Factors Affecting the Use of Alternative Delivery Channels: A Study on the Customers of Private Commercial Bank in Bangladesh

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Abstract

Alternative delivery channels (ADCs) have emerged as a new platform to offer banking services to its customers across the globe. The present study focused on constructing the new factors that affect the use of Alternative Delivery Channels (ADCs) by customers of private commercial bank in Bangladesh. A Sophisticated Statistical Techniques "Factor Analysis" (Principal Component Analysis, PCA and Confirmatory Factor Analysis, CFA) is used to construct the new factors. The results showed six new factors such as a) Riskiness, b) Convenience, c) Cost-effective, d) Easily accessible, e) Time savings and f) Transaction flexibility successfully constructed and assigned as the factors affecting the use of alternative delivery channels (ADCs) by bank customers. The study demonstrates that the chance of fraud while transferring funds under risky dimension, available banking services on holidays under convenience dimension, reasonable bank charges for issuance of debit card under cost effective dimension, available services for 24 hours a day under easily accessible dimension, instant feedback about transaction under time saving dimension and transactions are done more quickly under transaction flexibility dimension have a great influence on customer's ADC usages.

Key Words: *ADCs, Bank customers, Factor analysis, E-banking*

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1. Introduction

Banking system is important, but banking institutions are not (Gates, 2008). With the development of ICT techniques, the traditional banking system has been replaced by the electronic and automated banking system in every country (Graven, 2000). So, electronic and automated banking system is now a global phenomenon because it has reached the banking services to the unbanked people through different Alternate Delivery Channel (ADC) products and services. Electronic banking is now being used by the developed countries because of its creative, innovative, cost-effective benefits and services (Salehi, Mahdi, Mansouri & Azary 2008).

Alternate delivery channels of banking, commonly known as electronic banking (E- banking) is the waves of the future for banks. It provides enormous benefits to customers in terms of case and cost of transactions, either through internet, telephone or through other electronic delivery channels. For many customers, electronic banking means 24-hours access to cash through an Automated Teller Machine (ATM) or Direct Deposit of pay cheques into checking or savings accounts in bank. But electronic banking is now involved with various types of business transactions. E-banking is a form of banking where funds are transferred to customers or clients through an exchange of electronic signals between financial institution, rather than exchange of cash, cheque or other negotiable instruments of banks. With the expansion of global Information and Communication Technology (ICT) infrastructure and the internet, e-banking is set to play a pivotal role in the national economy. For this reason, proper software, infrastructure, and skilled manpower are important for the implementation of e-banking in the country. In Bangladesh, several banks are offering alternate delivery channels of banking services to its customer.

Now a days, alternate delivery channels of banking system is growing popularity in Bangladesh. Several private as well as local banks is going online now considering the demand and necessity of fast banking services for the customer. Internet banking not only provides banking facility round the clock but also helps a country to get attached to the international economy as well as business. At present, Bangladesh Bank (BB) has undertaken a huge project relating to modern payment automation infrastructure. Bangladesh Automated Clearing House (BACH) has started its operation that results in a gradual shift

from cash and paper-based transactions to electronic modes of payments. It has replaced the traditional system of clearing bank drafts, cheques, pay-orders, dividend with the automated system for providing best customer services. Apart from such non-cash payment instruments, various ATM cards - credit card and debit card transactions are becoming popular to the customers, especially in the urban areas (Bangladesh Bank, 2017). At present, 51 banks are operating card business in Bangladesh. Among those, interbank ATM transactions of 49 banks and POS transactions of 39 banks are being routed through National Payment Switch Bangladesh (NPSB). Other banks are also likely to join to NPSB. The number and volume of the interbank ATM and POS transactions through NPSB are growing rapidly in Bangladesh (BB, 2017).

Ali and Akter (2010) argued that a transitional period in the banking sector of Bangladesh has been passing through shifting from the traditional banking system to the online banking. This comment indicates that gradually electronic banking is gaining its importance in Bangladesh. Customer's linking is necessary for the banking sector to elevate probability, business expansion and accomplishment of business activities. Now a days, banking sector is modernizing and expanding its hand in different financial events. At the same time the banking process is becoming faster and easier to the customers. To survive in the competitive field of the banking sector, commercial banks are looking for better service opportunities to provide their customer.

Despite many benefits, provided by the banks to their customers, it remains a double-edged sword and not used by every customer, because of the increasing distance between the bank and customers, that may lead to the lack of confidence and a security concern. As a result, the quality of alternative delivery channels become an important area of attention among the researchers and bank managers due to its strong influence on the banking performance, lower costs, customer satisfaction, customer loyalty, and profitability (Seth, Deshmukh & Vrut 2004).

With the advancements of technology, including expansion of mobile phone coverage, Bangladesh Bank Governor Atiur Rahman mentioned "effective partnerships among banks and technology service providers' would make branchless banking or alternate channels of banking a great success" (BSS, 2010). This paper tries to highlight the various factors that affect the use of

Alternative Delivery Channels (ADCs) by customers of private commercial bank in Bangladesh. This research is of paramount importance for the banking industry to devise their ADCs policies and product offerings in the light of the results of this study.

This is a primary study that fundamentally contributes to the business research and measures the knowledge about customers regarding alternative delivery channels in Bangladesh. In addition, this study substantiates that low knowledge about alternative delivery channels may lead to confusing customers at the time of taking banking service. The effect of various factors can influence the customers for choosing the service from alternative delivery channels, that can also positively or negatively influence the banking sectors; and this would be a supplementary addition.

2. Literature Review

Alternative Delivery Channel (ADC) means channels that acts as intermediaries between banks and customers and leads to expand movement and execution of banking services. These channels may be media, tools or any application through which customer can perform their banking operations. From the point of view of Bank these Alternative Delivery channels will help bank to reach wild range of customer across the country.

As the world economy is growing faster and banking sector is making mark in each and every day, Digital banking or alternate channels of banking is very important and effective to be a part of it. Bangladesh just started its journey in internet banking and banks are coming forward to make it a success. Online banking is clearly a huge benefit for the customers and the system saves a lot of time and things get done so easily. A developing country like Bangladesh can make the best out of Internet Banking and banks are trying to perfectly execute this valuable system.

