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Impact of E-Banking on Customer Welfare: Empirical Evidence from the Banks in South Punjab (Pakistan)

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ABSTRACT

Purpose: *It is evident that internet banking (e-banking) revolutionizes financial management through convenience, speed, and accessibility, thus enhancing customer welfare by saving time, reducing costs, and increasing financial control. Hence, this study expands on existing literature by analyzing the impact of e-banking on customer welfare, particularly in banks of Southern Punjab, Pakistan.*

Design/Methodology/Approach: *This study uses Zenithal et al.'s (2005) e-SQ/e-SERVQUAL framework and IFC's (2013) MBQ model, treating customer welfare as an outcome of e-banking service quality. A descriptive-exploratory design was employed to analyze the cause-and-effect relationship between e-banking services and customer welfare. A Logit Model was drawn based on data collected from 1029 customers of real-time online branches (RTOB) located in Southern Punjab, Pakistan, to estimate the econometric properties for determining the relationship between e-banking and customer welfare.*

Findings: *Findings reveal that E-banking explains 68.59% of welfare variance (R^2=0.6859, Adj. R^2=0.6825). The Logit model is significant (F=206.33, p=0.000), with education (β=0.009, p=0.012), e-compensation, efficiency, responsiveness, and website layout (all p=0.000) as positive predictors. Gender, location, age, marital status, and income showed no significant impact (p>0.05).*

Implications/Originality/Value: *The study highlights that the banking sector of Pakistan, particularly in Southern Punjab, must improve digital literacy, banking services, and rural infrastructure to enhance e-banking adoption and financial inclusion to contribute more to customer welfare.*

1 Introduction

Banking has been vital to economies since ancient times, safeguarding money, enabling payments, and fueling growth. While traditionally focused on deposits and credit, technology is now transforming banking, creating exciting new possibilities while challenging old methods (Bos et al., 2017). Global banking has transformed dramatically in recent decades, driven by digital innovation. With the internet boom in the 2000s, banks began offering online services - from balance checks to loans - bringing banking into customers' homes. This shift to e-banking wasn't just about convenience; it reflected banks' need to cut costs, optimize services, and meet tech-savvy customers' expectations (Yaseen & El Qirem, 2018).

Today's global digital banking trends are accelerating fast, driven by three key forces; first is the global connectivity wherein over 4.1 billion internet users created massive demand for digital banking, second is the mobile revolution wherein smartphones turned banking into an on-the-go service, breaking free from desktop limits and the third is Fintech disruption wherein digital wallets, mobile payments, and crypto forced traditional banks to innovate or lose customers (ITU 2020). Digital banking is revolutionizing financial inclusion worldwide. Global initiatives led by organizations like the World Bank are leveraging mobile technology to bring banking services to underserved communities. Through e-banking solutions, people in remote areas can now access accounts, savings, and credit right from their phones, breaking down traditional barriers to financial services (Konalingam et al., 2017).

Electronic banking (e-banking) can be defined as the delivery of banking services through an electronic system to customers. E-banking has transformed banking for everyone, making services faster, simpler, and more convenient. Banks now deliver smarter digital solutions, while customers enjoy seamless transactions. The shift also cuts costs and streamlines operations, creating a win-win for both clients and financial institutions (Indrasari et al., 2022). E-banking has revolutionized customer experience by turning time-consuming branch visits into instant digital transactions. Now, people check balances, transfer money, and pay bills anytime, anywhere, so effortlessly that most customers won't settle for anything less than 24/7 online access (Shankar & Jebarajakirthy, 2019).

The current study focuses on e-banking innovation and the advancement of the banking sector in Pakistan because e-banking has become a key enabler of modernization in the banking sector, with changes in the delivery and consumption of services. This digitization advantage has profound impacts on customer benefits, cost structures, and firm development, especially in areas that conventional banking cannot access (Konalingam et al., 2017). Existing literature indicates that e-banking holds bright potential for South Punjab, Pakistan, especially for rural communities and small businesses traditionally excluded from banking services. By enabling digital savings, credit, and transactions, it can significantly improve customer welfare and economic well-being across the region.

But in the meantime, studies such as Butt et al. (2018) and Zahidy et al. (2019) Indicate that South Punjab faces challenges like lower digital literacy and poor internet access compared to major cities, e-banking could still transform local financial access. The region isn't technologically barren - digital banking may fill critical gaps in services that traditional banks haven't addressed. Yet we know surprisingly little about what banking solutions local customers actually want or need here. This knowledge gap demands urgent attention, as understanding South Punjab's unique needs is crucial for developing tailored e-banking strategies that work for its diverse communities.

This study explores how e-banking impacts customer welfare in South Punjab, a region often overlooked in digital banking research. We have examined how age, education, income, and tech access influence e-banking adoption, and whether urban-focused technology models work in rural settings. Key challenges like low digital confidence, poor awareness, and weak infrastructure will be analyzed. Crucially, we have investigated how personalized e-banking services could boost customer satisfaction of customers and improve their welfare in South Punjab. The research has also assessed e-banking's impact through availability, flexibility, and security measures on customer welfare. These findings will help banks strengthen their digital offerings and guide policymakers in using technology for greater financial inclusion in underserved areas.

2 Literature Review

Banks are investing in digital transformation not just to modernize their services, but to enhance customer convenience and satisfaction. With growing competition, banks now focus on improving every aspect of banking - from products and services to delivery channels and pricing. High-quality e-banking services lead to greater customer satisfaction, which is reflected in banks' increasing

transaction volumes. Study of Boateng (2020) on e-banking found that better IT and communication systems improved customer service and boosted bank profits. By surveying 250 customers across 10 banks, the research showed high satisfaction with digital banking, thanks to its convenience and security. The study recommends stronger e-telecom oversight and regulations to maintain these benefits.

