AN EVALUATION OF THE ROLE OF TECHNOLOGY AND RELATIONSHIP IN BANKING: STUDY ON BANGLADESH

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ABSTRACT

Banking has become increasingly competitive financial services industry with fragmented customer groups, their heterogeneous expectations and ever-changing global economic challenge. Besides, technology with sophisticated facility is making banking industry new every morning. To be fit against these challenges, it is necessary to appear close to the customers with technology driven long-term stable relationship. Reporting the attitude of the thirty banks' towards technology and relationship, this study documents the imperative importance of technology and relationship in profit maximization, increase in quality of service, reduction in cost of bank operation and diversification of bank income sources. The report shows that Private and Foreign Commercial Banks are pioneers banking facilities with technological development maintaining better relationship with the customers, while local public banks (NCB) are lagging behind.

Key Words: E-banking, Relationship, Relationship Banking, Relationship Index, Technology Index.

1. INTRODUCTION

Banking is a financial service industry and any banking decision must be viable in terms of cost-benefit aspects and attracting new customers. Since the market is increasingly covered with financially literate customers, it has been difficult for traditional banks to maintain their old standard (Howcroft & Durkin, 2000). Technological benefit is paying much because it provides the low cost creation and re-creation of financial services and it sets the upper scale for distribution of financial services to the customer against a speedy return of customer satisfaction (Howcroft & Durkin, 2003). Since banking is a both way game, satisfaction is only possible when there is a better relationship existing between parties; the bankers and the customers. In sum, relationship banking is the most efficient way to satisfy the mutual benefit of the both parties (Peltoneime, 2004). Positive relationship between bankers and the customers in one way can reduce the cost. However Petersen and Rajan (1994) showed that unbalanced relationship might be a potential cause of different types of costs for banks. Banks might loose long-term stable return. Therefore, technology and relationship both are very important for research in banking and financial institution.

This study reports impact of relationship and technology on bank's performance and managerial decision. The rest of the report is designed is this way. Second chapter shows the theoretical aspect of relationship and technology in banking. Third chapter entails the theoretical background and chapter four reports the objective, data, methodology and the hypotheses to be tested. Chapter five states the results and Chapter six sketches the conclusion.

II. RELATIONSHIP BANKING AND TECHNOLOGY: DEFINED

A. Relationship Marketing to Relationship Banking

The idea of Relationship Banking comes from Relationship Marketing (RM), one of the greatest innovations in Marketing. Gronroos (1997) provided the following trendy definition of RM: "Relationship Marketing (RM) is to identify and establish, maintain and enhance and when necessary also to terminate relationships with customers and other stakeholders, at a profit, so that the objectives of all parties involved are met, and that this is done by a mutual exchange and

fulfillment of promises." Boot (2000, p. 10) defines relationship banking "as the provision of financial services by a financial intermediary that invests in obtaining customer-specific information, often proprietary in nature and evaluate the profitability of these investments through multiple interactions with the same customer over time and or across products." Summary of the definitions was made by Pezzetti (2000) by highlighting relationship as the combination of some key points like (1) customized services, (2) long-term process, (3) negotiated profitability, (4) asymmetric information, (5) involvement of client specific information etc.

B. Technology: from inside of the pc to hands of the people

Technology helps bank in developing and delivering core services. Technology comes into face mostly as Internet. Different uses of Internet in Commerce are named differently as E-Commerce, i-baking, e-banking etc. Though it is difficult to build the trust and loyalty through an online procedure, technology gives the preferential benefits of becoming very close to wide range of population. Truly the next century belongs to technology.

III. ROLE OF TECHNOLOGY AND RELATIONSHIP - LITERATURE REVIEW

A. Technology makes COMMUNICATION close, relationship makes it simple

One of the most important implications of technological advancement in banking is that it makes distant customers come closer (Howcroft & Durkin, 2003). Go on the streets of any city, you will most often see the advertisement of e-banking, i-banking, e-mail banking, thumb banking etc. These are impact of technology on banking that enables the bankers in providing better services to their remote customers. Internet in stand-alone computers is enabling the customers to contact the banks for their necessary services anytime and from virtually any place they want. Howcroft & Durkin (2003) identified this as key important factor for customer-bank relationship.

B. Technology keeps COST down, relationship diminishes it

Technology enables the bankers to create and recreate innovative services at lowest cost possible

to ensure *convenience* to their customers. As Lynch (1996) described technological benefit in two ways; firstly, it reduces the cost of production of financial services and lastly, it reduces the cost of delivery of the services to the customers. Technology maintains a lower cost by covering huge population of certain area at a time, which was virtually impossible through manual branch networking.

