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Abstract: E-business has created tremendous opportunity all over the globe. On line banking can act as a complementary factor of e-business. Bangladesh Bank has recently argued to introduce automated clearing house system. This pushed upward transition from the manual banking system to the on line banking system. The study has been undertaken to observe present status of the e-business and as its complementary factor on line banking system in Bangladesh. The article analyzes the data that were collected from Bangladeshi banks up to February 2010 and also used snowball sampling techniques to gather answer from the five hundred respondents' who have already been using on line banking system on the basis of a questionnaire which was prepared for this study purpose. The study found that dealing officials of the banks are not well conversant about their desk work. Authors' observed that the country can be benefited through successful utilization of e-business as this will help to enhance productivity, monetary gain of both producer and customer may be feasible and positive impact on raising gross domestic product. E -business especially with the help of on line banking can manage economy of Bangladesh in a better way as customer will be satisfied.

Keywords: E-business, On line banking, ICT, Globalization, Customer Satisfaction.

JEL Classifications: E42,G21,M31,O33

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Introduction:

Bangladesh is still lagging behind to avail the opportunity of e-business. However, banking sector as a whole has been introducing on line banking system which plays complementary role to spread of e-business. Internet has opened a new horizon of e-business, creating immense opportunities for marketing products as well as managing organizations banking internationally. Gradually wire less Internet system has been creating a new paradigm and electronic fund transfer can have a suitable formation.

E-business can improve the quality of the services, save customers valuable time, movement from one place to another and receiving the goods accurately. E-business brings a new channel of distribution process. But this leads to change in the regulatory issues, cross border trade through emerging new marketing distribution channel. This reduces transaction time, boundary less trade, and accuracy. In developed nations, e-business creates an opportunity to directly selling of the product to the customer without using any intermediaries. This process occurs mainly in the four systems: businesses to business (B2B), business to consumer (B2C), business to government (B2G) and consumer to consumer (C2C).E-business expedite the process of better customer relationship management. It also helps to attain enterprise resource management as well as “e” to “e” process. As such on line banking system can add value and value chain can be created in the e-business process. In turn it helps to raise gross domestic product of the country.

Governments as well as different international organizations have also identified that underdeveloped banking technology creates hindrance on economic progress of the country. On line banking system is a way of conducting, managing, and executing banking transactions utilizing information and communication technology (ICT) and electronic communication networks such as the Internet, intranet and extranet. Environment of electronic banking requires authentication procedures for electronic payment system, network environment, computer hardware and software, electronic hardware, legal bindings, etc. The security and authentication of modern banking are very much dependent on cryptography and its applications. Ramakrishnan(2001) argued that many banks have assumed that Internet banking primarily increases information security risks and have not sufficiently focused on the effect on other banking-specific risks. Risk management disciplines have not evolved at the same speed and many institutions, especially the smaller ones, have not been able to incorporate Internet banking risk controls within their existing risk management structures.

As information symmetry and free flow of information is gaining more importance due to globalization process, Bangladeshi companies have to compete in the world market to serve corporate and other clients with round the clock services. Access to computer would be beneficial to Bangladesh like any other country. Social and economic disparity and lack of Internet accessibility which creates digital divide is a great hindrance towards customer dissatisfaction of the business organization which ultimately results negative customer relationship management. As a result it creates negative impact on economic development of the country. E-business process creates an opportunity for doing business through arranging real time sharing business. Organizations can take help of transaction process through e-business solutions from around the world where on line facility can be available.

Due to advancement of technology, business process of the globe is gradually becoming complex for which e-business especially in the banking sector can supersede the traditional business process. Through e-business the country can compete with the changing global business trend and on line banking can facilitate e-business.

Literature Review:

Buffam(2000) depicted that companies that build the better e-business solutions will outperform their competitors. Companies that build the very best e-business solutions will transform themselves into zero-latency enterprises. Companies that choose not to embrace e-business, or do so ineffectively, will underperform or be driven out of business.

Turban et al. (2000) argued that following points of managerial issues are very important: Focus of Electronic commerce management; Sales promotion; Purchase process reengineering; Just-in –Time delivery; New electronic intermediary business; Provision of solutions; Business ethics.

Rahman (2001-2002) observed that issues relating to electronic fund transfer require security, availability, authenticity, non-repudiability and audibility. He suggested for appropriate control and efficient security measures and also for proper utilization of audit trail in the e-commerce system.

Ali(2003) argued that Bangladeshi companies, organizations have several problems to start full swing e-business. These include limited resources, backwardness in technology, managerial inefficiency, socio-infrastructural problem such as corruption, default culture law and order situation, rampant corruption, strike etc. which penetrate for long time.

Ali, Mohsin, and Yasmeen(2004) observed that maximize e-business efforts to focus on information dissemination, knowledge transfer, and technical assistance are required .Steps need to create appropriate knowledge among various procedures of e-business.

Huda, Momen and Ahmed(2004) commented that the banking sector in Bangladesh is clearly recognizing the importance of information technology to their continued success.

Hoq, Kamal and Chowdhury (2005) argued that a key reason why e-commerce, especially the business-to-business segment, is growing so quickly is its significant impact on costs associated with inventories, sales execution, procurement, intangibles like banking, and distribution costs. If these reductions become pervasive, e-commerce has the potential to be the application that ushers in the large productivity gains. Achieving these gains is therefore contingent on a number of factors, including access to e-commerce systems and the needed skills. However, what is unique about ecommerce over the Internet and the efficiency gains is that it promises the premium placed on openness. To reap the potential cost savings fully, firms must be willing to open up their internal systems to suppliers and customers. This raises policy issues concerning security and potential anti competitive effects as firms integrate their operations more closely.

Uddin and Islam(2005) observed that the multifarious projections of ICT in human life plead a winning case for institutional integration of ICT related components in rural support programs taken by Governments and NGOs.

Chaffey (2006) dealt with strategy and applications of E-Business and E-Commerce in a logical but robust manner. He stressed that e-business and e-commerce is very important for management implications as such a bridge to link leading edge research and professional practice is required.

Mia, Rahman and Debnath(2007) observed that the latest development in marketing financial services by banks is online banking, where banks have now put themselves in the World Wide Web to take advantage of the Internet's power and access to cope with the accelerating pace of change of business environment.

Pires and Stanton (2007) commented that policy wise government must recognize that the ability of countries to engage in e-commerce is tied both directly and indirectly to their attractiveness for FDI.

Ahmed and Islam (2008) observed that adopting e-banking services, banks in developing countries are faced with strategic options between the choice of delivery channels and the level of sophistication of services provided by these delivery channels.

Chandrasekhar and Sonar (2008) depicted that banks will reap the benefits of IT truly and totally, if and only if they pay adequate attention to technological progress as well as efficiencies on the input and output sides.

Shamsuddoha(2008) argued that in Bangladesh, banking industry is mature to a great extent than earlier period. It has developed superb image in their various activities including electronic banking. Now modern banking services have launched by some multinationals and new local private commercial banks. Electronic banking is one of the most demanded and latest technologies in banking sector.

Ahshan(2009) argued that online transaction would boost the gross domestic product (GDP) growth and thus help Bangladesh achieve the Millennium Development Goals (MDGs). In the era of globalisation, the Internet makes the world smaller and e-commerce facilitates marketing and shopping from home. E-commerce facilitates business with customers over the internet. In e-commerce, customers can buy goods and services over the Internet.

Islam and Yang(2009) observed that service quality satisfaction and informational trust had important mediating effects on the Balance score card performance process. These two mediating roles explain that, when an institution creates and raises the levels of service quality satisfaction and informational trust, the results lead to a favorable customer interaction relationship and thus could help the institution achieve higher levels for Balance score card performance measure.