Alternate Delivery channels cover a wide range of avenues including ATM debit/Visa cards, credit cards, SMS/mobile banking, phone banking and internet banking (Singh, 2014). All over the globe, each of the alternate delivery channels is studied to evaluate its adoption rate among the bank customers. A brief description of the products and services is given below:

1. Automated Teller Machine (ATM): An ATM machine is a cash machine, cash point, cash line is a computerized telecommunications device that enables the clients of a financial institution to perform financial transaction without a cashier, human clerk or bank teller. It is stated by Kashyap and Sharma (2012) that in the context of urban areas of India, the widely used direct banking channel is ATM. According to Mwatsika (2014), the context of Malawi retail banking, the ATM banking is considered to be the second most popular access channel to avail banking services. 2. Debit Card: An electronic card issued by a bank which allows bank clients access to their account to withdraw cash or pay for goods and services. 3. Credit Card: A credit card is a system of payment named after the small plastic card issued to users of the system. Some people adopted usage of credit cards because of the factor of utility (Siddiqui and Anjum, 2013). 4. Point of sale (POS): POS is an abbreviation for point of sale (or point-of-sale or point of service). This can mean a retail shop, a checkout counter in a shop, or a variable location where a transaction occurs in this type of environment. 5. Phone Banking: Telephone banking is a service provided by a bank or other financial institution that enables customers to perform financial transaction over the telephone, without visiting a Bank branch or automated teller machine. 6. Corporate Automated Clearing House: The Automated Clearing House (ACH) is an electronic network for financial transactions. ACH processes a large volume of both credit and debit transactions which are originated in batches. 7. Online banking: Online banking allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution. 8. SMS banking: SMS banking is a type of mobile banking, a technology- oriented service offering from banks to its customers, permitting them to operate selected banking services over their mobile phones using SMS messaging.

Numerous factors, including competitive cost, customer service, and demographic considerations are motivating banks to evaluate their technology and assess their electronic commerce and Internet banking strategies. Many researchers expect rapid growth in customers using online banking products and services. Studies show that competitive pressure is the chief driving force behind increasing use of alternate channels of banking technology, ranking ahead of cost reduction and revenue enhancement, adding more to it. Banks see that alternate channels of banking is a way to keep existing customers and

attract new ones to the bank. Banks can deliver banking services on the Internet as transaction costs are far lower than the traditional brick-and-mortar branches. Banks have significant reasons to develop the technologies that will help them deliver banking products and services by the most cost-effective channels depicted by the increased level of participation by both the local and foreign banks currently in Bangladesh.

The term of riskiness is very important factors for considering alternate delivery channels of banking. In the context of Kenya, Ndumba and Muturi (2014) found that customers had fear that their money or information could be delivered to inaccurate account number, therefore, security persist as hurdle in the acceptance of mobile banking. Similarly, short-messaging service (SMS) banking is also one of the derivatives of multiple delivery channels, namely mobile banking. A large number of banks in Pakistan are providing their customers with SMS alerts for each transaction against some service charges. Greater the perceived security, higher will be the customer's intention to use SMS banking (Amin and Ramayah, 2010). Mazhar et al. (2014) emphasizes that the effect of perceived usefulness and security is quite considerable on internet and mobile banking usage. It was brought into light that "the feeling of safety in usage" of ATM services is one of the factors that has emerged as a source of obstruction in the propagation of this alternative delivery channel (Mwatsika, 2014).

The customer of a bank is convenient or not is also a dependable variable for choosing alternate delivery channels. The factor of convenience was indirectly highlighted in the research conducted at Taiwan and Singapore by Wu et al. (2006) that makes an argument by using alternative channels customers can easily make a transaction anywhere-anytime. Abbam et al. (2015) studied about the customer choice of Banks in Ghana and they identified that the most important factors influencing customer choice of a bank are location of the bank, extension of working hours by the bank, availability of ATM facility, provision of efficient services, the bank being a private one and introduction of customers to the bank by friends and relatives.

Cost effectiveness has a great influence on customers' alternate delivery channels. Salhieh et al. (2011) explored the assessment of Jordan's banking sectors' readiness for providing electronic banking services. The findings of the

study showed that both bank managers and customers have positive attitude towards using various alternative delivery services because electronic banking system saves time and reduces the cost.

In addition to knowledge, easily accessible of alternate delivery channels have a motivating role on the customers of a bank. Verma (2014) stated that the Indian banking industry has witnessed a shift in trend from cash economy to plastic card economy. Khraim et al. Shaikh (2016) explores and identifies several alternative delivery channels such as automated teller machines (ATMs), the Internet, the telephone, Point of Sale (POS), and convenient mobile delivery of financial and non-financial services to consumers. Perera (2018) identified several factors which influenced the customers to adopt the internet banking System like a relative advantage, perceived ease of use, perceived usefulness, demographic factors, perceived security, compatibility, Service quality, Complexity, Trialability and Social influence.

Several previous studies have shown that, customers are very satisfied with the use of alternate delivery channels because of time savings. A lot of time savings benefit is offered by banks to a wide customer base through alternate delivery channels. As per findings of Mazhar et al. (2014), if an individual recognizes alternate delivery channels as being more cost efficient, time saving and user-friendly, then his likeliness of adopting mobile banking or internet banking.

Lastly, Transaction flexibility also plays an important role for using alternate delivery channels of banking organization. Electronic banking systems allow business parties or individual to pay directly or to debit accounts via telecommunication systems. Kabir and Poddar (2015) conducted a study based on E- Banking and Customer Satisfaction in Bangladesh and they found that Six factors are determined which accelerate customer satisfaction, but among those four factors are considered effective influence. These are Reliability, Easiness, Charges, Assurance, Visibility and Responsiveness of customer.

Various studies regarding internet banking and ADC products of the U.S.A., Japan, Europe, Romania, Turkey, Malaysia and Saudi Arabia banking institutions, were conducted by Pyun et al. (2002), Gurau (2002), Polatoglu and Ekin (2001), Balachandher et al. (2000) and Jasimuddin (2004). Mia et al. (2007) found that internet banking is also expanding and developing rapidly in

Thailand, Malaysia, Singapore, and Philippines. Studies regarding diffusion, and usage of internet banking and ADC products and services in Zimbabwe, China, Tunisia, Nigeria, and in Iran, were conducted by Thulani et al. (2009), Guangying (2009), Dhekra (2009), Adesina and Ayo (2010), Maiyaki and Mokhtar (2010), and Salehi and Alipour (2010).

