

Digital Banking: A Scenario of Bangladesh

Mohammad Zoynul Abedin* and Md. Mahabub Alom**

The study examined the extent to which digitalization has affected the organizational structure of Bangladeshi banks. More than 120 banks, those constitute private banks, foreign banks, Islamic banks and nationalized banks, were selected for the study from central city of Bangladesh. Interview was conducted for middle and top level managers and questionnaire was developed and administered to the other staffs using a five-point Likert scale to determine the attitudes and opinions of staffs on the effects of digital revolution on the organizational structure of the banks. The study found that standard operating procedures, policies, culture, surrounding environment and management decisions were all affected by digital revolution. The study concluded that digital revolution has changed the course of history in the banking industry leaving far reaching effects and implications on both the organizational and industrial structure.

Field of Research: Banking

1. Introduction

Technology emerges in a social matrix. It influences and shapes the society. Full benefits from new technologies can be expected only after social institutions and structures are changed to adapt to the new technologies. An in-depth analysis of classical Industrial Revolution revealed that a series of technical innovations would not constitute a technological revolution: it must be interconnected with a series of fundamental social and cultural changes. Moreover, financial capital and information are important ingredients of a technological revolution. Technical innovations that led to classical Industrial Revolution would not be possible without support of financial capital, as well as without exchange of information (Kranzberg 1985). While classical Industrial Revolution brought fundamental innovations in production and distribution of energy (Castells 1998), the new technological revolution brings fundamental innovations in production and distribution of information. Information becomes the most important resource in modern society.

A feature of the banking industry across the globe has been that it is increasingly becoming turbulent and competitive, characterized by an increasing trend towards internationalization, mergers, takeovers and consolidation of the banking industry. Moreover a number of non-banking companies are entering the banking industry by offering financial products and services (e.g. Toyota's credit card, GM's auto financing, Merrill Lynch investments). This has given a myriad of options to

*Mohammad Zoynul Abedin, Assistant Professor, Department of Finance and Banking, Faculty of Business Studies, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh. E-mail: zoynulmiu@gmail.com

**Md. Mahabub Alom, Senior Lecturer, Department of Business Administration, School of Business and Economics, Manarat International University, Gulshan-2, Dhaka-1216, Bangladesh. E-mail: dustutul@yahoo.com

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customers in choosing banking services. As a response and aided by technological developments, banks have attempted to build customer satisfaction through providing better products and services and at the same time to reduce operating costs. Thus the banking industry has been constantly innovating and with the advent of technological developments, particularly in the area of telecommunications and information technology, one of the latest innovation that took birth, and quite inevitably, has been the internet banking. This phenomenon has attracted a number of empirical studies (Bielski 2000; Booz, Allen & Hamilton 1997; DeSourdy 2001) that analysed the development of electronic banking and its operations.

The banking industry is constantly responding to changes in customer preferences and needs; increasing competition from non-banks, changes in demographic and social trends, information technologies advances, channel strategies, and government deregulations of the financial service sector (Giannakoudi 1999; Byers & Lederer 2001). Success or failure of many banks is dependent upon the capabilities of management to anticipate and react to such changes in the financial marketplace. In search for sustainable competitive advantages among the competitive and technological financial service industry, banks have recognized the importance to differentiate themselves from other financial institutions through distribution channels. This has resulted in banks developing, and utilizing new alternative distribution channels to reach their customers (Daniel 1999; Thornton & White 2001).

Specifically this paper aims at i) the effects of digital revolution on the organizational structure of the banks, ii) attitude of bank workers towards the adoption of digital devices and iii) induced impact of ICT in banking industry. The results will have important implications and is believed to be very helpful for the Bangladeshi banking sector and also for the government since both will be aware of the relatively important elements that should be taken into account to foster this service and thus reaping out its benefits.

This paper is divided into six parts: the first and second parts contain the introduction and the literature review on theories that can be used to explain digital banking and information systems acceptance. Moreover, previous research on the critical factors which may have significant impact on the acceptance of digital banking will be discussed. The Third part presents the research methodology used in this work. The fourth part comprises of the results and analysis. In this part the data is analysed using percentages, mean, standard deviation, rank analysis, chi-square test also. The final two parts (five and six) consists of the discussions, conclusion and practical implications of the research.

