Establishing a secured atm banking system

Finance, Banking

Abstract

The aim of this study is to investigate risk management, security and controls in the Context of Automated teller machines (ATMs).

In doing so, it adopts a non-technical Approach by investigating the interrelationship and effect of risk management and controls In setting Automated Teller Machine securitygoals. The literature explores and discusses The risk management and different controls of ATMs. To reduce the risk of fraudulent Activity, several controls can be integrated into the ATM processingenvironment. However, the controls should not be considered a cure-all. Keywords: ATMs, data security, risk, fraud, electronic banking, and controls.

Introduction This paper examines the effects of incompatibility in network industries. In a network industry such as telecommunications, the internet, or automatic teller machines (ATMs) in the banking industry, firms are technologically interconnected. This interconnection can lead to more complicated pricing structures than those observed in traditional industries, since a consumer may receive direct or indirect services both from his chosen firm and its rivals.

While interconnection increases the size of the network available to consumers, in industries such as the banking industry, the introduction of pricediscriminationbetween affiliated and unaffiliated consumers reintroduces firm-level network economies by reducing compatibility within the shared network. This paper measures the impact of this incompatibility and finds significant effects on competition in the deposit market, welfare,

and investment. It also briefly considers an alternative institutional structure in which provision of ATM and deposit services is separated.

In the banking industry, the customers of one bank can use their ATM cards at ATMs owned byother banks, but the ATM owner may charge a fee called a surcharge. This can be interpreted aspartial incompatibility between components of a system comprised of ATM cards (bank affiliation)and ATMs. Analogous to the strong complementary relationships between CPUs and peripheralsor VCRs and video tapes, ATM cards and ATMs form complementary components of a system thatallows consumers to perform transactions on their bank accounts.

Consumers can choose variouscombinations of these complementary goods, but the compatibility is only partial since there is acost associated with use of a foreign ATM, that is, an ATM not owned by the consumer’s bank. There is a sizeable theoretical literature on compatibility in industries with network externalitiesor complementary components. This literature predicts that incentives for compatibility differacross firms and will be smaller for firms with larger networks, since these firms lose the competitive advantage their network size confers under incompatibility.

The effects on consumer surplus should differ depending on the distribution of consumer characteristics and the new price equilibrium that is reached. In turn, the effects of compatibility on price competition depend on a number of factors. In the banking industry, while partial incompatibility achieved through surcharging should theoretically soften price competition in the deposit market by making an increase in deposit. This paper will focus on the

types of ATM transactions that can be performed on any ATM within the shared network such as inquiries and cash withdrawals.

Executive Summary ATM An automated teller machine (also known as an ATM or Cash Machine), is a computerized device that provides the customers of a financial institution with the ability to perform financial transactions without the need for a human clerk or bank teller. Crime at ATM’s has become a nationwide issue that faces not only customers, but also bank Operators. Security measures at banks can play a critical, contributory role in preventing attacks on customers.

These measures are of paramount importance when considering vulnerabilities and causation in civil litigation and banks must meet certain standards in order to ensure a safe and secure banking environment for their customers. The Automated Teller machine is a terminal provided by bank or other financial institutions which enables the customer to withdraw cash to make a balance enquiry, to order a statement, to make amoneytransfer, or deposit cash. The ATMs are basically self-service banking terminals and are aimed at providing fast and convenient service to customers.

Some of the new generations of ATMs are able to cash a check to the penny, dispense Traveller’scheques and postage stamps, perform stock transfers, print discount coupons, issue phonecards, and even sell concert tickets. Customers are grateful for these ATM features but they are alsovery concerned with ATM crime and safety.

Mission Key to Success Company Background 1. Statement of the Problems/Problem Definition/ Automatic Teller Machines (ATM) indicates the development of InformationTechnologyin Banking sector.

Two types of ATMs need to be addressed, one of which is the branch ATM, The other being the out of branch ATM. The branches will take care of the ATM located in Their respective branches, while the out of branch ATMs such as those located in department Store will be taken care by cash centers. Each cash center has ATMs under itsresponsibility. At VIT there are three ATMs out of which two are out of branch ATM() and one is branch ATM(). The major problem faced by these ATMs are the long queue of customers at the peak hours and then at the off peak hours the lack of customer entry.

The number of customer are so large that many a times customer waits for more than half an hour to get his turn but at nights the ATMs remain idle that there are no customers to serve . Depending on the current capacity of each ATM, many alternative decisions can be made. Now the work process decision is made by operators. Thus, the problem of ATM facility is significant. In this study, methodology “ Simulating ATMs” is proposed in order to maximize efficiency Of banks to improve their customer’s service and increasing long term relationship with them And also to reduce the congestion at the ATM centre at peak hours.