C. Technology protects banks from RISK, relationship cures it

The wide-arms of technology assist to collect information about the customers. E-commerce helps to create a knowledge-based financial system that reduces the information hazards and increases symmetricity of information. Evans and Wurster (1997, p. 71) described that information from the technology can alter possible asymmetry of information which creates level of satisfaction. Studies identified the technology as the revolutionary power to reduce the gap in the relationship between bankers and the customers (Blattberg, Glazer and Little, 1995; Mckenna, 1995). As long as the information collection is faster and of less costly by the help of technology, risk regarding customer's worthiness will be reduced. Relationship helps to identify and resolute the gap and the risk out of the gap. Long-lasting relationship makes the customers feel for the bank. The customers therefore treat themselves as the partners' rather simple customers. They share "proprietary (reserved) information" about strategic choice, human resource policies, investment decisions and many more to the banks if stable relationship exists (Boot and Thakor, 2000; Boot, 2000; Berger, 1998).

D. Technology increases the PROFITABILITY, relationship helps to diversify it

Petersen (1999) and Rajan (1992) showed that relationship is a strategic tool that protects bank's profitability in the long run. In present competitive financial market system, banks cannot survive with traditional interest differentials (Cotta, 1998). The income diversification is necessary, so that banks can make them competitive. Several studies discovered that relationship with the customers enables the bank to diversify the interest based income to commission based income, which as a more strategic use of relationship marketing takes the stake to retain good customers (Brindelli and

Colombo, 1993; Santorsola, 1994; Bruno, 1995; Brondoni, 1998).

E. Technology and relationships themselves are COSTLY

Setting up of innovative technology, latest hardware, customized software, built-in network stations, countrywide coverage are costly. But may not be that costly when relationship incurs a bigger cost. Several studies showed that long-lasting relationship requires the bank to sacrifice sure returns and after the customer receiving the service, they switch the brands (Ernst and Young, 1999). Therefore investment in relationship maintenance becomes fruitless. This part of the relationship was described by the "poor relationship theory" by Cotta (1998).

IV. OBJECTIVE, DATA AND METHODOLOGY

The study locates the effect of two imperative issues, technology and relationship, on banking decisions. Data were collected using structured questionnaire from branch managers of 30 sample banks, where no individual bank was selected twice. All of these branches are located in Dhaka City. By keeping in mind that data collection on these issues will be difficult, sample size was selected at the most convenient basis. Ideas on past researches were generated from secondary data analysis by analyzing topics collected from periodicals, professional magazines, published articles and electronic sources. SPSS Computer Package was used to analyze data. Three different types of data were collected. Out of 23 different variables, three variables display the demography of the banks and respondents, four variables for technology and relationship related performance data on different banks by categorizing the performance in two major groups; below industry average group and above industry average group. Since these performance variables have market impact, real performance data were not shown and simple average method was used for this differentiation between groups. Another two important variables were TECHNOLOGY INDEX and RELATIONSHIP INDEX (see variables for details). Lastly, attitude of the bank managers were collected on different technology and relationship related variables by using Five Point Likert Scale.

A. Variables

First demographic variable is the TYPE OF BANK, where '1' represents Nationalized Commercial Banks (NCB), '2' is for Private Bank (PCB) and '3' is used for Foreign Banks (FCB). YEARS OF BANK OPERATION is the second variable, where '1' represents that the bank is from first generation (before 1980), '2' is for Second Generation (before 1990) and '3' is for Third Generation (before 2000). The last demographic variable is EXPERIENCE OF RESPONDENTS, where '1' represents less than five years and '2' represents that the respondent is working for more than five years.

Second type of variables are PERFORMANCE oriented. Here the answers are collected either in '1' if the performance is below industry average or in '2' if otherwise. The variables are ROA for 2004, Operating Expense to Interest Income Ratio for 2004, Non-Interest Income to Interest Income Ratio for 2004 and the Asset Quality Ratio for 2004. ROA is calculated by dividing Net Income with Total Asset. Total Expenses include interest and non-interest (operating) expense. Non interest income includes income from investment, income brokerage, exchange and commission and other income, and total income includes interest and non-interest income. Quality of Asset has been determined by deducting Non-performing loans (NPL) to Total Asset Ratio from '100%'.

