suggests that an Internet-based consumer banking strategy may be effective, with reports of more profitable, loyal and committed consumers compared with traditional banking consumers (ABA, 2004; Fox, 2005). Thus, contemporary banks now regard the Internet channel as equally important to traditional channels of branches, automated teller machines (ATM), telephone banking and call centres (Gartner, 2003). In the new banking environment, Internet Banking is increasingly managed as an operational activity and an important element of a multichannel strategy.

III. SYSTEM ANALYSIS

A. Existing System

In the present scenario none of the existing bank applications allow users to transfer money between their accounts and do

not allocate time to users to get services from the banks when doing deposit or withdraw operations.

1) Disadvantages

- Understanding the usage of internet banking might be difficult for a beginner at the first go. Though there are some sites which offer a demo on how to access online accounts, but not all banks offer this facility. So, a person who is new might face some difficulty.
- Security of transactions is a big issue. Your account information might get hacked by unauthorized people over the internet.
- Suppose if the user has multiple accounts in different banks, he has to install respective bank application to transfer the money which will be hectic for the user.
- In the present scenario user has to wait at the banks when depositing or withdrawal of money where he does not get any allocated time to perform his operations.
- None of the existing bank applications allow user to transfer money between their accounts which is the major disadvantage of the existing system.
- Regular use of Mobile Banking may lead to extra charges levied by the bank for providing the services.
- Does not provide multiple authentication features like Touchid and Face recognition.

B. Proposed System

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

System architecture is a conceptual model that defines and supports reasoning about structure, behavior, and more views of a system and the above Fig 2 represents the system architecture of our android application. It consists of front and back end. Front end represents the graphical user interface which is visible to users. Backend consists of activities or modules which constitutes an application.

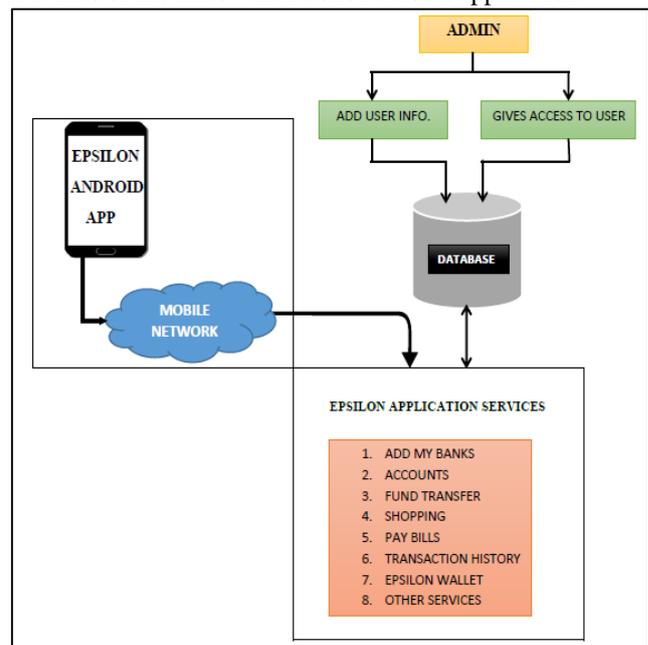


Fig. 2: System Architecture of EPSILON

1) Advantages

- EPSILON user interface is very simple and easy so that user can easily perform the required transaction.
- This application will provide multilevel authentication to avoid unauthorized access by enabling Strong Passwords and OTP.
- Avoids unnecessary waiting at the banks by allocating specific time to each user by generating E-TOKEN and QR-CODE and required customer's need is serviced by scanning the QR-CODE.
- Allows user to transfer between their accounts which is the major advantage of this application.
- It is quite convenient as you can easily pay your bills, can transfer funds between accounts, etc. Now you do not have to stand in a queue to pay off your bills; also you do not have to keep receipts of all the bills as you can now easily view your transactions.
- It is available all the time, i.e. 24x7. You can perform your tasks from anywhere and at any time; even in night when the bank is closed or on holidays. The only thing you need to have is an active internet connection.
- Through Internet banking, you can keep an eye on your transactions and account balance all the time. This facility also keeps your account safe. This means that by the ease of monitoring your account at any time, you can get to know about any fraudulent activity or threat to your account before it can pose your account to severe damage.
- It is fast and efficient. Funds get transferred from one account to the other very fast. You can also manage several accounts easily through internet banking.

IV. RESULTS

The experimental results are shown in the below figures.

A. Output Snapshots

1) Sign Up Procedure Level 1

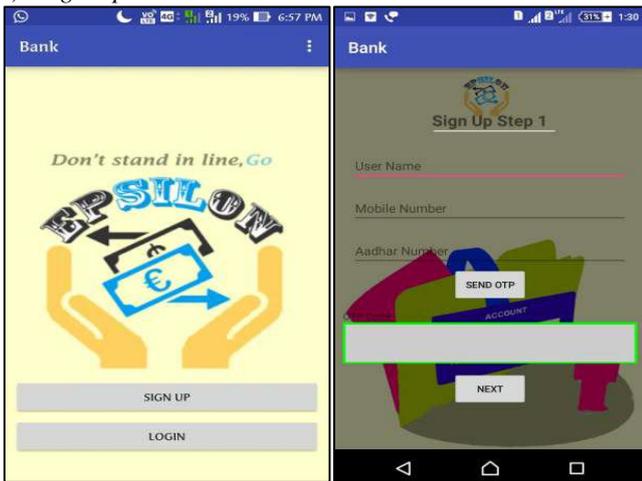


Fig. 3: Sign up Procedure 1 of EPSILON

In the above Snapshot, first diagram represents the splash screen along with the Sign up and login buttons. After Clicking on the Sign Up button user enters the first phase in which he needs to enter the three text fields which consists of username and phone number to be registered for future use along with Aadhar Id validated through the OTP.

