

The Impact of Mobile Banking Apps on Telecommunication or Industrial and Service Sector in Pakistan

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ABSTRACT

This research investigates how mobile banking apps affect the telecommunication, industrial and service sectors in Pakistan. As digital technologies advance, these apps have revolutionized financial transaction by increasing the efficiency, customer satisfaction and security. The research assesses variables such as perceived usefulness, ease of use, and credibility in determining user satisfaction. Through secondary data and empirical studies, it points out the challenges such as usability and security issues. The results show positive impact or link between mobile banking and improvement in service quality, financial inclusion, and operational efficiency. Statistical analysis confirms that mobile banking increase reliability, reduce operating costs and accelerate transactions. The integration of IOT and big data analytics technologies has also enhanced financial services to facilitate business innovation. The study suggests that company should improve the app usability, refreshing security, and offer value added services to increase benefits.

KEYWORDS: Mobile banking apps, Telecommunication, Industrial, Service sector, Pakistan.

INTRODUCTION

Background

This article offers the effect of mobile banking application on telecommunication or industrial and service sector. We lived in that era where digitally technologies are growing rapidly and everything getting developed very fast.

In this telecommunication and internet based digital world that mobile banking industry is mile stone for banking industry. In this article the researcher findings are that factors such as perceived ease of use and usefulness, credibility and customer attitude, customer satisfaction influenced by attitude. the gap of this article is that mobile banking apps are providing more value-added services and designing. (M. Younis Metlo, 12(1), 2021). This research investigates the key issues in mobile banking applications, focusing on users' satisfaction and experience. With the rise of smart phone usage, many people hesitate to use M-banking due to complex interfaces. Experts indicate two mobile banking apps bank of Punjab and Muslim commercial banks against Nielsen's 10 heuristics identifying usability problems. Finding show an overall task success rate of 83% and a system usability scale score of 77% and a relative time-based efficiency of 54.2%. in this study the escalators identify 83% minor errors and 17% serious errors. The paper finish or terminate with recommendations to improve or further work on usability of mobile banking apps or applications. (Aijaz A. Shaikh, 2015) this study shows that analyze the correlation between customer satisfaction and mobile banking service quality among the users of Pakistan. In 400 peoples the structured questionnaire was distributed in Rawalpindi, Islamabad and Wah Cantt. The findings indicate a positive association between guarantee, tangibility and responsiveness

with customer satisfaction, there no relationship showed between empathy and reliability. In literature suggested that banks should update their e-banking services align with industry advancements in Pakistan. Further future studies are encouraged to expand the sample and add additional variables to explore for deeper insight research in future. (Anum Javeed, khan et al) telecommunication service industry offers services that transmit msg, voice, data, text, sound, video and other signals. The telecommunications service industry has experienced with tremendous growth to form an essential structure platform for today's global network economy. (Winston T. Lin; 2017) This study shows that investigation of role of industry 4.0 in the production and service sectors in Pakistan. concentrating on five aspects, including interoperability, big data, the smart factory, the cyber physical system (CPS), and the internet of things. Data were gathered from 224 textile workers and logistic companies and PLS -SEM was employed for analysis through a survey, using a competitive approach. The findings shows that industry significantly improve the overall performance of these sectors. (Imran, M., 2018). This research paper shows there insight of reality of mobile telecommunication market transformation of Pakistan. This study shows the mobile telecommunication market transformation as a complex socio technical system. Also highlight the roles of technology standards and three performers such as providers, users and government. It indicates that these factors or performers impact the standard adoption and market evaluation. This case study shows the need of pro competition policies and an individualistic control for promoting the technological innovations in developing countries. (Aslam, W., 2018).

The mobile banking apps impact these factors telecommunication or industrial and service sector. The mobile banking apps affect the telecommunication that in this study aims to examine how mobile banking apps affect customer satisfaction in the Pakistani banking sector in today's internet-based digital business economy. (M. Younis Metlo, 2021).