Third type of variables are Index Variables, those are calculated on the basis of bank's investment in technology and involvement in relationship with clients. Technology index refers to banks' investment in technology, which is represented by the number technology related services provided by bank. Relationship index refers to banks' commitment towards keeping good relationship with customers. Normally banks provide different services related to technology and with different levels of relationship. Out of a total 10 technology related services (See BOX 01), bankers are given one point for each service. The industry average was calculated by taking simple average of the total services provided by thirty sample banks. Likewise, banks normally maintains relationship in three different fields i.e. deposit, loans and other services. For each, one point is given and industry average is calculated to differentiate the bank in (1) below and (2) above industry groups. See equation 1, 2 and 3, 4 for calculating Technology Index,

Relationship Index and Industry Averages of Indices. Here, '1' represents that the index for individual banks is lower than industry average and '2' says the bank is in better position than the industry average. Calcualtions are given in Equation 1 through 4. Industry average for Technology index was 4 and that was 1.5 for Relationship index. The third are ATTITUDE VARIABLES (see BOX 1), where data were collected on the basis of Likert Five Point Scale ('1' represents that the respondents strongly disagree about the impact of this variable on success of the company and '5' shows that they are strongly agree that the variable has an impact. Out of total fourteen variables, 9 of these are on the use of technology and 5 are on relationship aspects.

Technology Index:
$$TI_{ti} = NTS \times 1 \text{---- (1)}$$

Where; TI is the Technology Index at time 't' and for bank 'i'
NTS is for Number of Technology Services

Relationship Index:
$$RI_{ti} = RU \times 1 \text{---- (2)}$$

Where; RI refers to Relationship Index at time 't' and for bank 'i'
RU is for Relationship Units; in how many services bank is considering the importance of relationship.

Industry Average:
$$ATI_{ti} = \frac{\sum_{i=1}^{n} TI_t}{n} \text{ ---- (3)}$$

Where; ATI refers to Average Technology Index.

$$ARI_{ti} = \frac{\sum_{i=1}^{n} RI_t}{n} \text{ ---- (4)}$$

Where; ARI refers to Average Relationship Index.

BOX 01

Technology Options

1. Online Bill Payment
2. Debit Card
3. Electronic Fund Transfer
4. E-banking
5. Intra Bank Communication
6. Credit Card
7. ATM
8. Online Corporate Banking
9. Any Branch Banking
10 Stand Alone PC

Source: TechBangla Survey 2001.

Relationship Options
1. Loans
2. Advances
3. Other services

Source: Boot (2000)

Attitude Variables: Technology

1. Technology brings the customer close to the bank.
2. Branches with ICT back up can cover more customers
3. Technology helps in developing new services.
4. Technology increases the profitability.
5. Technology helps in customer monitoring system.
6. Technology helps to diversify the income bases.
7. Technology helps to reduce asymmetric information.
8. Employees and Customers need technological training.
9. Technology makes the service delivery easy and less costly.

Attitude Variables: Relationship
1. Relationship should be product-wise rather than centralized.
2. Relationship is the key issue to stabilize the profitability.
3. Relationship can reduce default loans.
4. Relationship can reduce the cost of operation.
5. Relationship helps to develop the priority sector.

Table 01: Respondent Profile by *Types of Banks*

	F	%	Cum %
NCB	4	13.3	13.3
PCB	23	76.7	90.0
FCB	3	10.0	100.0
Total	30	100.0	

Table 02: Respondent Profile by *Years of Experience of Respondents*

	F	%	Cum %
Less Than Five Years	9	30.0	30.0
More Than Five Years	21	70.0	100.0
Total	30	100.0	

Table 03: Respondent Profile by *Years of Operation*

	F	%	Cum %
First Generation Banks	10	33.3	33.3
Second Generation Banks	9	30.0	63.3
Third Generation Banks	11	36.7	100.0
Total	30	100.0	

Table 04: Respondent Profile by *Return on Asset (ROA) of 2004.* (Mean = 1.025%)

	F	%	Cum %
Below Industry Average	13	43.3	43.3
More than Industry Average	17	56.7	100.0
Total	30	100.0	

Table 05: Respondent Profile by *Operating Exp. to Int. Income. Ratio of 2004* (Mean = 28%)

	F	%	Cum %
Below Industry Average	18	60.0	60.0
More than Industry Average	12	40.0	100.0
Total	30	100.0	

Table 06: Respondent Profile by *Non-Int. Inc. to Interest Inc. Ratio of 2004* (Mean = 69%)

	F	%	Cum %
Below Industry Average	13	43.3	43.3
More than Industry Average	17	56.7	100.0
Total	30	100.0	

Table 07: Respondent Profile by *Asset Quality of 2004* (Mean = 92.09%)

	F	%	Cum %
Below Industry Average	13	40.0	40.0
More than Industry Average	17	60.0	100.0
Total	30	100.0	

B. Respondent Profile

Out of a total of 30 banks, 4 NCB's were included which was 13.3% of the total sample. 23 Private Commercial Banks (PCB) stands for 76.7% and 3 Foreign Commercial Banks (FCB) stands for 10% of the total sample (Table 01). One third of the banks were from 1st Generation, 30% of the banks were from second generation and rest 36.7% were from third generation (Table 02). Respondents were all either assistant or full managers. 70% of tem have been working for more than five years and the rest have experience less than five years (Table 03).

