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# Role of Mobile Banking in Growing the Profitability of Banking Industry of Pakistan

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***ABSTRACT***

Practically a large portion of the world's grown-up populace needs access to conventional banking and other financial administrations. Pakistan is no special case and it is likewise among those nations at the lower end of the range of financial service consideration. Be that as it may, steps are being taken by government controllers and the private area to improve access to money related administrations, for example, credit, reserve funds, settlements, and protection**.** The prevailing research aims to evaluate the influence of M-banking (MB), accessibility of MB services, and transaction cost of MB on the profitability of the banking industry of Pakistan. A descriptive research design is utilized in the prevailing research. The study selects the overall population of the study. The study utilized secondary data from the 1st quarter of 2011 to the 4th quarter of 2018. The examination utilized time series data for analysis. The examination used the VECM model for analysis. For directional impact, the Granger causality test was utilized. The analysis s carried out on Eviews9. Positive long-run association between the accessibility of services, the transaction cost of MB on the profitability of banking in Pakistan is displayed by the outcomes of the prevailing research. The outcomes also revealed that there is unilateral causality running from m-banking, accessibility of MB services, and transaction cost of MB.

## INTRODUCTION

The last two decades witnessed a great deal of technological advancement in the operation of different organizations, especially in banks. Banks have created inventive items and provide a

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wide scope of services with an end goal to expand effectiveness which is the ultimate *objective of banks. Mobile Banking (MB) alludes to the entrance of banking services and facilitating the utilization of electronic cell phones, for example, cell phones (Porteous, 2006). The banking sector has received new techniques for supporting its development because of hardened rivalry. The timely convenience, simplicity, quickness, and briskness in the activity that has been brought into play by the commencement of MB idealogy have upgraded the requirement for little and medium ventures in Kenya to move from their old style or basic methods for conveying business to fuse the MB transactions in their business (Iravonga & Miroga, 2018). MB maybe define as is the dealing which is involved in to shift of right of ownership to utilized services and goods, which is transacted by using mobile entree to PC intervened systems with the assistance of an electronic gadget (devices).* They further identify that M-banking delivered services with the help of cell phone gadgets (Rajnish, Stephan, and Herstatt 2006). M-banking is frequently operating employing SMS or portable web, however, it can likewise be utilized by unique projects called customers downloaded to the cell phone (Mashau, 2016). The unrest of technological advancement has impacted pretty much every aspect of life, among them is the Banking sector. The acceptance of electronic banking has reformed and reclassified how banks were working. As innovation is currently considered as the fundamental commitment to the organization's‟ achievement and as their center skills. So the banks, be it residential or remote are contributing more to facilitate clients with innovations through MB (Njoroge, 2014). According to the State Bank of Pakistan (*SBP) Branchless Banking Newsletter (2011),* newsletter reports issued by SBP, in Pakistan there are 5.06 branches for 100000 people but throughout the world, the common median of branches for the 100000 is 8.4 branches. Which is very low as compared to the global median? To adopt the global median of 8.4 for 100000 people Pakistan needs the addition of 5.5 branches. The statistics show that Pakistan needs to increase its branches by about 66 % ( *SBP Branchless Banking Newsletter, 2011)*. The telecom business in Pakistan has developed multifold and meet the global degrees of securities. It has begun as luxury and status trifle for the exclusive class, presently it is appropriately moderate for a typical man. Banking arrangement of Pakistan is up to date and adhering to the international banking models, it has been seen that there is not any more surge in branches, long lines for check deposits, money withdrawal and installment of service bills. Through technological innovation integrating the framework is efficient, powerful, proficient and error free. Time is a significant facets for business development as it occurs over innovation combination in banking (Hanudin & Baba, 2007). MB turned into an instrument for everyday use, which made an open door for the evolution of banking services to come to the previously

underbanked/unbanked populace (CGAP, 2006). The MB market in Pakistan is on the rise. The MB suppliers have made ventures into the MB framework for the successful stipulation of MB services support of the low-salary populace. The biggest MB specialist organizations in Pakistan are Telenor with EasyPaisa and United Bank Limited (UBL) with Omni, working since October 2009 (CGAP, 2011). To overcome the shortage of branch banking, and attarct banked and unbaked clients the SBP brings technological innovation in operation banking services in the form of MB. Altogether, 21 banks are giving MB facility to their clients' with the quantity of register MB clients 3.6 million. These clients handled 7.2 million transaction of significant worth Rs.135.0 billion utilizing MB Apps. These transaction delineated a quarterly development of 5.8% and 2.7% both in volume and estimation of transaction separately. The quantity of enlisted MB clients has indicated an expansion of 7.6% from past quarter ( SBP, *Payment Systems Review*, 2018).