Objective of study:

The research shows that financial inclusion and economic growth significantly present by mobile banking, but challenges such as security concerns, system quality and app performance survive. The review recommend that the business can improve through the customer satisfaction by improve security, ease of use and reliability. More ever risk perception and trust affect by the mobile banking assumption. focus on service quality and innovation. By focusing on these areas Pakistan mobile banking apps and service sector and telecommunication sectors can enhance their services and meet growing demand for digital banking solutions. The research is largely applied and secondary in nature. Depending on data from customer reviews, surveys, past report to analyze current and results.

The key recommendations for improving mobile banking apps include usability, security, value added services such as (health benefits, health insurance and allowances for customers), user feedback and customer support and education. Telecommunication productivity, to improve or enhance telecommunication or industrial and service industry Improve service quality by increasing telecom industry productivity and services like (msg, voice video) and privacy. Adopt modern technologies like internet of things (IOT), increase big data in organization in both telecommunication and industrial sector, investment in smart factories (invest in smart factories, encourage partnership, improve the overall performance and competitiveness in the industrial sector.

Problem statement:

The problem statement about how mobile banking apps will affect the telecom, industrial, and service industries in today's digital the mobile banking apps are needed or inherent. Still many usersface challenges during using the apps like complex interfaces that slow down their satisfaction. (Malik et al., 2021) How these apps can improve or enhance more usability and provide more value-added services and also improve the mobile banking apps that provide users online health benefits and health allowance to customers and health insurance. (Saleem & Rashid, 2011) The purpose of this study is to investigate the connection between customer satisfaction with mobile banking and its overall impact on the telecommunications and service in Pakistan. (Metlo et al., 2021).

The research Gap:

The research gap in this research is that the lack of diversified understanding of how mobile banking apps can improve their usability and gave value added services that meet to customers or users need.(Hussain et al., 2023)

There is an insufficient investigation of the connection between the features of mobile banking apps and customer satisfaction in the broad factors of the telecommunication or industrial and service sector in Pakistan.(Khan et al., 2018)

Research question:

- 1) How do mobile banking apps impact the reliability of payment system and reduce operational cost in the telecommunication and industrial sector?
- 2) In what ways do mobile banking apps improve the time efficiency by allowing quicker transaction and customer services processes in the telecommunications and industrial sectors?
- 3) How does the convenience or ease and speed of mobile banking apps affect customer satisfaction in the telecommunications and industrial/service sectors?
- 4) How does the adoption of mobile banking apps create new business models and revenue opportunities, and contribute to innovation and growth in the telecommunications and industrial/service sectors.

LITERATURE REVIEW

This literature review provides insight on previous studies that have been done on impact of mobile banking apps on telecommunication or industrial and service sector in Pakistan. gather data from previous studies and collect data from Pakistan areas.

This paper presents investigative case study in telecom sector that analysis the adoption of internet of things technology, within focusing on Pakistan as an emerging market. Telecom operators testing various roles in the (IoT) internet of things value the chain. they are working or operating beyond basic connectivity, giving positioning to themselves as a coordinator for devices and solutions that connect businesses to each other (E2E). To offer the applications and service delivery, system integration. (Ishaq, K. 2024).

The customers review about mobile banking apps hold the customers personal accounts experiences within the mobile banking. This study aims to come across or find the service quality measure from the customers reviews of mobile banking apps. This study based on primary research collect from the mobile banking apps customers reviews. The positive and negative review are discussed in different size or bulk of mobile banking services quality are discussed. (Hussain, A., 2023).

Understanding the factors that influence customer satisfaction and service quality is crucial for businesses looking to maintain a competitive edge in today's highly competitive, technologically advanced, and developed business environment. Customers' perceptions of the ease of use, security, and ease of use of the products or services are measured using standardized equipment in this study, which employs a punctual quantitative research design and collects data from a diverse sample of customers from a variety of industries. (Ali, M. A., Zia Ullah, 2023). The findings or investigations highlights that business can improve service quality and customer satisfaction by emphasizing usefulness, security, and ease of use. resulting in increased competitive dominance and more devoted customers. Similarly, customer satisfaction and service quality are positively impacted by improved product or service security. This study is primary because it uses brand-new data gathered from a diverse sample of customers. (Khan, A. A., Abbas, Q., & Iqbal, S. 2023).