Table 04 shows that 43.3% of the banks are underperforming in profitability (Mean = 1.025%). Table 05 shows that only 40% of the banks have operating expenses less than industry average of 28% and Table 06 shows that 56.7% of the banks performed better than industry average in non-interest income to total interest income ratio (Mean = 69%). 40% of the banks hold lower quality assets than industry average (Mean = 7.91%) and the rest 60% of the banks have better quality assets (Table 07).

C. Methodology

The methodology comprises of two basic research objectives:
(A) Relationship between Performance Variables with Technology Index and Relationship Index. The result will tell us about the strength of correlation between the performance of the bank and investment in technology and relationship.
(B) Differentiation of Mean Score of Attitude Variables (attitude of the bank manager) by (1) ROA, (2) operating expense to total income ratio, (3) years of experience of the respondents, (4) years of operation of the banks and (5) type of banks. This will tell us about the perception of the managers regarding significance of technology and relationship from their perspective according their performance.

For the first objectives, we have tested the hypotheses using Correlation Coefficient and its significance value. For the second objectives, the study used One Way ANOVA and One Sample T-Test. The mean values and significant levels were represented in different tables.

D. Hypotheses

(1) To test the Relationship

H1: Greater the Investment in Technology, higher is the ROA.

H2: Greater the Investment in Technology, lower is the cost (Operating Expense to Interest Income Ratio).

H3: Greater the Investment in Technology, higher is the income diversification (Non-interest income to Interest Income Ratio).

H4: Greater the Investment in Technology, higher is the Asset Quality (Ratio of Good quality loans to total asset).

H5: Better the relationship, higher is the ROA.

H6: Better the relationship, lower is the cost (Operating Expense to Interest Income Ratio)

H7: Better the relationship, higher is the income diversification (Non-interest income to Interest Income Ratio)

H8: Better the relationship, higher is the Asset Quality (Ratio of Good quality loans to total asset).

Investment in technology is measured through Technology Index and Relationship has been measured by Relationship Index.

(2) To Test the Difference (with Mean score of Attitude Variables)

H9: High ROA has higher mean score than low ROA [T-Test].
Higher mean score of attitude with higher average ROA represents the positive support of the managers towards investment in technology and relationship.

H10: Low Operating Expense to Interest Income ratio has higher means score than that of the high Operating Expense to Interest Income ratio [T-Test].
Theories suggest that technology and relationship are important in terms of cost of operation for banks. Therefore, high mean score from managers with low operating expense to interest income ratio definitely represents their higher involvement with technological and relationship oriented banking.

H11: Highly experienced Respondents have higher mean score than that of the less experienced [T-Test].
Experienced managers normally should support the role of technology and relationship in banking decisions. But studies also support that young or less experienced bankers also support the importance of relationship and technology in banking more than highly experienced, resistant to change bankers. This hypothesis will test whether managerial experience differentiates the investment in technology and relationship.

H12: Mean scores of First Generation, Second Generation and Third Generation are different [ANOVA].
Studies on Bangladesh Banking show that second generation banks are highly efficient, third generations are technologically advanced and first generation banks have banking experience. Higher the mean score with any specific group of banks will prove their investment in technology and relationship. It will be interesting if there is a relationship between generations and concentration in technology and relationship.

H13: Mean scores of Nationalized Commercial Banks, Private Commercial Banks and Foreign Commercial Banks are different [ANOVA].
Nationalized Commercial banks are usually reluctant to technology and have been shoring a "does not matter" attitude to relationship. Opposite to that, private commercial banks are surviving with relationship but limited technology development. Foreign banks are limited in numbers but highly developed in technology and structured in relationship with customer. In this part we will look into managerial attitudes, whether are actually different, for these groups of banks.

V. RESULTS

A. Testing for Relationship between Indices and Performance variables

Maximizing Return: The more a bank can offer technological services, the higher is the return (H1: Correlation 0.760 with P value of 0.000). Relationship will also increase ROA (H5: Correlation 0.544 with P value of 0.002) but not like technology.

Table 08: Hypotheses for Testing Relations (Correlation Coefficient).

Hypothesis	Variable 01	Variable 02	Correl.	Sig./ P Value	Result (Ho/ H1)
H1	Technology Index	ROA	0.760	0.000	H1
H2	Technology Index	Operating expense to interest income ratio	(0.508)	0.004	H1
H3	Technology Index	Non-interest income to interest income ratio	0.591	0.001	H1
H4	Technology Index	Asset Quality	0.731	0.000	H1
H5	Relationship Index	ROA	0.544	0.002	H1
H6	Relationship Index	Operating expense to interest income ratio	(0.250)	*0.183*	Ho
H7	Relationship Index	Non-interest income to interest income ratio	0.439	0.015	H1
H8	Relationship Index	Asset Quality	0.577	0.001	H1

Reduction of Cost: Technology supports to reduce the cost of banking operation. As it is shown from the analysis, higher the investment in technology will reduce operation cost (H2: Correlation -0.508 with P value of 0.004). Due to competition and increase in standard of living, banking operating cost is increasing and this should provide bankers a hope for future decision. Close relationship with customers in terms of deposit mobilization and credit deployment will help to reduce operating cost but the result is not statistically significant. The theories suggested that higher relationship is good but that might increase the cost, which is proved by the result (H6: Correlation -0.250 with P value of 0.183).

