

E-cash: A New Dimension in ATM Services in Bangladesh

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***Abstract:** In the age of modern technological improvement, banking industry of Bangladesh has stepped into a new horizon for banking, namely Electronic Banking. ATM (Automated Teller Machine) is one of the most demanding and latest technologies introduced in Electronic Banking system. A shared ATM / Point of Sale (POS) switch is of significant convenience to customers of its member banks by providing anytime, anywhere banking. This paper focuses on different aspects, problems, prospects and development of E-cash, a shared networking of ATM used by six banks in Bangladesh and maintained by Electronic Transactions Network Ltd (ETN). Strategies and directions for the development of this ATM network in Bangladesh are also highlighted here.*

1. Introduction

Electronic Banking services are increasingly used by small and large organizations all over the world. Electronic Banking, also known as electronic fund transfer (EFT), involves different types of transactions through computer and electronic technology. Many financial institutions use ATM or Debit cards for this purpose. An ATM facilitates 24-hour access to bank services through an ATM card. A shared ATM network facilitates any single bank cardholder to enjoy the advantage of using multiple ATMs located in multiple member bank premises. E-Cash is such an ATM network performing in the banking industry of Bangladesh.

E-cash ATM has introduced a new era in banking services in Bangladesh. Through E-cash ATM multiple banks can allow their customers to conduct different banking transactions 24 hours a day.

2. Objectives of the Study

The objectives of this paper are as follows:

- To discuss ATM and its use in Bangladesh,
- To present an overview of the E-cash, a shared ATM network performing in the banking sector of Bangladesh,
- To highlight the prospects and limitations of E-cash system, and
- To offer recommendations for the improvements of E-cash ATM in Bangladesh.

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3. Methodology

The study is exploratory in nature and confined to Dhaka city and Chittagong city. Both primary and secondary data were used in this study. Researcher collected data from a number of banks in the Dhaka city and Chittagong city. Target population for the research was users of E-cash ATM and respective bank officials. Primary data were collected through personal interview with 20 bank officials and 100 customers who are using this E-cash ATM. In case of bank officials, quota sampling was used. In quota sampling, the population is first segmented into mutually exclusive sub-groups; then judgment is used to select the subjects or units from each segment based on a specified proportion. Here using quota sampling 100 officials were selected from the member banks. Then systematic sampling was used to select officials from each quota in order to keep the bias at minimum level. In case of customers, non random convenience sampling technique was used since it was almost impossible to determine the total number of customers. As descriptive method is used to analyze the data, no rigorous statistical tools were used. Secondary data were collected from company websites, reports, newspapers, electronic database, magazines and online publications produced by both academicians and banks. Besides, informal conversations were also made with the executives of "Electronic Transactions Network Ltd (ETN)" and "Cashlink Bangladesh Limited (CBL)" to collect some relevant information to prepare this report.

4. Literature Review

In this age of information technology, electronic communication is essential for a country for its business, government agencies and economy (Ali et. al., 2007). This technology is the prime ingredient in electronic commerce (Jaiswal, 2000). ATM is one of the e-banking facilities that enhances the speed of electronic communication.

To meet the increased demand for electronic communication based services the new technologies emerge in our society on a regular basis. Whether or not these technologies remain and are successful depends on the degree to which they are adopted by the members of society (Rogers, et. al., 1996). A version of automated teller machines (ATMs) was introduced in 1969 (Mauldin, et. al., 1978). Mauldin et al. (1978) stated that by 1976 "more than 4600 ATMs were reported in operation in the United States and growing in excess of 100 units a month".

ATM or 24 hour teller is an electronic terminal that lets us bank almost any time. After 40 years of growth and advancement, ATMs are found almost everywhere, not just in banks, but in places such as restaurants, drug stores, shopping centers, and grocery stores. By continuing to provide new and enhanced services, ATMs facilitate life in a modern society.

The market for ATMs is truly global and continues to grow. Worldwide, the ATM industry can be divided into seven major regions based on penetration rate, usage statistics, and deployed machine features. Mature regions, which comprised the USA, Canada, Europe, and Japan, feature a high density of ATMs and a slow growth rate. Demand for ATMs continues to rise in the Asia/Pacific and Latin America regions, which feature the highest growth rates of all regions (http://www.moxa.com/Vertical_Markets/ATM/index.htm).