Nyangosi , Arora , Singh (2009) argued that banking through electronic channels has gained increasing popularity in recent years. This system, popularly known as 'e-banking', provides alternatives for faster delivery of banking services to a

wide range of customers. The overall result indicates that customers in India and Kenya have developed positive attitudes and they attach much importance to the emergence of e-banking.

Shah and Clarke (2009) focused on human, operational, managerial, and strategic organizational issues in e-banking. They argued that e-banking management can help to expedite doing business through using electronic medium.

Rahman(2010) who is the Governor of Bangladesh Bank argued that Bangladesh Bank has achieved a historic milestone in the trade and business arena ,departing from conventional banking with the introduction of e-commerce recently; a giant stride towards digital Bangladesh .

From the aforesaid literature review, it is evident that on line banking can act as a complementary towards e-business. With the help of e-business the country can create opportunities as this will help both producers and customers. But these theoretical observations may not be feasible in this country .As such the study seeks to evaluate whether the country has proper infrastructure for doing e-business? What are the statuses of e-business and on line banking of the country? Does on line banking really works as a complementary to e-business in Bangladesh? Aforesaid questions arises which the study intends to examine.

Objectives of the Study:

The study has been undertaken with the following objectives:

- i) To examine infrastructural situation of the country to prosper e-business and on line banking system in Bangladesh;
- ii) To observe present status of on line banking in Bangladesh;
- iii)To evaluate whether on line banking system can work as a complementary to e-business process ;
- iv)To provide some recommendations so that e-business can bring fruitful results in the country.

Methodology of the Study:

The study is based on secondary sources and also primary sources. As such the study has reviewed different published articles, books, newspaper, and websites. However, exact references are mentioned in this article. The study will also collect related information regarding present status of the on line banking through field visit in forty eight banks (forty- seven banks after merger of two banks on 3rd January,2010) head office and in charge of IT and MIS Dept. Moreover, also visited Central Bank i.e. Bangladesh Bank to collect related information. The study collects data on following points: Services provided by the banks, software use by the banks, name of the vendor's and bank's name which is given in Appendix in Table: A.

Moreover, the study also did a survey through preparing a questionnaire. For collecting data from the respondents', the study used snowballing sampling technique which is also known as a chain referral sampling type. Snowball sampling technique is used to discover and enlist "hidden populations," who may be difficult to locate. The survey was conducted among 500 customers' comment those have been using on line banking system. Customers' are of following banks: Sonali Bank Ltd., BASIC Bank Ltd., Dutch Bangla Bank Ltd., Standard Chartered Bank, Trust Bank Ltd., Prime Bank Ltd., Uttara Bank Ltd. Detail list of no. of respondents of each banks

(including male and female customers') are given in Table: B in Appendix. These customers' are from Dhaka and also Chittagong city. Fact that on line banking is mainly concentrated in the Dhaka city .However, in Chittagong city also on line banking system is also being expanded .Out of 500 respondents, 381 persons are from Dhaka city while 119 person from Chittagong city.

Observations through field study were obtained are being reported at the present status of the on line banking system. Time period of the study is up to February 2010.The study did not use any sort of correlation or regression analysis as this study is mainly based on qualitative nature.

Present Status:

Bangladeshi companies, organizations are facing problem to start full swing e-business. Network is a mode of communications with the computers. Networks of computers can be classified in following ways: Local area network, Metropolitan area network, and World Wide area network. Multiple computers connected through telephone lines, cable systems, and in wireless technology are also required. According to a report published in The Daily Star(4th April,2010) Bangladesh ranked 118th in the global Network Readiness Index in 2009-10 up from 130th a year ago, showing an upward trend in the information and communication technology sector. In South Asia, India ranked 43rd, Sri Lanka 72nd, Pakistan 87th and Nepal 124th in the 'Global Information Technology Report 2009-2010' released by The World Economic Forum (WEF) on 3rd April,2010.As such Bangladesh has to go long way to develop its network for arranging Digital Bangladesh by the year 2021 and public and private cooperation and strategic alliance is required to develop e-business system in the country.

Electronic Payment Systems for e- business includes characterized by broad geographic presence and acceptance by a large number of merchants or programs. Participants in an electronic payment system may include users, financial institutions, business personnel, industrialist, merchants', third party processor etc. WiMAX stands for Worldwide Interoperability for Microwave Access which offers wireless transmission of data via different transmission modes, from point-to-multipoint links to portable and fully mobile internet access.The Finance Minister recently argued at trial launching of operation of the country's first-ever wireless broadband technology WIMAX. He commented that entrepreneurs of the telecommunications sector must reach the digital communications system to the doorsteps of the rural people. He hoped that the WiMax technology will be available at every divisional headquarters within a year(Source: http://www.bangladeshinfo.com/gadgets/news_inner.php?nid=2343, July 22, 2009)

Telephone density is awfully little in Bangladesh. It is far much less in comparison with other developed nations of the world as well as neighboring countries. Kabir(2008) depicted that Mobile Phones(millions) are 36.4, Fixed Lines (PSTN) (millions) are 1.2 Total telecom users (millions) are 37.6, Teledensity (%) is 26.8 in the year 2008. Outside Dhaka, at present a few computer network infrastructures have been developed so far. Apart from some educational institutes outside Dhaka, observation finds that most of the LAN setups are Dhaka centric. Bangladesh has been connected to worldwide Internet Super High Way from 2006 through an under sea submarine cable. But this single submarine cable frequently faces disruption resulting in slow bandwidth.

A huge digital divide exists among the city of Dhaka , Chittagong and other parts of the country. Private-public partnership is a crucial issue for information and communication technology (ICT) development and application. Private enterprise and capital can lead ICT revolution in Bangladesh. This, however, would require the government to provide the basic business environment. Rapid growth in ICT is not possible without massive investments for ICT infrastructure and human resource development in the computer and electronics and telecommunication engineering courses through ensuring quality education. Still now call charge of cell phone is not competitive in Bangladesh. Bangladesh Telecommunication Regulatory Commission (BTRC) is not playing due role in the development process of communication sector. Infrastructural problems are creating less scope to successfully implement e-business.

Under the private initiative, Internet was started in 1996 by ISN in Bangladesh. ISN is the first ISP operator in this country. Still now all the Internet service providers have the server in abroad, for which they are facing competitive disadvantage, as cost remains high. Security problem is still high in this country. Lack of digital accessible personnel is real problem for the country. Moreover, some software developers of the country aren't well conversant with the market demand for which they cannot supply application software with faultlessness.

Policy makers of the country are not aware about the benefits of e-business .As such they don't put significance on proper and systematic development of the process of e-business. In this connection it may be stated that Bangladesh bank is trying to implement automated clearinghouse through utilizing (Magnetic Ink Character Recognizer) MICR procedure. But in developed nations MICR procedure is now replaced by more sophisticated procedure such as cheque truncation process.

Total numbers of Banks in Bangladesh are forty seven. Banking sector in Bangladesh on the basis of utilization of electronic devices can be subdivided into three groups: i)Foreign Commercial Banks and Private Commercial banks especially 2nd(except few banks) and 3rd generation Private Banks :Fully Online banking; ii)1st generation private banks and some 2nd generation Private Commercial Banks: Medium range Online banking system ;iii)Nationalized Commercial Banks , Specialized Banks and Few foreign Bank branches of this subcontinent :Low grade online banking system..