2. Literature Review

Pikkarainen, Pikkarainen, Karjaluoto, & Pahnla (2004) defines digital banking as an 'internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments'. With the exception of cash withdrawals, digital banking gives customers access to almost any type of banking transaction at the click of a mouse. Indeed the use of the internet as a new alternative channel has become a competitive instead of just a way to achieve competitive advantage with the advent of globalization and fiercer competition (Flavián, Torres, & Guinalíu 2004; Gan, Clemes, Limsombunchai, & Weng 2006). All banks using the internet as an additional channel or a bank using only the internet as delivery channel

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are now on equal footing to offer their banking services on the internet and to compete for customers around the world. This could be the reason why the internet is widely seen as the most important delivery channel in the era (Karjaluoto, Mattila & Pento 2002).

Digital Banking is beneficial for both the providers and the customers. The rationales of banks' usage of the digital banking technology from the bank's perspective are mainly related to cost savings (Robinson 2000 & Sathye 1999). Banks use digital banking as it is one of the cheapest delivery channels for banking products (Pikkarainen et al. 2004). Such service also saves the time and money of the bank with an added benefit of minimizing the likelihood of committing errors by bank tellers (Jayawardhena & Foley 2000). Digital banking offer services regardless of geography and time and banks provide its services to the customers for them to use at their convenience. As Karjaluoto et al. (2002) argued banking is no longer bound to time and geography. Customers over the world have relatively easy access to their accounts, 24 hours per day, and seven days a week.

According to Forrester (2007, p. 13), Digital banking has grown gradually in the UK over the past decade and is now used by 31% of adults, or 15 million people. But growth has slowed in the past couple of years. That's odd because only 46% of UK Net users access their bank accounts online, yet 74% regularly shop online. By 2012, it is expected that 44% of adults to use online banking in the UK, or nearly 22 million people. His study had projected that between 2009 and 2014, the total number of US online bill payment households will increase from 48 million to 63 million.

Digital banking has grown steadily in France over the past decade, boosted by the growth in net use overall, and is now used by 31% of adults, or 15 million people. Growth to continue at a similar rate for the next five years because French net users are becoming increasingly confident with the channel and because banks can still do more to persuade customers to bank online, starting with reducing or eliminating the charges that many still impose on customers who bank online. By 2013, it is expected that 42% of adults to use online banking, or more than 22 million people. Swedish banks have successfully been migrated the majority of their customers to ATMs and online banking — 83% and 71%, respectively. He also projects that, by 2012/20013, 81% of Dutch and 47% of German consumers will use digital banking (Forrester 2007, 2008, 2009).

Digital banking acceptance has gained special attention in academic studies during the past five years as banking journals have devoted special issues on the topic (Mukherjee & Nath 2003). Two reasons can be established for digital banking development and diffusion. First, banks can save costs by offering digital banking services. It has been proven that digital banking channel is the cheapest delivery channel for banking products once established (Giglio 2002.) Second, banks can reduce their branch networks and downsize the number of service staffs, which opens the way for digital banking as many customers feel that branch banking requires too much of their time and effort. Therefore, time and cost savings and freedom from branch banking have been found to be the main reasons underlying digital banking acceptance (Howcroft, Hamilton & Hewer 2002).

3. Methodology and Research Design

To assess the digital revolution impact upon the banking sector in Bangladesh, the researcher used both primary and secondary information. For the primary information, a survey was conducted during the first quarter of year 2010. Questionnaires were designed and distributed to different staffs and officers at different levels of different banks, e.g, national banks, commercial banks, specialized banks, Islamic banks, and foreign banks as well across the Dhaka city. The questionnaire we prepared and used had been pre-tested initially with few officers working in different levels to ensure consistency and relevance to the Bangladeshi case. Minor changes were requested by those people, which we implemented before carrying out the final interview. A total of 122 useable responses were obtained. The questionnaire we prepared for this exercise was divided into 4 sections. The first section concentrates on the general profile of the respondent including his/her age group, education level and professional level and income group. In the second section issues such as computer literacy, fear of redundancy, application of ICT, etc. was addressed to know the attitude of bank workers towards the adoption of digital devices. Also, the respondent was asked to provide details about the number of years he/she has been dealing with his/her main bank and to rate the services provided by the digital banking . In section 3, we were interested in finding the impact of ICT in banking industry in Bangladesh. The respondents were provided with a list of factors and were required to assign a weight to each one, using a 5 point Likert scale. It is estimated, from unofficial discussion with various large banks, which around 15-20 percent of their clients have an internet account with them. Under section 4, the following hypotheses are designed to know the government's role, management attitudes and impact of digitalization towards the banking performance.