Income Diversification: There are almost fifty banks are operating in Bangladesh with few other non-banking financial institutions. Their main income is from loans of different types of diverse customer groups, which is resulting in sharing other's market and threatening the base of income. Income diversification, therefore, is very much needed. Analysis in table 08 shows that technology strongly helps to diversify the income base from traditional sources to new non-loan areas (H3: Correlation 0.591 with P value of 0.001). Technology in this respect will help the banks to hike towards fees and commission earnings; those are less risky and fixed in nature. Relationship can

also help in diversifying income base through identification of customer driven areas of service, and the result is significant (H7: Correlation 0.439) at P value of 0.015.

Asset Quality and Good Value for Investment: Better technology, what can bring the customers close to the bank, is the best source of information collection from the customers. If information are collected and used in analysis, that will most likely to reduce bad loans. Relationship is another important weapon to collect more information from the customers and analyze their credibility. The result shows that technology (H4: Correlation 0.731 with P value of 0.000) and relationship (H8: Correlation 0.577 with P value of 0.001) can increase asset quality and ensure better value of bank investment.

B. Testing for Mean Difference in Attitude Variables (Table 9, 10, 11)

Customer Satisfaction: (See Items 1, 2, 8)
Customer satisfaction is the vital issue in banking. Managers, by their experience, are indifferent about the importance of ICT facility, and other technological support to increase customer satisfaction (Table 10 – Hypothesis 11). However, young but less experienced managers (Table 10 – Hypothesis 11) mostly form Private and Foreign

Commercial Banks (Table 11, Hypothesis 13) those have started in second and third generations (Table 11, Hypothesis 12) have been tremendously espousing the value of technological means in Customer Satisfaction and overall management. Bankers with higher ROA supports that technology can increase customer satisfaction, it brings customers close to bank (Table 09 – Significant at 0.008 with a Mean of 4.530), advanced ICT facilities in branches can attract more customers (Table 09 – Significant at 0.000 with a Mean of 4.350). Bankers are indifferent about the importance of training to understand technology better. However, higher ROA bankers nodded positively towards organizing training, workshop and awareness building facility for employees and customers to let them know and use the technological services efficiently. All Bank managers, while cost if concerned (Table 09), are undistinguished about the importance of technological investment but less costly bank managers put more emphasis on ICT development (Mean 4.167) and need for employee and customer training (Mean 4.556) to manage customers.

Development of new service and thirst sector (See Items 3, 10, 14)
All managers, by their experience, are indifferent that technology and relationship help in developing new services and thirst sector for the banks, however the younger managers believe that technology can help to develop new services

(Table 10 – Hypothesis 11 – Mean of 4.222). Being aggressive than their experienced bosses, young managers also believe that relationship should be product wise rather than centralized (Table 10 – Hypothesis 11 – Mean of 2.778) and structured relationship will assist in developing thirst sector (Table 10 – Hypothesis 11 – Mean of 4.221) through identification of the customers' needs and wants. Managers from second generation banks (Table 11, Hypothesis 12) have earned higher mean score in supporting technology brining new service (Mean of 4.778) and Relationship to be product wise rather than centralized (Mean 3.77) and Relationship building thirst sector for banks (Mean 4.556). Managers, by their type of banks, are indifferent regarding relationship to be product wise rather centralized. However, managers from FCB put emphasis on technology providing new windows to develop service (Mean 4.667) and PCB managers earned more points regarding relationship building an effective third sector for banks (Mean 4.565). Higher ROA bank managers reckon that technology helps in new service development (Table 09 – Mean 4.240) and relationship should be product wise (Table 09 – Mean 3.180), so that concentration towards specific products bring better profitability. They stated similar opinion about the role relationship to build a thirst sector with the underperformer. Managers, while cost is concern, are all at same point that technology develops new service and relationship, which should be product wise, helps to plan the thirst sector (Table 09).

