Digital Technology, Cost Category, and Competitive Advantage in Islamic Bank X

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ABSTRACT

This study conducted an in-depth analysis of the competitive advantage and costs of implementing digital technology in Islamic bank X. There are differences in the use of digital technology by individual and corporate customers. Individual customers mostly use mobile and Internet banking, whereas corporate customers use a more diverse range of services, such as cash management systems. Qualitative Case study research in Islamic Bank X enables a deeper discussion of cost and competitive advantage, which prior studies have not explored extensively. The informants in this study were key employees and customers who had used digital technology. The results of this study show that three costs arise in the implementation of digital technology: analysis, monitoring, and adjustment costs. The competitive advantage obtained from the implementation of digital technology can be felt by management and customers: data security, operational efficiency, transparency and accountability, product innovation, and customer loyalty. This research contributes to policymaking regarding implementing digital banking technology, which entails cost implications and brings significant advantages for banking sectors.

Keywords: Digital Technology; Cost; Competitive Advantage

Teknologi Digital, Kategorisasi Biaya, dan Keunggulan Kompetitif di Bank Shariah X

ABSTRAK

Penelitian ini bertujuan untuk melakukan analisis mendalam tentang kategorisasi biaya dan keunggulan kompetitif implementasi teknologi digital bagi Bank Syariah X. Terdapat perbedaan penggunaan tehnologi digital bagi nasabah individual dan perusahaan. Pada nasabah individual yang banyak digunakan adalah mobile dan internet banking, sedangkan pada nasabah perusahaan bentuknya lebih beragam misalnya cash management sistem. Penelitian kualitatif studi kasus pada Bank Syariah X memungkinkan pembahasan yang mendalam tentang analisis biaya dan keunggulan kompetitif yang belum banyak dilakukan oleh penelitian sebelumnya. Informan penelitian ini adalah para karyawan kunci dan nasabah yang telah menggunakan teknologi digital. Hasil penelitian ini menunjukkan bahwa ada tiga biaya yang muncul dalam implementasi teknologi digital yaitu biaya analisis, biaya pemantauan dan biaya penyesuaian. Keunggulan kompetitif yang diperoleh dalam implementasi teknologi digital dapat dirasakan oleh manajemen dan nasabah yaitu keamanan data, efisiensi operasional, transparansi dan akuntabilitas, inovasi produk, dan loyalitas nasabah. Penelitian berkontribusi dalam pengambilan kebijakan tentang implementasi tehnologi digital perbankan yang tidak hanya membawa konsekuensi biaya tetapi mendatangkan keunggulan kompetitif.

Kata Kunci: Teknologi Digital; Biaya; Keunggulan Kompetitif

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INTRODUCTION

Digital technology in banking has at least four advantage: data security, transparency and accountability, operational efficiency, and financial product innovation (Tang & Yang, 2023). Data security in digital technology is achieved because digital technology can perform centralized and encrypted data storage, making it difficult to hack (Shanti et al., 2023; Tang & Yang, 2023; Wang & Hou, 2024). Digital transactions can increase transparency and accountability because they occur in real-time, can be accessed by the public, and cannot be changed, thereby minimizing the risk of data tampering (Hidajat, 2020; Tang & Yang, 2023; Wang & Hou, 2024). Operational efficiency in digital technology occurs because of the ability to bypass third parties in the process, thereby reducing transaction processing costs and time (Amiri et al., 2023; Chrismastianto, 2017; Garbo & Latifah, 2024; Tang & Yang, 2023).

Financial product innovation is another advantage of digital technology in increasing the accessibility and inclusiveness of banking products (Chrismastianto, 2017; Laksono & Nisa, 2024; Tang & Yang, 2023). The magnitude of advantages in the implementation of digital technology also results in a cost allocation that is not cheap. This cost allocation is not cheap because there are at least four challenges of technology implementation: the high need for Internet access speed, the potential for cybercrime, the need to work with technology developers, and a low public understanding of digital banking technology (Chrismastianto, 2017). These four challenges require banks to have large funds in order to resolve them. Large funds are needed by banks to provide certainty of Internet access speed, protection against cyber-crime, and customer data security when using third-party services and to provide socialization of features in digital technology. One of the banks implementing digital technology is the Islamic bank X.