Ho: Digital revolution does not play any positive role towards the banking performance

H1: Digital revolution plays some positive roles towards the banking performance

Ho: Inconsistent government policies are not deterrent for digitalizing of banking industry

H1: Inconsistent government policies are deterrent for digitalizing of banking industry

Ho: Management attitudes are not helpful for digitalization

H1: Management attitudes are helpful for digitalization of banking industry.

Secondary data, namely, annual reports of the sample organizations, related books, journals, and magazines etc were consulted for the theoretical development of the study. The collected data and information have been analysed and examined critically through quantitative analysis such as chi square test, mean average, standard deviation, ranking of factors etc. in order to make the study more informative and useful to the researchers, academicians, and management.

4. Results/Analysis

A total of 136 questionnaires were collected out of the total 175 questionnaires distributed. There were 14 incomplete questionnaires that were discarded. Therefore,

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only 122 questionnaires were used for data analysis, thereby giving a response rate of 89.71%.

The respondents comprised 81 males (66.39%) and 41 females (33.61%). The profile of the respondents is shown in Table 1. 41.21% of the respondents were between 20–29 years old, followed by 34.54% with age between 30–39 years old. In total, 72.13% of the respondents were masters' degree holders. In terms of total annual personal income and family income, most of the respondents earned between Tk 20,000–Tk 30,000 (38.52%) and Tk 10,000–Tk 20,000 (28.69%), respectively.

Among the respondents, there were only 3 respondents who had no access to Internet and 6 who did not use the Internet or did not have Internet experience. 81.7% respondents had used the Internet for more than 2 years and 58.3% used the Internet everyday.

Table 1: Profile of the respondents

Demographic Variables	Details	Frequency	Percentage (%)
Gender	Male	81	66.39
	Female	41	33.61
Age (in year)	20-29	51	41.21
	30-39	42	34.54
	40-49	17	13.94
	50-59	07	6.07
	60 plus	05	4.24
Education	Bachelor degree	21	17.31
	Masters degree	88	72.13
	Professional	13	10.66
	Qualification		
Total personal income per annum	Less than Tk 10,000	08	6.56
	Tk 10,000-Tk 20,000	35	28.69
	Tk 20,000-Tk 30,000	47	38.52
	Tk 30,000-Tk 40,000	17	13.93
	Tk 40, 000-Tk 50,000	10	8.20
	Tk 50,000-Tk 60,000	04	3.28
	More than Tk 60,000	02	1.64
Positions	Executive/Top	26	21.31
	Management	38	31.15
	Middle Management	14	11.48
	Supervisory	15	12.30
	Administrative/Clerical	15	12.30
	Technical	14	11.48
	Others		
Material Status	Single	64	52.46
	Married	61	50.0
	Others	07	5.74

Source: Estimated by the authors using field survey data, 2010

Table 2 shows the responses of bank workers on the effect of digital revolution on the structure of the organization. The responses of the staffs highlighted the need for

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trained workers in order to introduce the digital environment in the banking industry. They mostly desire it with a mean value of 4.23 out of 5.0 and ranked it 1 (one) based on mean and standard deviation. With a mean of 4.13 out of maximum 5.0, the respondents believe that adoption of ICT has improved the competitive edge of banks, according this they ranked it 2 (two) based on both mean and standard deviation. Authority relied on knowledge and competence and not on mere formal position with a ranking of 6 and 8 based on mean (3.66) and standard deviation (1.24) respectively. This implied that a change is required in the hierarchy of decision making. This agreed with The Economist (November 3, 2001), that the knowledge workers, collectively, are the new capitalists. Knowledge has become the key resource, and the only scarce one. This means that knowledge workers collectively own the means of production.... Knowledge workers... see themselves as equal to those who retain their services, as 'professionals' rather than 'employees'. The knowledge society is a society of seniors and juniors rather than bosses and subordinates.....The knowledge society is the first human society where upward mobility is potentially unlimited' (Agboola, Yinusa & Ologunde).