***Problem Statement***

As innovation turns into the request for the day and new improvement in the economy open doors that are difficult to accept, numerous organizations are searching for ways on the best way to hold onto innovation as a way for survival. MB can be utilized to raise effectiveness and lift business development through modest, proficient and dependable financial services supportive networks that decrease the requirement for the transaction and the risk related (Kathuo et al., 2015). In Pakistan, MB is provided by 21 banks to attract banked clients and raised its market share. MB is a form of cashless banking which is adopted by banks in Pakistan. In Pakistan (Ibrahim et al., 2015) did research on the acceptance of MB in Pakistan. Hanudin & Baba, (2007) and Kumail Abbas Rizvi et al., (2017) did research on MB in Pakistan The study only focused on the factors affecting the adoption of MB in Pakistan, MB is acting as a catalyst of financial inclusion in Pakistan and on analysis of MB acceptance for customers in Pakistan. There is no study on the cause-effect of MB on financial performance (FP) of the banking industry in Pakistan. The prevailing study is focusing on the effect of MB on the FP of the banking industry of Pakistan. The study also focused on the effect of transaction cost and accessibility of MB on the FP of the banking industry of Pakistan (BIP).

The prevailing study is seeking to answer the question of the research that what is the effect of MB on FP of BIP?, what is the effect of transaction cost of MB on FP of BIP?, and what is the effect of accessibility of MB on FP of BIP?. The study aims to evaluate the effect of MB on the FP of the BIP. The study is also focusing on the purpose of the study to determine the influence of the transaction cost of MB on the FP of the BIP. The study is also focusing to evaluate the purpose of the study which is related to find out the effect of accessibility of MB

on FP of the BIP. The prevailing study will advise them on the financial impact regarding MB on the FP of their organizations. Through the results of this examination, the administration will have the option to strategize on the best way to acknowledge maximum benefits from MB. The outcomes of this examination will be significant in illuminating policymakers particularly as to controlling the MB in Pakistan. The study outcomes include a dimension that may help enhance the direction of the policy concerning guidelines of MB just as components that spike economic development. The current research will help assemble the information base in the order by including the existing literature on MB and PF. The examination will be utilized as a source reference of reference material other than recommending fields where future research might be led.

## Literature Review

### *Theoretical Reviews*

Bank-led Theory was proposed by Ivatury, Lyman, and Staschen, (2006). According to the bank-led hypothesis of BB, an authorized financial institution conveys FS and items through agents. This model is also proposed by state bank of Pakistan for the operations of BB in Pakistan (Branchless Banking Regulations, 2016) As indicated by CGAP, (2006), the bank creates money related items and benefits and circulates them through retail specialists who handle all or a large portion of the client collaboration. The central bank is the inevitable supplier of FSs and it is the organization where the client's records were kept up. Retail specialists (agents) have eye-to-eye collaboration. with customers and perform money/in real money out capacities, a similar way a branched teller would take stores and procedure money withdrawals (Owens & Anna, 2006). The bank-led theory is critical to the examination since it permits BB and authorized money related institutions (typically a bank) to convey FS through a retail operator (Kanyore, 2017). The theory is decidedly influencing the investigation since the branchless banks will, in any case, make benefits through the agents. The bank creates money related items and administrations; however, it disseminates them through operators who control all of the client cooperation (CGAP, 2006).

The bank-focused rises when a regular bank uses non-standard ease Conveyance channels to offer FS to its present customers. Points of reference change by the utilization of automatic teller machines (ATMs) to net banking or MB an account to give certain obliged keeping FS to clients. This model is an additional substance in nature and may be seen as an unpretentious growth of normal branch-based banking. Under the bank-focused theory, a bank uses non-regular modest conveyance channels to give banking organizations to its present customers. Models go from the usage of ATMs to web banking or convenient banking to give certain

limited FSs to bank customers. This speculation was made by Kapoor in (2010). The current theory contributes to the independent variable EB and MB since it briefly explains how banks used different delivery channels to deliver FS to their customers. Even though the bank-focused model offers preferences, for example, more control and brand deceivability to the financial (financial institution concerned, it isn't free of difficulties.

**Empirical Review**

Sharif, (2019) carried a study to evaluate the influence of MB on the FP of banking organizations. The study utilized the jinja equity bank for analysis as a case study. The study utilized descriptive research with a population of 40 employees in the finance, administration, Operations, and loans department for analysis. The study collected primary data through questionnaires. The outcomes of the study presume that MB services utilized by Equity Bank Jinja branch such as payment of bills, deposits, withdrawals funds transfer statement request, Checking cheque deposit status, balance inquiry, and Ordering checkbook positively via MB positively affects the FP of jinja bank.

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Mageto, Muturi, and Abuga (2017) did a study on the influence of MB on the FP of banking in Kenya. The study was conducted to estimate the influence of MB on the FP of banks in Kisii town Kenya. The study was conducted on 225 respondents who were collected from operation managers, clients, and 7 MB agents. The study presumes that the transaction cost of MB is very low and MB transactions can be transacted at any time. The study presumes that the transaction cost, perceived access, and security of mobile payment has a significant influence on the FP of banks in Kissi town Kenya. The study primarily focuses on the transaction cost of MB and the feedback of the customers towards MB. The study only focuses that what is the feedback of the customers towards MB because of the low transaction cost. The study ignores other factors of mobile banking like the value of MB transaction and volume of the transaction which includes payment and bills payment through MB also ignores the controlling factors like capital and size of the bank.