This case study indicates that data collected from various sources website of state bank of Pakistan as well as various journals and articles covering from 2011-2021. The main purpose of this study is to conclude the role of mobile banking and its effect the economic growth and financial inclusion in Pakistan. the mobile banking is identified as a significant factor of both financial inclusion and economic growth in Pakistan. (Ali, M., Alamgir, M., 2024)

This study indicates that the banking sector of Pakistan has been transformed the transformation and development of performance and services provide from 2006-2021 of online banking of Pakistan. determine by technological advancement and global rise of internet usage. Using the swot analysis matrix of the online banking strength, weakness, opportunity, threats to provide the comprehensive review of online banking in Pakistan. during this period online banking services have been in a growth phase that suggested by the current analysis. This data base on secondary data collected from reports published by private and public banks in Pakistan.(Naeem, M., 2023)

The mobile telecommunication market is viewed as a complex socio-technical system by analytical framework, and this paper provides a rare look at how it has changed in Pakistan. Standards for technology and three groups of social actors, including the government, networks, and service providers and users as being organize by telecommunication market. The author suggested to examine the existing data or literature, case studies, or market development. This research based on secondary data.(Gao, P., & Rafiq, A. 2009)

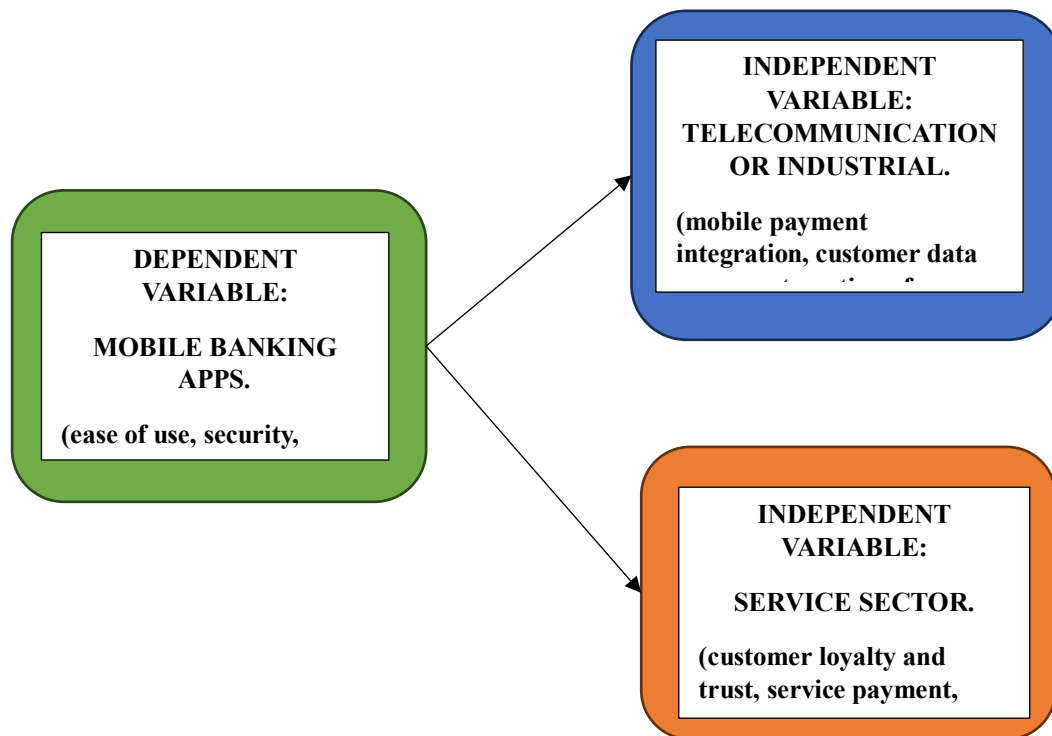
The study uses questionnaire to collect data from participants through the customers.utilizing statistical methods like factor analysis, correlation, and regression analysis. This study identifies the most important factor in Pakistan's adoption of mobile technology as customer satisfaction. According to the findings, customers are concerned about the authenticity, reliability, and security of technology. Companies ought to concentrate on IT application, innovative services, security, customer trust, and risk, according to the findings. To encourage the technology adoption and customer satisfaction these are necessary for it.(Saleem, Z., & Rashid, K. 2011).