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Table 2: Attitude of Bank Workers towards the Adoption of Digital Devices

	N	Mean	Std. Deviation	Minimum Mean	Maximum Mean	Mean Ranking	Std.Dev. Ranking
Computer literacy offers no unique advantage to workers in banking	120	3.22	1.72	1	5	9	10
Fear of redundancy and retrenchment grips computer illiterate bank workers	122	3.80	1.14	1	5	4	4
ICT application in banks has altered skills in industry	121	4.04	1.23	1	5	3	7
Fewer workers are needed in banks using IT devices	122	3.45	0.85	1	5	8	1
Authority relies on knowledge and competence and not on mere formal position	121	3.66	1.24	1	5	6	8
Trend of recruitment and promotion in banks favours people with computer engineering background	122	3.07	1.22	1	5	10	6
ICT application in banks has not affected the size of the work force	122	3.02	1.27	1	5	11	9
Need to train bank workers in order to make them IT literate	119	4.23	0.85	1	5	1	1
Computer education assists in solving basic operational & planning problems	121	3.75	1.09	1	5	5	3
Adoption of ICT has improved the competitive edge of banks	123	4.13	0.94	1	5	2	2
Adoption of ICT encourages direct report to higher authority by the lower level managers	121	3.54	1.15	1	5	7	5

Source: Estimated by the authors using field survey data, 2010

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The respondents said that ICT encouraged direct report to managing directors by lower level managers with a ranking of 7 and 5 based on mean (3.54) and standard deviation (1.15) respectively. This position was in consonance with Laudon & Laudon (2001) who claim that IT could bring information directly from operating units to senior managers, thereby playing down on the roles of middle managers. The respondents supported that fewer workers were needed with the adoption of ICT and this has implication for staffs restructuring which may call for down sizing. Firms can downsize to the point of producing their main competence and purchasing everything else they need from outside. Thus, instead of massive corporations, digital revolution encourages small and highly focused corporations.

Table 3: Induced Impact of ICT in Banking Industry

		x	f	fx	Mean	%
A	Need for Competitive Strength	5	79	395	4.66	66.37
	Highly Responsible	4	33	132		27.73
	Responsible	3	6	18		5.04
	Fairly Responsible	2	1	2		0.84
	Hardly Responsible	1	0	0		0.00
	Not Responsible					
B	Need for Market Segmentation	5	18	90	3.44	15.0
	Highly Responsible	4	57	228		47.5
	Responsible	3	14	42		11.67
	Fairly Responsible	2	22	44		18.33
	Hardly Responsible	1	9	9		7.5
	Not Responsible					
C	Need for Improved Revenue	5	35	175	3.96	31.82
	Highly Responsible	4	50	200		45.45
	Responsible	3	18	54		16.36
	Fairly Responsible	2	0	0		0.0
	Hardly Responsible	1	7	7		6.36
	Not Responsible					
D	Need Proper Forecasting	5	30	150	3.98	26.31
	Highly Responsible	4	64	256		56.14
	Responsible	3	12	36		10.53
	Fairly Responsible	2	4	8		3.51
	Hardly Responsible	1	4	4		3.51
	Not Responsible					
E	Need for Modernization	5	58	290	4,2	48.33
	Highly Responsible	4	37	148		30.83
	Responsible	3	20	60		16.67
	Fairly Responsible	2	1	2		0.83
	Hardly Responsible	1	4	4		3.33
	Not Responsible					
F	Increase overall productivity	5	49	245	4.21	40.16
	Highly Responsible	4	56	224		45.90
	Responsible	3	13	39		10.66
	Fairly Responsible	2	2	4		1.64
	Hardly Responsible	1	2	2		1.64
	Not Responsible					

Source: Estimated by the authors using field survey data, 2010

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With a ranking of 4 based on mean (3.8) and standard deviation (1.14) respectively, they also agreed to the potential fear of redundancy and retrenchment for workers who are not computer literate. This agrees with Rifkin (1995) that the rise of productivity as a consequence of ICT deployment affects the amount of time worked in two ways. First, labour and time saving technologies have allowed companies to eliminate and dismiss workers en masse. Second, those who manage to hold their jobs are made to work longer hours. For firms, a smaller workforce means saving on the cost of providing benefits such as health care. Drucker (2002) tracing the history of industrial revolution suggests that workers will not disappear; only particular kinds of workers will. There will always be room for workers, but the areas or fields of demand may change.