Bagudu and Abdul-hakim (2017) did a study on the influence of MB on the FP of CB in Nigeria. 22 CB was studied for the research. The data was collected through a structured questionnaire. For the analysis and presentation of the data simple graph charts were used. The study presumes that the price of MB has a positive significant influence on the FP of banks in Nigeria. The outcomes presume that the acceptance of MB improves efficiency and confidence in the financial system and also got the trust of the customers. The study suggests that CB should continue to adopt MB because the number of people using mobile is increasing day by day. In this study, the prime focus was only on the transaction cost of MB and ignoring other aspects of MB like transfer, deposits, and bill payments. Besides transaction costs the MB

transaction volume and value give a better idea that how much MB can affect the FP, so the overall package of the MB should be used for the better outcome.

Wadhwa, (2017) did a study on the impact of MB on the profitability of scheduled banks in India. The main purpose of the study was to portray the current status of MB in India and how it affects the profitability of banks. The descriptive design is utilized by the study. The study selects the whole population of scheduled banks operating in India. The study collects secondary data for analysis from reports published by RBI from 2011 to 2016. The study utilized ROE and ROA to explain variables and volume and value of MB transaction and other factors of MB as the explanatory variable of the study. Multiple regression tools utilized by the study for analysis. The outcomes of the study illustrated that volume and value of MB banking in India have a positive significant effect on the FP of scheduled banks in India. The study only focuses on the volume and value of MB banking in India. For better results, the study also should focus on other factors like bill payment, fund transfer accessibility of services of MB banking.

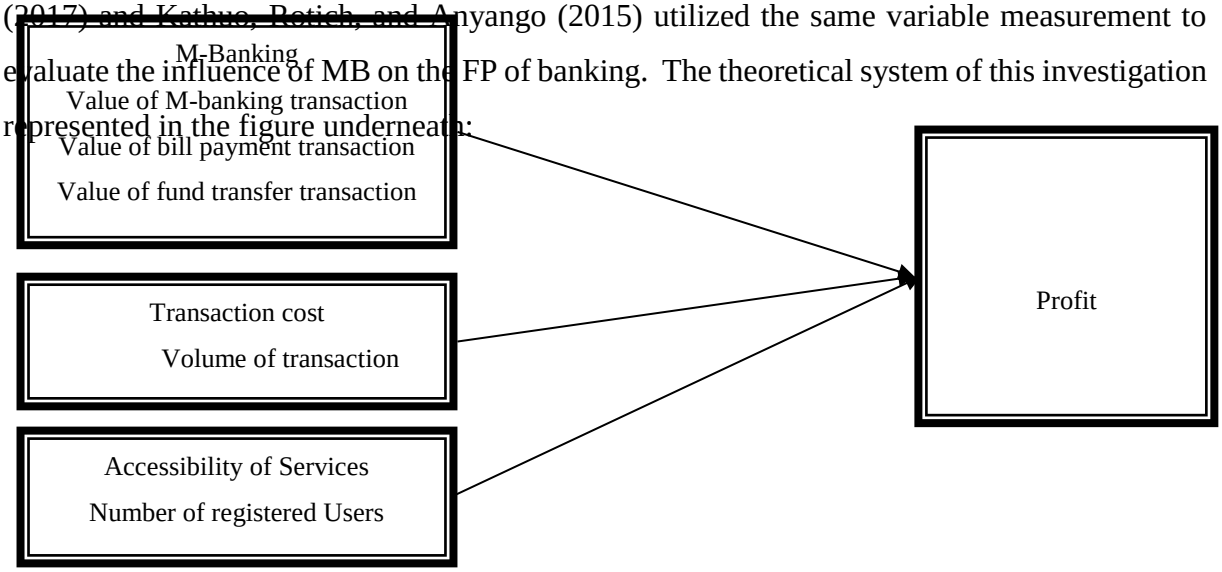
Kato, g. K., otuya (2015) the study centered on the influence of MB on the FP of banks in Kenya. The information was collected through a questionnaire. The target banks were selected from the Kaka mega town. Financial base measurement and customer base measurement used for finding out the profitability of banks. The data collected through the questionnaire was processed by multiple regressions and correlation was utilized to analyze data for the reason to disclose the influence of MB on the FP of banks. The research presumes that there is a positive connection between the FP of the bank and, balance inquiry bill payment, information inquiry, and cash withdrawal inter-bank transfer. The research focuses on the transfer withdrawals and payments through MB and the prime index for finding out the profitability was using the profit margin, sales volume, and effectiveness of cost. The better index to disclose the profitability is NII. The study does not use control variables.

Kathuo, Rotich, and Anyango(2015)carried out a study on the effect of MB on the FP of the banks. The design of the study was descriptive. The population of 42 CB in Kenya was used for the analysis. The data was collected through questionnaires. The analysis of the qualitative data was done through descriptive statistics and quantitative data was done via narration. The study presumes that the volume of MB transaction increase after the acceptance of MB. The study presumes that the MB products offered by the banks are ac/ac transfer, personnel to personnel transfer, and bills payments. The study presumes that the banks who offered MB products have improved the FP of banks also made more efficient the FS of banks. The study

focused on all aspects of MB but not use the controlling factor because organization size age leverage can affect the performance.