Previous studies in the USA have suggested that ATM users who have adopted such form of banking as an integral part of their banking methods should obviously become the prime targets of any new ATM features and other automated banking innovations (Stevens *et. al.*, 1986). Experience around the world has shown that ATMs only become fully viable when installed in sizeable numbers. One or two scattered ATMs can never generate sufficient customer appeal to make the installation worthwhile. But installing large number of ATM requires investment in the ATM hardware, the extremely expensive software. Also, the back-office needs to run the Network. Thus, for any single bank to invest in setting up a network of even 15 ATMs would be highly expensive. The solution is that a third party can set up the ATM Network and make it available to as many banks as possible to use on a shared basis. In this way the cost is shared out between the participating banks and also the business generated by the combined customers of all the banks makes the investment viable. It is this solution that Electronic Transactions Network Ltd. (ETN) is providing in Bangladesh (<http://www.united.com.bd/main.php?c=3>). 100% owned by the United Group, Electronic Transactions Network Limited (ETN) is a Bangladeshi financial sector solution provider that provides the operations of the E-cash ATM network (http://psp.emergingmarketsgroup.com/reader_dfid.aspx?siteId=6f0c8505-3228-4e6d-961e-59dbaa7a6c4b&contentId=8ba55f62-554d-40c1-8d2a-420651b82236).

In Bangladesh, Banking industry has become more matured recently. Now modern banking services have been launched by some multinationals and local private commercial banks (Shamsuddoha *et. al.*, 2005). ATMs are one of the banking technologies that contribute to the technological innovations and have become quite popular in Bangladesh. A group of domestic and foreign banks operate shared ATM network, which drastically increases access to this type of electronic banking service (Alam *et. al.*, 2007). The network of ATM installations will be adequately extended to enable customers to non-branch banking beyond banking (Khokon, 2006). Over 300 ATMs would be set up in rural areas of Bangladesh to provide improved banking services to the rural people deprived of these services. In lieu of this, Cashlink Bangladesh and Euronet Worldwide have tied up to set up 505 ATMs across the country in next three years, of which more than 60 percent would be in rural areas. As per the agreement, Euronet will work as the Cashlink's technology operations management partner.

Very limited studies have been done so far on ATM and its use in Bangladesh. Much of the resulting research has concentrated on providing evidence of the association between consumers' usage patterns of ATMs and their demographic profiles (Hood, 1979 and Murphy, 1983) and more recently, consumer psychographic profiles (Stevens *et.al.* 1986). Most retail banking research has explored ATM usage entirely from the viewpoint of consumers' demographics (Rugimbana and Iversen, 1994). Only a few studies regardless of the research context have been conducted which focus on the attributes of innovations, as perceived by the potential users (Ostlund, 1974 and Taylor, 1977). Shamsuddoha *et. al.* (2005) worked on ATM. They focused on ATM as a modern banking instrument in the context of Bangladesh and customers viewpoint on ATM. But they did not discuss how to expand the use of ATM in the country in a cost-effective and convenient manner for both customers and banks.

This study is an endeavor to focus on the use of ATM through a shared networking system. The study covers the current situations, problems and prospects of E-cash ATM,

a shared network of ATM in Bangladesh. Specific policy implications are also given for the development of this network in the country.

5. Automated Teller Machine (ATM)

The ATM revolutionized the banking industry over the last two decades by featuring cash anytime, anywhere. An ATM allows customers to perform banking transactions 24 hours a day, 7 days a week and they are not restricted to carry out transactions only during the banking hours.

Point Of Sale Transfer (POS): Now a days ATMs are also used in different shopping complexes. POS lets the buyers pay for their purchases with their ATM or debit cards. Money is transferred from the cardholder's bank account to the seller's account. This helps both the customers and the sellers to save their time and energy, especially to do the shopping in the easiest way.

6. Importance of ATM in Banking

Information technology (IT) has changed most of the functions in banking business. Now-a-days most of the banking activities are being conducted based on electronic banking (Debnath and Gurung, 2008). E-banking facilities such as the use of ATM card have changed banking habit of the customers and activities of the bankers. The ATM system has changed the customary banking services. ATMs help financial institutions handle more transactions and make services more accessible to account holders with fewer employees, thus reducing operating cost. At the same time, customer satisfaction can also be enhanced through this facility.

Customer can use the machine for performing different transactions, which he would have to perform by lengthy banking procedures. Since customers do not have to go to bank to get the banking facilities, their transaction costs can also be reduced.