Table 09: Difference in Mean According to *ROA* and *NII to II Ratio* [T-TEST]

Attitude Variables	Category	H9: ROA			H10: OPT EXP to II		
		Mean	P Value	Ho/H1	Mean	P Value	Ho/H1
(1) Technology brings the customer close	< IA	3.380	0.008	H1	**4.389**	0.064	Ho
	> IA	**4.530**			3.500		
(2) Branches with ICT back up can attract more customers	< IA	2.230	0.000	H1	**4.167**	0.000	H1
	> IA	**4.350**			2.333		
(3) Technology Helps in Developing new services	< IA	3.000	0.012	H1	**4.056**	0.081	Ho
	> IA	**4.240**			3.167		
(4) Technology increases the profitability.	< IA	2.850	0.009	H1	**4.111**	0.014	H1
	> IA	**4.180**			2.833		
(5) Technology helps in customer monitoring system	< IA	2.460	0.001	H1	**4.056**	0.004	H1
	> IA	**4.120**			2.417		
(6) Technology helps to diversify the income bases	< IA	2.850	0.002	H1	**4.056**	0.114	Ho
	> IA	**4.410**			3.250		

Attitude Variables	Category	H9: ROA			H10: OPT EXP to II		
		Mean	P Value	Ho/H1	Mean	P Value	Ho/H1
(7) Technology helps to reduce asymmetric information	< IA	3.000	0.006	H1	**4.056**	0.209	Ho
	> IA	**4.410**			3.417		
(8) Employees and Customers need technological training	< IA	3.850	0.192	Ho	**4.556**	0.004	H1
	> IA	**4.350**			3.500		
(9) Technology makes the service delivery easy and less costly	< IA	2.920	0.001	H1	**4.222**	0.016	H1
	> IA	**4.410**			3.083		
(10) Relationship should be product-wise rather than centralized.	< IA	2.230	0.042	H1	**2.833**	0.748	Ho
	> IA	**3.180**			2.667		
(11) Relationship is the key issue to stabilize the profitability.	< IA	2.380	0.009	H1	**3.500**	0.196	Ho
	> IA	**3.820**			2.750		
(12) Relationship can reduce default loans.	< IA	2.080	0.032	H1	**3.056**	0.330	Ho
	> IA	**3.350**			2.417		
(13) Relationship can reduce the cost of operation.	< IA	2.310	0.013	H1	**3.889**	0.000	H1
	> IA	**3.650**			1.833		
(14) Relationship helps to develop the priority sector.	< IA	3.770	0.110	Ho	**4.500**	0.071	Ho
	> IA	**4.470**			3.667		

Here in above table: *Category '< IA' refers to less than industry average and '> IA' refers to more than industry average. 'OPT Exp to II' Ratio refers to operating expense to interest income ratio. 'Ho' refers to null hypotheses and 'H1' refers to alternate hypotheses. P value represents the significance level.*

Increasing Profitability and Reduction of Cost (See Items 4, 9, 11, 13)

Managers, by their experience (Table 10 – Hypothesis 11), are indifferent about the importance of technology and relationship in escalating bank's profit and cutting down banks' operating cost. Nevertheless, experienced bosses think that technology increases the profitability (Mean 3.667) and relationship stabilizes it (Mean 3.286). Cost benefit by both technology (Mean 4.0) and relationship (Mean 3.556) is aggressively supported by young managers.

One the other hand, managers, by the generation of banking (Table 11, Hypothesis 12), are undistinguished about the importance of technology in maximizing bank's profit. But third generation banks strongly agree that technology can reduce service delivery cost (Mean 4.364) and relationship can reduce overall cost of operation (Mean 4.091). The reason of this support could be that these banks are highly technology and relationship oriented. Second generation banks, nonetheless, think that relationship can be best used

to reduce the uncertainty in profitability (Mean 4.000). Managers, by type of banks (Table 11 – Hypothesis 13), are on an average in favor of technology and relationship to reduce banks cost of operation and to increase profitability. Especially, the foreign banks assertively support that technology (Mean 4.33) and relationship (Mean 4.333) reduce cost. Oppositely, they highly opined that these can be used to have treats for profitability (Technology Mean 4.0, Relationship Mean 4.33).

Higher ROA managers always believe that technology and relationship will increase the profit and reduce the cost (Table 09, See Hypotheses 09 item no 4, 9, 11, 13). But managers, in terms of operating cost (Table 09 – Hypothesis 10), are indifferent about relationship to stabilize the profitability (item 11). Like usual, less costly managers believe that technology will increase profitability (Hypothesis 10, item 4, Mean 4.111), technological channels will make service delivery easy at low cost (Hypothesis 10, item 9, Mean 4.22) and relationship to reduce overall cost of operation (Hypothesis 10, item 13, Mean 3.889).