At present the banks in Bangladesh are using the limited electronic banking services. It is expected that bank can attain more profit and offer better services to its customers by, introducing on line banking facilities. The foreign commercial banks operating in Bangladesh like Standard Chartered Bank , Citi Corp. N.A. and the HSBC are the pioneers to introduce the electronic banking facilities. They provide ATM, Debit Card, Credit Card, Home Banking, Internet Banking, Phone Banking, on line banking etc. services.

Among the indigenous banks, the Private Banks are ahead of the public banks. Prime bank ltd. , Dhaka bank ltd., BRAC bank ltd., Dutch-Bangla bank ltd., Eastern and Mercantile bank ltd., are already stepped on towards electronic banking facilities. Apart from these banks, Mutual Trust Bank ltd., also introduced ATM service. Among the four Nationalized Commercial Banks (NCBs), Janata bank ltd., has some access to the electronic banking facilities. Bangladesh Bank, the Central Bank of Bangladesh, is also trying to formulate the wide structure of electronic banking facilities. All of these private banks offering limited on line banking services. Most of these banks only offer services by providing ATM card. Most of them do not offer wide range of internet banking facilities which is the main advantages of e-banking. Can deposit money in any branch and withdraw money from ATM machine- is treated the best e-banking facility available in Bangladesh While electronic money transfer starts in a limited edition. Sonali and Agrani bank ltd., is also providing on line banking services in a limited scale. Rupali Bank ltd. is also developing on line banking. BASIC bank which is 100 percent public owned but served as private sector banking has a technological advancement. Detail types of banking services offered by various banks are given in appendix.

A broad spectrum of Internet banking services, a subset of electronic finance, is available in Bangladesh with different degree of penetration. The credit card is available from VISA, MasterCard and VANIK. Some foreign banks provide electronic fund transfer (EFT) services. It is at an early stage and used on a very limited scale. Microchips embedded Smart Card is also becoming popular in the country, particularly for utility bill payment. Automated teller machine (ATM) is expanding rapidly in major cities. A group of domestic and foreign banks operate shared ATM network, which drastically increase access to this type of electronic banking service. The network will gradually be extended to other parts of the country.

Last couple of years shows dramatic improvement in the awareness situation in the banking sector regarding the comprehensive application of ICT. Local software companies have been starting competition to supply useful complete banking software with all the basic features of banking module. However, many forms of electronic banking services are not possible to offer in Bangladesh at this moment due to the technology backwardness, infrastructural underdevelopment and legal infrastructure. Those products would be very useful for export-oriented industry to reduce lead-time in export and keep comparative advantage in the international market.

For sending foreign remittance four nationalized banks and fifteen private banks are working collaboratively with mobile phone service operators. Recently remittance could be sent in Bangladesh by banking channel through account transfer (normally takes 3 working days) or in the form of instance cash (takes 24 hours). Foreign resident people can send their money and PIN (personnel identification number) through mobile phone. As a result money transfer becomes relatively easy, quick and hassle free. But this system also superseded by mRemittance system. According to a Ahemd (15th April,2010) in a revolutionary step on April 13, mobile remittance service or mRemittance was introduced in the country opening doors to millions migrants workers to help transfer their hard – earned money easily ,effectively and most importantly ,swiftly. The first ever remittance service for Bangladesh was jointly launched by two local banks –Dhaka Bank ltd. and Eastern Bank ltd. – and the country’s second largest mobile operator ,Banglalink.

Credit card facility fully can not be extended in the country, as common gateway between financial institutions can not be established. Pricing mechanism of the products of country is not competitive, rater it is very much volatile. This creates a negative impact on the customers’.

To eradicate digital divide process has been started very slowly. Bogora, Kushtia, Barisal and Modhupur village of Tangil was bringing under preview of Internet banking is a complete virtual bank which started on 2nd May of 2000. This will gradually give following services: e-marketing, e-shopping mall, e-marriage scheme, e-mail, e-tender , e-voting/polling, search engine, chat, e-commerce, e-stamp, e-Cash, e-music, e-entertainment, e-treatment, e-Advocacy etc. E-governance can help us to achieve good governance of the country.

If Govt. doesn’t take proper incentives to spread the computerization process then there will be no benefit. The parliamentary members of the country must be aware of the benefits of Information and Communication Technology (ICT) otherwise it can not be successful. It won’t bring any dramatic changes in the economy. Entrepreneurship Development fund (EDF) of Bangladesh bank is should be utilized properly. Only a few companies can avail the fund. ICT related companies are trying to develop e-business processes but their activities are limited. If proper procedure of e-business can be developed in the agribusiness sector especially in the rural areas through utilizing e-technology then it will be beneficial for the producers of the agricultural commodities.

Acute shortages of human resources interested to do online banking business are also one of the main reasons for lagging behind. However, as law and order situation is deteriorating so there is a positive impact on the e-banking considering the safety of the people.

From the field visit, it reveals that banking sector requires rapid modification and adaptation to keep harmony with the world business. It becomes more obvious by

observing the increased number of customers in some modern banks while others are losing them. In the context of Bangladesh, a country of more than 150 million people, it is to be realized that there is no other option for us than to join the current trend

According to news report published in the new Nation on 28 th August 2009 the government has formulated a policy on the national information and communication technology as part of its announced plan for digitization of the nation. The policy has earmarked activities in three phases in the short, medium and long-term plans to be implemented within 2021. The government aims at doubling the gross domestic products (GDP) during this time to achieve the goal. The policy details suggest a number of activities including spreading the use of keyboard by functionaries at different levels, encouraging the use of standard code by software sellers, developing a national web-portal and popularizing the use of e- citizen services, paying service charge through mobile phones or ticketing etc. Land registration, passport renewal, digitization of police case dairy and case position in the court, spreading the use of broadband internet throughout the country and such other essential services may also be brought under the scheme. The new policy will be the common property of all departments and organs of the state targeted to develop a digitized nation within the stipulated time.

Most of the existing banking system in the country outside Dhaka and Chittagong city is manual (paper based) that's why is awkward, slow and error-prone. It, in one hand, fails to meet the customers' demand and, on the other hand, it causes some significant losses both for the banking authority and traders. Electronic banking, on the other hand, solves the above problems. Furthermore, it opens up some other salient aspects such as increased foreign trade and foreign investment. At present weekly bank holiday in Bangladesh is in Friday and Saturday where as in rest of the world it is in Sunday. As such Bangladesh has only 4 banking days for foreign exchange transactions. With preliminary stage e- business facilities and this limited time period (banks' transaction days) how long we can survive- is a debate. Bangladesh government should consider this case carefully.

According to a report on "Bangladesh is developing electronic payment infrastructure"(May 20,2008) the Securities and Exchange Commission (SEC) in Bangladesh proposed IT Consultants Limited (ITC), a manager of Q-cash brand of ATM and different cards, to raise their paid-up capital up to Tk 500 million if the company is to proceed to initial public offerings. The Securities and Exchange Commission (SEC) has asked us to raise the company's paid-up capital Tk 50 crore from the current Tk 37 crore. In case the company fails to comply with the SEC requirements to increase the paid-up capital within the time specified, it will have to gain the approval of the SEC again. This measure is believed to extend the sphere of the company's influence. The company began as a private limited business in 2001. But now it is the local leader in electronic payment systems which are developing in the country with increased speed. ITC possesses necessary tools to process transactions for banks and retailers. It has the largest independent network of more than 100 ATMs in the country. There is also a wide network of point-of-sales (POS) centers operated by the company.(Source: http://www.ecommerce-journal.com/news/bangladesh_is_developing_electronic_payment_infrastructure_0?drgn=1)

According to the report published in The Financial Express(3rd November,2009) Bangladesh Bank gave the ground breaking directives to commercial banks through a circular issued on 2nd Novemebr,2009, saying that from now on their clients can pay power, water, gas and phone bills from bank accounts and transfer funds within a bank or to other banks. The central bank said that online payments will be treated like any other cash transaction although it reminded the banks that these money transfers would be regulated by the country's strict Anti-Money Laundering Act. The country had only about 400,000 credit card holders at the end of June last year, according to Bangladesh Bank Payments and transactions by credit cards were nearly Tk11 billion in June 2008 --- one of the lowest in the world. However, banks still need massive ICT backbone to ensure that online transaction can not be misused. Meanwhile, Bangladesh bank started Automated

Clearing house on trail basis from 8th November, 2009. Bangladesh Bank also declared that the clearing house won't accept any cheque from 1st April 2010 if size of the cheque is not as per the guideline of the MICR system. However, in Bangladesh digital divide among the Dhaka city and rest of the country is conspicuous. E-business as a whole is confined among very few business organizations and on line banking business is expediting process of the e-business of the country.