Similarly, Tounekti (2022) treated internet banking as a key technological tool, analyzing factors that influence its adoption using the TAM model. These factors included awareness of e-banking benefits, security, internet quality, trust, and demographic traits like age, gender, income, and education. Using secondary data for theory and primary data from 400 respondents across 20 banks, the author applied PLS-SEM analysis. The findings revealed that 97% of people used e-banking, while only 3% did not, highlighting its widespread acceptance. Likewise, Tilahun and Tafa (2022) used the OLS regression method and confirmed that reliability, responsiveness, empathy, service quality, and trust significantly boost customer satisfaction, which ultimately enhances their welfare.

Asfour et al. (2023) expanded on previous research by examining seven key mobile banking dimensions that impact customer satisfaction: reliability, flexibility, privacy, accessibility, ease of use, efficiency, and safety. Surveying 360 mobile banking users, the research found privacy and accessibility to be the most crucial factors. The author suggested that banks should prioritize improving these digital services by broadening transaction options and refining app features, and they can significantly boost customer happiness and welfare.

Rashidi and Mansoori (2023) explored how e-banking features impact customer satisfaction in Azerbaijan's banks, focusing on demographic factors like age, profession, and education. Using surveys from Melli Bank customers and statistical analysis, the research found that these personal factors significantly influence e-banking satisfaction. Interestingly, customers' in-person visits decreased after adopting e-banking, while service quality remained crucial. Banks must improve digital services to boost satisfaction because happy online customers mean fewer crowded branches and happier banks.

Senaji (2024) explored the impact of e-banking on customer satisfaction and welfare in Kenya's top commercial banks. Using surveys and stratified random sampling, the study analyzed internet banking, ATMs, mobile banking, and point-of-sale services. Key factors like speed, flexibility, and ease of use significantly boosted customers' welfare, while mobile banking convenience stood out as especially important. However, internet banking's perceived usefulness had a smaller effect. The findings suggest banks should improve their digital services to enhance customer experience. Likewise, Butt et al. (2018) studied how e-banking affects customer satisfaction in Islamic banks in Lahore, Pakistan. Using surveys and regression analysis, they found that security, service quality, convenience, and online services all positively influence satisfaction and increase overall customer welfare, though 9% of customers were unhappy with service quality. The study suggests banks improve these areas to boost customer welfare and reduce their dissatisfaction.

In light of above existing literature, it can be summarized that e-banking transforms service quality with 24/7 access, efficiency, and accuracy, boosting overall customer satisfaction and welfare. Its impact varies by gender and evolves with technology as ATMs replaced cash, online transfers replaced manual processes, and mobile apps now handle everything from accounts to savings. Although extensive research on e-banking has existed from 2004 to 2022, several critical gaps remain unaddressed. Future studies should explore how financial literacy and education influence user expectations and adoption of digital banking services. Significant research gaps exist regarding how different income groups, age, and geographic locations experience e-banking differently, along with how cultural and social factors affect e-banking adoption rates.

Further, current studies also overlook practical challenges like the lack of user training, inadequate customer support systems, cybersecurity risks, and unreliable internet connectivity in some areas.

But, most importantly, previous researchers haven't properly examined how pricing strategies affect customer satisfaction and welfare, or what measures banks can take to offer low-cost e-banking services without any hidden charges or taxes for those customers who might switch for better deals elsewhere. These unanswered questions highlight the need for more comprehensive studies that address real-world user experiences and business challenges in digital banking.

3 Methodology

This study has used quantitative methods to examine how different factors influence customer welfare in e-banking in Pakistan. By analyzing responses from 1029 customers of real-time online branches (RTOB) of commercial banks in Southern Punjab, Pakistan, the research has explored the cause-and-effect relationships between key variables through descriptive and exploratory approaches. Target population of this study was approximately 6499617 (internet banking users: 3113728, mobile phone banking users: 3385889) registered e-banking users in Pakistan (SPB, 2021). Total of 1029 customers bear different demographic characteristics were selected through a simple random sampling technique, as no segregation was required based on customers' demographic characteristics, while the Southern Punjab, Pakistan, was the targeted area of study on a convenient basis. For data collection, a Google survey form was placed online as well, and offline distribution of the questionnaires was made by the researcher, and data was obtained under this study's variables.

The validity of the data collection tool (questionnaire) was earlier ensured through a pilot study, while the reliability of collected data in the final stage was confirmed by obtaining a minimum Cronbach's alpha threshold ($\alpha>0.07$) of all items under e-banking and customer welfare scales. For conducting data analysis, the Ordinary Least Squares (OLS) method was executed, and the two Logit Models were drawn as shown in the equation below.

YEB = f (Gen, Area, Age, Ms, Edu, Inc)

The functional form of the model is as follows.

$$Y = \beta_0 + \beta_1 Gen + \beta_2 Area + \beta_3 Edu + \beta_4 Age + \beta_5 MS + \beta_6 Incml \qquad \text{Eq. (1)}$$

In equation # 1, YEB represents usage of Internet Banking, which is a dependent variable (Dube Thulani, 2009). Independent variables are given below with their symbols. Gen = Gender, Area = Residence area, Age = Age, Edu = Education level, MS = Marital Status, Incml = Income level.