7. ATM in Banking Services in Bangladesh

ATM, a new concept in modern banking, has already been introduced in Bangladesh to facilitate subscribers 24 hours cash access through a plastic card. It has different names such as ATM Card, 24 Hours Banking Card, Money Link Card, Ready Cash, E-Cash, etc. In Bangladesh, some multinationals launched ATM booth in Dhaka in 1992-93. The Grind Lays was the pioneer in Bangladesh and then Standard Chartered Bank, American Express Bank, HSBC and a number of local private banks were the followers (Shamsuddoha et. al., 2005).

Bangladesh bank data show that there are about 600 ATMs in the country. The number was less than 300 one year ago. Currently Dutch –Bangla Bank has the largest network with 260 ATMs. The other major market players are BRAC Bank, Standard Chartered Bank and Q-cash ATM. Nationalized commercial banks provide ATM services with very few branches and also the computerized branches are very small except the foreign commercial banks (Alam et. al., 2007).

As Standard Chartered Bank is one of the pioneers in online banking in Bangladesh, they gave their card name as ATM Card. There are some ATM cards that are used interchangeably in different banks under a shared ATM network. The Q-Cash ATM network maintained by IT Consultants Limited (ICT) is shared by Arab Bangladesh, IFIC

Bank, Janata Bank, Mercantile Bank Limited., Jamuna Bank Limited, Eastern Bank limited, Pubali Bank Limited, Mutual Trust Bank Limited, Trust bank Limited, etc. E-Cash is another name of ATM network used by a number of banks in Bangladesh through a shared network system. E-cash was the first to introduce shared networking of ATM in Bangladesh.

8.1 An Overview of E-Cash ATM System

The concept of shared ATM network is new in Bangladesh. E-Cash is the pioneer in Bangladesh in this sector. The idea of this shared ATM network was conceived in 1996 but E-Cash ATM Card was launched on June 25, 2001 and moved into full commercial operation from October 11, 2001. It is owned by United Group and maintained by ETN. ETN started as a joint-venture company between United Group, Bangladesh and Sonic Global Solutions Pvt. Ltd., Australia to provide ATM services to banks in Bangladesh on a shared basis. The member banks of this shared ATM network were Agrani Bank Ltd., Bank Asia, Credit Agricole Indosuez, Dhaka Bank Ltd., Islami Bank Bangladesh Ltd., National Bank Ltd., National Credit and Commerce Bank Ltd., Southeast Bank Ltd., Social Investment Bank Ltd. and The Oriental Bank Ltd. (presently known as ICB Islami Bank). Later on, United Group became the sole owner of ETN. The transaction switching facility of ETN is well known and first of its kind in Bangladesh. It has delivered nearly 3.2 million transactions to customer of different banks over last 6 years disbursing nearly Tk 1,000 crore. Very recently (8th March, 2009) Cashlink Bangladesh Limited (CBL) signed the final agreement to acquire 100% shares of ETN from its current owners. As per the agreement CBL will continue the activities of ETN as a separate entity. Cashlink Bangladesh Limited is a joint venture establishment owned by AB Bank Limited, Euronet Worldwide Inc, Networld Bangladesh Limited, Southeast Bank Limited and United Commercial Bank Limited (<http://cashlinkbd.com/media.php>).

At present six banks are members of this shared network including one Nationalized Commercial Bank (NCB) and five local private sector banks. The member banks are Agrani Bank Ltd., Bank Asia, Dhaka Bank Ltd., Islami Bank Bangladesh Ltd., Southeast Bank Ltd. and Social Investment Bank Ltd.. ATM/Debit Card Services are provided from 26 ATMs located in Dhaka, Chittagong and Sylhet. From these ATMs, clients of member banks are able to withdraw cash, make balance inquiry and pay various utility bills, loans, fees, etc.

The transactions done by E-cash card holders are increasing proportionately with the growth of cardholders. The objective of this ATM network is to become the 'National Switch of Bangladesh' as a third party electronic banking transaction processor.

8.2 Services Provided under E-cash

E-cash is currently providing the following services to member bank cardholders of this network:

- **Cash Withdrawal:** Maximum withdrawal limit is Tk. 40,000 per day but withdrawal limit per transaction is maximum Tk.20, 000.
- **Balance Inquiry:** Through E-cash card customers can check their account balances any time.

- **Utility Bill payments:** E-cash facilitates payment of utility Bills directly debiting customer account and crediting utility company's account. E-Cash card holders can pay their BTCL (Bangladesh Telecommunications Company Limited), Banglalink, Grameen, Citycell bills in the E-cash ATM booths.
- **Loan & Other Fees Payment:** Customers can pay their retail loans and other fees such as Islami Bank Hajj Scheem, Mudaraba loan, fee, etc. Other Bank loan repayment schemes will be included in future.