By analyzing the literature review, the researchers have drawn the attention to fulfil the knowledge gap of customers for using ADCs in Bangladesh. The specific six factors such as a) Riskiness, b) Convenience, c) Cost-effective, d) Easily accessible, e) Time savings and f) Transaction flexibility were identified from the literature review. How much these factors have influenced the use of ADCs of bank customers in Bangladesh, is the major objectives of this research, which had not been studied yet in Bangladesh, specifically based on six factors.

3. Research Objectives

In this study, the authors took interest to pursue the factors relating to the use of alternative delivery channels (ADCs) by private bank customers in Bangladesh. The objectives of the study are:

a. To identify users and non-users of private commercial bank's ADCs in Bangladesh.

b. To find out preference of private commercial bank's customers regarding ADCs usages.

c. To explore the factors that influence the use of alternative delivery channels (ADCs) by private bank customers in Bangladesh.

d. To generate and confirm the dimensions of alternative delivery channels (ADCs) in Bangladesh.

4. Research Methods

The research method section is divided into seven sub-sections, viz. sample design, data collections, survey instrument, reliability of the scale, mode of data analysis, identifications of factors that influence customers' ADCs usage in commercial banks of Bangladesh, and demographic characteristics of the respondents.

4.1. Sample Design

The sample for this study is the customers of the different private commercial banks, listed on both Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) and have branches in Chattogram city in Bangladesh. In Bangladesh, 62 scheduled commercial banks are currently operated, out of which 29 commercial banks are listed on both DSE and CSE in which 6 are Islamic commercial banks and 23 are conventional private commercial banks (Source: websites of DSE and CSE). The researchers have selected customers who have accounts with and take services from ADCs of 10 private commercial banks purposively out of 29 listed private commercial banks to collect data for the study where 8 are private commercial banks and the remaining 2 are Islamic commercial banks (See Appendix A: Table-1). 300 customers were selected as samples from different branches of the sample banks in Chattogram (30 from each of the sample banks).

4.2. Data Collection

In the study, both primary and secondary data were used to conduct the research where articles and textbooks have been reviewed to find out related variables and existing models on the evaluation of factors that influence customers' ADCs usage. Here, a printed survey questionnaire was prepared based on various literatures (Adeniran and Junaido, 2014; Singh, 2014; Verma, 2014; Mazhar et al., 2014; Amin and Ramayah, 2010; Xue et al., 2007; Khraim et al., 2011; Kumbhar, 2011) to collect primary data where such data were collected by direct personal visit to the respondents. A total number of 300 questionnaires were distributed to 300 sampled bank customers who stayed in Chattogram cities, had account with and enjoyed services of ADCs from that sampled private commercial banks. Due to some limitations, such as customers' reluctance to answer questions, workload, etc., all questionnaires from all the selected customers of the sample banks were not possible to collect. Finally, a total of 200 questionnaires (67%) were found with usable responses (See Appendix-A: Table-1).

4.3. Survey Instrument

Questionnaire survey method were administered among the respondents by providing a 26-item questionnaire developed by the researchers to gather primary data where 6 questions were about demographic characteristics of respondents and the remaining 20 questions were 5-point Likert scale (5 = Strongly Agree…, 1 = Strongly Disagree) to identify factors that influences customers' ADCs usage. Further, under Confirmatory Factor Analysis 4 items were deleted due to low have low squared multiple correlation less than 0.20 and considered remaining 16 items valid from those 20 items to develop factors that influenced customers' ADCs usage of private commercial banks in Bangladesh.

4.4. Reliability and Validity

Reliability is formed with an overall Cronbach's alpha that shows the strong or weak consistency of a set of items (variables) that are considered as a hypothesis to measure the study concept. In this study, reliability test is used to verify the internal consistencies of predetermined items/variables (Cooper & Schindelr, 2001; Hair, Anderson, Tatham, & Black, 2003; Malhothra, 2002) regarding the factors to factors that influences customers' ADCs usage of private commercial banks. It is quite important to say that its value varies from 0 to 1, but values more than 0.6 is required to be reliable (Cronbach, 1951; Malthothra, 2002). Cronbach's alpha is used in the current study to measure the reliability of the scale.

Further, to determine construct validity Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) and Pearson's correlation matrix are performed. Under EFA, Principal Component Analysis (PCA) with orthogonal varimax rotation is performed to extract factors in the study. For factor analysis, the SPSS (Statistical Package for Social Science) and AMOS graphics, 23.00 versions are used in the study.

4.5. Mode of Data Analysis

A sophisticated method of statistics – Factor Analysis by varimax rotation method is used in this present study to obtain interpretable dimensions. Here, researchers have followed the initial factor matrices to varimax rotation

procedures to provide orthogonal common factors (Kaiser, 1958) from 20 items in the study. Finally, factors regarding the customers' ADCs usage are made on the basis of factors scores. After that, the first order confirmatory factor analysis (CFA) is performed in the overall dataset through the maximum likelihood (ML) estimate to evaluate the validity of a theoretical construct (Byrne & Gavin, 1996). The constraints employed are riskiness, convenience, cost effectiveness, easily accessible, time savings and transaction flexibility. Afterwards, CFA results are evaluated whether the un-dimensionality and reliability of each contract are confirmed. The model fit indicators evaluated are CMIN / DF, RMSEA, SRMR, GFI, AGFI, CFI, PCLOSE and HOELTER.

To discuss the model fit of SEM, the study considers the criteria of the various model fit indices a follows:

Table-2: Criteria of Model Fit Indices

Model Fit Indices	Description	Criteria	Source
CMIN/DF	Relative Chi-square value	< 3	Hu & Bentler, 1999.
GFI	Goodness-of-Fit	≥ 0.90 (Depend on the sample size) ≥ 0.80 (Marginal)	Mulaik et al., 1989; Chandra et al., 2018.
AGFI	Adjusted Goodness-of-Fit	≥ 0.90 (Depend on the sample size) ≥ 0.80 (Marginal)	Mulaik et al., 1989; Chandra et al., 2018.
CFI	*Comparative Fit Index*	≥ 0.90 (Very Good Fit) ≥ 0.80 (Satisfactory) ≥ 0.75 (Fair Fitting Model)	Konovsky & Pugh, 1994; Du Plessis, 2010; Moolla & Bisschoff, 2013.
RMSEA	*Root Mean Square Error of Approximation*	< 0.08 (Good fit) 0.08-0.10 (Mediocre Fit)	MacCallum et al., 1996.