In 2019, an Islamic bank X launched Mobile Banking (MB) as an example of digital technology for individual costumers (Pratwi & Dahruji, 2024). The features of MB can facilitate customers to carry out standard banking transactions, such as transfers or balance checks, with several additional features that make it easier for customers to make routine monthly bill payments and education as well as purchase digital products (Aditya & Diana, 2023). The addition of features and increased security through biometric login and read One-Time Password (OTP) features continue to be improved to maintain customer trust and convenience (Aditya & Diana, 2023; Pratwi & Dahruji, 2024). Therefore, this study aims to analyze the costs and opportunities of digital technology in Islamic Bank X.

Previous studies have discussed optimization (Bagas & Fasa, 2024; Haq et al., 2024; Setianingrum et al., 2025; Shabri et al., 2020; Trimulyana, 2024), benefits (Garbo & Latifah, 2024; Laksono & Nisa, 2024; Norrahman, 2023; Pratwi & Dahruji, 2024), and challenges (Muslimin et al., 2024) of digital transformation in Islamic banking separately. This study conducts an in-depth and comprehensive analysis of the optimization, advantages, challenges, and cost at Islamic Bank X, providing a comprehensive overview of the implementation of digital technology in Islamic banking. This comprehensive analysis is interesting because the analysis of costs and competitive advantage in the development of digital technology is not only about the benefits felt by banks but also the considerable cost investment in its

development. Furthermore, digital technology is expected to minimize earnings management practices, which is a central issue in managing customer funds in banking. This study is the first to provide a comprehensive analysis of the costs and advantages of digital technology. This study is expected to contribute to theory and practice. This theoretical contribution is an in-depth study of costly contract theory in the development of digital technology, and practical because it can become a comprehensive reference for the development of digital technology in banking.

Transaction cost economics (TCE) theory is used in this study because it can explain the reasons for companies to develop certain technologies. TCE is an economic theory that describes the process of making, implementing, and renegotiating contracts that impact costs (Staubus, 1994). The costs used in the contract affect management attitudes and behaviors in digital technology adoption decisions (Staubus, 1994). This theory is used because the key definitions in contract theory, namely transaction costs, incomplete contracts, opportunistic behavior, renegotiation, and corporate governance mechanisms, are able to provide a comprehensive picture of the cost-benefit analysis in the development of digital technology.

RESEARCH METHODS

This is a case study of qualitative research on Islamic Bank X in Indonesia. Bank X was selected as the research site because it has the best customer service for three consecutive years, including services in implementing digital technology. The informants in this study were several employees and customers of an Islamic bank in Indonesia. The informants selected were key employees or those who had more than five years of service to ensure their understanding of digital banking products or their relevance to digital technology. In addition, to ensure the consistency of employee answers, researchers selected informants from customers who had utilized digital banking technology for more than five years. Table 1 presents the participants' positions.

Table 1. Informant Data

No.	Position
1.	Deputy Regional Chief Executive Officer (Mr. WSB)
2.	Regional Chief Executive Officer (Mrs. AAD)
3.	Branch Manager Malang Branch (Mrs. RPK)
4.	Head of Digital Banking (Mr. DR)
5.	Region Funding & Transaction Manager (Mrs. WW)
6.	Region Head SME & Islamic Business Banking (Mr. IHW)
7.	Head of Business Development & Governance (Mr. ITH)
8.	Costumer 1 (Mr. M)
9.	Costumer 2 (Mrs. KA)
10.	Costumer 3 (Mrs. FS)
11.	Costumer 4 (Mr. UA)

Source: Research Data, 2025

The primary and secondary data were used in this study. Primary data were obtained from interviews with the participants (Djalaluddin et al., 2023). The secondary data in this research are in the form of other information related to

transaction evidence of digital technology development, advice and input on digital technology, and other relevant evidence.