3.1 Demographic Characteristics of e-Banking Customers

The link between gender and e-banking is shaped by tech access, financial know-how, and social expectations (Dr. M., 2013). In many places, women have had less access to financial services and tech than men. But as smartphones and internet access grow, more women are embracing e-banking, and research shows they often prefer its convenience. Still, security concerns remain. Women may worry more about fraud or privacy, especially in certain cultures. To build trust, banks need strong security measures and clear communication. Likewise, Yaun (2013) compared banking habits in the US and Malaysia, focusing on how age affects usage with special attention to women's impact on customer satisfaction. Findings also show that men and women often use e-banking differently; men may focus more on investing, while women tend to use it for budgeting and planning. Understanding these habits helps banks tailor services to different needs. Plus, e-banking can empower women by giving them greater financial control and independence. In this study, scale is used (Male=1 & female =0) for measuring gender influences on e-banking adaptation.

Geographical location (urban/rural) significantly influences e-banking usage patterns, with distinct differences emerging between urban and rural areas (Ahmad et al., 2011). Urban residents typically benefit from superior digital infrastructure, including reliable high-speed internet and greater access to technological devices, which facilitates more frequent use of online banking services. In contrast, rural communities often face challenges such as inconsistent internet connectivity, limited access to

banking technology, and financial constraints that restrict device ownership. While physical bank branches and ATMs remain more prevalent in cities, potentially reducing the urgency for digital alternatives, rural areas are experiencing growing e-banking participation as infrastructure improves. Shaji and Mathews (2020) examined rural Indian women's banking habits and confirmed this trend, revealing that although urban adopters embrace technological advancements more readily, rural users are increasingly engaging with digital financial services. The research, which employed qualitative surveys (coded Rural=1, Urban=0) in South Punjab, highlights how expanding financial access is gradually bridging the urban-rural digital divide in banking practices.

Users' age significantly shapes digital banking behaviors, with distinct patterns emerging across generations (Akhter et al., 2022). Younger users, particularly Millennials and Gen Z, demonstrate higher e-banking adoption due to their technological familiarity and preference for digital convenience. These groups actively utilize mobile banking apps and online financial tools as part of their daily routines. In contrast, older adults often approach digital banking more cautiously, with many preferring traditional methods due to security concerns, despite gradual increases in adoption rates. Research by Weng et al. (2006) confirmed age's strong negative correlation with internet banking use, while finding marital status irrelevant and location positively influential. This aligns with findings from numerous scholars, including Akinci (2003), Safeena (2011), and Maenpää (2008). Our study employed qualitative questionnaires with South Punjab bank customers, categorizing respondents as either above 35 years old (1) or below (0) to examine these generational differences in financial technology adoption.

Education plays a pivotal role in how people engage with online banking services (Allada and Dubey, 2014). Those with higher education levels tend to be more financially literate, allowing them to navigate digital banking platforms with greater confidence and make more informed money management decisions. These users typically demonstrate better understanding of crucial security practices, like using strong passwords and secure networks, significantly reducing their vulnerability to online fraud. Research by Allada and Dubey (2014) confirms that education level (along with income) strongly predicts internet banking adoption, while age shows a negative correlation. In our study, we quantified education as: below matric (5 years), matric (10), intermediate (12), graduate (14), and master's (16), revealing how each additional year of schooling correlates with increased digital banking competence. More educated users don't just use these services more frequently - they extract more value from them, fully appreciating the time-saving benefits and financial control that e-banking provides.

Marital status of users quietly but powerfully influences how people use online banking, creating distinct patterns between couples and singles (Allada and Dubey, 2014). For married partners, digital banking often becomes financial glue, a shared tool for managing household budgets, paying bills together, and keeping joint accounts transparent. The convenience factor hits differently when the user is balancing work, kids, and family commitments. Single users, meanwhile, tend to approach online banking as a personal finance cockpit, perfect for autonomous money management, from quick transfers to tracking individual spending patterns. Their usage varies more dramatically based on lifestyle and financial personality. Widowed and divorced individuals often develop their unique rhythms with digital banking, adapting it to their changed circumstances. Interestingly, age often trumps marital status when it comes to tech adoption - many older adults, whether single or married, still prefer the familiarity of traditional banking. In our study, we captured this complexity through a simple binary measure (Married=1, Unmarried=0), revealing how relationship status shapes but doesn't dictate our digital financial behaviors.

For those with higher incomes, e-banking is a seamless experience (Allada and Dubey, 2014). They're likely to have the latest devices and reliable internet, making mobile banking second nature. These users don't just check balances - they leverage advanced tools for investments, automated savings, and financial planning, but for people stretching every dollar, the story changes. Spotty internet, older

phones, or simply feeling intimidated by technology can turn e-banking into a challenge rather than a convenience. Many stick to traditional branch visits for that face-to-face reassurance. Research like Allada & Dubey's (2014) confirms this divide, which shows income and education boost digital banking adoption, while age can be a barrier. While e-banking offers financial tools for everyone, true accessibility still depends heavily on economic circumstances, though it remains a powerful tool for financial inclusion when these gaps are addressed. Digital banking isn't one-size-fits-all. What a user gets from it depends largely on what he earns, proving that in finance as in life, opportunity isn't equally distributed. The measurement under monthly income was done through coding above 50k (1) and less 50k (0).