**Conceptual Framework**

The conceptual framework utilized in the prevailing study depicts several variables under study in study. The variables utilized in the current study are as follows: The explanatory variable under investigation is MB. This alludes to all the Financial services convey via the MB stage. These financial services incorporate the interbank transfer of funds, volume of MB transaction, payment of bills, the value of MB transaction and registered users of The study utilized the explained variable accessibility of services which can be measured by use of all registered Mb users, the transaction cost of Mb which can be measure by volume of Mb transaction as the cost charged by banks on MB services are on per transaction, and MB can be measure by the value of Mb transactions, the value of fund transfer and value of bills payment via MB, The explained variable under investigation is profit. Sharif, (2019), Mageto, Muturi, and Abuga (2017) and Kathuo, Rotich, and Anyango (2015) utilized the same variable measurement to evaluate the influence of MB on the FP of banking. The theoretical system of this investigation represented in the figure underneath:




**Methodology**

Research design is the plan and structure of examination getting answers to required research questions. The plan is the overall plan or program of the examination. It incorporates a diagram of what the researcher will do from the development of theories and their operational ramifications to the final data analysis (Mel & Hin, 2014). The current study is following a descriptive survey research design. Descriptions of phenomena or characteristics associated with a subject population (the who, what, when, where, and how of a topic).

The population is characterized as the desired arrangement of expression required from which the required data is taken. From that populace, a particular example is taken for testing and getting information (Saunders, 2007). The prevailing study utilized census approach. A census approach is an approach in which the overall population is selected for the analysis. The prime purpose of the selection of the whole industry for analysis is to generalize the outcome of the full population to individual banks. The sample size of the specific sample was taken for analysis from the overall population and the result of that sample generalizes to the overall population. *The prevailing study utilized secondary data.* Secondary data is the data which is prepared by another person for his objective and which is used by another person for their objectives. In like manner, analysis directed on the statistical survey can comprise secondary data (Kothari, 2004)**.** The study used data from 2011 to 2018 quarterly. The data for explanatory variables MB, accessibility of MB services, and transaction cost of Mb is collected from payment review reports issued by SBP quarterly. The data for the explained variable is collected from the compendium, reports issued by SBP quarterly.

**Data Analysis and VECM Methodology**

Data analysis is the computation of different measures to disclose the association between the variables. The study utilized time-series data. The data was organized in excel and further analysis was done on Eviews9 software. Econometric models applied in this investigation are the Vector Error Correction Model (VECM). They are picked because they can analyze the association among variables and give short-run and long-run association among variables. As indicated by (Hall, 2007) econometric model can assist to overcome the issue of complete vulnerability by giving rules and regulations on planning and decision making, just as a method for looking at nature and type of the association among variables. The Time-series properties of all variables in the model utilized in this investigation have been distinguished by Augmented Dicky-Fuller for the unit root test. In the unit root test, If all the variables are stationary at the I(0) level then the study could use simply the OLS regression model. But if some variables become stationary at I(0) and some become stationary at I(1) the study could utilize the ARDL model which is the abbreviation of the autoregressive lag model, in this model the study could use lags of the data for analysis (Dritsaki, 2017). If all the variables are integrated at 1st difference then it proceeds to the Cointegration test which created by Engle-Granger in 1987 (Gujarati, 2004). The Cointegration test was performed Johamen & Jtiselius, (1990) multivariate methodology. Engle-Granger causality test is led to look at whether an endogenous variable can be treated as exogenous. If some of the variables are integrated on 0

levels or integrated at 1st difference and some integrated on 2nd difference the study will utilize the toda-Yamamoto model for analysis (Dritsaki, 2017).

**Result and Discussion**

**Augmented Dickey-Fuller Test (ADF)**

The study used time series data for analysis. According to Gujarati, (2004) time-series data has always faced the problem of stationary or unit root. To disclose that the data is stationary or non-stationary ADF test is conducted and further based on the outcome of that test, the model of the data is selected for the analysis. The null hypothesis for the ADF test is that there is a unit root. The unit root is the test of wither the data is stationary or not. Stationary data is the data whose statistical behavior likes mean-variance. Etc are constant over the period and in contrast non-stationary data is the data whose statistical behavior like mean and variance, etc is not constant over the period. The result of the ADF test illustrates that all the variables are integrated at 1st difference. According to Dritsaki, (2017) and Gujarati, (2004) if all variables are stationary at 1st difference then the study follows Johansen co-integration test ( JCT).

| Variables | At Level | At 1st Difference | Conclusion |
|---|---|---|---|
| Profit | -1.3526 (0.5906) | -9.5686 (0.0000) | Stationary at 1st difference |
| Value of M-Banking | -0.5996 (0.8586) | -8.0582 (0.0000) | Stationary at 1st difference |
| Value of Bill Payment | -1.7067 (0.4118) | -5.31973 (0.0001) | Stationary at 1st difference |
| Value of Fund Transfer | -1.67395 (0.4341) | -8.2122 (0.0000) | Stationary at 1st difference |
| Volume of M-banking | -1.0270 (0.8726) | -8.8209 (0.0000) | Stationary at 1st difference |
| Number of Reregister Users | 0.59211 (0.9872) | -3.38368 (0.0197) | Stationary at 1st difference |

The values in () represent the p-val

The study utilized the ADF test to evaluate the stationary of the data. The outcomes of the ADF test illustrated that all the variables are not stationary at level but stationary at 1st difference. According to Dritsaki, (2017) and Gujarati, (2004) if all the variables are stationary at 1st difference then the best guidelines for further analysis are too utilized the Johansen co-integration test.