The data collection techniques used were observation, interviews, documentation, and literature review (Denzin, 2018). Interview questions were made in such a way as to answer the research objectives. The observation was conducted through participant observation by directly observing the operationalization of digital technology, socialization with customers, and customer complaints regarding the use of digital technology. Documentation was used to obtain documentary data, such as customer complaint memos, for the year 2024. The literature study is an activity of collecting data and reading materials for theories in accordance with the research as a guide in writing this article.

The data analysis in this study included reduction, data display, and conclusions. Data reduction was performed by reprocessing and separating data from interviews and observations to simplify the objectives and scope of the research. Data Display is an activity to explain, display and present data. Data that have been reduced will be described objectively by the author. In this study, the authors convey narratively and attractively about the implementation of digital technology in an Islamic bank in Indonesia. The last phase involves concluding by looking back at the data that have been reduced and presented to assess the meaning that has been analyzed and its implications in answering research questions. This study uses data source triangulation by comparing the results of interviews with each informant to obtain similar answers and compare the results of interviews with the results of observations. In addition, researchers have used observation, written data, official records, personal writing records, and drawings or photographs to obtain different views and breadths of knowledge about the phenomenon under study.

RESULT AND DISCUSSION

One way Bank X optimizes the use of digital technology is to strengthen electronic banking services and improve cash management services. These two measures are presented in detail in Bank X's 2023 annual financial statements as a form of liquidity risk mitigation.

Optimization to strengthen digital technology is obligatory for banks to survive amid the rapid development of financial technology. This ability to survive is important because the current market share of the financial sector is a digital generation that is facilitated by technology. Bank X also does this by developing features that are able to facilitate customers with quality that is also better than that of other banks. This statement is reinforced by the results of the interviews conducted with Mr. DR and Mrs. WW, who stated that the application of digital technology at Bank X is quite good.

"*…Quite adequate and quite good, when compared to other banks, the completeness is the same, and the quality is good; this banking product is running in the digital program; the product is complete and can be compared to other banks...*" (Mr. DR, December 12, 2024).

"*…Of course, for digital banking, we have several channels for both individual and non-individual customers; if what is widely known is clearly by individual customers, it is mobile banking and internet banking. Then for non-individuals, of course, the cash*

management system includes virtual account services or technology, and later in it can be developed again with the applications that exist in us..." (Mrs. WW, December 11, 2024)

This statement indicates the different forms of digital technology for individual and agency customers. For individual customers, the most widely used features are mobile banking and Internet banking, which can be used to conduct daily transactions with complete features. For example, on the mobile banking interface, there are features to open accounts, make payments with Qris, make initial registration, Hajj information, Hijrah lounge, e-money payments, education bills, and other transaction needs. These complete features make it easier for customers to carry out banking transactions effectively and efficiently. This result is reinforced by Mrs. KA's statement as an individual customer who has been a customer since 2010 and Mrs. WW as Region Funding and transaction Manager of Region A.

"…*The features are complete; I can pay for children's school fees and transfer money, even when abroad; my other visa card has problems because it cannot be used to pay, but my balance is still deducted. Thank God I have this Visa Bank that allows me to continue making purchases and withdrawals from all ATMs*…" (Mrs. KA, December 17, 2024).