As mentioned above, this study has employed the Logit Model as shown in equation 1 earlier. Results of coefficients and significance are shown in the table below;

Table 1

Demographic Characteristics of e-Banking Customers

yeb (E-Banking)	Coefficients	std.err	Z	p> lzl	(95% conf. interval)	
Gender (Gen) (male=1, female=0)	0.6671433	0.2979917	2.24	0.025	1.08664	0.6671433
Area (urban=0, rural=1)	0.9879151	0.296574	3.33	0.001	1.50176	0.9879151
educational level (Edu) (years of education)	.0238635	.0311609	0.77	0.444	0.96347	.0238635
Age (below 35 years =0, above 35 years=1)	-1.426081	.3295682	-4.33	0.000	0.12593	-1.426081
Marital status (Ms) (Married=1, others =0)	0.6332117	.2676828	2.37	o.018	1.11467	0.6332117
income (Inc) (Below 50000=0, above 50000=1)	2.266153	.4047174	5.6	0.000	4.36195	2.266153
Cons	1.320851	0.5646582	2.34	0.019	1.23879	1.320851

This table displays the marginal effects of the coefficients, revealing strong agreement and disagreement among users regarding the E-Banking variable. Notably, all coefficients for age are positive, suggesting a consistent trend. The coefficient for gender is estimated at 0.667, which, in logistic regression, means that a one-unit increase in gender (e.g., moving from female [0] to male [1]) corresponds to a 0.667 increase in the log odds of using internet banking. A small standard error indicates a good model fit. The results suggest that gender has a positive and statistically significant impact on e-banking adoption (p-value = 0.025). In practical terms, men appear more likely to use e-banking compared to women. The 95% confidence interval (0.083 to 1.251) further supports this finding, indicating that the true effect likely falls within this range.

Location (Area) emerges as the second key factor, with a strong coefficient of 0.9879. This suggests that people in urban areas are significantly more likely to use e-banking compared to those in rural areas; a one-unit increase (moving from rural to urban) raises the log odds of adoption by nearly 0.9879, holding other factors constant. In plain terms, the data shows a clear trend: urban residents are more inclined to embrace internet banking. On the other hand, education has a negligible coefficient and a high p-value (0.444), meaning it doesn't play a significant role in e-banking adoption. Essentially, whether someone has more or less education doesn't seem to affect their likelihood of using digital banking services, at least in this study.

Age and marital status reveal some fascinating insights about e-banking adoption. The data shows that each year of age decreases the likelihood of using digital banking by about 1.426. In other words, older individuals tend to be less comfortable with these services. This trend is highly significant (p-value = 0.000), meaning it's a reliable pattern in the data. On the flip side, marriage seems to boost e-banking use. Married individuals (coded as 1 in the model) are about 0.633 times more likely to adopt internet banking compared to unmarried users, even after accounting for other factors (p-value = 0.012). Why might this be? One plausible reason is that married couples often juggle more financial responsibilities—budgeting, bills, shared accounts, which could make digital banking more appealing for managing their money efficiently.

Income stands out as one of the strongest predictors of e-banking adoption. The numbers tell a clear story: every additional unit of income boosts the likelihood of using digital banking by 2.266. Simply put, people with higher incomes are far more likely to embrace online banking, and this isn't just random chance (p-value = 0.000). What's equally interesting is what happens when we strip away all other factors. The model shows that even at baseline (β constant = 1.3209), there's still a notable chance someone will use e-banking (p-value = 0.019). This suggests that digital banking has reached a point where it's becoming universally appealing people from all walks of life are giving it a try, regardless of their age, location, or marital status.

3.2 Impact of e-Banking on Customer Welfare

In order to estimate the impact of e-banking on customer welfare, the second Logit Model was drawn through the Ordinary Least Squares (OLS) method as shown in the equation below.

CW = f (Com, Ee, Er, Ew, Gen, Area, Ms, Edu, incs)

Our second model focuses on how different aspects of e-banking quality - including compensation, efficiency, responsiveness, and platform appearance - affect customer welfare. By analyzing these key factors, we can better understand what truly matters to users when it comes to digital banking services. The relationship between these elements can be expressed through the following model;

$$Y(CW) = f(\beta 0 + \beta\ 1\ C + \beta\ 2\ E + \beta\ 3\ R + \beta\ 4\ W\ \beta 1Gen + \beta 2Area + \beta 3Edu + \beta 4Age + \beta 5MS + \beta 6Incml) \quad \text{Eq. (2)}$$

In Equation #2, CW (Customer Welfare) is what we're trying to understand—it's the outcome influenced by several key factors. These include Com (Compensation), Ee (how efficient the e-banking system is), Er (how responsive the service is), and Ew (the website's layout and design). We're also accounting for personal factors like Gen (gender), Area (where someone lives—urban or rural), Age, Edu (education level), MS (marital status), and Incml (income level). Together, these help explain what drives customer satisfaction with e-banking.

Customer welfare, the dependent variable of this study, reflects the real benefits people gain from using a service. In the world of E-Banking, this means faster transactions, lower costs, and the freedom to manage money anytime, anywhere, without stepping into a bank. Think about it: no more waiting in lines, worrying about carrying cash, or rushing before closing time. Instead, users enjoy secure transfers, instant notifications, 24/7 access, and even savings on travel and paperwork. To measure these benefits, we used the Mobile Banking Questionnaire (MBQ), a tool developed by the International Finance Corporation (2013). Studies show that speed and convenience are key to customer satisfaction (Haque et al., 2009), and today, over 2.3 million users in Pakistan rely on E-Banking for everything from paying bills to school fees (SBP, 2017). Banks are also thriving, with 25 institutions now offering digital services, proof that E-Banking isn't just a trend but a transformation in finance (Najaf et al., 2015; Hussain & Islam, 2012).

Research shows that compensation and convenience form the foundation of successful E-Banking. As Alnaser and colleagues (2017) found, customers are drawn to digital banking because it offers affordable services with greater efficiency, available 24/7 without the limitations of traditional

banking hours. This around-the-clock accessibility helps banks build stronger relationships with their customers. The financial benefits work both ways. As banking service fees decrease and internet access becomes more affordable, more people are making the switch to digital options. It's simple, really - when customers realize they're getting better value through E-Banking compared to traditional methods, they're quick to adopt the new system and rarely look back. Our study confirms these findings, with participants consistently rating convenience as a major advantage of E-Banking. We measured their responses using a standard 1-5 Likert scale, and the results clearly show that the time-saving and cost-effective nature of digital banking creates significant customer satisfaction.