8.3 Requirements to Have the E-Cash Facilities

A customer needs to fulfill some requirements to be an E-cash cardholder. At first a customer needs to be an account holder of any of the six banks. He also needs to confirm that he will always maintain a minimum average balance in his account as required by his bank. The bank authority will cut a service charge for the ATM facilities from the cardholder's account along with the ledger charge. Each of the six banks requires its customers to renew their E-cash cards every year. On the death of an E-cash holder the bank will suspend the card as well as his account as soon as possible.

8.4 Security of E-cash Card

ATM security is a critical issue for both banks and account holders. Incidents of fraud are reported in every region. Counter measures are required to protect the banking system as well as the equipment.

E-cash is fully secured. The main concept of the security process of E-cash system is that any cardholder can carry out transactions on E-cash ATMs only with a Personal Identification Number (PIN). If a person loses his/her card, others cannot use that because transactions cannot be done without the PIN. The PIN is the secret code to access a specific person's account. The cardholder should memorize the code as soon as he/she receives that and then he/she should destroy it without keeping any record. If he/she protects his PIN, he/she protects his account. If the cardholder loses the card or has a doubt that the PIN has been disclosed, he/she needs to inform his bank and apply for a new PIN immediately. The bank will issue a new PIN.

All of the six banks under E-cash system in Bangladesh have their ATMs in some secured places and maintain safety for the customers and the machines by appointing well-trained security guards and managing TV cameras.

8.5 Networking System for E-cash ATM

All the networking of these nine banks that have participated in the E-cash ATM system is maintained by three kinds of networking relationships. These networking functions are performed to withdraw cash from the account or to have a balance enquiry or to pay the utility bills.

The descriptions of the networking system for withdrawal and balance enquiry and for utility bill payments are given below:

- **The Networking System for Withdrawal and Balance Enquiry**

The E-cash networking for withdrawal and balance enquiry has three major parts. These are as follows:

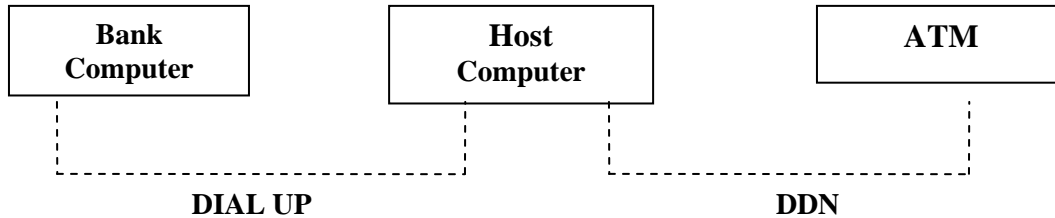
a. Off-line Relationship: An off-line relationship stands for the part of the networking system that is basically done manually by the member banks.

Any E-cash cardholder of this shared network can withdraw money or can have a balance enquiry from the ATM. He needs to have an account in any of the branches of these nine banks. All these six banks have their branch-booths in Dhaka and outside Dhaka across the country. Usually each of the banks has one E-cash ATM card issuing or controlling branch. Any branch of any of these nine banks has an off-line relationship with the E-cash ATM card issuing branches. The branch of a particular bank will transfer money from the cardholder's account to the controlling branch of the said bank. As all of the six banks do not have an online relationship among the controlling branch and other branches, this thing is done manually here. So to send the required amount (upon the ATM controlling branch's advice) or information from the particular account holder's branch to controlling branch, an off line relationship works here. The Bank's internal mechanism to transfer money or information from the account holder's account to the controlling branch is known as the credit advice. The branch will send the money by transports or inform the controlling branch with the necessary details of the account holder's account by telephone, fax, etc.

b. On-line Relationship: On-line relationship is the part of the network that is done completely online with the help of a server. Basically all the controlling branches of the six banks have an on-line relationship with the ETN (Electronic Transactions Network LTD) or the host center. This host or the media named ETN connects the ATMs in different locations in the country with another kind of on-line relationship.

ETN: The Host of the On-line Relationship: ETN or Electronic Transactions Network Ltd. works as the server or as an Internet Service Provider (ISP) or the host in this shared ATM network. ETN uses its necessary soft-wares to perform this function properly. They have a dial up connection with the controlling branches of these six banks. Again they have a leased line or DDN (Digital Data Network) relationship with the ATMs. ETN also manufactures the plastic card used in E-cash ATM.