Filed level study:

Total numbers of different categories of banks are currently forty -seven. The Bangladesh Development Bank Ltd (BDBL) began operations, on 3rd January, 2010 through merger of Bangladesh Shilpa Bank and Bangladesh Shilpa Rin Sangstha. From the filed survey we observe that following banking services are being provided by different banks:

- Core Banking
- Cluster Banking
- Phone Banking
- SMS Banking
- Internet Banking
- Various Cards
- ATM Shared (VISA/MASTER)
- ATM own (VISA/MASTER)
- EFT
- SWIFT
- PC Banking
- POS Terminal
- Banking KIOSK
- Offline Branch Computerization

Detail of the field survey regarding software uses', vendor's name and services are given in the appendix in Table: A.

However, from the field survey it is evident that foreign commercial banks and private commercial banks are relatively in a better position to provide on line banking services.

Moreover, when contacted with Bangladesh Bank then it was informed that BACH (Bangladesh Automated Clearing House) is yet working in SIT (System Integration Testing) phase. SIT is expected to be completed within first half of January 2010. In the first phase, only Dhaka will be under this umbrella and all bank branches in Dhaka region must be part of BACH. Bangladesh Bank (BB) in its Dhaka office is using 7 inch * 3.50 inch MICR encoded cheques in BACH. Cheque truncation will be done, some banks will truncate fully (meaning at branch level) while some partially (meaning at a central point). BB will also provide bureau service, if needed by any bank initially. Clearing is for inter-bank transaction. It will be settled by BB after t+1 days.

Customers' Response:

Out of five hundred customers' who have been using on line banking system, following results have been gathered from the questionnaire through using snowball sampling technique.

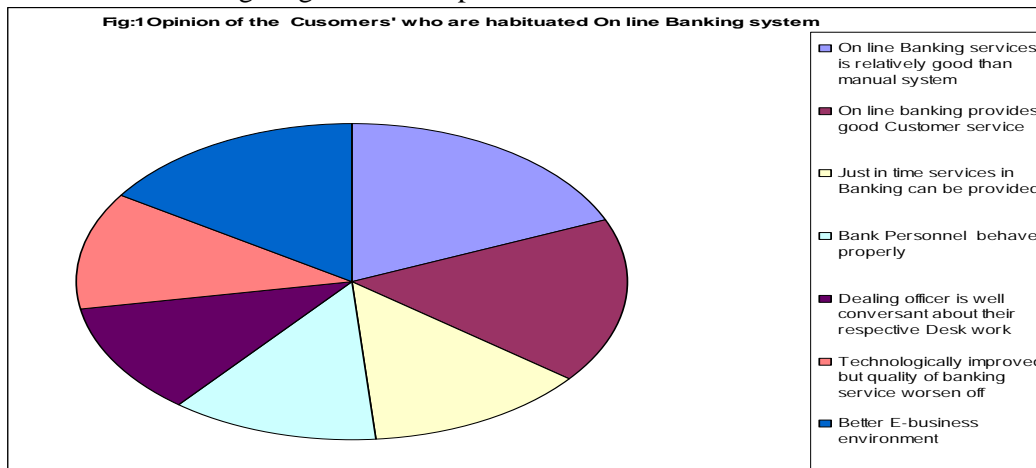
Table:1 Customers' Response who have been using on line banking system (% of Respondents who expressed "Yes" comment)

| Comment | Dhaka(In percentage) | Chittagong(In percentage) |
|--|-----------------------------|----------------------------------|
| On line Banking services is relatively good than manual system | 79% | 65% |
| On line banking provides good Customer service | 72% | 61% |

| | | |
|---|-----|-----|
| Just in time services in Banking can be provided | 56% | 48% |
| Bank Personnel behave properly | 52% | 56% |
| Dealing officer is well conversant about their respective Desk work | 48% | 47% |
| Technologically improved but quality of banking services worsen off | 51% | 44% |
| Better E-business environment | 67% | 61% |

(Source: Compiled on the basis of Customers' response)

From the aforesaid findings it is observed that impact of on line bank has a mixed result though most of the customers' support that it provides good customer services. This supports our null hypothesis. But the problem lies that customers' thought that technologically improved but quality of banking services are worsen off. In case of other opinion survey most of the customers' are providing "yes" results which also indicate that null hypothesis is correct. However, in the opinion poll survey there is a question regarding dealing officials of the commercial banks whether they are well conversant about their desk work? The reply indicates that 52% and 53% customers of Dhaka and Chittagong thoughts that dealing officers of the banks are not well conversant about their desk work. Now we are showing diagrammatic representations.



Analysis of the Findings:

E-business is still not very much progressed in Bangladesh. Mass awareness is not feasible. The country faces problem of developing human-ware. Without preparing human capital at the level of international standard, we cannot be able to compete in global market and successful e-business cannot be feasible.

From the filed level study we observe that still nationalized commercial banks and specialized banks are lagging behind of on line banking services. Moreover, customers are not satisfied with the quality of the services. They are not also very happy with the behavior of the bank personnel. However, it reveals that e-business especially with the help of on line banking can manage economy of Bangladesh in a far better way as customer relationship management increases.

Local Banking software should be developed properly and must have greater accessibility within the country and outside the country. Moreover, to produce hardware especially computer and its accessories, local entrepreneurs are not taking any sort of strategic planning. Bangladesh Bank should adopt latest technology but due to lack of vision they are adopting old technology i.e. introduction of MICR for Bangladesh Bank automation procedure. MICR system should be substituted by cheque truncation system.

The shortage of technology-based human resources and poor telecommunication infrastructure needs to be overcome to break low equilibrium trap. Bridging the digital divide would provide technology-based human resources, who can contribute to raise gross domestic product (GDP), national savings, investment, creation of employment and

moving out from the vicious circle of underdevelopment. .

Numerous problems have been identified from the field survey on line banking system in Bangladesh. Some of them are in the followings:

- Inefficiency and inadequate knowledge of the bank management about the on line banking.
- Lack of proper Strategic plan to gain and retain market share of the indigenous banks.
- Lack of international standard communication channel.
- High cost of establishing on line banking system.
- Inadequate back and front office management.
- Lack of integrated plan among the banks and the Central Bank authority.
- Inefficient Clearing House Facilities.
- Inappropriate software and less trust by the Bank authorities on local software.
- Biased-ness of the management of bank towards foreign software.
- Legal barriers and appropriate policy framework.

The number of customers taking banking services does not capable to bear the cost of additional equipments like computer, computer accessories , Internet etc. from their own organization or at home. Biometrics should be more strengthened. Using Internet facility still very costly and people has little knowledge in operating computers. A few numbers of cyber café is available but for banking purpose customers do not feel safe to use these facilities. As a result total numbers of customers who are habituated in on line banking systems are limited. In these circumstances investment for establishing e -banking facilities seems profitless.