The process will show How much time a customer spends and give suggestion whether a new ATM is required or With the same resources the performance can be improved. This research will support the Banks in terms of decisionmakingfor reducing the waiting time of customers, by solving a Simulation model with the help of queuing theory. The technique of

simulation has long been used by the designers and analysis in the physical Sciences and it promises to become an important tool for tackling the complicated problems Of managerial decision making.

It is actually imitation of reality and when it is being put into Mathematical form it is called simulation. Generally, the main objective of simulation is to Minimize the managerial problem in terms of decision making and hence helps in reaching Solution with at most accuracy. Also it is comparatively free from mathematical solution, Hence can be easily understood by the operating personal and nontechnical managers. On the other hand queuing model is used to overcome the congestion of the traffic? This traffic Can be of any form.

This model mainly used in situation where customers are involved, hence When it is being coupled with simulation it becomes very much conducive to get solution to Solve the problem related to customers. Therefore, these two models are used to understand The situation related to ATM waiting line and to find some alternative to overcome this Problem by suggesting certain alternatives. Automated Teller Machines (ATMs) provide banking services such as withdrawals, deposits, and transfers on a 24 hrs with 7days basis. Due to their convenience they are nowuniversal and are used by a diverse set of users located around the world.

Despite this success, however, ATMs still suffer from a variety of problems. Since ATMs are used for banking, security is paramount. Personal banking information is highly sensitive and users are vulnerable while using ATMs. Keypads in particular have been exploited by criminals who have installed small cameras or touch-sensitive overlays, or in some cases have simply

observed users as they have keyed in their pins. The physical security of users is also important. ATMs are open late at night but often have limited security.

Users may feelanxietyand, in those cases, it is best that they complete their ATM operations as quickly as possible. In addition to security concerns, there are a number of known usability issues with current ATMs. For example, users may not know which card they have entered into the machine, and accidental key presses may trigger unintended operations. Similarly, ATM interfaces are often loosely-coupled with underlying functions and allow the users to perform illegal operations, only informing them after the fact of the inability of the system to carry out a given task.

A good solution to both the usability and security issues will require further exploration of how ATMs operate. Ultimately, such a solution will include a reformulation of certain key ATM functions and novel technologies such as touch screens and web-based interfaces. 1. 1Problem Statement In most of the ATMs the major problem is waiting of customers in the queue for more Duration. Mainly the objective of ATM for bank is to keep away the customers from coming To bank and make the process easy for them to avoid the basic procedure they do in bank.

But As stated the problem which most ATM face is the long queue in front, but then when the Problem is only for a short while as rest of the time the ATM remains idle means adding to The operating cost. The problem is to determine whether only one machine is required to Fulfill the need or two more machines needed to be installed to give comfort to customer Which is really of short period of time. 1. 2 Problem Significance The cost of the

installing an ATM machine accounts for a sizeable part of the total operating Cost of a company.

Adding to it is cost of extra security guard who is needed to be placed There. But the customer satisfaction point of it is necessary to incur these expenses as Retaining them is more important, hence these cost are overshadowed by this fact. This Research will provide a robust problem solving technique for the realworld? Make a decision Related to reducing the ATM queuing problem to reduce operating cost. •Problem Objective The overall objective of the research is to develop a model to reduce the waiting time of Customers and the total cost related to ATM installation. Problem Constraints In this research, the researcher has focused on the Problem of waiting of customer in ATMs For long to undergo a simple transaction with the available ATM machine, also to know Whether another machine is required to reduce the traffic at the centers by keeping in mind The cost incurred in installing. Methodology Introduction to simulation and queuing It is the imitation of reality like laboratories in which numbers of experiments are performedon simulated models to determine the behavior of real system in true environments.

The example cited above is of simulating the reality in the physical form, and are referred toas analogue simulation. For the complex and intricate problem of managerial decision Making, the analogue simulation may not be practicable, and actual experimentation with thesystem may not be uneconomical. Under such circumstances, the complex system is Formulated into a mathematical model for which a computer programme is developed, and The problem is solved by using high speed electronic computer, and

hence it is named as System simulation. Queuing theory has been applied to a variety of business situations.

All situations are relatedto customer involvement. Generally, the customer expects a certain level of service, whereasthe firm provides service facility and tries to keep the costs minimum while proving therequired service. This widely used in manufacturing units. Here it helps in reducing theoverhead charges and the overall cost of manufacturing. Also used to know is the unit arrive, at regular or irregular intervals of time at a given point called the service point. General Analysis of the Project ATMs are used by all modern commercial banks and are found in cities around the world.

Modern ATMs already address many human interaction concerns, but still suffer from a number of usability and other issues. The following are seven important aspects to consider when attempting improving ATM interfaces: Security Issue ATMs act as electronic tellers, and security is always an important concern for users. Major security issues are already addressed in the modern ATM design. A password, or PIN number, is used to protect the information. After decades of use, ATMs have proven the effectiveness of this security policy.