Table 10: *HYPOTHESIS 11*: **Mean Difference by** *Respondent Experiences* **[T-Test]**

Attitude Variables	Category	N	Mean	P Value	Result (Ho/H1)
(1) Technology brings the customer close	< 5 Yrs	9	**4.556**	0.088	Ho
	> 5 Yrs	21	3.810		
(2) Branches with ICT back up can attract more customers	< 5 Yrs	9	**3.444**	0.979	Ho
	> 5 Yrs	21	3.429		
(3) Technology Helps in Developing new services	< 5 Yrs	9	**4.222**	0.116	Ho
	> 5 Yrs	21	3.476		
(4) Technology increases the profitability.	< 5 Yrs	9	3.444	0.703	Ho
	> 5 Yrs	21	**3.667**		
(5) Technology helps in customer monitoring system	< 5 Yrs	9	**3.662**	0.527	Ho
	> 5 Yrs	21	3.286		
(6) Technology helps to diversify the income bases	< 5 Yrs	9	**3.889**	0.690	Ho
	> 5 Yrs	21	3.663		
(7) Technology helps to reduce asymmetric information	< 5 Yrs	9	**3.880**	0.818	Ho
	> 5 Yrs	21	3.762		
(8) Employees and Customers need technological training	< 5 Yrs	9	**4.212**	0.766	Ho
	> 5 Yrs	21	4.095		
(9) Technology makes the service delivery easy and less costly	< 5 Yrs	9	**4.000**	0.531	Ho
	> 5 Yrs	21	3.667		
(10) Relationship should be product-wise rather than centralized.	< 5 Yrs	9	**2.778**	0.977	Ho
	> 5 Yrs	21	2.762		
(11) Relationship is the key issue to stabilize the profitability.	< 5 Yrs	9	3.000	0.608	Ho
	> 5 Yrs	21	**3.286**		
(12) Relationship can reduce default loans.	< 5 Yrs	9	**2.889**	0.858	Ho
	> 5 Yrs	21	2.762		
(13) Relationship can reduce the cost of operation.	< 5 Yrs	9	**3.556**	0.252	Ho
	> 5 Yrs	21	2.857		
(14) Relationship helps to develop the priority sector.	< 5 Yrs	9	**4.221**	0.858	Ho
	> 5 Yrs	21	4.143		

Here in above table: *Category '< 5yrs' refers to experience less than 5 years and '> 5yrs' refers to more than 5 years. 'Ho' refers to null hypotheses and 'H1' refers to alternate hypotheses. P value represents the significance level.*

Diversification and Risk Management (See Items 5, 6, 7, 12)

All managers, by their experience (Table 10 – Hypothesis 11), stood at same opinion that technology and relationship provide real opportunity for diversification of income bases and risk management through credit monitoring system, reduction of asymmetric information and reduction of bad loans. They, while differentiated by operating cost (Table 09 – Hypothesis 10), are in indifferent about technology for reducing asymmetricity of information (Item 7, Mean 4.056), bad loans (Item 12, Mean 3.06) and increasing income diversification (Item 6, Mean 4.06). But less costly managers are highly in favor of technology to assist in credit monitoring system (Item 5, Mean 4.056) to increase credit convenience (increasing credit return, satisfaction and decreasing default credit).

Higher ROA managers are all in support of technology to reduce riskiness in bank business

(Table 09, Hypothesis – 9, items 5, 6, 7 and 12), especially when technology helps to diversify income bases (Item 6, Mean 4.410) and help to reduce asymmetric information (Items 7, Mean 4.41). Third generation banks (Table 11, Hypothesis 12) are in favor of Technology to diversify income bases (Item 6, Mean 4.364) and to diversify income base from interest to fee oriented businesses (Item 5, Mean 4.182). Concentrating more on retail market, could be a reason for this support. But they are indifferent with other bank managers about technology to reduce asymmetric information (Item 7). Second generation bank managers are in favor of relationship to reduce non-performing loans (Item – 12, Mean 4.333). Most of the credit successful banks (i.e. Prime Bank Limited, Dhaka Bank Limited etc.) are in second generation, so, their opinion should be carefully considered. On the other hand, by the type of banks (Table 11, Hypothesis 13), all the managers are undistinguished about the importance

of technology in reduction of asymmetric information (Item 7) and diversification of income base (Item 6), and relationship to reduce bad loans (Item 12). However, Foreign Banks are more in favor of technology to help in credit monitoring system (Item 5, Mean 4.000), since they are using different channels and technological means to monitor credit customer's motive and attitude.