Although on line banking has bright prospects, it involves some financial risks as well. The major risk of on line banking includes operational risks (e.g. security risks, system design, implementation and maintenance risks); customer misuse of products and services risks; legal risks (e.g. without proper legal support, money laundering may be influenced); strategic risks; reputation risks (e.g. in case the bank fails to provide secure and trouble free e-banking services, this will cause reputation risk); credit risks; market risks; and liquidity risks. Therefore, identification of relevant risks, and formulation and implementation of proper risk management policies and strategy formulations and implementations are important for the scheduled banks while performing on line banking system. Ramakrishnan's(2001) suggestion may be followed for risk management.

Benefits of Electronic Business and on line banking system:

Managers at various levels of organizations especially in underdeveloped country like Bangladesh will have to play vital roles to successfully implement e-business. They may act as strategic leaders at different stages of managerial capabilities. They are the key forces to initiate dedicated strategy to change from the traditional business processes to the technology driven business processes. This is not involving only huge costs as a transition period of organizations but adaptability of the human being in the new processes to adding values are required. Due to global changing environment, to succeed in the global arena as well as domestic business, organizations often forced to do business in the electronic ways. Moreover, to succeed over the competitors' organizations needs to be changed their strategy and they are gradually become bound to adopt e-business. At these stages successful implementations depends on all the stages of the Hierarchy of the Management i.e. starting from the Top Management level to the lower level management.

On line banking system works as a complementary factor of electronic business. Though electronic business has a greater set of field but on line banking can work as a

subset of the e-business .Benefits derived form the e-business largely depends on successful implementation of the business process.

Managing external pressure as well as internal pressure should be coordinated by the management so that e-business can supersede traditional business processes of organizations .Moreover, transformation process requires huge cost especially organizations of Bangladesh. Greater and cautious resource management especially financial capability should be handled by the management of the organizations. Flexible innovative changes processed by the management of the organizations are required for the organizations to succeed in the transformation process. Changing processes should consider socio-economic and cultural environment as well as labor surplus country. Business process reengineering may be designed with the aim that personnel of the organizations will use the technological functionalities which will lead to further enhancement of the organizations. As such strong motivations by the management towards all level of personnel of the organizations are required. Managers' functionality to implement e-business is a stressful task for which their mindset should be strong and they should consider not only global considerations but also consider domestic situations.

E-business can add value through knowledge management as it helps to attain new services to the customers. Successful e-business depends on sharing of strategic knowledge for which dissemination of the information and free flow of knowledge around the globe is required. On line banking can provide twenty four hours banking facilities. Through electronic data interchange customers are able to draw money from one branch to another. Letter of credits can be sent through SWIFT or electronic fund transfer from one country to another can be feasible. Actually on line banking provides faster, reliable services. Encryption and decryption can be used to send money from one place to another. As such on line bank management handles customers in a far better way.

In Bangladesh decision makers are generally reluctant about advancement of technology. It is difficult for people who do not have much technical knowledge to understand the necessity of adoption of new technology. So the pace of computerization in various offices, business enterprises and sectors are low.

Another problem of initiating E- business is that in our country policy makers, managements are generally reluctant to accept something new. As such management prefers to maintain current business model and that's why they are reluctant to introduce some thing new.

To avail the advantage of E- business, organizations including banks have to invest for software, hardware, infrastructure development etc. The owners are uncertain about the positive return on investment as transformation from manual system to electronic transaction involves huge cost. This is a great drawback to implement E-business at a full swing. But the organizations are not interested to invest because they consider huge expenses.

In Bangladesh most of the business organizations are running centralized manner. As such visions, missions, goals of the top management of various organizations are very important. Top management should change their mindset and like Bangladesh Bank, they should encourage e-business process. Top management views are reflected to the mid level management and lower level management. Unfortunately most e-business efforts fail for non-performing visions, missions, goals and tactics at the business processes of the organization.

Discussions and Conclusions:

Due to advent of e-business especially on line banking system, the distribution channel is also changing. But quality of banking services should be international standard.

To attain more effective and efficient business procedure, Bangladesh has to produce commodities of global standards. Ali, Mohsin, and Yasmeen(2004) observation may be followed to attain e-business efforts through information dissemination, knowledge transfer, and technical assistances. However, Bangladesh's global Network Readiness Index should be improved from present situation.

From the respondents' opinion in the area of Dhaka City and Chittagong city of the on-line banking user customers we observed that null hypothesis is accepted while alternative hypothesis is rejected. It indicates that on line banking can provide better customer relationship management. As per findings behavior pattern of the bank personnel should be improved. Not only technological improvement is desirable but also banking service as a whole should be better off. Chandrasekhar and Sonar's(2008) comment should be considered as not only technological progress but efficiency of the banking services are required as on line banking customers' are not still fully satisfied with the services.

Study on customers' feedback is partially supported by the findings of Nyangosi , Arora , Singh (2009) as they argued that banking through electronic channels has gained increasing popularity in recent years. However, policy makers should consider Shah and Clarke (2009) observation. Because from the customers' feedback, the study observes that paying attention on human, operational, managerial, and strategic organizational concern in e-banking is required. Moreover, bank personnel should be well conversant about their respective desk work. This is also applicable to other organizations which are implementing e-business in the country. Otherwise customer relationship management cannot be improved. Buffam's (2000) comment is more practical for the companies of Bangladesh as e-business will lead to attain competitive advantage as will they can outperform their competitors.

The study also done to observe different types of services and use of software's by the banks. From the field level study we observe that Core Banking, Cluster Banking, Phone Banking, SMS Banking, Internet Banking, Various Cards, ATM ,SWIFT,PC Banking, POS Terminal, Banking KIOSK, Offline Branch Computerization are being provided. From the point of view of on line banking, still foreign banks are providing more on line banking services than private commercial banks. Then nationalized commercial banks and last being on line banking services are being provided by specialized banks.

Ahshan's(2009) observation is important for Bangladesh as it will help to enhance economic development. Creation of appropriate personnel/professional can improve the economic condition of the country. As such stress should be given to develop human ware. E-business can play important role to reduce poverty only when it can be effectively utilized for spreading the business both in rural and urban areas, creation of job opportunities, removing middlemen in the business process and one to one direct selling process and increasing both income and saving.

Internet accessibility should be used for poverty reduction. Following should keep more emphasis on e-business: IT firm; Export/Import traders; Export oriented/Potential export business; Facility provided ISP/Internet; Infrastructure development- Govt.; Ministry of Commerce, Ministry of Law, Ministry of Science & ICT, Export promotion bureau; Telecommunication / Infrastructure ;Awareness on IT benefits among the mass. In this regard

Governor of Bangladesh Bank Rahman (2010) rightly points out that a holistic approach needs to be taken by all the stakeholders to reach the ICT facilities to the doorstep of the common people. Actually e-technology can be utilized with other computer peripherals to enhance communication, skill ness and understanding and provide a sound basis for implementing e-business. It can be helpful to accelerate the learning process, including the acceleration of the development and application of knowledge and technology. This includes development of the system and infrastructural development and support where

followings are required: (a) E-procedure, (b) Browser based system development, (c) Web enable of legacy and/or client server systems, (d) Enterprise application integration, (e) Implementation or use of application server technology. Ahmed and Islam's (2008) observation should be cautiously taken so that adopting on line banking services for which banks in Bangladesh can develop strategies for expediting not only banking business but also providing customers' satisfaction.