SRMR	Standardized Root Mean Square Residual	< 0.05 (Well Fit Model) < 0.08 (Deemed acceptable)	Byrne, 1998; Diamantopoulos & Siguaw, 2000; Hu & Bentler, 1999.
HOELTER	Hoelter'sindex	Critical Sample Size > 75 at *p* value 0.05 and 0.01	Arbuckle, 2012; Newsom, 2005.

Source: Author's contribution based on literature review

4.6. Identifications of Factors that Influence Customers' ADCs Usage in Commercial Banks of Bangladesh

The factors influencing customers' ADCs usage in commercial banks of Bangladesh based on various literatures (Adeniran & Junaido, 2014; Singh, 2014; Verma, 2014; Mazhar et al., 2014; Amin & Ramayah, 2010; Xue et al., 2007; Khraim et al., 2011; Kumbhar, 2011) have been presented in the following table:

Table-3: List of Factors Affecting the Use of Alternative Delivery Channels (ADCs) by Bank Customers

S.N	List of Factors Affecting the Use of Alternative Delivery Channels (ADCs) by Bank Customers	Notification
1.	Easier to do banking	X1
2.	Available banking services on holidays	X2
3.	Convenient way to manage finances	X3
4.	Transactions are done more quickly	X4
5.	Comfortable to use debit card or credit card instead of carrying cash	X5
6.	Payment for goods and services can be made easily	X6

7.	Payment of electricity and telephone or recharges of cell phone become easy	X7
8.	Time saving by conducting transaction using ADCs	X8
9.	Instant feedback about transaction	X9
10.	Access banking account from anywhere	X10
11.	Available services for 24 hours a day	X11
12.	Enables to accomplish banking activities more quickly	X12
13.	Less transaction cost	X13
14.	Reasonable bank charges for issuance of debit card	X14
15.	Save travel expenses	X15
16.	Accessibility of information concerning banking transactions by others	X16
17.	Riskiness as payment may go to some incorrect account	X17
18.	Information related to banking transactions can be hacked or tampered	X18
19.	Chance of fraud while transferring funds	X19
20.	Chance of data loss	X20

Source: Review of literatures of the study

4.7. Demographic Characteristics of the Respondents

Selection variables in this category are gender, age, educational qualification and family monthly income. The following Table-shows demographic characteristics of the respondents.

Table-4: Demographic Characteristics of the Respondents

Gender	**Frequency**	**Percentage**		
Female	52	26		
Male	148	74		
Total (*N*)	**200**	**100**		
Age	**Female**	**Male**	**Total**	**Percentage**
18-24 Years	13	65	78	39
25-32 Years	17	46	63	31.5
33-40 Years	17	30	47	23.5
> 40 Years	5	7	12	6
Total	**52**	**148**	**200**	**100**
Educational Qualification	**Female**	**Male**	**Total**	**Percentage**
S.S.C.	10	40	50	25
H.S.C.	22	49	71	35.5

Graduate	16	39	55	27.5
Post Graduate	4	20	24	12
Total	**52**	**148**	**200**	**100**
Family Monthly Income	**Female**	**Male**	**Total**	**Percentage**
Less than BDT 20000	15	54	69	34.5
BDT 20001 - BDT 40000	20	55	75	37.5
BDT 40001 - BDT 60000	10	24	34	17
BDT 60001- BDT 80000	4	11	15	7.5
> BDT 80000	3	4	7	3.5
Total	**52**	**148**	**200**	**100**

Source: Contribution of authors

From the of Table-4, it is found that out of total sample 74 percent are male and the remaining 26 percent are female respondents. From the table, it is found that 39 percent of the respondent is in the age group 18-24 years, where 65 respondents are male and 13 respondents are female out of 78 respondents. The second highest age group lies within 25-32 years which is about 31.5 percent where 46 respondents are male and 17 respondents are female out of 63 respondents. Besides, 23.5 percent of the respondent is in the age group 33-40 years and the remaining 6 percent of the respondent is in the age group > 40 years where 30 respondents are male and 17 respondents are female out of 47 respondents and 7 respondents are male and 5 respondents are female out of 12 respondents respectively.

The study also considers educational qualifications of the respondents as formal education is always considered an important capital of individual in building his or her occupational career (Lipset & Bendix, 1989). In this context, Table-4 portrays that 35.5 percent of the respondents are HSC where 49 respondents are male and 22 respondents are female out of 71 respondents. The graduate respondents are in second highest position which is about 27.5 percent where 39 respondents are male and 16 respondents are female out of 55 respondents. Besides, 25 percent of the respondents SSC and the remaining 12 percent of the respondents are post graduate where 40 respondents are male and 10 respondents are female out of 50 respondents under SSC education and 20 respondents are male and 4 respondents are female out of 24 respondents under post graduate education respectively.

Further the study also considers family monthly income of the respondents. Table-4 shows that 37.5 percent of the respondents is within the range of BDT 20001 - BDT 40000 family income level where 55 respondents are male and 20 respondents are female out of 75 respondents. The second highest position belongs to less than BDT 20000 income level, which is about 34.5 percent where 54 respondents are male and 15 respondents are female out of 59 respondents. Besides, 17 percent of the respondent lies within BDT 40001 - BDT 60000 income level where 24 respondents are male and 10 respondents are female out of 34 respondents. 7.5 percent of the respondent is in BDT 60001- BDT 80000 income level where 11 respondents are male and 4 respondents are female out of 15 respondents and the remaining 3.5 percent of the respondent is in > BDT 80000 family income level where 4 respondents are male and 3 respondents are female out of 7 respondents respectively.

5. Data Analysis and Findings

The data analysis and findings of the study are addressed in five parts, viz., users and non-users of ADCs, preference to use ADCs by respondents, appropriateness of data for factor analysis, factor analysis (PCA and CFA), and correlation matrix.

5.1. Users and Non-users of ADCs

The following Table-shows users and non-users of ADCs.