"…*There are features that help customers to access the term one-stop service, both in terms of financial transactions and also for other non-financial transactions, for example, Hijrah Lounge, Hijrah Travel, maybe there are some more Islamic things, starting from reading the Koran, choosing Umrah travel. The hope is that one download of the customer application can optimize all their needs. In addition, we also perform office channeling; for example, for cash withdrawals, we can use Mobile Banking services in Indomart*…" (Mrs. WW, December 11, 2024)

Agency customers also carry out digital services to improve banking processes that can be replaced with technology. For example, some of these transactions are the creation of business savings accounts or current accounts that require the owner to come directly to the bank. A small number of customers conduct such transactions; however, with the development of digital technology, most customers actually replace it with cash management through XDIN services. This service makes it easy for customers to carry out all their transactions independently, such as opening accounts, transfers, creating virtual accounts for payment accounts, and other transactions. This result is reinforced by Mrs. WW's statement, as follows:

"..*Some of the checks or Giro bill are still used, but others have switched to digital services using cash management access for the cash management branding itself in us it is called XDIN, in its starting from inquiry, accounts, transfer transactions to services or creating virtual account numbers, namely shadow accounts, if for example it can be used for customers who need to create bills for their users or their customers, and that can be done directly in our cash management, besides that the features in it are definitely tailored to the needs of the customer*…" (Mrs. WW on December 11, 2024).

Digital transformation can provide banking benefits through service customization, increased customer satisfaction, and reduced transaction-processing costs (Lantip, 2023). Digitalization can improve communication, transparency, monitoring, and integration of interactions between business partners, thereby reducing several costs, such as coordination, transaction, and

agent costs (Lantip, 2023). Digital technology is developing due to changes in customer behavior, increased smartphone market penetration, and regulatory support (Megawati & Kertiriasih, 2024). Digital technology has several benefits, such as speed of access to information, communication, and transactions through electronic media (Megawati & Kertiriasih, 2024; Tang & Yang, 2023). These benefits are felt not only by customers but also by banks. Furthermore, Megawati & Kertiriasih (2024) stated that, with digital technology, banks can provide the services needed by customers more quickly and safely.

The theory of transaction cost economics (TCE) or economic transaction cost theory originates from a new economic and institutional view of the potential use of costs to maximize the achievement of corporate goals (Hakim et al., 2016). This theory describes why people choose certain transactions over others (Lopes Amaral & Wutun, 2022). The theory of economic transaction costs in digital activities involves three types of costs: initial analysis, monitoring, and adjustment (Lopes Amaral & Wutun, 2022). The analysis of these three costs is used to explain TCE in the implementation of digital technology. The initial analysis cost is the cost, including the time and effort spent by the management to find information about the best digital products and services (Williamson, 1981) from all digital services offered by digital technology development agencies. The monitoring cost includes the time and effort spent to ensure that management has fulfilled all the contractual requirements (Williamson, 1981) specified by the technology developer. Finally, adjustment costs include the time and effort in the change process, customer service, and support (Williamson, 1981) of the developer during the contract period.

Bank X has a special team for developing digital technology. The team was divided into two units: a digital banking team and an on-banking house sales team. This team develops and ensures the security of digital transactions and manages and evaluates Bank X's digital features. This team is a head office team; therefore, not every region has staff members. However, the feature development process is also based on inputs from each region according to the problems and needs of customers and the benchmarking process with other banks. The following are the statements of Mr. DR and Mrs. WW regarding the special team for digital technology development.

"…*The special team is more precisely at the head office; if we in the region just give suggestions, implement, and teach customers to use technology. The development is definitely in the unit, but we do not know much about the unit in the region. Digital banking has two units that may play an active role: digital banking at the head office and transactions on banking house sales at the head office. These two units develop until they become owner products, look for customer needs, introduce what we have, and benchmark with other banks*…" (Mrs. WW, December 11, 2024)

"…*Therefore, a special division develops daily, sells, and ensures after-sales to customers. We also have to keep the customers who have closed and used the digital facilities well after they install this mobile banking*…" (Mr. DR, December 12, 2023)