Business sector should be encouraged that make their own investment in the application of ICT in production, trade and services. Procurement and utilization of funds from national sources, both public and private should be pursued. International development and donor agencies should be approached to provide funds to set up necessary infrastructure and development of human resources, confirming to the objectives of ICT policy. Shah and Clarke (2009) observation about the e-banking can be transformed for successful e-business policy formulation as it depends on human, operational, managerial, and strategic organizational issues. Islam and Yang(2009) rightly observed that service satisfaction and information trust can play positive role to attain e-CRM and balance score card model which is not only valid for the financial institutions but in a large extent i.e. business process of the country.

Economy of Bangladesh is still underdeveloped and one of the main reasons is banking system is not properly developed. Technology is one part but personnel should be well conversant with their respective desk work and behavior pattern should be improved. Government as well as different international organizations have also identified that underdeveloped banking causes some costly obstacles on the way of even economic progress of the country. Investors are frequently scared in invest because of its sluggish banking system. Hence the task of making the banking system of Bangladesh at per international standard deserves the highest priority. Business processes should be re-engineered.

Banks will have to face stiff competition in the world market with increasing of impact of globalization and the banks will be forced to offer twenty –four hours banking services online. Regulatory issues relating to security measures of electronic banking can be improved through the following ways:

- a) Analyzing the potential risks in the electronic payments systems;
- b) Existence of tradeoff between the efficiency of the financial system and the amount of risk incurred;
- c) Competitive pressures that may encourage the banks to engage in competitive deregulation;
- d) Effective provision and arrangement for cryptography and its applications;
- e) More customers' are willing to accept e-business as psychological patterns of the customers' have been changing.

Global financial system has getting stronger day by day and it is strengthening by the e-business. Around the globe, consumer market has greater potentialities and producers must be active otherwise they may lose their share in the marketing strategies. Customer retention is feasible through arranging e-business otherwise if switching cost is low and other factors in between two companies are similar then customer will switch from one company to another where technological advancement is relatively higher. Moreover, rate of call charge of cell phone should be lowered. Hidden cost in cell phone should be removed. However, on line banking as well as electronic fund transfer and electronic data interchange is not free from risk. Not only security risk, but cost of transactions may also be raised .In this regard Rahman's (2001-2002) observation regarding risk should be cautiously handled.

The country can be benefited through successful utilization of e-business .This will help to enhance productivity and customers will be satisfied. Producers will also be benefited and monetary gain can be attained. E-business especially with the help of on line

banking can manage economy of Bangladesh in a better way as customers' satisfaction can be increased.

Recommendations:

To implement e-business successfully in Bangladesh following recommendations are given below:

- Digital Bangladesh may be activated by 2021 to develop the economy of Bangladesh. Successful team building with a coherent manner for developing human ware, hardware, software and web ware are required to increase e-business process in a systematic way. Moreover, greater emphasis should be given on security system and to prevent fraud so that any sort of financial transactions including on line banking payment or any other electronic fund transfer can be properly handled.
- Career path of hardware and software engineers should be properly designed. Otherwise professionals will be de-motivated and they won't work with job satisfaction.
 - In Bangladesh, on line banking systems are yet at a take off stage. The Clearing House operation in Bangladesh should be fully automated system. Banks and business organizations especially corporate houses should have adequate research, skilled manpower and technology driven strategies in this regard.
 - Initiatives to develop integrated e – banking software through in house built may be taken. Preference should be given by the bank authority to use local software over foreign software. Common gateway is required so that inter bank transactions can be feasible. Bank can charge normal profit to enlarge the market size on the on line banking products. Banks should have their own strategic plans to implement on line banking system. Creating awareness and consciousness among the clients of the banks are also required.
 - The country needs to develop e-business with the help of ICT facilities. ICT application and development of software are very much dependent on the quality of the workforce, and supportive infrastructure and environment. Upzilla level may be considered as the base unit which may be connected with district and then connectivity with the capital of the country can be done. However, more stress should be given on wire free connectivity for which priority should be given on WIMAX technology.
 - Public and private participation (PPP) for e-business should be encouraged for economic development. Spread of on line banking is a very good initiative. But it is not only sufficient. Business sector as a whole should be focused on using E-business. It should be accompanied with e-governance system and should be moved towards other areas of the “ e ”to“e” system like e-tender, e-trafficking, e-ticket, e-learning etc. More stress should be given to the wireless transactions and working environment due to rapid technological advancement.
 - E-business should be used both for agricultural sector and industrial sector. Equal importance should be given so that domestic trade and international trade can be effective. Distortion from the market should be driven out and information should be passes systematically.
 - E-business can help to improve total quality management. This can also ensure quality assurance of the business sector. As such business policy formulation and strategies are required and this should be properly implemented. Adequate training and technological support to be developed so that trained manpower and technology driven organizations can be created with the help of partnership between Govt. and non –Govt. organizations.
 - Quality maintenance of local software should be arranged. Initiatives should be taken to set up hardware industry so that computer and computer accessories can be prepared in the country and easily purchasable for the lower and lower middle class people. Quality education and training in the field of ICT to develop human resources are essential.

Moreover, entrepreneurship should be developed for developing hardware and computer peripherals.

- More high-speed fiber optical data communication infrastructures should be well established for speedy data communication for domestic and global high speed communication system. This will help to attain better e-business including on line banking system. Competitive situation should be arranged so that e-business management can be improved through efficiency and effectiveness of customer services.
- BTRC as a regulatory body should work with long term vision, mission and fulfillment of goal oriented strategies. They should work as a facilitator rather not creating hindrance. VOIP should be legalized after examining and finalizing proper rules and regulations in the country.

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Appendix:

Table: A Bank’s Name, services, software uses’ and vendor’s Name

| Service | Software use | Vendor’s name | Bank’s Name |
|--------------|------------------------------|---|--|
| Core Banking | Equation | Misys International Banking System Ltd. UK | AB Bank Limited |
| | STELAR | ERA InfoTech Limited | Bank Asia Limited |
| | | | Standard Bank Ltd. |
| | Flexcube (IBM AIX, Oracle) | Oracle Financial Services Software Ltd., India (Local Representative: Dataedge limited) | Dhaka Bank Ltd. |
| | | | Eastern Bank Ltd. |
| | | | Citibank N.A. (In-house..) |
| | | | Dutch Bangla Bank Ltd. |
| | PC Bank 2000 | Leads Corporation Ltd | First Security Islami Bank |
| | | | Social Islamic Bank Ltd. |
| | HUB Core Bank | In-house | The Hongkong & Shanghai Banking Corporation Ltd. |
| | Temonas | DataSoft Limited | Janata Bank Ltd. |
| | Flora Bank | Flora Systems Ltd. | Mutual Trust Bank Ltd. |
| | | | Jamuna Bank Ltd. |
| | A2Z Multiuser Banking System | A2Z Computer Service,BD | National Bank Ltd. |
| | PC Bank-2000 | LEADS Corporation Limited | National Bank of Pakistan |
| | Micro Banker VPro/5 | Data-edge | ONE Bank Ltd. |
| | Bank Ultimius | Leads Corporation Ltd | Southeast Bank Ltd. |
| | eBBS | In-house | Standard Chartered Bank |
| | ABABIL | Millinum Information System Ltd (MISL)BD | AI –Arafah Islami Bank |
| | | | The City Bank Ltd. |
| Finacle | Infosys Solution | BRAC Bank Ltd. | |
| | | The City Bank Ltd. | |