2) Sign Up Procedure Level 2 and 3

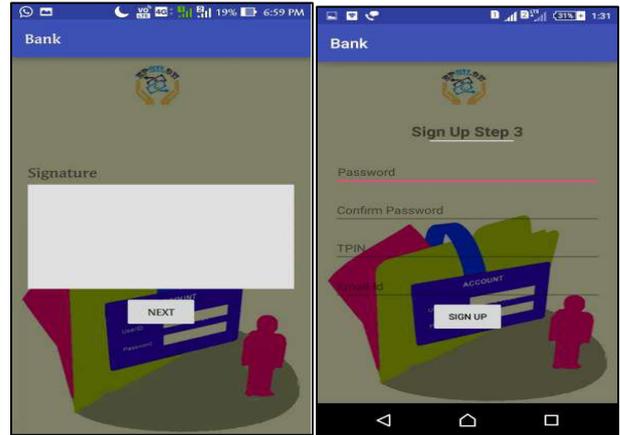


Fig. 4: Sign Up Procedure 2 of EPSILON

Above Snapshots continues the Sign up procedure with getting the signature from the user(either through camera, gallery or file manager) which have a great use in future operations(Generating Challan with electronic signature) of epsilon and the third step includes adding password, TPIN along with email id for some recovery measure. After clicking on to the SIGN UP button, User registered himself to use the EPSILON APP only if his all details are valid along with the valid Aadhar id which is of primary importance in the EPSILON application.

3) Deposit / Withdrawal

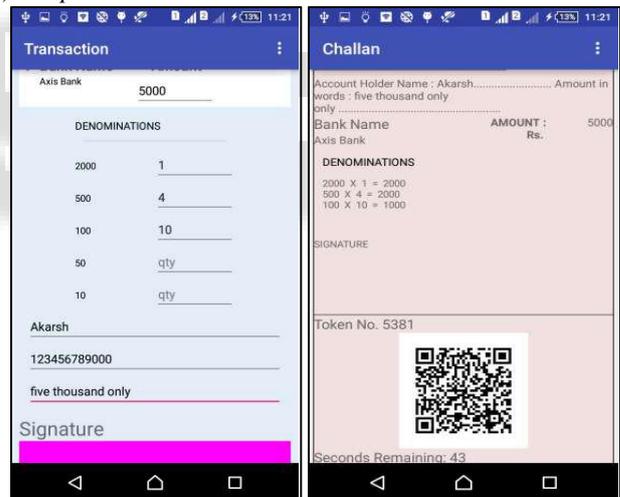


Fig. 5: Deposit Operation of EPSILON

Above Snapshots explains the process of Deposit Operation in the EPSILON application. In this application, User needs to enter the amount along with denominations as per they provide for the bank as shown above. After user click on with the GENERATE CHALLAN, It gets generated with the token number, approximated service time and QR code. User rather than wasting his time waiting in the queues he can go up with the QR code with specified time. After Information embedded QR code gets scanned by the bank. Information enters into the bank database, this avoids the paper and pen usage and helps user to save his time. Withdrawal Operation is as similar as Deposit Operation.

4) Shopping

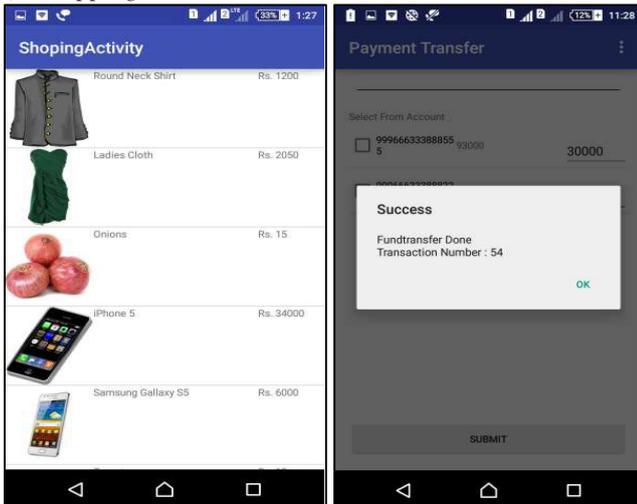


Fig. 6: Shopping activity of EPSILON

Above Snapshot explains the shopping activity of the EPSILON. This works in the Many to one mechanism. In the above Snapshot, iPhone5 is of cost 34,000. Using this application he can pay the amount to shop by sharing from his multiple accounts i.e. 30,000 from one account and 4,000 from another. This helps the user in many ways and he can pay the amount as he wishes from his accounts at a single shot.

V. CONCLUSION

In this paper, we design an application EPSILON and aims at proving "Multiple account banking on a single interface", to avoid avoiding crowds and queues at bank, and also it provides easy and simple way for fund transfers, payment services and secure internet banking with anywhere all-time services.

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