However, this approach may not be sufficient in the future. Mugging and PIN theft should be addressed in a new ATM system. Mature biometric technology may be a good candidate to provide additional security. Besides password protection, modern ATMs also include ‘ card eating’ features to provide customers with more security. However, instead of increasing customer security, this feature can in fact cause problems for authorized

users due to misunderstanding or carelessness. This feature should be reviewed as part of a user-centered design process. Functionality

ATMs handle as many traditional teller operations as possible. Traditional ATMs implement most basic daily banking functions, such as deposit, withdrawals and balance checking. These functions are designed based on the performance limitations of computing and networking, which have changed rapidly over the course of the last few years. These limited functions may not be satisfactory by modern standards. The next-generation ATM should support the following features if possible:

- Money transfer: transfer money from one bank account to another person’s bank account. Bill Payment: automatically pay bills. Although a valid feature is provided in internet banking right now, ideally ATMs would still provide these functions for users without internet access.
- Other ElectronicFinanceTools: Good examples could be electronic bank notes or electronic bank travel cheques. Usability Unlike some other electronic devices, ATMs should be useful to a wide-range of users and those users should be able to use the system with limited or no assistance. This aspect is critical to the new ATM design.

Although these issues are already taken into consideration in the current ATM designs, evaluation may reveal that there is room for improvement in current systems. Theoretically, it is also possible that there is no perfect design once we review the usability requirements. We may have to provide a compromised solution to suit the majority.

The following are some typical user stories for review:

- ATMs currently allow users to insert different cards but do not display visual cues to identify which card was inserted. A displayed image would provide good feedback to prohibit accidental operations using the wrong card. The current key layouts, especially the function keys, are slightly different between different ATMs. A new standard high-resolution touch-screen would be preferable.
- Not all current ATMs can support multiple-languages. Considering growing international trade andcommunication, multiple language support would be a very important feature.
- The current deposit and withdrawal functions also need to be improved. For example, the standard process for putting multiple cheques into ATMs is confusing, and the ATM withdrawal function does not support bill selection based on the customer’s request. The new ATM should allow the user to easily access money across the world. Efficiency ATMs must be both easy to use and fast. The more time a user spends at an ATM, the more inconvenienced the user feels. Wait times also increase for other users. Clearly, this is an important issue to consider when designing an ATM system. Accessibility As ATMs are physical machines, their design must take accessibility concerns into account. Some good accessibility features can be found in current ATM design. For example, the ATM keyboard includes Braille support for the blind. Current ATM design does not do a good job of protecting people from others peeking from behind.
- The fixed height of ATMs can be inconvenient for some users. Threat & Affect ATMs should be attractive. Potentially, good looking ATMs could

attract new users and make existing users more comfortable. For example, relaxing backgroundmusiccould relieve user anxiety during complex operations.

There are three basic types of ATM attacks:

- Attempts to steal a customer‘ s bank card information;
- Computer and Network attacks against ATM‘ s to gather bank card information;
- Physical attacks against the ATM.

THEFT OF CUSTOMER‘ S BANK CARD INFORMATION

- Card Skimming
- Fake ATM machines
- Card Trapping/Card Swapping
- Distraction theft or ‘ manual’ skimming
- Shoulder Surfing
- Leaving transaction ‘ Live’
- Cash trapping

COMPUTER AND NETWORK ATTACKS

- Network attacks against ATMs
- Viruses and malicious software
- Phishing
- PIN cash-out attacks
- Utilizing a Fake PIN pad overlay
- PIN Interception PHYSICAL ATM ATTACKS

- Ram Raid Attacks
- Theft of ATMs
- Smash and Grab of ATMs
- Safe cutting/Safe Breaking
- Explosive Attacks Scope of the Project We should evaluate whether or not the ATM is helping to extend banking services.

By mixing the web/mobile preauthorization transaction service with the traditional 24 hours with 7 days ATM service, service time can be improved and wait times reduced. Proposed Improvements Our initial meeting yielded many ideas for new ATM technologies that have the potential to improve user experience. We considered mobile phone interfaces, voice interfaces, refinements of physical button interfaces, high resolution touch screen interfaces, biometric identification techniques (finger print or retinal scan), and a web interface for pre-specifying ATM transactions.

After a brief discussion of each of these ideas, we decided to talk in depth about the final three. The use of an advanced high resolution touch screen would not solve any problems in itself. but would allow for a more sophisticated user interface. The potential for increased screen space and detail could help address the need for a more intuitive layout, the issue of restricting input to acceptable dollar amounts, and multi-language support. It might also allow ATMs to perform some actions that are not currently possible such as displaying the customer's preferred name for each account and facilitating transfers to third party accounts.