| | | | |
|------------------------|-------------------------------|--|---|
| | | | EXIM Bank Ltd. |
| | T24 | Temenos Switzerland | Prime Bank Ltd. |
| | | | Agrani Bank Ltd. |
| | Flora UBS | Flora System | National Credit and Commerce Bank Ltd. |
| | Equation Branch Server | Misys International Banking System Ltd. UK | International Finance Investment and Commerce Bank Ltd. |
| | Equation Branch Automation | DO | |
| | Trade Innovation | DO | |
| | Infinity Banking System | | Rupali Bank Ltd. |
| Cluster Banking | | | First Security Islami Bank |
| | PC Bank 2000 | Leads Corporation Ltd | United Commercial Bank Ltd. |
| Phone Banking | Tele Banking | ERA InfoTech BD | Bank Asia Ltd. |
| | Call Center Integrated System | In-house | The Hongkong & Shanghai Banking Corporation Ltd. |
| | Flora Bank Phone Banking | Flora | Mutual Trust Bank Ltd |
| | IVR | Suprico | Standard Chartered Bank |
| | Access | Phoenix Soft Switch, International Acumen | BRAC Bank Ltd. |
| | CISCO System | LEADS | Dutch Bangla Bank Ltd. |
| | Telebanking | Flora System ltd | Jamuna Bank Ltd. |
| | Mobile Banking Management | SSL Wireless Limited | AB Bank Ltd. |
| SMS Banking | SMS Banking | ERA InfoTech BD | Bank Asia Ltd. |
| | | | Dhaka Bank Ltd. |
| | Flexcube | Oracle Financial Services Software Ltd., India | Dutch Bangla Bank Ltd. |
| | | | First Security Islami Bank Ltd. |
| | SMS Banking | LEADS Corp. | United Commercial Bank Ltd. |
| | Win2000 | LEADS | Mercantile Bank Ltd. |
| | Flora Bank SMS Banking | Flora | Mutual Trust Bank Ltd. |
| | Balance query by Cell Phone | Business Automation | ONE Bank Ltd. |
| | Tagged with Banking | LEADS | Shahjalal Islami Bank Ltd. |
| | SMS Banking | Upload Systems | Southeast Bank Ltd. |
| Mobile Banking | In-house | Standard Chartered Bank | |

| | | | |
|---|--|--|--|
| | Web Service, Windows Service | In-house | BRAC Bank Ltd. |
| | For SMS Banking | Software Shop Ltd. | International Finance Investment and Commerce Bank Ltd. |
| | O/S WAP | M/S S.S.L | Sonali Bank Ltd. City Bank Ltd. |
| Internet Banking | OmniEnterprise | InfrasoftTech Limited | AB Bank Ltd. |
| | MyBank | ERA InfoTech BD | Bank Asia Ltd. |
| | Flexcube | | Dhaka Bank Ltd. |
| | | | Eastern Bank Ltd. |
| | | | Dutch Bangla Bank Ltd. |
| | HSBCnet Advising | In-house | The Hongkong & Shanghai Banking Corporation Ltd. HSBC |
| | Win+SQL Server | Desktop Limited | Janata Bank Ltd. |
| | Flora Internet Banking | Flora | Mutual Trust Bank Ltd |
| | Web Statement | In-house | One Bank Ltd. |
| | iBank Ultimius | LEADS | Southeast Bank Ltd. |
| | iBanking | In-house | Standard Chartered Bank |
| | Phoenix Soft Access | International Acumen | BRAC Bank Ltd. |
| | CitiDirect | USA | Citibank N.A. |
| | TIB(Temenos Internet Banking) | Temenos Holdings Corporation, Switzerland | Prime Bank Ltd. |
| Various Cards | BA's proprietary Debit Card | ERA InfoTech BD | Bank Asia Ltd. Dhaka Bank Ltd. National Credit and Commerce Bank Ltd. |
| | CARDPRO | BEPS | |
| | Trans Master for Prepaid Credit and Debit Card | Tietonator | Eastern Bank Ltd. |
| | Proprietary Debit Card, PC Bank ATM Interface | LEADS | First Security Islami Bank Ltd. |
| | Dabit Card + Credit Card | ITCL, BD | Janata Bank Ltd. |
| | Win+SQL Server, LEADS | | Mercantile Bank Ltd. |
| | CTL Prime & CTL Online | TSYS International, USA | Mutual Trust Bank Ltd |
| | Cardpro | Sungard System, Malayasia | National Bank Ltd. |
| | | | BRAC Bank Ltd. |
| | | | Prime Bank Ltd. |
| VISA Debit Card, VISA Prepaid Card (International), VISA Gift Card | | Shahjajal Islami Bank Ltd. | |

| | | | |
|-------------------------------------|---|-----------------------------|---|
| | eCAPS | In-house | Standard Chartered Bank |
| | VISA(Card-Pro) | BEPS, Bangladesh | Exim Bank Ltd. |
| | ACCESS Card Management | International Acumen | Standard Bank Ltd. |
| | Card Suite(AIX, Oracle) | Tieto Enator, Latvia | Dutch Bangla Bank Ltd. |
| | Q-cash | ITCL | Jamuna Bank Ltd. |
| | Probashi Agrani Remittance card | Cash Link, BD | Agrani Bank Ltd. |
| | Tranzware card management system | IT Consultants Ltd., Russia | International Finance Investment and Commerce Bank Ltd. |
| | Finacle | | City Ltd. |
| | Connect24 | | CityBank Ltd. |
| ATM Shared (VISA/MASTER) | ITCL | | AB Bank Ltd. |
| | STELAR | ERA InfoTech BD | Bank Asia Ltd. |
| | ITM, Euronet Switzerland | local-CASH LINK Bangladesh | Dhaka Bank Ltd. |
| | ITCL, Q-Cash | Singapore | Agrani Bank Ltd. |
| | IST switch of DBBL | | Mercantile Bank Ltd. |
| | | | Mutual Trust Bank Ltd |
| | | | National Bank Ltd. |
| | | | National Credit and Commerce Bank Ltd. |
| | | | International Finance Investment and Commerce Bank Ltd. |
| | Tranzware, Compass Plus | IT Consultants Ltd, Russia | Sonali Bank Ltd. |
| | | | City Bank Ltd. |
| | VISA, Q-Cash, OMNIBUS & DBBL switch & ATM Network | | Shahjajal Islami Bank Ltd. |
| | | | Uttara Bank Ltd. |
| | Q-Cash Shared ATM Card | | National Credit and Commerce Bank Ltd. |
| | Cardpro | Sun Gard | BRAC Bank Ltd. |
| | | City Bank Ltd. | |
| Card Management System (CMS) for PC | Cashlink Bangladesh Ltd | Social Islamic Bank Ltd. | |
| VISA | ITCL | Jamuna Bank Ltd. | |
| ATM own (VISA/MASTER) | STELAR | | Bank Asia Ltd. |
| | Wincor Nixdorf Protopas | ITCL | Eastern Bank Ltd. |
| | ATMP 6.0 | In-house | The Hongkong & Shanghai Banking Corporation Ltd. |