This case study explores that how mobile banking affecting the customer satisfaction in Pakistan's banking sectors. Through self-administration, the responses to the 111survey were used to collect the data. It finds that customer designation is significantly influenced by usefulness, ease of use, creditability, and customer attitude. The bank management should provide more value-added services to customers in their mobile banking apps and design. Make more user friendly and offer them more value added to improve the customer experience. (Metlo, M. Y., 2021).

Hypothesis

The research model and hypothesis have been developed as follows in order to investigate the influence or impact of mobile banking apps on Pakistan's telecommunication, industrial, and service sectors.

Research Design



Research hypothesis:

Based on the frame work the following hypothesis are presented for testing relationships between variables. This study shows the relationship between mobile banking apps (dependent variable) and telecommunication or industrial and service sector (independent variables).

H1:The mobile banking improved or enhanced the reliability of payment system and reduce operational cost in the telecommunication and industrial sector.

H2:Mobile banking apps improve the time efficiency by allowing quicker transaction and customer services processes.

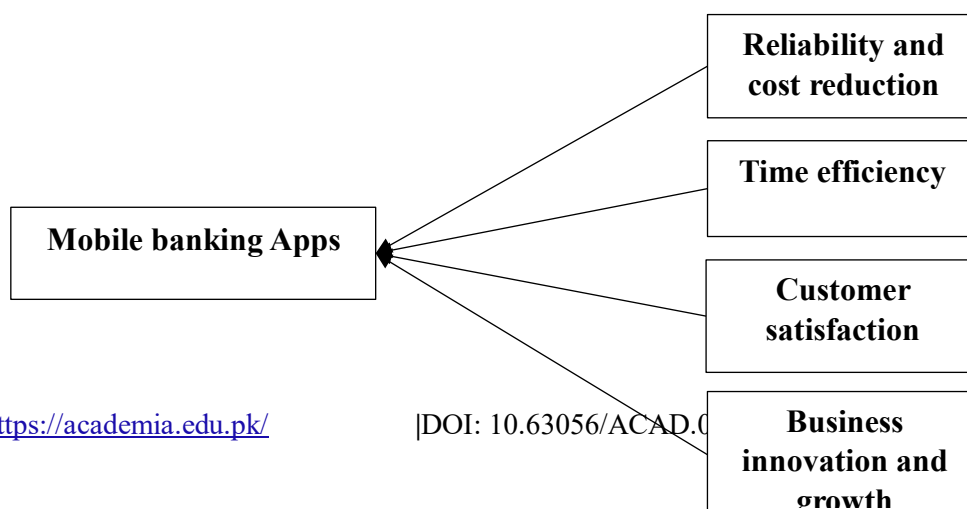
H3:The ease and speed of offered by mobile banking apps results in higher customer satisfaction in telecommunication or industrial and service sector.

H4:The affection or adoption of mobile banking apps allow new business models and revenue opportunities, enhancement innovation and growth in the telecommunication or industrial and service sector.