An advanced display could also be designed to restrict the viewing angle so that private information is less visible to malicious onlookers. One final

advantage of a high resolution display is that it would allow for much more attention to aesthetics, and as Donald Norman tells us, " attractive things work better. " The main disadvantage of using a touch screen is that it may confuse users, and providing accessibility for the blind is more difficult than in cases where Braille codes can simply be added to keypads.

The use of biometrics for identification would yield many benefits. The most obvious benefit of biometric technology is that it would increase the security of bank accounts, as a finger print is much harder to steal than a PIN. If the use of a finger print could eliminate the need for an ATM card entirely, it could drastically reduce time spent at the ATM, and it would eliminate the problem of inserting the wrong card. The idea we spent the most time on is a web interface to allow users to pre-specify ATM transactions.

The general idea is that the customer can access the bank's website from a PC or mobile phone to input the operations that will be done at the ATM. For example, a user could specify that she wants to withdraw 360 ETB from her chequing account and 220 ETB from her savings account. She also has three cheques to deposit for 250. 35 ETB, 298. 70 ETB, and 329. 11ETB. She wants 100 ETB of the deposit to go into her son’s account and the rest to go to her retirement account.

When the user arrives at the ATM and identifies herself with a card and PIN or a fingerprint, the machine will display the options she selected earlier and ask if that is still what she wants to do. After selecting " yes," she simply inserts the cheques into the machine and removes her cash. While the benefits of this idea may not be immediately apparent, and may not be significant for simple ATM usage, it has the potential to drastically improve

the user experience under some circumstances. In the previous example, the user needed to perform many transactions with somewhat nusual amounts of money. If this were to be done at a standard ATM, it could take a very long time to navigate through the interface for each individual transaction. During this time, any number of distractions could occur, including a line of angry customers amassing behind the user or the user's child suddenly beginning to cry. Under these circumstances, it would be easy for the user to enter an incorrect amount or even to forget one of the transactions completely. However, with the web site, all of the decisions would be made in the comfortable environment of the user's home or office.

Besides helping the user to ensure that all transactions are executed properly, this web interface could cut down greatly on lines at ATMs, increasing customer satisfaction and physical security. Another scenario where this could be useful is for outdoor ATMs in bad weather. If the user drives to the ATM and then realizes that being outside would be unpleasant, she could access the web site through her mobile phone to pre set the transactions and minimize time spent outdoors. Such a radical departure from present ATM interactions is certainly not without drawbacks.

One of the main issues is that not everybody has web access, especially through their mobile phones. The ATM would definitely need to have a standard user interface in addition to web capabilities. The web site would also introduce security concerns with password attacks and network communication to the ATMs. Hopefully these problems have already been solved in the current implementation of online banking. Finally, as with any UI, poor design could cause this idea to become frustrating and useless.

These preliminary ideas have been developed based on initial meetings and brainstorming.

Further research and information gathering will lead to the refinement of our proposed system changes, and an iterative design process will allow us to develop a prototype of a highly improved, secure, accessible, and intuitive ATM system and extended web-based interface. Conclusion (Expected Output from the Project) The main purpose of this study is to develop an efficient procedure for ATM queuing Problem, which can be daily used by banks to reduce the waiting time of customers in the System. The queuing characteristics of customers were observed and the researcher compared The process of customer behavior of different ATM services at VIT.

It is concluded that the ATM service should introduce in men’s hostel (around ? thstudents strength stay in hostel) Will facilitate pulling more customers towards ATM service. The researcher suggested that the SBI can install a new ATM machine in men’s hostel in spite of high installation cost and thereby reduce the customer cost and service cost for attaining benefit in the long run. This will be helpful for commercial bank to sustain more potential customers in high competitive situations with other private banks.

ATM provides financial services to an increasing segment of the population in many countries. Fingerprint scanning, continues to gain acceptance as a reliable identification and verification processes. This paper identifies a model for the modification of existing ATM systems to economically incorporate fingerprint scanning; and, outlines the advantages of using such system. It should be noted that the customers perception cannot be

generalized as it was highly affected by the tradition/cultureof the user involves. Recommendation for Further Study

Several aspects of waiting problem for the ATM that remained unsolved in this study will Form interesting topics for further study. The following recommendations are made for Further studies: It is observed that if a person is not well versed with ATM takes more time which is not Considered. Also many customers stand in the queue and leave which can be put into the consideration. The time the workers take to feed the ATM with currency is not considered. Out of stock situation can be considered. On holidays mostly after exams the utility of ATM to be considered.

The main limitation of the research due to time constraint it is observed with minimum sample, if sample size would have increased, the result obtained by both in simulation and queuing will coincide. This study would not consider waiting cost and service cost due to non availability of original information. For future research, this study can be extended by considering the cost factors to find out the best ATM facility.