**Johansen co-integration test (JCT)**

The Co-integration tool is utilized to evaluate the long-run association among variables. There are two methodologies of the co-integration system. The first is Engle Granger's (1987) co-integration approach and the subsequent one is Johamen & Jtiselius,(1990) co-integration approach. Engle-Granger approach is utilized to evaluate the long-run association between just two factors while the Johansen approach is utilized to check since a long-run relationship

among multiple factors. As indicated by the model of this examination, the Johansen co-integration is proper so this methodology is utilized for the prevailing examination because the study utilized more than two variables in the study. In the JCT, the essential two sorts of measurements, Trace statistics and most maximum Eigenvalues (MEVT) are to be determined for watching the co-incorporation among the factors. The trace test (TT) tests the $H^1$ of r co-incorporating vectors against the $H^0$ of co-integration vectors. The MEVT test tests the $H^1$ of co-integration vectors against the $H^0$. According to Gujarati, (2004), most of the researchers utilized the trace test value for co-integration. To perform the JCT the 1st guideline is to select the appropriate lags. The selection of inappropriate lags will disturb the long-run characteristics of the data (Gujarati, 2004).

The JCT is the likelihood-ratio (LHR) test. The MEVT and the TT are the tests used for JCT. For both test statistics, the initial JCT is a test of the $H^0$ of no Co integration against the $H^1$ of Cointegration.

$$LR(r_0, r_0 + 1) = -T \ln (1 - \lambda_{r0+1})$$

where $LR\ (r_0,\ r_0 + 1)$ is the LHR test statistic for testing whether rank ($\mathbf{\Pi}$) = $r_0$ versus the $H^1$ that rank ($\mathbf{\Pi}$) = $r_0 + 1$. Where matrix $\mathbf{\Pi}$ can be written in terms of the vector or matrix of adjustment parameters $\boldsymbol{\alpha}$ and the vector or matrix of cointegrating vectors $\boldsymbol{\beta}$ as $\mathbf{\Pi} = \boldsymbol{\alpha}\boldsymbol{\beta}'$

For example, the hypothesis that rank ($\mathbf{\Pi}$) = 0 versus the alternative that rank ($\mathbf{\Pi}$) = 1 is tested by the LHR test statistic $LR(0,\ 1) = -T\ln\ (1 - \lambda_1)$

The TT is a test whether the rank of the matrix $\mathbf{\Pi}$ is $r_0$. The $H^0$ is that rank ($\mathbf{\Pi}$) = $r_0$. The $H^1$ is that $r_0$ < rank ($\mathbf{\Pi}$) $\leq n$, where $n$ is the maximum number of possible cointegrating vectors. For the succeeding test if this $H^0$ is rejected, the next $H^0$ is that rank ($\mathbf{\Pi}$) = $r_0 + 1$ and the $H^1$ is that $r_0 + 1$ < rank ($\mathbf{\Pi}$) $\leq n$.

Testing proceeds as for the MEVT.[5]

The LHR test statistic is

$$LR(0,\ n) = -T \sum_{i=1}^{n} \ln\ (1 - \lambda_i).$$

where $LR(r_0, n)$ is the likelihood ratio statistic for testing whether rank ($\mathbf{\Pi}$) = $r$ versus the alternative hypothesis that rank ($\mathbf{\Pi}$) $\leq n$. For example, the hypothesis that rank ($\mathbf{\Pi}$) = 0 versus the alternative that rank ($\mathbf{\Pi}$) $n$ is tested by the LHR test statistic.

Table 1

VAR Lag Order Selection Criteria

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | 35.23599 | NA | 5.74e-09 | -1.949066 | -1.668827 | -1.859415 |
| 1 | 116.3164 | 124.3233 | 2.99e-10 | -4.954426 | -2.992749* | -4.326869 |
| 2 | 172.1471 | 63.27483* | 1.09e-10* | -6.276475* | -2.633361 | -5.111011* |

There are numerous measures utilized for the choice of lags but the most suitable rule for the choice of the lags is the Akaike rule (AIC) (Gujarati, 2004). The outcome of the lags determination expressed that the ideal lag of the investigation for further analysis is 2 as appeared in the table above

To test for co-incorporation, we embrace the JCT approach because the Engle-Granger approach can be very feeble under mellow cases of autocorrelation. The Johansen-Juselius likewise gives the likelihood statistical ratio precisely known dispersions. If the factors are co-integrated, the last phase of the time-series investigation is to develop a dynamic error correction model (ECMs) that considers the basic co-integration properties.