With digital revolution the most demanded and sought after workers will be information technology (IT) professionals. Reich (2001) points out that the others workers that will thrive with IT professionals are the “symbolic analysts” such as engineers, attorneys, scientists, professors, executives, journalists, consultants and other “mind workers” who engage in processing information and symbols for a living. They will occupy a privileged position in that they can sell their services in the global economy. In an economy where information is critical, symbolic analysts or “knowledge workers” will also constitute an elite group. In the banking industry, they serve as consultants and also influence the process of decision making.

Table 3 shows the impact of the adoption of ICT products on competitive strength, market segmentation, improved revenue, proper forecasting, modernization and productivity. Respondents believe that ICT impacts positively on all these criteria. The calculated mean of 4.66 out of a maximum of 5 shows that adoption of ICT in banks improves competitive strength. Similarly, it increase the overall productivity (4.21), it enhances proper market segmentation (3.44), improves revenue (3.96), and ensures modernization (4.20) and proper forecasting (3.98). All these have brought about changes in the positioning of various banks in the industry. Some of the ‘big four’ (the first four banks) in Bangladesh have been replaced mostly by those who have been able to utilize the advantages provided by digital revolution. The positive impact of ICT on revenue corroborates the findings of Laudon & Laudon (1991) that studied the entire cash flow of most fortune 500 companies and linked their success to Information System. They concluded that Information Technology directly affects how managers decide, how they plan and what products and services are produced. This provides good leverage for gaining a commanding height in the industry.

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Table 4: Management attitude to digital revolution of the bank

Variable	Observed Frequency (O)	Expected Frequency (E)	(O - E)	$\frac{(O - E)^2}{E}$
Risk averse	14	20	-6	1.8
Aggressive	53	20	33	54.45
Speculation	13	20	-7	2.45
Participation only where it is profitable	22	20	2	0.2
Risk neutral	06	20	-14	9.8
Others	12	20	-8	3.2
Total				71.9
$\chi^2_c = 71.9$, at 5df $\chi^2_t = 11.070$				

Source: Estimated by the authors using field survey data, 2010

In table 4, the calculated value, $\chi^2_c = 71.9$ is greater than that of corresponding table value, $\chi^2_t = 11.070$ at 5 degree of freedom and at 5% level of significance. Since calculated value is greater than tabulated value, thus we are 95% confident that management shows a helpful attitude towards the digitalization of the banking industry. This is also predicted from the survey results cause almost 44 percent of the respondents are aggressive for digitalizing of the banking environment though some are opine (almost 18.0 percent) that they participate when it will be an profitable mechanism. The BECS (Bangladesh ECommerce Samity) formed on the 20th November 2000, has vigorous campaign of e-commerce and tries to introduce it in every door in Bangladesh and make Dhaka a dot com city within five years. Considerable awareness for e commerce can be observed in Bangladesh and companies are trying to apply e-commerce for conducting business (Debnath & Mahmud 2007)

Table 5: Distribution of the respondents as to inconsistent Government policies

Variable	Observed Frequency (O)	Expected Frequency (E)	(O - E)	$\frac{(O - E)^2}{E}$
Strongly agree	30	24	6	1.5
Agree	60	24	36	54
Undecided	18	24	-6	1.5
Disagree	11	24	-13	7.04
Strongly disagree	01	24	-23	22.04
Total				86.08
$\chi^2_c = 86.08$, at 4df $\chi^2_t = 9.488$				

Source: Estimated by the authors using field survey data, 2010

Apart from the aforementioned factors the inconsistent government policies for digitalization can be viewed as a deterrent to the digital banking, as shown in table 5, the majority (75.0 percent) of respondents were of the opinion that persistent and inconsistent government policies in digitalization are a significant factor in digital

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banking. The calculated value, $\chi^2_c = 86.08$ at 4 degree of freedom and table value, $\chi^2_t = 9.488$ at 5% level of significance, apparently the calculated value, $\chi^2_c >$ table value, χ^2_t , which is a clear indication that inconsistent government policies is a deterrent, and harmful tool for digitalizing the banking environment. After all, the government has placed the vision of 2021 - the year of Golden Jubilee of our independence. The vision envisages a digital Bangladesh with excellence in information and communication technology and high-performing inclusive economic growth.