Framework

Independent variable

Dependent Variables



METHODOLOGY

This study relies on primary data collected from 200 respondents via questionnaire because its objective is to examine the connection between mobile banking apps and Pakistan's telecommunication, industrial, and service sectors. Quantitative methods have been chosen, and research strategy is primary gathered data from SPSS. data sampling is that taking information from respondents through random sampling method. It's basic research. The research design is explanatory (casual) purpose to explain the cause-and-effect relationship between two variables in topic. The purpose of this study is to how mobile banking apps impact or effect the telecommunication or industrial and service sector and shows the relationship between two variables independent and dependent. It appears that a regression analysis research design will also be used to investigate the connection between mobile banking apps and the telecommunications, industrial, or service sectors. The data analysis is regression analysis that will be conducted to evaluate the impact of mobile banking apps features and telecommunication or industrial and service sector.

Research design

This study's research design is causal (explanatory). This means that the study aims to explain the cause-and-effect relationship between two variables: the use of mobile banking apps and their impact on the telecommunication, industrial, and service sectors in Pakistan.

The objective of the explicative (or causal) research design is to determine the relationship between the independent and dependent variables. It aims to comprehend the ways in which one variable mobile banking apps influences or affects another variable the telecommunications, industrial, and service sectors.

Dependent variables and Independent Variable

The most important feature under investigation is mobile banking apps. The study concentrates on the various features of mobile banking apps, including speed, usability, dependability, security, and cost-effectiveness. This independent variable is thought to have an impact on the dependent variable.

Variable that Depends (DV): Telecommunication, Industrial, and Service Sectors: The sectors affected by mobile banking apps. The impact could include changes in operational efficiency, customer satisfaction, cost reduction, and innovation in business models in these sectors. These are the outcomes that can be measured as a result of the independent variable, which is mobile banking apps.

Data Source

A questionnaire that given to 200 people used to directly collect data from respondents. This data is collected through a survey method and focus on gathering firsthand responses regarding how mobile banking apps impact the telecommunication, industrial, and service sectors in Pakistan.

The responses of respondents who use mobile banking apps and their perceptions of its impact on the sectors will serve as the primary data source.

Population and Sample

The population under study will comprises users of mobile banking applications within the telecommunication, industrial and service sector in Pakistan. they should be experienced users of mobile banking application for personal or business use.

Sampling techniques:

Random sampling technique employed in this study where 200 respondents are selected. Random sampling guaranteed that every member of the population has equal probability of being selected or picked.

Sample Size: 200 respondents, a large enough sample to ensure statistical reliability for regression analysis.

Data Collection

Instrument: the main data gathering tool will be consisted administered to the respondents chosen. The questionnaire consists of closed ended questions to facilitate the objective analysis and a few open-ended questions to provide qualitative information if needed.

Mode of data collection:

The survey conducted online and offline both through a survey link and questionnaire on Likert scale method. It provides a mixed set of responses both from rural and urban.

Data Collection Period:

The data will be gathered over a certain time period so that the responses are timely and relevant.

Analytical Techniques

Regression analysis: as the aim is to analysis the effect of mobile banking apps on telecommunication, industrial and service sectors. The regression analysis utilized as the main analytical method. Regression analysis utilizes to identifies the direction and strength of relationship between mobile baking apps features (independent variables) and the effect on sectors (dependent variables).

SPSS SOFTWARE:

The data gathering processed through SPSS software which offers a range of tool for regression analysis, hypothesis testing and visualization.

RESULTS AND DISCUSSIONS

Table 1 *Reliability Statistics*

Scale	Cronbach's Alpha	N of Items
Reliability and Cost	0.951	05
Time Efficiency	0.953	05
Customer Satisfaction	0.952	05
Business Innovation and Growth	0.951	05

A reliability statistic shows with Cronbach alpha values of various scale.

The reliability is measured by Cronbach's alpha. Business Innovation and Growth Cronbach's alpha value is 0.951, while Reliability and Cost have a value of 0.951, Time Efficiency has a value of 0.953, and Customer Satisfaction has a Cronbach's alpha value of 0.952. this table shows the reliability value if increase more than 95% the it considered rejected or not good but the value of each scale of alpha has showed the closer to 1, means it reliability is excellent. The N of items shows that each scale has five items.