Table 2 Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | ρ-val |
|---|---|---|---|---|
| None * | 0.962807 | 217.4680 | 95.75366 | 0.0000 |
| At most 1 * | 0.888058 | 122.0104 | 69.81889 | 0.0000 |
| At most 2 * | 0.625365 | 58.50702 | 47.85613 | 0.0037 |
| At most 3 * | 0.527147 | 30.03475 | 29.79707 | 0.0470 |
| At most 4 | 0.226364 | 8.314600 | 15.49471 | 0.4324 |
| At most 5 | 0.029610 | 0.871645 | 3.841466 | 0.3505 |

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | ρ-val |
|---|---|---|---|---|
| None * | 0.962807 | 95.45759 | 40.07757 | 0.0000 |
| At most 1 * | 0.888058 | 63.50341 | 33.87687 | 0.0000 |
| At most 2 * | 0.625365 | 28.47227 | 27.58434 | 0.0384 |
| At most 3 * | 0.527147 | 21.72015 | 21.13162 | 0.0413 |
| At most 4 | 0.226364 | 7.442955 | 14.26460 | 0.4381 |
| At most 5 | 0.029610 | 0.871645 | 3.841466 | 0.3505 |

Table 2 illustrates the JCT under maximum Eigenvalue and trace test. Both trace and maximum Eigenvalue tests implied that there are 4 co-integration associations between variables. The

JCT revealed that there is a long-run association between FP and MB, the transaction cost of MB, and the accessibility of MB services.

**Vector Error Correction Model (VECM)**

As we find the cointegrating association between study variables so we will continue with Vector Error Correction Model (VECM). Even though Cointegration confirms the long run connection between the variables in the short run, this equilibrium may not exist. The Error Correction Mechanism clarifies the short-run association towards a long-run association between the factors. It gives data about the speed of adjustment to long-run equilibrium and avoids the spurious regression problem. It is the test for finding the percentage of the speed of adjustment towards equilibrium. Simply it is the test to disclose the percentage time in which the variable will move back towards equilibrium and the explained and explanatory variables will move together. The VECM has the below econometric model according to the study variables.

***ΔCBPROFITt = Ut + αtΔVLFundTransfert-1 + ΔVLBill Payment-1 + ΔVLMBTt-1 + ΔVOLMBTt-1+ ΔVNO MBUsers+ φ t-1 + μt***

Where towards equilibrium Δ is the 1st difference administrator, and *αtΔVLFundTransfert-1, ΔVLBill Payment-1*, *ΔVLMBTt-1*, *ΔVOLMBTt-1*, and *ΔNOMBUsers* are the coefficients assessed from equation (1)? φ = Speed or pace of adjustment, The VECM will identify the pace of adjustment.

Table 3
Vector Error Correction Estimates
Standard errors in ( ) & t-statistics in [ ]

| Cointegrating Eq: | Cointegrating Eq1 |
|---|---|
| PROFIT(-1) | 1.000000 |
| VOLMBT(-1) | 0.239533<br>(0.03441)<br>[ 6.96160] |
| VLOMBT(-1) | 0.098485<br>(0.03937)<br>[2.50168] |
| NUMBER_FO_USERS(-1) | 0.795827<br>(0.11643)<br>[ 6.83532] |
| FUND_RANSFER(-1) | 0.388058 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (0.04197) | | | | | |
| | [9.24529] | | | | | |
| BILL_PAYMENT(-1) | 0.046198 | | | | | |
| | (0.01618) | | | | | |
| | [2.85599] | | | | | |
| C | 3.178610 | | | | | |

| Error Correction: | D(PROFIT) | D(VOLMBT) | D(VLOMBT) | D(NUMBER_ _USERS) | D(_FUND_TR ANSFER) | D(L_BILL_PA YMENT) |
|---|---|---|---|---|---|---|
| CointEq1 | -2.000149 | -0.636726 | -0.396748 | -0.059676 | 0.287245 | -1.239741 |
| | (0.61059) | (0.49504) | (0.30130) | (0.11847) | (0.92733) | (0.42615) |
| | [-3.27577] | [-1.28621] | [-1.31681] | [-0.50370] | [ 0.30976] | [-2.90918] |
| $R^2$ | 0.760423 | 0.664082 | 0.705697 | 0.541889 | 0.571026 | 0.717673 |
| Adj $R^2$ | 0.552790 | 0.372953 | 0.450634 | 0.144859 | 0.199249 | 0.472991 |
| Sum sq. resids | 0.695489 | 0.457165 | 0.169347 | 0.026184 | 1.604200 | 0.338775 |
| S.E. equation | 0.215328 | 0.174579 | 0.106253 | 0.041780 | 0.327027 | 0.150283 |
| Fisher-statistics | 3.662338 | 2.281056 | 2.766754 | 1.364857 | 1.535935 | 2.933075 |
| Log LH | 12.94210 | 19.02588 | 33.42579 | 60.49443 | 0.823508 | 23.37166 |
| AIC | 0.072959 | -0.346612 | -1.339710 | -3.206512 | 0.908724 | -0.646321 |
| SC | 0.733033 | 0.313462 | -0.679636 | -2.546439 | 1.568797 | 0.013752 |
| Mean dependent | 0.010146 | 0.028550 | 0.064420 | 0.019348 | 0.066578 | -0.005736 |
| Standard deviation dependent | 0.321991 | 0.220466 | 0.143355 | 0.045181 | 0.365456 | 0.207014 |