Table 11: Difference in Mean for *Years of operation* and *Types of Bank* (ANOVA)

Attitude Variables	*H12: YEAR OF OPERATION*				*H13: TYPES OF BANKS*			
	Gen	Mean	P Value	Ho / H1	Type	Mean	P Value	Ho /H1
(1) Technology brings the customer close	1st	3.300	0.024	H1	NCB	1.750	0.000	H1
	2nd	**4.556**			PCB	**4.391**		
	3rd	4.273			FCB	4.333		
(2) Branches with ICT back up can attract more customers	1st	2.000	0.000	H1	NCB	2.000	0.082	Ho
	2nd	4.111			PCB	3.565		
	3rd	**4.182**			FCB	**4.333**		
(3) Technology Helps in Developing new services	1st	3.100	0.011	H1	NCB	1.500	0.000	H1
	2nd	**4.778**			PCB	3.957		
	3rd	3.364			FCB	**4.667**		
(4) Technology increases the profitability.	1st	2.900	0.118	Ho	NCB	1.750	0.015	H1
	2nd	3.667			PCB	3.870		
	3rd	**4.182**			FCB	**4.000**		
(5) Technology helps in customer monitoring system	1st	2.100	0.001	H1	NCB	1.250	0.004	H1
	2nd	3.889			PCB	3.696		
	3rd	**4.182**			FCB	**4.000**		
(6) Technology helps to diversify the income bases	1st	2.900	0.039	H1	NCB	2.750	0.258	Ho
	2nd	3.889			PCB	3.826		
	3rd	**4.364**			FCB	**4.333**		
(7) Technology helps to reduce asymmetric information	1st	3.100	0.095	Ho	NCB	3.250	0.581	Ho
	2nd	3.889			PCB	3.826		
	3rd	**4.364**			FCB	**4.333**		
(8) Employees and Customers need technological training	1st	3.200	0.000	H1	NCB	2.500	0.000	H1
	2nd	4.222			PCB	**4.478**		
	3rd	**4.909**			FCB	3.667		
(9) Technology makes the service delivery easy and less costly	1st	2.800	0.010	H1	NCB	1.750	0.001	H1
	2nd	4.111			PCB	4.043		
	3rd	**4.364**			FCB	**4.333**		
(10) Relationship should be product-wise rather than centralized.	1st	2.400	0.021	H1	NCB	2.000	0.412	Ho
	2nd	**3.778**			PCB	2.826		
	3rd	2.273			FCB	**3.333**		
(11) Relationship is the key issue to stabilize the profitability.	1st	2.200	0.025	H1	NCB	1.250	0.010	H1
	2nd	**4.000**			PCB	3.391		
	3rd	3.455			FCB	**4.333**		
(12) Relationship can reduce default loans.	1st	2.400	0.002	H1	NCB	1.500	0.051	Ho
	2nd	**4.333**			PCB	2.783		
	3rd	1.909			FCB	**4.667**		
(13) Relationship can reduce the cost of operation.	1st	2.100	0.005	H1	NCB	1.250	0.012	H1
	2nd	2.889			PCB	3.217		
	3rd	**4.091**			FCB	**4.333**		
(14) Relationship helps to develop the priority sector.	1st	3.500	0.052	Ho	NCB	2.000	0.000	H1
	2nd	**4.556**			PCB	**4.565**		
	3rd	4.455			FCB	4.000		

Here in above table: *Category 'Gen' refers to Generation which eventually refers to Generation of banks. Under Generations, '1st' refers to First Generation Banks, '2nd' refers to Second Generation Banks and '3rd' refers to Third Generation Banks. Under type of banks, 'NCB' refers to Nationalized Commercial Bank, 'PCB' refers to Private Commercial Bank and 'FCB' is to Foreign Commercial Bank. 'Ho' is null hypotheses and 'H1' represents alternate hypotheses. P value represents the significance level.*

VI. CONCLUDING REMARKS

This is very easy to understand from the above analyses that technology and relationship are vital for banking decisions. Higher investment and proper use of technology can reduce cost, risk, asymmetric information and can increase profitability and bank's competitive advantage. Respect toward relationship with customers will increase stability of profit, increase asset quality and will assist in setting up thirst sector. This should also be noted that technology and relationship are really costly to establish. Most of the foreign banks are successful in this regard. However, competition will go up when the private banks will come up with spirited service delivery through newer technological versions. Government should put more emphasis on investing more in technological infrastructure establishment and through regulation; it should also set an upper band for relationship. Otherwise, relationship will make banking costly for many of the retail sectors.

Even though technology might be costly or it might obsolete the value of face to face interaction, the next century will be technology driven because of its wide coverage, diversification and cost reduction facilities. Understanding and monitoring customer needs are now easier because of technology. But unfortunately Bangladesh has not yet received the introduction of the hyper-speed ICT development. Most of the people are illiterate about this. This report also suggests having education and infrastructure facilities ready to challenge the attack of the financial globalization. We should pay attention to the banking relationship for mutual benefit. One of the major ways identified is the branch development with focus on management of customer satisfaction with ICT backup. Relationship increases negotiation power and ICT provides bargaining power to the holders (Howcroft and Durkin, 2003). Promise in relationship buildup and investment in ICT development will take Banks in Bangladesh to achieve its far reaching goals.

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