Table 6: Digital revolution boosts the banking performance

Variable	Observed Frequency (O)	Expected Frequency (E)	(O - E)	$\frac{(O - E)^2}{E}$
Strongly agree	91	22	69	216.41
Agree	08	22	-14	8.91
Undecided	09	22	-13	7.68
Disagree	02	22	-20	18.18
Strongly disagree	00	22	-22	22
Total				273.18
$\chi^2_c = 273.18$, at 4df $\chi^2_t = 9.488$				

Source: Estimated by the authors using field survey data, 2010

Digitalization can be regarded as the life wire of a growth and development of banking sector but its risks are impediments to banking performance. A high majority (90.0 percent) of the respondents were of the opinion that digital revolution boosts the banking performance and this scenario also predict from the analysis as of calculated value ($\chi^2_c = 273.18$) is greater than that of tabulated value ($\chi^2_t = 9.488$) at 4 degree of freedom and 5% level of significance from table 6.

Thus it is easily said that digital revolution has drastically increased the banking performance and national economic performance also. According to Ramayah et al. (2003) the advent of the Internet has transformed the traditional financial services provided by banks. The advantages of digital banking can be enormous such as 24-hour access, funds transfer and settlement of bills at the convenience of the banks' patrons. It is believed that online transactions increase with greater accessibility and web security. With the growing penetration of computers in the local population, the strategic implications of digital banking cannot be denied.

5. Conclusion

The study revealed fundamental changes in the structure and content of banking business in the country and revealed technology as the main driving force of competition in the banking industry. Without doubt, digital revolution is changing the course of history and all banks should equip themselves with better information and policies that would enable them join the race. Banks should address the effects of digitalization and strengthen their technological innovation and must ensure that investments in ICT generate business value and mitigate the associated risks (Agboola, Yinusa & Ologunde).

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This calls for the implementation of organizational structures with well defined roles for addressing the issue of digital revolution. This is usually not an easy task. Because information system potentially changes an organizational structure, culture, policies, and work, there is a considerable resistance to new changes by those whose positions are threatened. The perceived emergence of the knowledge workers (IT Professionals), majority of who may not be among the top managers, into a decision making class, may constitute opposition to the required change in the industry. Besides the middle level managers that might be thrown out of relevance given the new network arrangement in the flow of information will not want to allow 'Tall' structures to be easily substituted with 'flat' ones. Lewin's (Laudon & Laudon 1991) three-stage approach to changing behaviour which was elaborated by Schein (1964) and quoted by Cole (2002) can be adopted. The first stage is to 'unfreeze' existing behaviour by providing a convincing motive for change. There is need to provide real motivation to move away from the status quo. Let people see that change is not only necessary but desirable for the organization. The second stage is 'changing or developing new behaviour' by encouraging them to identify with more appropriate and beneficial behaviour. The third stage is to 'refreeze' and it focuses on the consolidation of the new behaviour by providing various rewards from the organization which includes an assurance for proper settlement of any officer that might be affected by the restructuring (Agboola, Yinusa & Ologunde).

Digital revolution has changed the course of history in the banking industry and has left far reaching effects and implications on both the organizational and industrial structure. It is imperative for banks and their staffs to effect proper restructuring that will facilitate optimal utilization of the benefits provided by the revolution. All banks should influence their customers to use digital banking and should improve existing digital banking process, put concentration on digital banking services more and more. The charge/fees of digital banking services should keep at reasonable rate or lower than other distribution channels in order to popularize digital banking in Bangladesh.

Finally a possible limitation of this study concerns that information about digitalization and its use in Bangladesh is still in its infancy stage at the time of the study. Therefore, information and literature available on the subject came mainly from other countries such as US, UK, Europe and Asian countries and such literature may not accurately describe the situation in Bangladesh with regards to cultural infrastructure differences. This study is also limited in the sense, results obtained relate to the Bangladesh context. Similar results may or may not be obtained if the study is extended to different contexts.

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