The result of VECM is expressed in table 3 above. The outcomes of VECM illustrates that the transaction cost of MB has a statistically significant positive long-run association with FP of the BIP, the outcome of the study illustrates that the transaction cost of MB is contributing 0.23 million in the profit of the banking industry of Pakistan. The outcomes also illustrate that MB has a positive and statistically significant long-run association with FP of the banking industry of Pakistan. The outcomes of the study expressed that value of MB transaction, the value of bill payment and value of fund transfer has a positive significant long-run association with FP of banking industry of Pakistan, the outcomes stated that value of MB transaction, the value of bill payment and value of fund transfer is contributing 0.098, 0.046 and 0.388 million in the profit of the Pakistan banking industry respectively. The outcomes of the study also illustrate that the accessibility of MB has a positive significant association with FP of the banking industry of Pakistan. The outcomes of the study stated that accessibility of MB is contributing 0.79 million in the profit of the banking industry of Pakistan. The fisher-statistic of the model is statistically significant with T-statistics of 3.662338 it means that the overall model fit

Above in table 3, the CointEq1 displays the error correction term (ECM). The estimated coefficient of the ECM term which is likewise the speed of adjustment towards equilibrium is negative as required by economic theory. The co-efficient of the ECM is negative because it is the face of adjustment towards equilibrium, it means that variables move back towards equilibrium state and move together again. The ECM term implied that 2.00149 disequilibrium occurs in the data and are correct in every each quarter.

**Granger-Causality test (GCT)**

The JCT display that there is a long-run association between MB, accessibility of MB services, and transaction cost of MB services with FP of the banking industry of Pakistan. The GCT is used for the directional causality of the variable. GCT is expected to decide the example of the association between variables in the model. Simply Granger causality (GC) is a tool for evaluating whether a one-time series is useful in predicting another. This association between variables can be one way or two ways.

Table 4 GCT

| $H^0$ | Obs | Fisher-stat | ρ-val. |
|---|---|---|---|
| NUMBER_FO_USERS does not Granger Cause PROFIT | 30 | 3.46961 | 0.0468 |
| PROFIT does not Granger Cause NUMBER_FO_USERS | 30 | 1.52804 | 0.2833 |
| FUND_RANSFER does not Granger Cause PROFIT | 30 | 5.76846 | 0.0087 |
| PROFIT does not Granger Cause FUND_RANSFER | 30 | 1.33863 | 0.8959 |
| BILL_PAYMENT does not Granger Cause PROFIT | 30 | 5.11890 | 0.0137 |
| PROFIT does not Granger Cause BILL_PAYMENT | 30 | 0.79432 | 0.4630 |
| VOLMBT does not Granger Cause PROFIT | 30 | 3.34806 | 0.0515 |
| PROFIT does not Granger Cause VOLMBT | 30 | 0.78553 | 0.4668 |
| VLOMBT does not Granger Cause PROFIT | 30 | 9.60343 | 0.0008 |
| PROFIT does not Granger Cause VLOMBT | 30 | 0.55606 | 0.5804 |

The outcome of GCT implied that there is unilateral causality running from the accessibility of MB services to profit, it means that an increase in accessibility of MB causes an increase in the profit of the banking industry of Pakistan (BIP). The outcome of the GCT illustrate that there is unilateral causality running from fund transfer, the value of MB transactions, and bill payment via MB to profit, it means that increase in fund transfer value of MB transactions, and bill payment via MB is causing an increase in profit in BIP. The result of the GCT implied that there is unilateral causality running from the transaction cost of MB to profit, it means that increase in the volume of MB transaction is causing the increase in the profit of BIP.

**Discussion**

The result of the study portrays that there is a positive and statistically significant long-run association between MB ( value of MB transaction, the value of fund transfer, and value of bill

payment) and FP of BIP, so the study accepts the hypothesis. The outcomes of the study agree with the result of Sharif, (2019) Kathuo et al., (2015) and Wadhwa, (2017). The study is also related to the bank focused theory and bank-led theory, because MB is the technological advancement in operation adopted by banks and it is the alternative channels used by the banks to deliver financial services customers and maximize the number of clients and amount of profit. M-banking channels utilized for the conveyance of the services to customers which is likewise become a vast source of income for banks. M-banking assists with controlling the undesirable cost like travel to a branch or ATM place for transaction and time turn utilized in going for branch banking and improves the efficiency of the conveyance of services to customers. That is the reason in Pakistan m-banking is adopted by the people and banks quickly. An increase in the m-banking transaction like the value of MB, the value of bill payment, and the value of fund transfer transactions contributing to the increase in the Profitability of BIP because of the cost charged by the banks of utilizing m-banking services is a source of income for the banks. Through MB, the banks offer online shopping and other utility services to clients through which time and cash of clients are saved. An increase in the value of MB banking services means an increase in the volume of transactions. The banks charged the cost of MB per transaction is a source of income for banks.