When it comes to E-Banking, reliability is everything. Customers need to trust that their transactions will be processed accurately and securely every single time. A bank that consistently delivers flawless service builds something priceless - customer loyalty. As recent studies show (Indrasari et al., 2022; Shankar & Jebarajakirthy, 2019), banks that combine traditional values with modern, efficient services create the strongest customer relationships. When E-Banking services work seamlessly, with no errors, no delays, customers feel valued. They're more likely to stick with a bank that brings financial services right to their fingertips reliably. This efficiency doesn't just satisfy customers; it turns them into loyal advocates for the bank. In our research, we measured these efficiency factors using a 1-5 Likert scale, and the results clearly show that smooth, dependable digital banking directly translates to greater customer trust and retention. After all, in today's digital world, a bank's reputation hinges on its ability to provide worry-free banking around the clock. When customers know they can count on error-free transactions whenever they need them, that's when true loyalty is built.

When it comes to E-Banking, how quickly and effectively banks respond to customers makes all the difference. Recent research (Deraz & Iddris, 2019; Nugraha, 2021) shows that customers value having real-time support available, whether through human representatives or automated systems, to quickly solve any issues with their transactions. Speed matters more than you might think. Studies reveal that fast transaction processing isn't just convenient - it's a key factor in customer satisfaction. When banks deliver quick responses and seamless service, customers are more likely to stay loyal. Think about your own experience: isn't it frustrating when a website lags or transactions take too long to process? That's why forward-thinking banks are investing in better IT systems and user-friendly websites. Making information easy to find and transactions effortless to complete keeps customers happy and engaged with digital banking. In our study, we measured these responsiveness factors using a simple 1-5 rating scale, and the results confirm what customers have been telling us all along - quick, reliable service keeps them coming back. Overall, in our fast-paced digital world, banking shouldn't slow you down. When banks get responsiveness right, they don't just solve problems - they build trust and lasting relationships with their customers.

A bank’s website or app is often the first and sometimes the only way customers interact with its brand. That’s why design isn’t just about looks; it’s about creating a seamless, trustworthy experience. Customers expect up-to-date information at their fingertips, and a well-designed digital platform delivers just that, keeping them informed and engaged. When a bank consistently refreshes its content and ensures easy navigation, it doesn’t just meet expectations, it builds loyalty. Accessibility plays a huge role, too. If customers can’t quickly find what they need, even the most attractive design falls short. Research by Ahmad & Al-Zu’bi (2011) and Shankar & Jebarajakirthy (2019) confirms that user-friendly access to services is key to satisfaction. In our study, participants rated these features on a 1-5 scale, and the results were clear: when a digital banking platform is both visually appealing and effortless to use, customers stick around.

When the online banking behavior of a user is considered, it is really important to look at how customers experience and judge the digital services their bank provides. A well-designed banking website isn't just nice to look at; it's a powerful tool that can make or break the customer experience. A clear, intuitive content always helps users find what they need without frustration. When a user

can easily navigate through the site and quickly complete transactions, he/she is more likely to keep using it. That's because smart website design reduces errors and makes banking tasks feel effortless. As research by Al-Qeisi & Hegazy (2015) shows, when banks get the content and layout right, they create a smoother, more efficient service that customers appreciate. In our study, we measured these experiences using a simple 1-5 rating scale, and the results confirmed what we all instinctively know - good digital design leads to better banking experiences. When customers can move through a website without hitting roadblocks, they're not just satisfied in the moment - they develop lasting positive habits around digital banking.

Table 2

E-Banking and Customer Welfare

Welfare	Co efficient	Std.error	T values	P>|T|	[95% con.	Interval
Gender	0.004413	0.0255886	0.17	0.863	-0.0458057	0.05462830
Area	-0.0149452	0.0234539	-0.64	0.524	-0.0609731	0.03108260
Education	0.009451	0.0037738	2.5	0.012	0.0020449	0.01685710
Age	-0.0188439	0.0214826	-0.88	0.381	-0.0610031	0.02331530
Marital Status	0.0207517	0.0217946	0.95	0.341	-0.0220197	0.06352310
Income	0.0381768	0.0249540	1.53	0.126	-0.107948	0.08714840
E-compensation	0.0995622	0.0243350	4.09	0.0000	0.01518053	0.14731910
Efficiency	0.2071321	0.0309068	6.7	0.0000	0.1464781	0.26778600
E-Banking Responsiveness	0.2138134	0.0280746	7.62	0.0000	0.1587175	0.26890930
E-Banking Website Layout	0.2806287	0.0249862	11.23	0.0000	0.2315938	0.32966370
Cons	0.6678251	0.0928236	7.19	0.0000	0.4856609	0.84998992

Table 2 summarizes the results of an OLS (Ordinary Least Squares) regression analysis conducted in South Punjab, exploring how different factors influence customer welfare. The study treated customer welfare as the dependent variable, while factors like age, gender, location, education level, marital status, income, e-banking compensation, efficiency, responsiveness, and website layout served as independent variables. The findings reveal how each of these elements affects customer welfare, highlighting key relationships and their impacts.

Customer welfare refers to the benefits and advantages that customers gain from using a particular service provider. E-banking enhances customer welfare by offering financial services quickly, affordably, and conveniently, eliminating the need for travel while providing 24/7 access worldwide. In this study, customer welfare is the key focus, examined as a dependent variable influenced by e-banking. To measure the major benefits users, derive from e-banking, the study employs the Mobile Banking Questionnaire (MBQ), developed by the International Finance Corporation (2013). Responses were collected using a five-point Likert scale. The R-squared value of 0.6859 indicates that 68.59% of the variation in customer welfare is explained by the independent variables in the model, suggesting a reasonably strong fit. Additionally, the Adjusted R-squared value (0.6825) confirms that adding more predictors would not significantly improve the model's explanatory power, reinforcing its reliability.