General Techniques of the On-line Relationship: An ATM is simply a data terminal with two input and four output devices. Like any other data terminal, the ATM has to connect to and communicate through a host processor. The host processor is analogous to an Internet Service Provider (ISP) in that it is the gateway through which all the various ATM networks become available to the cardholders.

Figure 01: General Techniques of the On-line Relationship

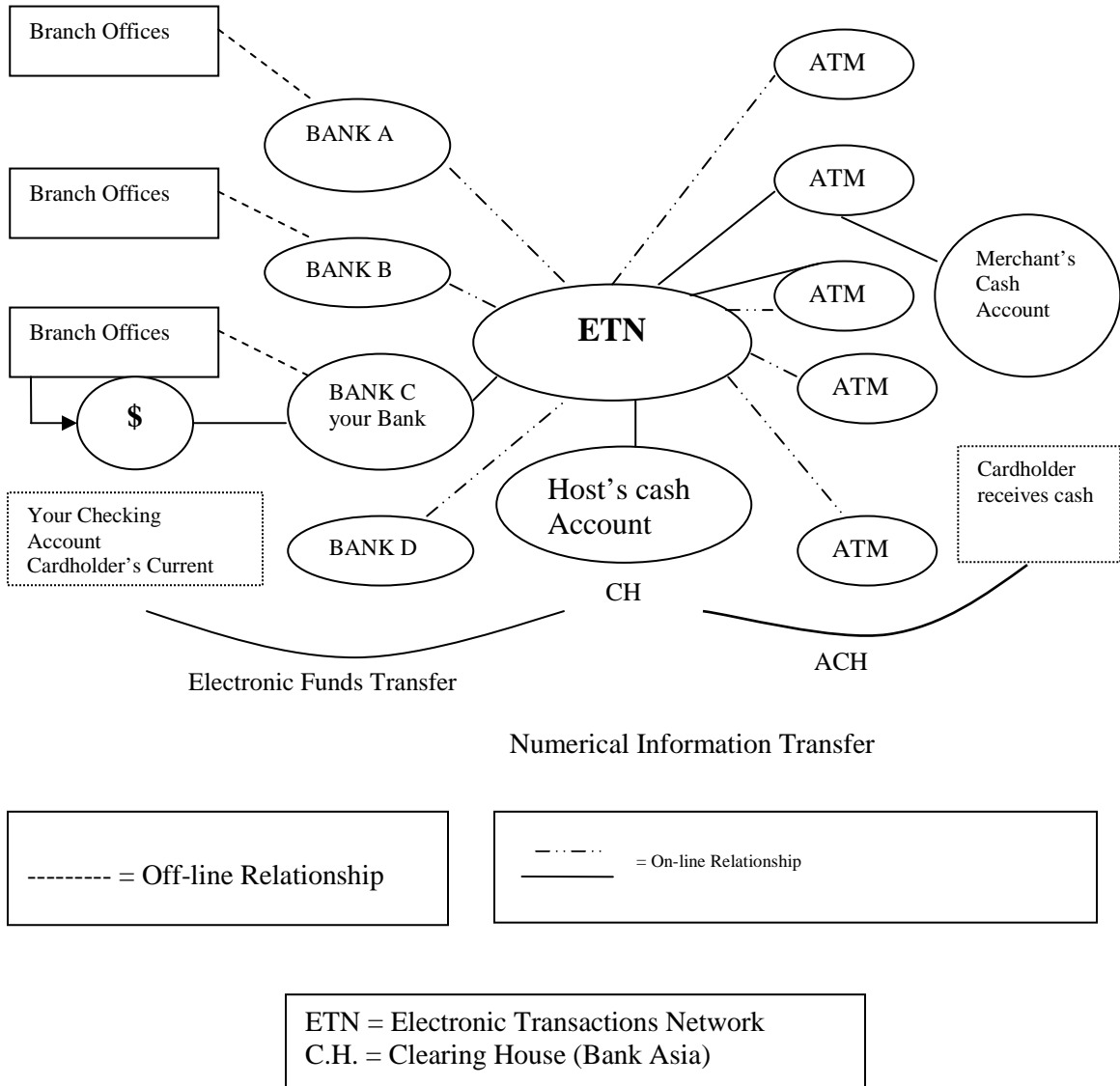
Most host processors can support either leased-line or dial-up machines. Leased-line machines connect directly to the host processor through a four-wire, point-to-point and dedicated telephone line. Dial-up ATMs connect to the host processor through a normal phone line using a modem and a toll-free number, or through an Internet Service Provider using a local access number via a modem. Leased-line ATMs are preferred for very high-volume locations because of their through put capability and dial-up ATMs are preferred for retail merchant locations where cost is a greater factor than through put. The initial cost for a dial-up machine is less than half of that for a leased-line machine. The monthly operating costs for dial-up are only a fraction of the costs for leased line.