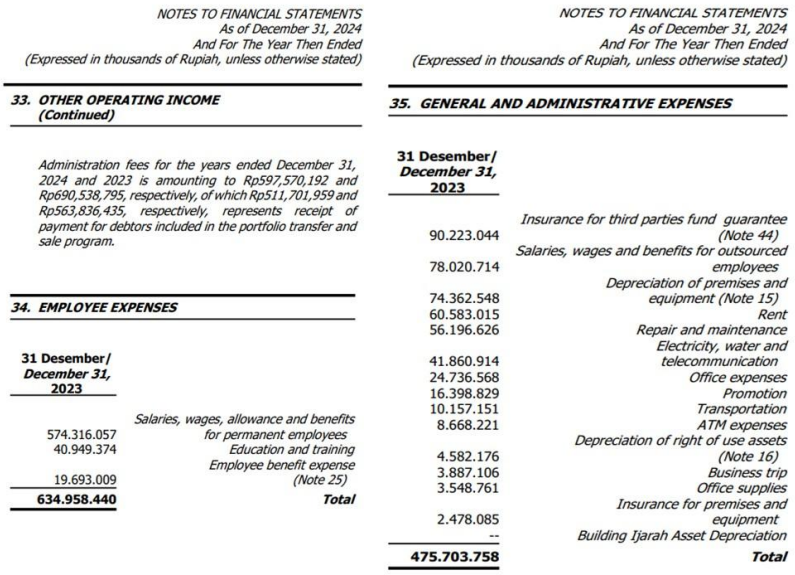
Researchers were unable to obtain the exact costs required to develop digital technology; however, in general, there are three costs associated with the development of digital technology at Bank X. The three costs are analysis, monitoring, and adjustment costs (Lopes Amaral & Wutun, 2022). These three

types are related to the initial process of system development, evaluation of usage, and revision of technology based on the evaluation results (Lopes Amaral & Wutun, 2022). Therefore, a very large cost is likely required for the implementation of digital technologies. These costs arise not only from the formation of digital teams but also from cooperation with third parties in technology development. Mr. DR and Mrs. AAD made this statement as RCEO of Bank X in Region A.

"*…I cannot tell you how much, because it is at the head office, but as far as I know it is very large, we also have improvements, so the focus is always on that, and we will increase this, this used to be quite large…*" (Mrs. AAD, December 11, 2024)

"*…I still do not know the amount; if the placement problem is there are two, which can be blocked from internal IT or Developer personnel; there are also those that are tendered to be developed by third-party personnel if the range of how much it costs, I do not know…*" (Mr. DR, December 12, 2024)

Based on discussions with Bank X's finance department, the cost component of technology development is split into several costs in the financial statements: the cost of salaries, wages, benefits of outsourced employees, and repair and maintenance costs. Figure 1 shows part of the notes to the financial statements for salary and maintenance expenses of Islamic Bank X.



NOTES TO FINANCIAL STATEMENTS
As of December 31, 2024
And For The Year Then Ended
(Expressed in thousands of Rupiah, unless otherwise stated)

33. OTHER OPERATING INCOME (Continued)

Administration fees for the years ended December 31, 2024 and 2023 is amounting to Rp597,570,192 and Rp690,538,795, respectively, of which Rp511,701,959 and Rp563,836,435, respectively, represents receipt of payment for debtors included in the portfolio transfer and sale program.

34. EMPLOYEE EXPENSES

31 Desember/ December 31, 2023	
574.316.057	Salaries, wages, allowance and benefits for permanent employees
40.949.374	Education and training
19.693.009	Employee benefit expense (Note 25)
634.958.440	**Total**

NOTES TO FINANCIAL STATEMENTS
As of December 31, 2024
And For The Year Then Ended
(Expressed in thousands of Rupiah, unless otherwise stated)

35. GENERAL AND ADMINISTRATIVE EXPENSES

31 Desember/ December 31, 2023	
90.223.044	Insurance for third parties fund guarantee (Note 44)
78.020.714	Salaries, wages and benefits for outsourced employees
74.362.548	Depreciation of premises and equipment (Note 15)
60.583.015	Rent
56.196.626	Repair and maintenance
41.860.914	Electricity, water and telecommunication
24.736.568	Office expenses
16.398.829	Promotion
10.157.151	Transportation
8.668.221	ATM expenses
4.582.176	Depreciation of right of use assets (Note 16)
3.887.106	Business trip
3.548.761	Office supplies
2.478.085	Insurance for premises and equipment
--	Building Ijarah Asset Depreciation
475.703.758	**Total**