Table 2 *Gender*

		Frequency	Percent	Valid Percent
Valid	Male	101	50.5	50.5
	Female	99	49.5	49.5
	Total	200	100.0	100.0

Out of 200 respondents the 101 ratio of male (50.5%) and the out of 200 respondents the female ratio is 99(49.5%).

Table 3 *Age*

		Frequency	Percent	Valid Percent
Valid	Below 20	28	14	14
	21-30	105	52.5	52.5
	31-40	56	28	28
	41-50	10	5	5
	Above 50	01	0.5	0.5
	Total	200	100.0	100.0

According to this table of data given that the age of respondents is range between below 20 (14%) that means the low number of mobile banking apps users are very young at age in Pakistan. those who ranged between 21-30 (52.5%) are young and the range between 31-40(28%) and 41-50 (5%) very old respondents of mobile banking app users and also never the less ranged 50(0.5%) are very old who is aged respondent of mobile banking apps user.

Table 4 *Education*

		Frequency	Percent	Valid Percent
Valid	High School	29	14.5	14.5
	Bachelors	102	51	51
	31-40	56	28	28
	41-50	10	5	5
	Above 50	01	0.5	0.5
	Total	200	100.0	100.0

In this table according to data that it is analyze that the respondents of mobile banking apps users are educated as high school respondents are 28 and 102 respondents who hold the bachelor's degree and who have master's qualification the ratio is 59 and the less who hold the others the ratio is 10.

Table 5 *Occupation*

		Frequency	Percent	Valid Percent
Valid	Student	76	38	38
	Employed	93	46.5	46.5
	Self-Employed	22	11	11
	Unemployed	09	4.5	4.5
	Total	200	100.0	100.0

According to the data given in table n0.4 that the most of respondents of mobile banking apps users are employed person and on second number the good ratio of students who is the respondents of mobile banking apps user and not the least the 22 numbers of self-employed respondents and never the less is 09 respondents are unemployed.

Table 6 *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.868 ^a	.754	.750	1.68964

a) Predictors: (Constant), Customer Satisfaction, Reliability and Cost, Time Efficiency.

b) Dependent Variable: Business Innovation and Growth.

Table 7 *Anova*

Model	Sum of Squares	df.	Mean Square	F	Sig.
1 Regression	1715.200	3	571.733	200.266	<.001 ^b
Residual	559.555	196	2.855		
Total	2274.755	199			

a. *Dependent Variable: Business Innovation and Growth.*

b. *Independent variables: Customer Satisfaction, Reliability and Cost, Time Efficiency.*

Table 8 *Coefficients^a*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.823	.788		2.315	.022
RC	.227	.059	.249	3.868	<.001
TE	.203	.064	.209	3.189	.002
CS	.495	.059	.483	8.441	<.001

a. *Dependent Variable: Business Innovation and Growth.*

b. *Independent variables: Customer Satisfaction, Reliability and Cost, Time Efficiency.*

This table shows the regression analysis for forecasting the business innovation and growth based on three independent variables, reliability and cost, time efficiency and customer satisfaction. These all variables show the significantly positive impact on business innovation and growth. In customer satisfaction and business innovation and growth of each unit of it increases by the 0.495 units. Time efficiency, reliability and cost also have the significantly positive impact with the beta values of 0.249 and 0.209. the model is respectively point out the significantly strong relationship between these variables and business innovation and growth. A lower p value (p 0.001) indicates that the model is statistically significant.

Table 9 *Correlations*

		Reliability and Cost	Time Efficiency	Customer Satisfaction	Business Innovation and Growth
Reliability and Cost	Pearson Correlation	1	.811**	.742**	.777**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	200	200	200	200
Time Efficiency	Pearson Correlation	.811**	1	.752**	.774**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	200	200	200	200
Customer Satisfaction.	Pearson Correlation	.742**	.752**	1	.825**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	200	200	200	200
Business Innovation and Growth	Pearson Correlation	.777**	.774**	.825**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	200	200	200	200

***. Correlation is significant at the 0.01 level (2-tailed).*

This table gives Pearson correlation coefficient between the four factors of mobile banking apps. which are reliability and cost, time efficiency, customer satisfaction and business innovation and growth. All shows the positive correlation and statistically significant at 0.001 means (p < 0.001), that point out the strong relationship between variables. The customer satisfaction and business innovation and growth show the highest correlation (0.825) between the both variables. Time efficiency also shows the positive significant correlation with all others

variables, primarily with reliability and cost (0.811). All values show that factors related to mobile banking apps and the telecommunications, industrial, and service sectors are positively correlated.