Again anyone can take the DDN (Digital Data Network) connections. It is a kind of digital connection, which performs better than the leased line connections. Usually these sorts of connections are used to relate the hosts and the ATMs. DDN is a technology used in modern online banking. *Bangladesh* Telecommunications Company Ltd. (BTCL) is the first institution that has introduced DDN technology in Bangladesh. The most effective feature of DDN is to transfer data at a higher speed than that of Leased Lines or the Dial-up Lines.

A bank or a financial institution may own the host processor or an independent service provider may own it. Bank-owned processors normally support only bank-owned machines, whereas the independent processors support merchant-owned machines.

Techniques of the On-line Relationship followed by ETN: In case of these six banks shared ATM facilities every controlling branch is connected with ATM through online connection through ETN (the server). The issuing branch of any of these six banks at first makes a dial up networking connection with ETN. They inform ETN the numerical position of the account of all their E-cash card holders. Online networking is made on Dial-up connection. They connect the host processor or the ETN through a normal phone line using a modem and a toll-free number. Likewise, the other controlling branches of the member banks also inform ETN the numerical position of the accounts of all their E-cash cardholders by online networking. Thus, ETN always gets the numerical information or the account position of the E-cash customers of the banks. ETN is always updated by those accounts related information by the ATM controlling branches every day. After that ETN connects with the ATMs in all the locations directly with the help of DDN (Digital Data Network). This DDN machines are provided by BTCL (previously known as BTTB). There is now only one leased line machine connection with the ATM from ETN.

Figure 02: Techniques of the On-line Relationship followed by ETN



Thus, all the ATMs get the necessary information to work according to the E-cash card holder's position and necessity.

c. Clearing House: In E-cash system six banks are working together. They need some settlement of funds because an account holder of any of the six banks can withdraw money from ATMs located in any of the banks. At the end of each day ETN calculates automatically the debit or the credit balances that a bank may receive from or pay to

another bank with the help of software and sends a settlement report with numerical information to Bank Asia, which works as clearing house or lead bank. It clears the amount among all the six banks and ascertains the necessary debit or credit balance that a member bank will get from or need to pay to another bank. Bank Asia also sends some printed documents related to the settlement procedures to the banks. These printed documents contain necessary debit or credit balances that a member bank will get or need to pay to another, which works as evidence of clearance.

- **The Networking System for Utility Bills Payment**

For payment of utility bill, at first the E-cash card holder uses the ATM and inputs the amount of his utility bill. ETN receives this information online from the ATM. The concern that will receive the utility bill also maintains an account in any of these nine banks. ETN will automatically update this (the concern that will receive the utility bill) account by debiting this accounts and by informing the controlling branch the numerical information. This work is also performed by dial up networking relationship. The controlling branch will then keep the cash amount in its account from the bill payee's account.

If the bill receiving concern does not have any account in the bank where the E-cash cardholder has his/her account, then on-line clearing-house system is used to solve this problem.

9.1 Advantages of E-cash ATM

The ATM and the E-cash cards make banking easy and convenient. The six bank's shared E-cash system gives the users a number of advantages. The major advantages of E-cash are:

- Withdrawal of Cash
- Balance Enquiry
- Utility Bill Payment
- Easy to Use And Well Secured

9.2 The Advantages of Being Shared among Participating Banks

E-cash ATM is a shared facility or shared network among six banks. Suppose a person is an account holder of Bank Asia but lives in a place where only Dhaka Bank Ltd. gives the ATM facilities and Bank Asia does not have any branch adjacent to his location. In case of urgency he does not need to go to Bank Asia to withdraw his money, rather he can easily withdraw money from the ATM located in Dhaka Bank Ltd. So, for the shared network among six banks the E-cash card holding customers always get these types of facilities. It also reduces the cost of the participating banks through joint cost sharing and increases their speed and operational efficiency.

9.3 Limitations of E-Cash ATM

E-Cash ATM has some limitations and hazards. These are as follows:

From customer's perspective:

- Transfer of money to other banks is not possible
- Blockage of card inside ATM
- Per day withdrawal is limited up to Taka 40,000 only.
- ATMs sometimes remain out of order even after banking hours when customers are badly in need of money
- It is difficult for illiterate people to use
- Limited number of booths is available covering a limited area, especially urban areas.