Table-5: Frequency Distribution for ADCs Usage

Frequency Distribution for ADCs Usage	**Users**			**Non-users**			**Total (*N*)**
ADCs	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	
ATM/Debit Card	50 (25.64%)	145 (74.36%)	195 (97.5%)	2 (40%)	3 (60%)	5 (2.5%)	200
Credit Card	6 (42.86%)	8 (57.14%)	14 (7%)	46 (24.73%)	140 (75.27%)	186 (93%)	200
Internet Banking	15 (22.06%)	53 (77.94%)	68 (34%)	37 (28.03%)	95 (71.97%)	132 (66%)	200
Mobile Banking	32 (32.99%)	65 (67.01%)	97 (48.5%)	20 (19.42%)	83 (80.58%)	103 (51.5%)	200
SMS Banking	37 (24.67%)	113 (75.33%)	150 (75%)	15 (30%)	35 (70%)	50 (25%)	200

Source: Contribution of authors

Table-5 portrays that majority of the respondents use ATM/Debit card. 97.5% i.e., 195 out of 200 respondents uses ATM/Debit card where 74.36% i.e., 145 respondents are male and the remaining 25.64% i.e., 50 respondents are female. The second highest types of ADCs used by respondents is SMS banking which is 75% of 200 respondents where 75.33% i.e., 115 respondents are male and the remaining 24.67% i.e., 37 respondents are female. The next mostly used ADCs types by respondents is mobile banking which is 48.5% i.e., 97 out of 200 respondents uses mobile banking where 67.01% i.e., 65 respondents are male

and the remaining 32.99% i.e., 32 respondents are female.34% i.e., 68 out of 200 respondents uses internet banking where 77.94% i.e., 53 respondents are male and the remaining 22.06% i.e., 15 respondents are female. Besides, the study finds that the respondents use less credit card which is 7% i.e., 14 out of 200 respondents use credit card where 57.14% i.e., 8 respondents are male and the remaining 42.86% i.e., 6 respondents are female.

5.2. Preference to Use ADCs by Respondents

The following Table-shows preference to use ADCs by respondents.

Table-6: Frequency Distribution of customer's preference to use ADCs

Frequency Distribution of Customer's Preference to Use ADCs	**Yes**			**No**			**Total (*N*)**
Preferred ADCs	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	
ATM/Debit Card	40 (23.67%)	129 (76.33%)	169 (84.5%)	12 (38.71%)	19 (61.29%)	31 (15.5%)	200
Credit Card	1 (20%)	4 (80%)	5 (2.5%)	51 (26.15%)	144 (73.85%)	195 (97.5%)	200
Internet Banking	1 (16.67%)	5 (83.33%)	6 (3%)	51 (26.29%)	143 (73.71%)	194 (97%)	200
Mobile Banking	10 (50%)	10 (50%)	20 (10%)	42 (23.33%)	138 (76.67%)	180 (90%)	200
SMS Banking	7 (35%)	13 (65%)	20 (10%)	45 (25%)	135 (75%)	180 (90%)	200

Source: Contribution of authors

Table-6 portrays that majority of the respondents prefer to use ATM/Debit card. 84.5% i.e., 169 out of 200 respondents prefer to use ATM/Debit card where 76.33% i.e., 129 respondents are male and the remaining 23.67% i.e., 40 respondents are female. The respondents have same preference regarding mobile banking and SMS banking which are 10% but considering gender, male and female respondents equally prefer to use mobile banking whereas 65% of 20 respondents i.e., 13 male respondents and the remaining 35% of 20 respondents i.e., 7 female respondents prefer to use SMS banking. 3% i.e., 6 out of 200 respondents prefer to use internet banking where 83.33% i.e., 5 respondents are male and the remaining 16.67% i.e., 1 respondent is female. Besides, the study finds that the respondents have lowest preference to use credit card which is 2.5% i.e., 5 out of 200 respondents prefer to use credit card where 80% i.e., 4 respondents are male and the remaining 20% i.e., 1 respondent is female.

5.3. Appropriateness of Data for Factor Analysis

Kaiser-Meyer-Olkin (KMO) is a useful method to show the appropriateness of data for factor analysis. This method is a measure of sampling adequacy. The KMO statistics varies between 0 to 1. Kasier (1974) recommends that values greater than 0.5 are acceptable. Again, Bartlett's test of sphericity (Barlett, 1950) is another statistical test applied in the study for verifying its appropriateness. This test should be significant i.e., having a significance value less than 0.5.

Table-7: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.707
Bartlett's Test of Sphericity	Approx. Chi-Square	1130.235
	Df	190
	Sig.	.000

Source: Contribution of authors

In this study, the value of KMO is .707 which is greater than .5, thereby indicating that the sample taken to process the factor analysis is acceptable. Besides, the significance value is also less than 0.50. So, according to Bartlett's Test of Sphericity, the data is appropriate for the factor analysis.

5.4. Factor Analysis

After examining the reliability of the scale and testing appropriateness of data, we next carry out factor analysis to simplify diverse relationship that exists among set of observed variables. For this, the study employs principal component analysis (PCA) followed by the varimax rotation. After that, Confirmatory Factor Analysis (CFA) is employed based on PCA results of the study to construct validity.

5.4.1. Result of Principal Component Analysis

The study used PCA for factor extraction and orthogonal method for factor rotation. It is necessary to mention here that factor loading greater than 0.3 is considered significant, 0.4 is considered more important and 0.5 or greater is considered very significant (Hair, Anderson, Tatham, & Black, 2003). For parsimony, only those factors with loadings above 0.5 are considered significant (Hair et al., 2003; Pal & Bagi, 1987; Hair et al., 1998; Pal, 1986). Again, in the study, most of the factors that influences customers' ADCs usage explains about 60 percent of the variance associated with most of the variables, the factors fit data quit-well.

To find out determinants that influence customers' ADCs usage of commercial banks in Bangladesh, twenty reasons are taken into consideration. A principal component factor analysis with varimax rotation is performed for these twenty items/reasons indicating factors that influence customers' ADCs usage. Here, six factor results i.e., riskiness, convenience, cost effectiveness, easily accessible, time savings and transaction flexibility are emerged from the output with eigenvalues greater than 1 (Appendix B: Table-8). These six factor results are generated after grouping the items/reasons with a factor loading of higher than 0.45 under a factor. The total variance is 61.795% which indicates that the six-factor solution explain 61.795% of the total variance where the remaining variance is explained by other items. The six dimensions that influence customers' ADCs usage are named accordingly and discussed as follows:

The result of Cronbach's alpha coefficients of the six dimensions are 0.829 (Riskiness), 0.605 (Convenience), 0.690 (Cost Effectiveness), 0.649 (Easily Accessible), 0.612 (Time Savings) and 0.602 (Transaction Flexibility).