Figure 1. Digital Technology Cost in Notes to Financial Reporting

Source: Research Data, 2025

These expenses are divided into two types: employee expenses and general and administrative expenses. The categorization of these costs as part of employee expenses, and general and administrative expenses indicates that digital technology development activities are routine transactions that are part of a company's main business activities. This statement was reinforced by Mr. DR, Mr. ITH and Mrs. RPK as follows:

"*It should be big because it can be considered an investment, well for the amount we do not know, and it should be significant, the benefits and too much help the position of the customer, the business, and must prepare the appropriate budget, this is one way to show our banking assets. The bank makes a fairly large business investment if the range of numbers is almost the same as the non-digital ones. Fixed costs it is more about investments*

related to servers, such as supporting devices; the hardware is probably a fixed cost, as well as the employees. If the variable non-fixed costs are more consumed, maybe if there is development, it is also in nature if needed, the investment costs may be to develop, to create more new services, the structure is probably more or less like that, apart from the server and others, the development is more important…" (Mr. DR, December 12, 2024)

"*…In terms of costs to customers, we also provide revenue sharing or fee sharing. For example, for house-to-house services and E-pay services, we work with non-individual customers, for example, Islamic financial institutions, on average, who need direct access to banks, well we set a fee upfront to be able to access the house to house of bank X, approximately 5 million rupiah, then there will also be monthly transaction fees, and set up fees…*" (Mr. ITH on December 8, 2024).

"*…They are likely used at the head office to meet the operational costs that also arise because, if the process is from our internal IT team, it also needs to be set up. During the set-up session, there are maintenance costs, server costs, or daily costs that are taken from the transaction fee...*" (Mrs. RPK, December 16, 2024)

The advantages of Digital Technology Development for External Bank X include many benefits in the development of digital technologies. Internal and external banking parties can benefit from these benefits. For both parties, benefits can have a physical form (tangible) or no physical form (intangible). For external parties, the benefits of a physical form are data security and financial product innovation. Data security is ensured because the mobile banking login process requires the password and fingerprint of the account owner. The transfer process requires a Telephone Identification Number (TIN). These two stages indicate the difficulty of hacking a mobile banking account. Mrs. KA's statement reinforced this result.

"*…It is very safe to use mobile banking. From the time mobile banking started, I have never had any problems with transaction security. This is very different from the accounts I have with other banks. Suddenly, there were three or four transactions with nominal amounts from mobile banking. The worst part is that this is a salary account, which happens to many employees in my place. So since then, I always empty my salary account and move it to an account at bank X…*" (Mrs. KA, December 17, 2024).

The second benefit that customers receive is product innovation. Unlike before the use of mobile banking, all banking transactions can now be performed through mobile banking. Complete financial features and other services make customers feel comfortable being Bank X customers. Some of the main features of Bank X's mobile banking are credit and data package purchase transactions, electronic money purchase/top-up, daily housing and education bill payments, entertainment payments, government service payments, all types of transportation payments, social fund spending transactions, and environmental fee payments. Banking product innovation can also be obtained from the ease of opening pension fund accounts, sukuk products, and other financial transactions. Mr. UA mentioned this in the following statement.

"*…Nowadays, it is easy to pay anything through mobile banking. I even want to extend my deposits through my phone. It is really cool…*" (Mr. UA, December 16, 2024)

The intangible benefits that customers gain from mobile banking are transparency, accountability, and customer loyalty. Customers obtain the first benefit because all transactions have a track record in the form of an electronic

statement (e-statement) that they can access at any time. In addition, customers will receive a notification via email or a short message system (SMS) if they make a transaction with an amount above Rp1,000,000. Real-time access to customers ensures that they do not have to worry about their funds. Mrs. FS and Mrs. W made the following statements:

"…*Yes, mas, it is good to use mobile banking. I once conducted a transaction in a shop. I could not make payments with the card because the shop machine had problems. I thought the money was deducted, and I had to take care of it at the X Bank Office; it turned out that in less than five minutes, the funds that were originally deducted came straight in. I could immediately check it on mobile banking*…" (Mrs. FS, December 16, 2024).