The outcome of the study illustrates that there is a positive and significant long-run association between transaction cost of MB (volume of MB transaction) and profitability of BIP so the study accepts the hypothesis. The study outcomes agreed with the result of Sharif, (2019) Kathuo et al., (2015) and Wadhwa, (2017). MB draws an increasing number of clients because of ease and low transaction cost for the conveyance of FS by the bank. , because of the introduction of other Mb services like fund transfer, bill payment, international remittances, mobile load, and retail purchases increase the volume of transactions. The cost charged by banks for the delivery of MB services is the source of income for the banks. As the outcome of the study revealed that there is a positive and significant long-run association between transaction cost of MB charged by bank and profitability of BIP, it shows that increase in the volume will increase the source of income for the bank. The adoption of MB is beneficial for both clients and the bank. In the client's point of view, MB is a low cost and time-saving service provided by banks, and from the bank’s point of view, MB is technological advancement adopted by banks to attract the customers and also a source of income for the bank. That is the reason the use of MB in Pakistan is increasing day by day.

The outcome of the study revealed that there is a positive significant long-run association between the accessibility of MB services ( number of registered users) and the profitability of

BIP, so the study accepts the hypothesis. There is no empirical evidence about the accessibility of MB to compare the outcome of the study. There is a shortage of branches in Pakistan and especially in remote areas there a very limited number of branches. Due to the network of MB covered the remote and cities areas of Pakistan. The network of such banking attracts a lot of clients who are contributing to the profitability of BIP. In Pakistan, banks introduce their apps to deliver services to customers with ease and at low transaction costs. Payment of bill and transfer of funds in Pakistan is a very time consuming also costly action because of limited branches and operation time of banks, while via MB bill payment, fund transfer and shopping can be done from home which is a very low time consuming and low-cost action, and the delivery of the services is 24/7. That is the reason in Pakistan's adoption of MB is increasing rapidly day by day. Accessibility of MB will increase the value and volume of MB transactions, as the study revealed that the transaction cost of Mb is a source of income for banks. Accessibility of services is directly related to the volume of MB transactions, an increase in accessibility of MB services causes an increase in the volume of MB transactions which is a big source of profit for banks as portrays by the outcomes of the study.

**Conclusion**

The prevailing study outcomes established that there is a positive and significant association between the profitability of BIP and MB (value of MB transaction, the value of fund transfer, and the value of bill payment). The study further concluded that there is a positive and significant association between transaction cost and profitability of BIP. The prevailing study also concluded that there is a positive and significant association between the accessibility of MB services and the profitability of BIP.

**Contribution of the study**

The current study makes many contributions to financial; management and particularly in the budgetary administration of banking. The result` of the study displays that MB, accessibility, and transaction cost of MB have a positive impact on the FP of BIP. Along these lines, the banks should concentrate on expanding the network of MB and cut off the transaction cost of MB which pull in increasingly more client. The increase in the client of MB will expand the volume of MB transaction which is added is a source of income for the banks, and which is contributing a lot in the profit of BIP. The study revealed that the accessibility of agent banking has a positive impact on FP of BIP; the banks should increase the accessibility of MB services by providing more MB products with low transaction costs and with ease. The study is also contributing to the bank focused theory and innovation diffusion theory because MB is the technological advancement in operation adopted by banks and it is the alternative channels

used by the banks to deliver financial services customers and maximize the number of clients and amount of profit. The MB is new technology introduce by bank in operation which is related to innovation diffusion theory and also with bank focused theory which also related to the alternative channels used for the delivery of FS.

**Recommendation**

The current study suggests that the banks should bring down the transaction expenses brought about by clients, minimize the time taken to finish the transaction, and enhance the nature of MB services to drive them to utilize the MB. This will expand the volume of transactions and enhance the FP of the BIP**.** The prevailing study further recommends that Banks need to accept MB as premium assistance offering to get the greatest incentive from it. The presumption that clients are excessively careful of MB does not hold anymore and actually, clients are progressively grasping the services. The prevailing study recommends that the government has a ton to pick up from MB as far as making FS providing to its residents. It should play the main role in making regulations that will improve the mindfulness and utilization of this service. This incorporates educated individuals about the utilization of the cell phone which is the absolute most significant gadget utilized in MB. The prevailing study also recommends that Cell phone organizations are more beneficial in Pakistan than other organizations. Cell phone organizations ought to create applications that help MB and which are easy to utilize yet secure for MB clients. They are the best place to comprehend what will best suit their clients getting from their huge involvement with offering MB. The examination draws further suggestions that all the banks need to give however many MB items as expected. However, the examination suggests that legitimate alert ought to be taken to guarantee that the services offer sufficient clients' trust, security just as their attention to the M-banking items.

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