| | | | |
|--------------|---|--|---|
| | Q-Cash | Singapore | Mercantile Bank Ltd. |
| | Under process -CTL Prime & CTL Online, ATM Controller | TSYS International, USA | Mutual Trust Bank Ltd |
| | TietoEnator Card Suite | Dataedge | One Bank Ltd. |
| | ITCL | | Shahjajal Islami Bank |
| | Switching Software | Cynergon Intelisys Ltd | Southeast Bank Ltd |
| | ATM SPARROW/HAWK, CR2 | | Standard Chartered Bank Ltd. |
| | Phoenix Soft | International Acumen | BRAC Bank Ltd. |
| | IST 7.5 | HMA STARware,India Origin-Canada | Standard Bank Ltd. |
| | IST 7.5 | HMA STARware,India Origin-Canada | Prime Bank Ltd. |
| | Iswitch | Interblocks, Srilanka | United Commercial Bank Ltd. |
| | IST(AIX, Oracle) | FIS, USA | Dutch Bangla Bank Ltd. |
| | Tranzware | Compass Plus, IT Consultants Ltd, Russia | City Bank Ltd. |
| | Feature available on Internet & SMS Banking | | Bank Asia Ltd. |
| | Eldorado | Interblocks (Sri Lanka) | Dhaka Bank Ltd. |
| | Western Union Money Transfer | BRAC Bank | AI –Arafah Islami Bank Ltd. |
| | Ease Limited | BD and Desktop Limited, BD | First Security BankLtd. |
| | Through IVR - Servion System | DataEdge | Bangladesh Commerce Bank Ltd. |
| | Through ATM Own - Phoenix Soft | International Acumen | |
| | Through Internet Banking- Internet Banking | BRAC Bank | |
| | Through Mobile Banking- Mobile Banking | BRAC Bank | BRAC Bank Ltd. |
| | FTI | In-house | Citibank N.A. |
| | Online Remittance s/w | In-house | |
| | Money Gram | | |
| | IME | | |
| | RemitOne | | |
| | Infinity Remittance | | Agrani Bank Ltd. |
| | Money Gram | | |
| | X-press | UAE Exchange, UAE | |
| | Placid Express | Plasic N.K corporation USA | International Finance Investment and Commerce Bank Ltd. |
| | Coinstar Money Transfer | Coinstar Money Transfer, India | |
| EFT | Messaging, SWIFT | | AB Bank Ltd. |
| SWIFT | SWIFT Alliance | | Bank Asia Ltd. |

| | | | |
|--|---------------------------|------------------------------------|---|
| | Service | | |
| | SWIFT | Syscom Information Systems Limited | Dhaka Bank Ltd. |
| | | | Eastern Bank Ltd. |
| | | | One Bank Ltd. |
| | | | BRAC Bank Ltd. |
| | | | Dutch Bangla Bank Ltd. |
| | | | Jamuna Bank Ltd. |
| | SWIFT | | National Credit and Commerce Bank Ltd. |
| | | | First Security Bank Ltd. |
| | | | Mercantile Bank Ltd. |
| | | | Uttara Bank Ltd. |
| | | | AI –Arafah Islami Bank |
| | | | Prime Bank Ltd. |
| | | | Social Islamic Bank Ltd. |
| | | | Standard Bank Ltd. |
| | | | United Commercial Bank Ltd. |
| | | | International Finance Investment and Commerce Bank Ltd. |
| | SWIFT | Belgium | City Bank ltd. |
| | Group Messaging Gateway | In-house | The Hongkong & Shanghai Banking Corporation Ltd. |
| | | | Janata Bank ltd. |
| | | | Mutual Trust Bank Ltd. |
| | | | Southeast Bank Ltd. |
| | SWIFT Alliance | | International Finance Investment and Commerce Bank Ltd. |
| | | | National Bank Ltd. |
| | | | Agrani Bank Ltd. |
| | SWIFT Alliance | Belgium | Sonali Bank Ltd. |
| | | | Rupali Bank Ltd. |
| | | | National Bank of Pakistan |
| | | | International Finance Investment and Commerce Bank Ltd. |
| | PC CONNECT | NBP Karaci, Pakistan | |
| | SWIFT Alliance Access 6.0 | Cambridge Worldwide, India | Shahjajal Islami Bank |
| | | | Bangladesh Commerce Bank |
| | SAM | In-house | Citibank N.A. |

| | | | |
|---------------------------------------|---|---|---|
| | SAA | SAM SWIFT | EXIM Bank Ltd. |
| | | | |
| PC Banking | PC Bank-2000 | LEADS Corporation | Mercantile Bank Ltd. |
| | | | National Bank of Pakistan |
| POS Terminal | Q-Cash | Singapore | Mercantile Bank Ltd. |
| | Under process -CTL Prime & CTL Online | | Mutual Trust Bank Ltd. |
| | Hypercon | Aamra Technology, USA | National Bank Ltd. |
| | VISA, Q-Cash, OMNIBUS & DBBL switch & POS Network | | Shahjajal Islami Bank Ltd. |
| | Switching Software | Cynergon Intelisys Ltd | Southeast Bank Ltd. |
| | TNMS | Aamra Technologies | |
| | STIS | International Acumen | BRAC Bank Ltd. |
| | Hypercom | Aamra(USA) | Prime Bank Ltd. |
| | Ingenico | ATCL(France) | Dutch Bangla Bank Ltd. |
| | ITCL | | Jamuna Bank Ltd. |
| | OS/400, Cash Link | | Agrani Bank Ltd. |
| | | | International Finance Investment and Commerce Bank Ltd. |
| | Tranzware Online Switching | IT Consultant, BD, Russia | City Bank Ltd. |
| | Banking KIOSK | ERA- KIOSK-Banking | ERA InfoTech |
| | International Acumen Ltd. | | Eastern Bank Ltd. |
| | Colors of Bangladesh | | Southeast Bank Ltd. |
| | Customized S/W | International Accumen, BD | Dutch Bangla Bank Ltd. |
| Offline Branch Computerization | E-Bank | Ethics Advance Technology Ltd. (EATL), BD | Bangladesh Shilpa Bank |
| | JBSoft Banking Application | In-House | |
| | Easy Banking | Desktop Limited | |
| | Flora Bank | Flora | Janata Bank Ltd. |
| | | | Janata Bank Ltd. |
| | BexiBank | Beximco Computers | Sonali Bank Ltd. |
| | A2Z Multiuser Banking S/W | A2Z Computer Service | National Bank Ltd. |
| | PCBANK2000 | Leads Corporation | Shahjajal Islami Bank Ltd. |
| | In-house Developed | | Uttara Bank Ltd. |
| | | | Agrani Bank Ltd. |
| | BexiBank4000 | Beximco Computers | International Finance |

| | | | |
|--|---------------------|------------------------|-----------------------------------|
| | | | Investment and Commerce Bank Ltd. |
| | | | Rupali Bank Ltd. |
| | | | Agrani Bank Ltd. |
| | | | Sonali Bank Ltd. |
| | IBS | Infinity Technology | Janata Bank Ltd. |
| | Krantibank | Kranti Associates Ltd | Agrani Bank Ltd. |
| | FloraBank | Flora System Ltd | |
| | Daffodil bank | Daffodil Computers Ltd | |
| | ABLsofT | In-house | |
| | AgraniSolution | In-house | |
| | Flora Bank Software | Flora | |
| | | | Bangladesh Commerce Bank Ltd. |

(Source: Prepared by Filed Observations on 30.12.09)

Table: B Respondents' of Different Banks who have been using on line banking system

| Serial No. | Name of the Bank | Male Respondents | | Female Respondents | |
|------------|-------------------------|------------------|-----------------|--------------------|-----------------|
| | | Dhaka City | Chittagong City | Dhaka City | Chittagong City |
| 1. | Sonali Bank Ltd. | 34 | 8 | 24 | 5 |
| 2. | BASIC Bank Ltd. | 25 | 9 | 19 | 4 |
| 3. | Dutch Bangla Bank Ltd | 45 | 11 | 27 | 9 |
| 4. | Standard Chartered Bank | 52 | 17 | 39 | 12 |
| 5. | Trust Bank Ltd | 28 | 9 | 21 | 7 |
| 6. | Prime Bank Ltd | 23 | 12 | 15 | 4 |
| 7. | Uttara Bank Ltd | 17 | 7 | 12 | 5 |

(Source: Opinion Poll Survey)