"…*Another intangible benefit is, of course, customer loyalty, so if the customer has used all of our services, transactional has also been in us, the holding product has also been in us, it will be difficult for them to move to another bank because forming an ecosystem or making a customer user of one of the digital services is not easy when he can, now he will move and will think again to move his transactions to another bank, one of which might be that*…" (Mrs. WW, December 11, 2024)

Similar to the benefits felt by external parties, internal parties also receive many benefits from using digital technology. The benefits of digital technology to internal parties can be divided into those that have no physical form (intangible) and those that have a physical form (tangible). The intangible benefits of digital technology include transparency, accountability, and customer loyalty. Transaction transparency and accountability are obtained because customers can check their fund mutations using mobile banking applications. The process of checking directly allows customers to complain about inappropriate transactions. The next greatest benefit is customer loyalty. The ease and transparency of transaction mutation can increase customer loyalty. Mr. M mentioned this statement as a customer and Mrs. RK as BM Branch B.

"…*Once there was a transaction in my account, but I did not feel it was my transaction, so I immediately confirmed it via email, not long after I got a detailed explanation of the transaction*…" (Mr. M, December 18, 2024)

"…*When we can create a transaction in one ecosystem, the result is third-party funds that will gather, so the full third-party funds go to bank X, and we help the transaction, the customer is also happy, the circulation of funds is also with us so that we not only get additional third-party funds but also get fee base income*…" (Mrs. RPK, December 16, 2024).

The tangible benefits obtained by banks are operational efficiency and financial product innovation. Operational efficiency is obtained because Bank X has many cost reductions due to the use of digital technology. Cost reductions are in the form of reducing the cost of adding ATMs and the number of employees in the front office (Tellers and Customer Service). The first benefit also impacts the next benefit, namely, digital product innovation, which makes it easier for Bank X. Mr. WSB and Mr. ITH made this statement as follows.

"*For me, it is very different. For example, in the past, there had to be two tellers and two customer service representatives in one office. However, that number has been reduced operationally because everything can be served digitally. Every time I go into a bank office, it is not as busy as it used to be, not because there are no customers, but because*

customers are now starting to switch to conducting their banking transactions through M-Banking." (Mr. WSB, December 17, 2024)

"*Initially, customers had to do everything manually because there was no digital system. However, now they can use mobile banking, which allows customers to manage their funds, such as paying tuition fees, without going to the school. If thousands of customers make payments on the same day or week, it generates significant revenue for the bank's assets*." (Mr. ITH, December 7, 2024).

CONCLUSION

The results of this study show that the implementation of digital technology is a long process that needs to be analyzed for its costs and benefits to determine the importance of digital technology development. Cost analysis shows that the implementation of digital technology requires at least three types of costs: analysis, monitoring, and adjustment costs. These three types of costs are in line with economic transaction cost theory, which states that the development of new technology or organizational policies requires an in-depth cost analysis. These costs are divided into two types: employee expenses and general and administrative expenses indicates that digital technology development activities are routine transactions that are part of a company's main business activities. The competitive advantage showed that the use of digital technology brings benefits to both internal and external parties. The benefits obtained can be tangible or intangible. Tangible benefits have a physical form, while intangible benefits do not have a physical form but can be felt. These benefits include data security, operational efficiency, transparency, accountability, financial product innovation, and loyalty. Further research can be conducted using multiple cases to determine the implementation of digital technology in other banks, thereby enabling the formulation of comprehensive policies for using digital technology.

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