DISCUSSION

Brief Overview

The article analyzes the effect of mobile banking applications on business innovation and growth in the telecommunications, industrial, and service industries in Pakistan. It employs primary data gathered from 200 respondents via an online questionnaire, which was analyzed using SPSS software. The research mainly investigates the correlation between various factors like reliability and cost, time efficiency, and customer satisfaction, with business innovation and growth. Different statistical tests, such as Cronbach's alpha, regression analysis, ANOVA, and Pearson correlation were used in testing the hypothesis and interpreting results.

Discussion of Results of Application Method

Quantitative research design was used by the study with a sample population of 200 respondents. Data analysis was performed with SPSS to test for reliability, regression, and correlations.

Reliability: Scale reliability was measured using Cronbach's alpha, with the results between 0.951 and 0.953 for various scales, demonstrating outstanding reliability. The figures confirm the consistency and reliability of the measures employed.

Regression Analysis: The regression analysis revealed that the independent variables of Reliability and Cost, Time Efficiency, and Customer Satisfaction each had a statistically significant positive relationship with Business Innovation and Growth. The R-square value of the regression model being 0.754 means the model accounts for 75.4% variance in business innovation and growth, which is seen as a robust explanation.

Correlation Analysis: The Pearson correlation values indicated strong positive correlations among the variables, and the highest among them was Customer Satisfaction and Business Innovation and Growth (0.825). This indicates that with an increase in customer satisfaction, business innovation and growth also increase.

Discussion of Descriptive Analysis

The descriptive statistics given in the article indicate a clean demographic split of the respondents based on gender, age, education, and occupation. The important findings are:

1. The sample was almost evenly split between males (50.5%) and females (49.5%).
2. Most of the respondents were young adults between the ages of 21-30 years (52.5%).
3. Respondents were well-educated in general, with 51% having a Bachelor's degree.
4. The largest percentage of the respondents were working (46.5%), followed by students (38%).

CONCLUSION AND RECOMMENDATION

The concluding that, the mobile banking apps shows significantly pronounced connection between the variables. The main objective of this study is to investigate the impact and relationship between the mobile banking apps and telecommunication or industrial and service sector in Pakistan. based on the primary data collected from the 200 respondents through online questionnaire. The data and results collect from SPSS and using regression analysis and

linear correlational. The results show the strongly positive impact and significant relationship between the hypothesis. The above table no.07 shows the results that regression analysis for forecasting the business innovation and growth based on three independent variable's reliability and cost, time efficiency and customer satisfaction. These all variables show the significantly positive impact on business innovation and growth. The regression analysis establishes or work out that the cause-and-effect relationship between the mobile banking apps and telecommunication or industrial and service sector. The findings indicates that the mobile banking apps use increases and better financial management, quicker service delivery and more customer satisfaction are all experienced by companies in the industrial, service and telecommunication sector.

Recommendation for Future Research

The recommendation for future research for researcher that enhance the more related to this topic mobile banking apps in banking sector that improve the same factors utilize the further investigation in various areas such as encourage the adoption of mobile banking in business operation, focus on mobile apps features, sector specific strategies. The more research should look into how mobile banking apps affect the long-term growth and profitability of companies in these industries. It would be helpful to investigate how sector growth may be further enhanced by integrating the emerging technologies like blockchain and artificial intelligence into mobile banking. Businesses in Pakistan industrials, telecommunication or industrial and service sector can use mobile banking apps to enhance customer satisfaction and operational effectiveness by putting this suggestion into practice.

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