Riskiness

This factor is represented by four variables of riskiness (F1) with factor loading ranging from 0.858 to 0.745. They are Chance of fraud while transferring funds, Information related to banking transactions can be hacked or tampered, Chance of data loss, and Riskiness as payment may go to some incorrect account. This component accounted for 14.173% variation with eigenvalues 3.612 (Appendix B: Table-8). Jalal et al. (2011) indicate that all the elements for the three identified factors such as perceived usefulness (PU), perceived ease of use (PEOU), security and privacy (PC) are important with respect to the users' adoption of e-banking services.

Convenience

This factor is represented by four variables of convenience (F2) with factor loading ranging from 0.773 to 0.470. They are Available banking services on holidays, Easier to do banking, Convenient way to manage finances, and Accessibility of information concerning banking transactions by others. This component accounted for 10.635% variation with eigenvalues 2.672 (Appendix B: Table-8). Kashyap and Sharma (2012) argued that in this electronic era there exist no need to count days to get account balance statement at the end of the month; also with the proliferation of ADCs, a bank customer does not need to wait for his turn to avail service of a bank personnel because now the bank is available at your door step in form of internet banking, mobile banking etc.

Cost-effectiveness

This factor is represented by three variables of cost-effectiveness (F3) with factor loading ranging from 0.906 to 0.478. They are Reasonable bank charges for issuance of debit card, Less transaction cost, and Save travel expenses. This component accounted for 9.705% variation with eigenvalues 1.991 (Appendix B: Table-8). The Nigerian authors Adeniran and Junaido (2014) found out in their research that cost of using ATM, simplicity in handling the machine and

safety of the entered information and monetary value, all play vital role in attracting banking clientage towards this means of service.

Easily Accessible

This factor is represented by three variables of easily accessible (F4) with factor loading ranging from 0.757to 0.693. They are Available services for 24 hours a day, Access banking account from anywhere and enables to accomplish banking activities more quickly. This component accounted for 9.688% variation with eigenvalues 1.611 (Appendix B: Table-8). Alternative delivery channels of banking enable the customer to have direct link with the bank via mobile anywhere and everywhere (Mazhar et al, 2014).

Time Savings

This factor is represented by three variables of time savings (F5) with factor loading ranging from 0.750to 0.633. They are Payment of electricity and telephone or recharges of cell phone become easy, Time saving by conducting transaction using ADCs, and Instant feedback about transaction. This component accounted for 9.332% variation with eigenvalues 1.407 (Appendix B: Table-8). Wisdom (2012) also provided further evidence to the fact that use electronic banking products saves time, makes banking services more convenient and quickens service delivery among others.

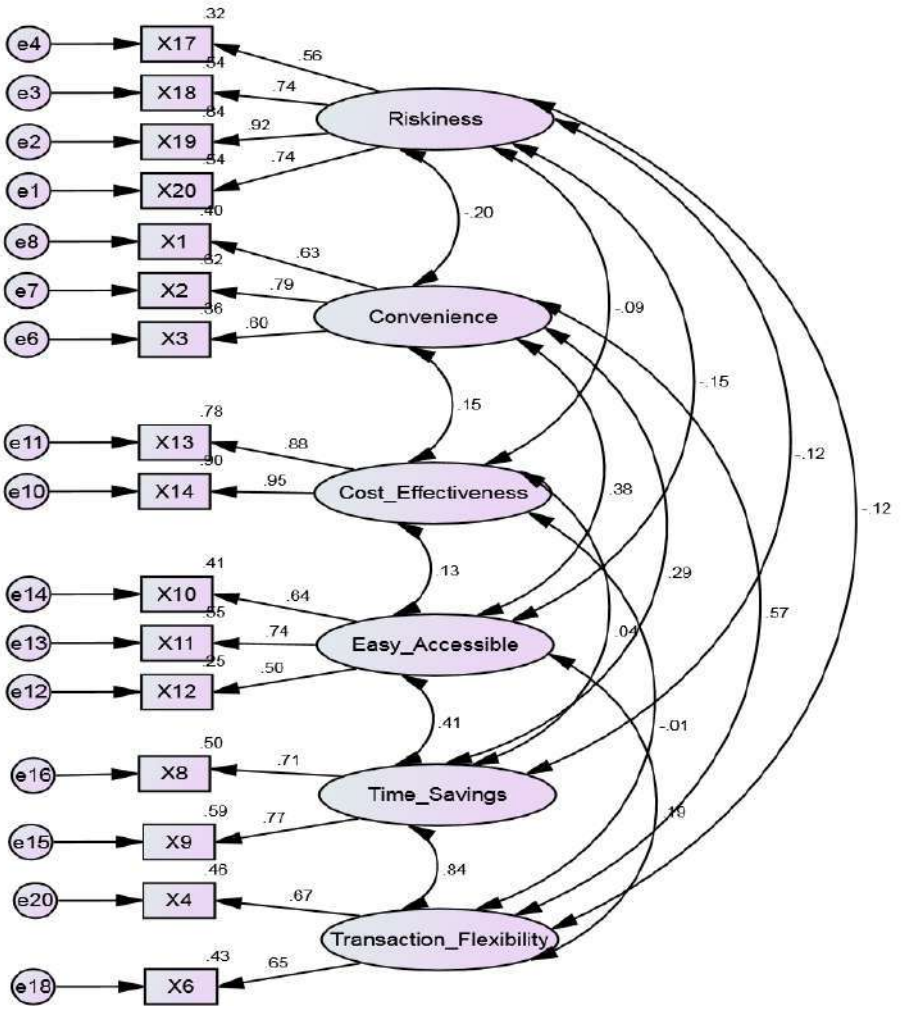
Transaction Flexibility

This factor is represented by three variables of transaction flexibility (F6) with factor loading ranging from 0.749 to 0.522. They are Comfortable to use debit card or credit card instead of carrying cash, Transactions are done more quickly and Payment for goods and services can be made easily. This component accounted for 8.262% variation with eigenvalues 1.066 (Appendix B: Table-8). Bony and Kabir (2012) evaluate about the Practice of e-banking in commercial bank of Bangladesh and they conclude that, e-banking can up surging in banking sector and make our country with more state of art facilities.