From provider's perspective

- Lack of skilled human resource
- Lack of financial viability because of limited market size.
- Need for a huge initial financial outlay to implement the system
- Concern for security of ATM boots and money.
- Requirement of creating the legal framework for electronic payment system.
- Need for up-to-date technological support and opportunities for more accurate service.
- Continuous money feeding problem
- Trouble shooting takes time.

10. Prospects of E-Cash ATM in Bangladesh

The concept of bank services marketing is new in Bangladesh. Some multinational banks have introduced highly technical services to help people modernizing their lifestyles. Now a days, most of our banks are engaging marketing forces to make people conscious about the advantages of ATM and to execute this raw business for their own organizations. Consumers are becoming more and more familiar with the use of ATM cards.

E-cash has now only 26 ATM booths. Another 24 booths are under implementation process according to the company's top officials. ETN is the first in Bangladesh to implement such an advanced technological composition with the full cooperation of banks. In the near future, it is expected that the network will become the national switch of Bangladesh by operating its own network and will concurrently interface with other existing bank software to provide a total shared ATM and POST service structure.

The shared ATM/POS switch offers significant convenience to customers of its member banks through greater transaction touch points, providing anytime, anywhere banking. The increases in the number of ATMs & POS terminals for the customers will not only give the cost advantage to the bank but also improve operational efficiency and customer services (http://www.bobsguide.com/guide/news/2008/Jan/15/OMNIBUS_Inter-Bank_Switch_goes_live_in_Bangladesh_with_Phoenix.html). E-cash is expected to work as a catalyst for the growth of e-Banking in Bangladesh.

Market experts predict that Bangladesh has great potentials in introducing online delivery channels. Currently only 7-8 percent people have access to banks. The number of bankable population could easily be five crore who had never been attracted by the banks (Zahir, 2008).

In near future departmental stores and other big shops will be connected with this shared ATM network. Eventually, it will serve the purpose of using a credit card. It is also planned to provide customers with the facility to deposit money into their accounts through the help of the E-cash ATM.

ETN came to the market with E-cash with a long term vision. They believe that the business prospects of plastic card usage in the debit platform will exceed all customers receive funds from ATM (Hammadi, 2003).

Cashlink Bangladesh Limited (CBL), a new company owned by a number of banks and their technology operations management partner, Euronet Worldwide, wants to become a competitor for ATMs. CBL, the payments systems solutions provider, has just completed the final agreement of acquiring Electronic Transactions Network – the very first shared ATM service provider of the country.

The advantage of having one of the world's leading switching software companies as an equity partner is that it assures long-term sustained access to the latest developments in software and also guarantees that the Bangladesh operation will be in conformity with the highest international security and operational standards.

It is expected that acquiring ETN will enable Cashlink to add strength and impetus to its core business of financial payments systems which include projects like rolling out 500 ATMs and 10,000 POSs over the next few years.

11. Recommendations

In the era of globalization, banks are trying continuously to provide prompt and up-to-date services to get competitive advantages and be ahead of competition in the industry. The network of ATM installations will have to be adequately extended to enable consumers to non-branch banking beyond banking hours. On the basis of analysis, the following recommendations can be offered to improve the E-Cash ATM system in Bangladesh.

- All the six banks should have their target to make the off-line portion of the networking system on-line.
- More banks should be encouraged to participate in this system, especially those which don't have strong ATM network or no ATM services at all.
- This shared ATM network should be expanded throughout the major cities in the country.

- There should be a wide advertisement all over the country to make people aware of the E-cash ATM system.
- A sound infrastructure and human and technical capacity should also be developed.
- Bangladesh Bank should work out an efficient information infrastructure for the banks using different technologies to ensure network connectivity among the participating banks.
- Development of the online banking system is the precondition for successful implementation of this ATM network in Bangladesh.
- Political commitment to improve governance and institutional strength is essential for successful application and expansion of the network.

12. Conclusion

E-cash ATM network is now working successfully in the major cities and locations in Bangladesh. This networking system has given a new dimension in the customary banking in Bangladesh. Different banking functions can be done easily with this system, which also increases the quality of the customary services of these six banks. Again these E-cash card facilities prove the world that Bangladesh is also using new and higher technology like those of other developed countries. E-cash ATM facilities also have huge prospects and advantages. So, E-cash ATM is one of the ideal conduits for convenient, reliable and secured banking services in Bangladesh.