Gender was one of the factors examined in this study. The results showed that while men tended to use e-banking services more frequently than other groups, the actual impact of gender on customer loyalty was minimal. The analysis revealed a coefficient of 0.0308, meaning that even if gender changed, its effect on customer loyalty would be very slight when all other factors remained constant. However, the p-value of 0.302 is well above the standard 0.05 threshold, indicating that gender isn't a statistically significant predictor of customer loyalty. This conclusion is further supported by the

95% confidence interval (- -0.0278 to 0.0895), which includes zero. In simpler terms, the data suggests that whether a customer is male or female doesn't have a meaningful influence on their loyalty in this model.

The second factor we examined was where people live, comparing urban and rural residents in South Punjab who use banking services. After analyzing the data, we found that location has only a tiny influence on customer satisfaction. The results show a small negative effect (-0.0149), meaning that when everything else stays the same, customer benefits decrease by just 0.0149 units based on location. What this really tells us is that whether someone lives in the city or the countryside doesn't make much difference to their banking experience. The effect is so minimal that we can't draw any strong conclusions about the location's impact on customer benefits. Essentially, where you bank from doesn't seem to significantly affect how satisfied you are with the service.

While we did find a small numerical relationship between location and customer satisfaction, the numbers tell us this connection isn't reliable. With a t-value of -0.64 and a p-value of 0.524 (much higher than the usual 0.05 cutoff), we can't be confident that where someone lives affects their banking experience. The confidence interval crossing zero further supports this - it's likely there's no real impact at all. What's interesting is that while location alone doesn't seem to matter much, our overall model still does a good job explaining customer satisfaction. This suggests two possibilities: either location genuinely doesn't influence satisfaction in our study area, or its effect gets overshadowed by other, more important factors in the model. Essentially, when we look at the big picture with all variables considered, where you live doesn't appear to be a key factor in your banking satisfaction.

Education, our third key factor, proves to be an important element in shaping e-banking satisfaction. As people's awareness and understanding grow through education, they tend to make better financial choices and experience higher satisfaction with digital banking services. Our analysis reveals that each step up in education level corresponds with a small but measurable 0.009 improvement in e-banking benefits. This positive connection shows that more educated individuals generally derive greater value from digital banking services. The statistical evidence strongly supports this relationship. With a p-value of 0.012 - well below the standard 0.05 threshold - we can be confident this isn't just random chance. Furthermore, the 95% confidence interval ranging from 0.002 to 0.017 stays consistently positive without crossing zero, giving us additional assurance that education genuinely enhances e-banking experiences. Taken together, these findings clearly demonstrate that in South Punjab, higher education levels consistently correlate with better outcomes in digital banking satisfaction and welfare.

In our study, we examined whether a person's age influences their e-banking satisfaction (welfare) using regression analysis. The results show that, on average, for every one-year increase in age, welfare decreases slightly by 0.0188 units, assuming all other factors remain constant. However, this effect is extremely small and statistically unreliable. The standard error (0.02148) suggests some variability in the estimate, but the t-value (-0.88) and high p-value (0.381) confirm that this relationship isn't strong enough to be meaningful. Since the p-value is much higher than the standard 0.05 threshold and the confidence interval includes zero, we can confidently say that age does not have a significant impact on e-banking welfare in our study. Essentially, whether customers are younger or older doesn't appear to make a real difference in their satisfaction levels with digital banking services.

The numbers show a slight positive trend - married individuals appear to have about 0.02 higher welfare scores on average compared to single customers when other factors are equal. However, this difference is so small that it's statistically insignificant. The statistical evidence doesn't support any meaningful connection between marital status and banking satisfaction. With a t-value of 0.96 and a p-value of 0.341 (much higher than the standard 0.05 cutoff), we can confidently say that whether someone is married or single doesn't actually affect their banking experience in any noticeable way.

Interestingly, this mirrors what we found with gender - neither relationship status nor being male/female appears to influence how satisfied people are with their banking services. The data suggests that when it comes to digital banking welfare in South Punjab, what really matters are factors other than these personal demographics.

When it comes to financial decisions, we typically expect income and purchasing power to play important roles. In our study, we examined how income levels affect customer satisfaction with banking services. The results show an interesting pattern - while higher income appears to be associated with slightly better banking experiences (with each income unit increase corresponding to about a 0.038 improvement in welfare scores), this relationship isn't strong enough to be statistically reliable. The numbers tell us that while there's a small positive trend, we can't say with confidence that income truly impacts banking satisfaction. With a p-value of 0.126 (higher than the standard 0.05 threshold) and a t-value of 1.53, the evidence simply isn't strong enough to conclude that wealthier customers have meaningfully different banking experiences. In fact, when we consider the full range of possible effects, income might not make any difference at all, or could even have a slight negative impact in some cases. These finding challenges common assumptions about financial behavior, suggesting that in South Punjab's banking sector, income level may not be as important for customer satisfaction as we might expect. Other factors beyond how much money someone earns appear to play bigger roles in shaping their banking experience.

The data shows no clear link between income and banking satisfaction, the p-value of 0.126 and confidence interval crossing zero suggest income doesn't significantly affect welfare in our model. This makes sense when we consider what "welfare" really measures: satisfaction with banking services, not financial status. Whether customers earn more or less, they receive the same digital services, identical transaction speeds, fees, and features. A wealthy entrepreneur making daily transfers experiences the same service quality as a student withdrawing cash monthly. While high-income users may engage with banks more frequently, their actual satisfaction depends on service quality, not account balances. This explains why income alone doesn't predict satisfaction—banking welfare stems from institutional service standards that apply equally to all customers, regardless of economic status.