5.4.2. Confirmatory Factor Analysis

The study considers the dimensions resulted from Principal Component Analysis to perform Confirmatory Factor Analysis. The following figure-1 shows the relationship between each latent variable of customers' ADCs usage.

Figure-1: Path Diagram



Source: Contribution of authors

The results of CFA showed by Figure-1 and Table-9 explained that the six latent variables are those six factors determined by EFA. From Table-8, the main dimension of riskiness is chance of fraud while transferring funds (0.919), while the main dimension of convenience is available banking services on holidays

(0.787). Furthermore, the main dimension of cost effectiveness is reasonable bank charges for issuance of debit card (0.95), the main dimension of easily accessible is available services for 24 hours a day (0.742) and the main dimension of time savings is instant feedback about transaction (0.765). Finally, the main dimension of transaction flexibility is transactions are done more quickly (0.675). All significant dimensions affect each variable with alpha 1% (Table-9). Under CFA, 16 items under six factors are considered and 4 items are i.e., X5 (Comfortable to use debit card or credit card instead of carrying cash), X7 (Payment of electricity and telephone or recharges of cell phone become easy), X15 (Save travel expenses), and X16 (Accessibility of information concerning banking transactions by others) have been removed from factors Transaction Flexibility, Time Savings, Cost Effectiveness, and Convenience respectively due to have low squared multiple correlation below 0.20 indicating the variance in the items are not much responsible for by the factors (Johnson & Stevens, 2001).

Table-9: Regression Weight

Path	Unstandardized Estimate	Standardized Estimate	S.E.	C.R.	P
X20 <--- Riskiness	1	0.735	CP		
X19 <--- Riskiness	1.204	0.919	0.107	11.234	***
X18 <--- Riskiness	0.925	0.738	0.092	10.055	***
X17 <--- Riskiness	0.702	0.563	0.092	7.605	***
X3 <--- Convenience	1	0.604			
X2 <--- Convenience	1.359	0.787	0.201	6.769	***
X1 <--- Convenience	1.108	0.632	0.172	6.428	***
X14 <--- Cost Effectiveness	1.02	0.95	0.252	4.041	***

X13 <--- Cost Effectiveness	1	0.884	CP		
X12 <--- Easy Accessible	1	0.5	CP		
X11 <--- Easy Accessible	1.376	0.742	0.264	5.207	***
X10 <--- Easy Accessible	1.173	0.639	0.225	5.216	***
X9 <--- Time Savings	1	0.765	CP		
X8 <--- Time Savings	0.936	0.708	0.122	7.671	***
X6 <--- Transaction Flexibility	1	0.652	CP		
X4 <---Transaction Flexibility	0.994	0.675	0.141	7.072	***

Source: Contribution of authors

Notes: **, **, *** Significant at alpha 10 %, 5 %, and 1 % respectively, S.E: Standard Error, C.R: Critical Ratio, CP: Constant Parameter*

The model fit result of the study reports results of the model fit indices like chi-square = 154.816, degree of freedom (df) = 89, p = 0.00, CMIN/DF = 1.740, CFI=0.938, GFI=0.916, AGFI=0.871, RMSEA = 0.061, SRMR = 0.0554, Hoelter's N returns value at 5% significant level = 144 and Hoelter's N returns value at 1% significant level = 159 are found in the model. Based on overall indices, this sample has an acceptable fit to the model as CMIN/DF, CFI, GFI, RMSEA, and SRMR lie in the acceptable ranges (Table-9).

5.5. Correlation

To examine convergent and divergent validity and the relationship between the six latent variables based on CFA, Pearson's correlations are calculated (Sharif et al., 2011). From Table-10, it is revealed that convenience and easily accessible dimensions are significantly related with all dimensions where riskiness is negatively related and other latent variables are positively related. Time savings has positive significant relation with convenience, easily accessible, transaction flexibility and negative significant relation with

riskiness. Additionally, riskiness dimension is negatively correlated with all dimensions and has significant relation with convenience, easily accessible, time saving dimension and transaction flexibility dimension in the study (Table-10).

Table-10: Correlations

	Riskiness	Convenience	Cost Effectiveness	Easily Accessible	Time Savings	Transaction Flexibility
Riskiness	1					
Convenience	-.235***	1				
Cost Effectiveness	-.096	.178**	1			
Easily Accessible	-.181***	.463***	.160**	1		
Time Savings	-.137*	.395***	.045	.490***	1	
Transaction Flexibility	-.143**	.647***	-.010	.296***	.893***	1

Source: Authors computation

Notes: **, **, *** Significant at alpha 10 %, 5 %, and 1 % respectively*

6. Implications of Findings

The present study found that customers use and prefer to use ATM/Debit card more than other alternative delivery channels of banks but less use and less prefer to use credit card. The reasons behind more using ATM/Debit card may be its easy accessibility, availability and less using credit card may be high interest charges against credit card, usages of credit card as debit card against loan, banks conservativeness due to ticket size and recovery uncertainty, credit card with dual currency (taka and USD) cards (Mamun Rashid, 2021). Thus, Bank should follow rules and regulations about compliance of ICT enforced by Bangladesh Bank and charge a reasonable price to increase ADCs usages. To find out the reasons behind ADCs usages, the study revealed six factors i.e., a)

Riskiness, b) Convenience, c) Cost-effective, d) Easily Accessible, e) Time Savings and f) Transaction Flexibility. In this regard, to minimize ADCs riskiness, bank can impose govt. policy in case of transferring funds through ADCs, limit the client's transaction amount, centralize the operations and form effective risk management committee by skilled and experience human resources (Amin, 2018). Moreover, as Convenience, Cost-effective, Easily Accessible, Time Savings and Transaction Flexibility influence customer to use ADCs of bank and increase bank transaction volume (Sathye 1999; Pikkarainen et al., 2004), bank should focus on these quality to attract not only urban customers but also rural customers to increase customers' satisfaction and ultimately increase banks' profit.