References

1. Alam, S. S., Ali, Khatibi, A., Santhapparaj, S. and Talha, M. (2007). "Development and prospects of Internet Banking in Bangladesh", *Competitiveness Review: An International Business Journal incorporating Journal of Global Competitiveness*, Volume: 17, Issue: 1/2 , pp. 56 – 66
2. Ali, M. M., Islam, M. R. and Ahmed, R. (2007). "Information Superhighway and Its Prospects in Bangladesh", *Dhaka University Journal of Business Studies*, Vol. XXVIII, No. 1, June, pp. 119-137
3. Debnath, N. C. and Gurung, H. B. (2008). "Credit Card Market in Dhaka City: An Analysis of the Issuers, Existing Card Holders and Merchants", *Daffodil International University Journal of Business and Economics*, , Vol. 3, No. 2, December, pp. 115-129
4. Hood, J. M. (1979). "Demographics of ATMs", *Bankers Magazine*, pp. 68-71
5. Jaiswal, S. (2000). "E-commerce (Doing Business on the Internet)", Galgotia Publication Pvt. Ltd., India
6. Mauldin, C. R., Sutherland, J. C. and Hofmeister, J. F. (1978). "Operant Attitude Segmentation and Marketing Decisions", *Operant Subjectivity*, Vol. 1, pp. 38-50

7. Murphy, N. B. (1983). "Determinants of ATM activity: the impact of card base, location, time in place and system", *Journal of Bank Research*, Autumn, pp. 231-3.
8. Ostlund, L. E. (1974). "Perceived Innovation Attributes as Predictors of Innovativeness", *Journal of Consumer Research*, Vol.1, No. 2, pp. 23-29.
9. Rogers, W. A., Cabrera, E. F., Walker, N., Gilbert, D. K. and Fisk, A.D. (1996). "A Survey of Automatic Teller Machine Usage across the Adult Life Span", *Human Factors*, Vol. 38.
10. Rugimbana, R. and Iversen, P. (1994). "Perceived Attributes of ATMs and Their Marketing Implications", *International Journal of Bank Marketing*, Vol. 12, No. 2, pp. 30-35.
11. Shamsuddoha, M., Chowdhury, M. T. and Ahsan, A.B.M.J. (2005). "Automated Teller Machine: A New Dimension in the Bank Services of Bangladesh", *Pakistan Journal of Social Sciences*, Vol. 3, No. 2, October, pp. 216-224.
12. Stevens, R.E., Carter, P.S., Martin, R.T., Cogshell, D. (1986). "A Comparative Analysis of Users and Non-Users of Automatic Teller Machines", *Journal of Retail Banking*, Vol. 8, pp.71-78.
13. Taylor J.W. (1977). "A striking Characteristics of innovators", *Journal of Marketing Research*, vol. 14, February, pp. 104-107.

Websites:

14. Ahmed, Z. (2008). Rahman, S. (2008). "Two ATM service firms close to partnership deal", Published On: June 06, 2008. Retrieved from <http://www.thedailystar.net/story.php?nid=39878>, visited on January 29, 2009
15. Hammadi, S. B. F. (2003). "Tech Interview Taking ATM tech Easy", *Star Tech*, Vol. 4, No. 175, November. Retrieved from <http://www.thedailystar.net/2003/11/19/d311191601118.htm>
16. Khokon (2006). Retrieved from <http://khokonz.blogspot.com/2006/07/bangladesh-banking-3.html>, visited on February 12, 2009
17. Rahman, S. (2008). "Two ATM service firms close to partnership deal", Published On: June 06, 2008. Retrieved from <http://www.thedailystar.net/story.php?nid=39878>, visited on January 29, 2009
18. http://www.moxa.com/Vertical_Markets/ATM/index.htm, visited on 6th February, 2009
19. <http://www.wikio.com/article/74417996>, visited on 15th January, 2009
20. http://www.bobsguide.com/guide/news/2008/Jan/15/OMNIBUS_Inter_Bank_Switch_goes_live_in_Bangladesh_with_Phoenix.html, visited on February 15, 2009
21. <http://www.united.com.bd/main.php?c=3>
22. <http://cashlinkbd.com/media.php>, visited on March 09, 2009
23. http://psp.emergingmarketsgroup.com/reader_dfid.aspx?siteId=6f0c8505-3228-4e6d-961e-59dbaa7a6c4b&contentId=8ba55f62-554d-40c1-8d2a-420651b82236