E-banking offers customers a faster, cheaper, and more convenient way to manage their finances compared to traditional banking. With 24/7 access and greater transaction capacity, digital banking eliminates the need for branch visits and long wait times. As Li and Zheng (2005) point out, cost savings play a major role in convincing customers to switch to online banking when fees are lower and internet access is affordable, people are more likely to embrace digital services. Customers naturally compare new options with what they're used to. If they see clear benefits like time savings, lower costs, and easier access (as highlighted by Usman & Usman, 2012, and Kazi, 2013), they're far more willing to make the switch. This convenience factor isn't just a perk; it's a game-changer that significantly boosts customer satisfaction and loyalty in the digital banking era.

Our research reveals a clear connection between digital banking benefits and customer satisfaction. When banks enhance their digital compensation features (like refunds or error corrections), we found that every improvement leads to about a 0.1-point increase in customer welfare scores. This isn't just a random pattern; the strong t-value of 4.09 and near-zero p-value confirm this is a statistically significant relationship. What does this mean in practice? The numbers show that modern banking solutions are making a real difference for customers in South Punjab. People are embracing digital banking because it genuinely makes their lives easier. They're finding these services more convenient, satisfactory, and user-friendly than traditional options. The precision of our results (shown by the small standard error of 0.024) gives us confidence that these aren't just temporary trends, but meaningful shifts in how people experience banking services. Ultimately, this confirms what we're seeing on the ground: when banks invest in better digital services, customers notice and they're voting with their wallets by increasingly adopting these modern solutions.

Reliable and error-free digital banking services aren't just convenient, they're essential for building customer trust and satisfaction. As research by Indrasari et al. (2022) and Shankar & Jebarajakirthy (2019) shows, banks that successfully modernize their services while maintaining reliability see better customer retention and engagement. Our analysis confirms this connection: when digital banking works seamlessly, processing transactions quickly and accurately, customer satisfaction measurably improves. Specifically, every unit increase in digital banking efficiency leads to a 0.21 point boost in customer welfare. This isn't a marginal finding; with a strong t-score of 6.7 and a near-zero p-value, the evidence is clear that efficient digital services directly enhance the banking experience. The small standard error (0.031) tells us these results are precise and reliable. In practical terms, it means that when banks invest in creating smooth, trouble-free digital platforms, customers respond with higher satisfaction, proving that in today's banking landscape, technological reliability isn't just an added feature, but a fundamental expectation.

Our research examined how crucial responsive support is for digital banking users. When customers can easily access assistance—whether through live representatives or automated systems—and receive prompt solutions to their transaction issues, it significantly enhances their banking experience. Speed emerges as a fundamental driver of satisfaction. Customers today don't just appreciate quick service—they expect it, especially for digital transactions where delays can be particularly frustrating. Studies by Deraz & Iddris (2019) and Nugraha (2021) confirm that faster processing times and immediate problem resolution directly translate to higher customer satisfaction and stronger loyalty. When banks optimize how quickly they handle customer information and requests, they create more positive experiences that keep users engaged with digital platforms. Beyond speed alone, banks need to focus on building robust IT infrastructure and designing intuitive websites that make information effortlessly accessible. These elements work together to create a seamless experience where customers feel supported at every interaction point. The evidence is clear: when digital banking services combine quick responses with reliable accessibility, they don't just meet customer expectations—they exceed them, fostering lasting satisfaction and continued use of digital banking solutions.

Our analysis reveals a clear connection between responsive digital banking and customer satisfaction. For every improvement in how quickly and effectively banks address customer needs online, we see about a 0.21-point increase in satisfaction levels. This isn't just a minor observation; the numbers tell a compelling story. With an exceptionally small standard error (just 0.028) and a powerful t-score of 7.62, we can be confident these results are both precise and reliable. The near-zero p-value removes any doubt that this is a statistically significant relationship that holds up under scrutiny. What this means for customers is simple: when banks respond promptly to online inquiries and resolve issues efficiently, people notice and appreciate it. This responsiveness directly translates to better overall banking experiences. The stronger a bank's digital customer service, the happier and more satisfied its customers tend to be, a finding that should guide how financial institutions prioritize their online support systems. The message for banks is clear: investing in faster, more effective digital responsiveness pays real dividends in customer satisfaction.

A bank's website serves as the digital front door to its services, and our research confirms its critical role in customer satisfaction. An intuitive layout with clear navigation doesn't just look good, it actively improves the banking experience by helping customers find what they need quickly and complete transactions without frustration. When websites are well-organized and intelligent in their design, they do more than attract users; they prevent errors and build trust. As Al-Qeisi & Hegazy (2015) found, thoughtful website architecture directly contributes to more effective digital banking services. Our analysis puts numbers to this intuition: every step of improvement in website design corresponds to a 0.28-point boost in customer satisfaction scores. With a remarkably small standard error of just 0.025, we can be confident this isn't just a coincidence; it's a precise measurement of how much quality web design matters. The message for banks is clear: investing in your digital interface

pays real dividends. A clean, logical website isn't just about aesthetics—it's a powerful tool for reducing customer effort, minimizing errors, and ultimately creating happier banking experiences. When customers can navigate with ease, their overall satisfaction with digital banking grows substantially.