7. Conclusion and Recommendation

Alternative Delivery Channels (ADCs) have emerged as a new platform to offer banking services to its customers in the competitive world. Through ADC products and services, the banking services have reached to the unbanked people. Additionally, ADCs usage has a great influence on the banking performance, lower costs, customer satisfaction, customer loyalty and profitability. The present study tries to investigate the various factors that affecting the use of ADCs by private commercial bank customers in Bangladesh. In the study, secondary literature review and primary data collection method were used to conduct the research. Initially, the study found that customers differ in their preferences to use direct banking channels. Most of bank customers i.e., 97.5% of the respondents in the study had already used and 84.5% of the respondents had preferred to use ATM/Debit card due to availability of Taka in the ATM booth but less used i.e., 7% and less preferred i.e., 2.5% to use Credit card due to high interest rate payment. Thus, maintaining reasonable interest rate, improving network services, solving of the problem promptly, bank can make their ADCs users fully satisfied.

Further, the study performed Principal Component Analysis (PCA) with orthogonal varimax rotation under Exploratory Factor Analysis considering 20 items and then based on Principal Component Analysis results the study performed Confirmatory Factor Analysis only with 16 items having high squared multiple correlation more than 0.20 and found six new factors affecting

the use of alternative delivery channels (ADCs) by private commercial bank customers; which are a) Riskiness, b) Convenience, c) Cost-effective, d) Easily Accessible, e) Time Savings and f) Transaction Flexibility. The result reveals that these six factors of ADCs usages explain 61.795% of total variance. The study demonstrates that the chance of fraud while transferring funds under riskiness dimension, available banking services on holidays under convenience dimension, reasonable bank charges for issuance of debit card under cost effectiveness dimension, available services for 24 hours a day under easily accessible dimension, instant feedback about transaction under time savings dimension and transactions are done more quickly under transaction flexibility dimension have a great influence on customer's ADC usages. Thus, banks should focus on their security system to avoid risk and insecurity as network failure, information hacked, fund transfer by fraudulent, money laundering and terrorist financing are involved in automated banking system, providing banking services quickly and ensuring their availability for 24 hours a day even for holidays, making quick responses for bank transactions, and charging reasonable price for debit card issuance in order to keep trust of customers on them. It is argued by Kashyap and Sharma (2012) that the lack of knowledge is a major hindrance in the way of ADCs adoption because a customer who does not understand how to use technology is implied to shy away him from the usage of internet banking.

One of the most important limitations is to use convenience samples that might limit the generalize ability of the findings.

A complete mathematical model to generate the dimensions of bank customer's ADCs usages can be used in the future research where other factors such as profitability from ADCs usages, managerial efficiency factors, social and economic factors can be considered. For proper adoption of ADC, social consciousness is required to understand the ADCs significance. In light of consciousness, legal force contribution is imperative to ensure the infrastructure security and the social security of banking. ADC is contemporary technological advanced system of banking that can assist business environment for economic services digitalization in Bangladesh.

To analyze the study, the following suggestions may be identified:

a) Bank should follow rules and regulations about compliance of ICT enforced by Bangladesh Bank.

b) Banks should focus on their security system to avoid risk and insecurity of customers.

c) By improving network service, providing receipt after transactions, and solving of problems promptly, banks can make their debit card users fully satisfied.

d) Banks have to face some challenges like, lack of customer confidence, security concerns, system failures, cases of transaction errors and network failures. All these challenges must have to fulfill by the banks for achieving competitive advantage.

e) Banking organizations should take necessary steps for delivering knowledge about the use of alternative banking channels to customers.

f) The workforce of banking organization should be properly trained regarding ICT knowledge.

g) Alternative banking channels have impact on the profitability of banks. And agency banking has a positive effect on the financial performance of commercial banks whereby it enhances the financial performance of commercial banks.

Amin (2018) investigates about the alternative delivery channels of Islami Bank Bangladesh Limited: Usage, Challenges, and Prospects of it. According to the study, diffusion rate of ADC products as Online Banking, ATM Card, SMS Banking, Internet-Banking, Mobile-Cash, Electronic Fund Transfer, and Real Time Gross Settlement of IBBL is on growing. The findings also show that huge risk and insecurity because of network failure, money laundering, and terrorist financing involved in automated banking system. The concluding remarks show that compliance of ICT rules and regulations, not depending on single switch to transact data, introducing chip card instead of magnetic stripe, adopting EMV and encryption techniques, skilled IT committee, availability of internet bandwidth will help the banks to confront these risks and challenges successfully. So, banking institutions in Bangladesh have huge opportunity to

introduce alternative delivery channels though some foreign and private commercial banks, like Islami Bank Bangladesh Limited (IBBL) have already introduced some ADC products.

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Appendix-A: List of Sample Commercial Banks and the Respondents from Each Who Have Responded to the Questionnaire

Sample Commercial Banks	No. of Respondents
Al-Arafah Islami Bank Limited	17
Islami Bank Bangladesh Limited	24
City Bank Limited	21
Standard Bank Limited	19
Eastern Bank Limited	19
Trust Bank Limited	20
AB Bank Limited	21
Southeast Bank Limited	18
Prime Bank Limited	20
United Commercial Bank Limited	21

Source: Data have been compiled by the researchers.

Appendix-B: Table-8: Principal Component Analysis with Rotated Component Matrix and Commonalities

Dimensions	Variables	Components						Communality	Cronbach's Alpha
		1	2	3	4	5	6		
Riskiness	X19	.858						.770	0.829
	X18	.841						.715	
	X20	.757						.624	
	X17	.745						.646	
Convenience	X2		.773					.668	0.605
	X1		.718					.597	
	X3		.590					.622	
	X16		.470					.389	
Cost-effectiveness	X14			.906				.828	0.690
	X13			.877				.805	
	X15			.478				.476	
Easily Accessible	X11				.757			.623	0.649
	X10				.734			.603	
	X12				.693			.571	
	X7					.750		.611	

Time Savings	X8					.667		.572	0.612
	X9					.633		.505	
Transaction Flexibility	X5						.749	.594	0.602
	X4						.565	.532	
	X6						.522	.609	
Eigenvalues		3.612	2.672	1.991	1.611	1.407	1.066	12.359	
% of Variance Explained		14.173	10.635	9.705	9.688	9.332	8.262	61.795	

Source: Contribution of authors