Our research model 2 reveals important findings about what drives customer satisfaction with digital banking services. The exceptionally strong F-statistic of 206.33, along with a near-zero p-value, tells us this isn't random - the factors we examined collectively do an excellent job explaining differences in customer satisfaction levels. Interestingly, while several factors significantly influence banking experiences, gender doesn't appear to be one of them. The numbers show that whether customers are male or female makes little meaningful difference in their satisfaction with digital banking services. This finding holds even when accounting for all other variables in our comprehensive analysis. What this means for banks is that they should focus their improvement efforts on aspects that genuinely impact customer experience, rather than tailoring services differently based on gender. The most effective enhancements will be those that benefit all customers equally, regardless of whether they're men or women. This robust model gives us confidence that we've identified the real drivers of banking satisfaction - and just as importantly, we've discovered what doesn't matter as much as some might assume.

The strength of the relationship between website design and customer satisfaction comes through clearly in our analysis. With a t-value of 11.23 - meaning the result is nearly 11 standard deviations away from zero - we're seeing one of the strongest measurable effects in our study. The practically non-existent p-value (0.0000) removes any doubt about statistical significance; there's essentially no chance this relationship occurred randomly. What's particularly compelling is the confidence interval, which tells us we can be 95% certain those improvements to digital banking website layouts boost customer satisfaction scores between 0.23 and 0.33 points for each enhancement unit. The fact that this entire range stays firmly positive confirms that better website design consistently leads to happier customers. This isn't just statistical noise - it's clear evidence that investing in user-friendly digital platforms directly translates to measurable improvements in customer welfare. The numbers don't lie: in today's banking environment, a well-designed website isn't just nice to have - it's a crucial driver of customer satisfaction that financial institutions can't afford to overlook.

Our findings demonstrate that enhancing banking websites leads to measurable improvements in customer satisfaction. The numbers tell a compelling story - every upgrade to digital platforms corresponds with higher welfare scores, showing these two factors move in lockstep. With an exceptionally strong significance level ($p < 0.0001$) and precise measurements, we can say with confidence that this isn't just a correlation but a meaningful relationship. The consistently positive confidence interval reinforces that better website design genuinely translates to happier customers. Essentially, when banks invest in their digital interfaces, customers respond with increased satisfaction - a connection that holds across our entire analysis.

4 Conclusion

E-banking has transformed how people manage their finances by offering unprecedented convenience, speed, and access. This revolution in banking services saves customers' valuable time, cuts costs, and puts greater financial control at their fingertips - all of which significantly boost customer satisfaction. Our research builds on previous studies by specifically examining how digital banking impacts customer welfare in Southern Punjab, Pakistan's banking sector. For this investigation, we combined two established frameworks: Zenithal et al.'s (2005) e-service quality model and the International Finance Corporation's (2013) Mobile Banking Questionnaire. We approached customer welfare as a direct result of the quality of digital banking services. Using a descriptive-exploratory approach, we analyzed how different aspects of e-banking influence customer satisfaction. To gather concrete evidence, we surveyed 1,029 customers from real-time

online banking branches across Southern Punjab. This substantial dataset allowed us to apply a Logit Model, giving us robust statistical insights into the precise relationship between digital banking services and customer welfare in this specific regional context.

Our analysis under model 1 reveals some telling trends about who embraces digital banking in Southern Punjab. Financial means appear to be the biggest driver; the data shows wealthier individuals are significantly more likely to use online banking services. Family status also plays a role, with married people adopting digital banking more than their single counterparts. Where someone lives and whether they're male or female similarly influence their banking choices, though to a lesser degree than income. Together, these factors explain about 19% of the variation in digital banking use, a meaningful chunk that helps banks understand their customer base. The findings present one surprise: while we might expect more educated individuals to be tech-savvy adopters, education level didn't actually make much difference. Perhaps most notably, age creates a clear divide. Older residents tend to shy away from digital banking, possibly because they conduct fewer transactions, have simpler banking needs, or feel wary about online security. For banks looking to expand their digital services, this suggests an opportunity and a challenge in addressing the needs and concerns of older customers.

Analysis under model 2 reveals that digital banking services play a major role in shaping customer satisfaction, explaining about 69% of the differences in welfare scores. This strong relationship holds true even after accounting for the number of factors we examined, with only a slight adjustment (from 0.6859 to 0.6825). The exceptionally high F-statistic of 206.33 and near-zero p-value confirm that these findings are statistically rock-solid - we can be confident that at least some digital banking features truly impact customer satisfaction. Breaking down the results, we see education matters - more educated customers report slightly higher satisfaction (0.009 increase per education level). But the real stars are specific service features: compensation policies, system efficiency, quick response times, and well-designed websites all show strong positive effects on customer welfare. The near-perfect p-values (0.0000) for these factors leave no doubt - when banks get these digital service elements right, customers respond with significantly higher satisfaction. This paints a clear picture for financial institutions: while customer education plays a role, the quality of digital services themselves makes the biggest difference in creating satisfied online banking users. Investments in these key areas pay measurable dividends in customer happiness.

Overall, the findings of this study reveal that certain digital banking features, like efficient services, responsive support, and user-friendly website design, consistently lead to higher customer satisfaction and welfare. However, personal characteristics like gender, location, age, relationship status, and income surprisingly show little influence on customer experience when other factors are considered. A critical finding highlights Pakistan's digital literacy challenge - many customers can't fully benefit from e-banking due to limited tech skills. To bridge this gap, we recommend several practical solutions: comprehensive training programs for customers and bank staff, enhanced digital platforms with stronger security and simpler interfaces, infrastructure improvements, particularly in underserved rural communities, mobile banking initiatives tailored to local needs, and targeted outreach to educated groups who can help drive adoption. These measures could significantly expand e-banking's positive impact across Pakistan's diverse population. While digital banking offers tremendous potential, realizing its full benefits requires addressing both technological and human factors.

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