

Optimizing Cost and Performance of Cloud versus on Premises in Digital Wallet Start up

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Abstract: In the context of the rapid growth of the fintech industry in Indonesia, the study explores the choice of IT infrastructure in particular between on premise and cloud in digital wallet fintech start-ups to improve cost efficiency. With a lack of detailed information in the literature about the critical role of infrastructure in the development of fintech, the study uses Mixed Methods The Convergent Parallel Design to provide in-depth insights into the impact of infrastructural decisions on operational and financial efficiency. The findings show that the adoption of cloud infrastructure, chosen for its scalability, flexibility, and cost efficiency, is significant in reducing operating and maintenance costs, while strengthening market positions. However, the decision also calls for serious consideration of security aspects, data privacy, and regulatory compliance. The findings provide important contributions for policymakers, regulators, and industry stakeholders in understanding the importance of data security strategies and company-specific needs in selecting IT infrastructures. In conclusion, choosing the right IT infrastructure is key to reducing costs and supporting sustainable growth in the fintech sector, especially for digital wallet start-ups.

Keywords: IT Infrastructure, Cost Efficiency, Security and Compliance, Mixed Methods-The Convergent Parallel Design, Sustainable Growth.

INTRODUCTION

The financial industry, including payments, is undergoing significant changes due to several factors such as digitization, technological innovation, changing consumer behavior, recent regulatory reforms, and increased competition. Regulatory changes have made it easier for non-financial entities that provide financial and banking services to enter the financial market. Over the past ten years, fintech has evolved into a disruptive force in the financial industry, offering innovative solutions to various industries. Fintech companies, including start-ups, telecom companies, and large technology companies, are developing or abandoning their core businesses to expand their offerings into financial and banking services. This is a diversification strategy with innovations in current financial products and services, replacing some parts of the bank value chain, and impacting payment systems (Hamdan et al., 2021).

The research aims to study the strategy of selecting IT infrastructure between on premises and cloud on a digital wallet fintech start up. The main objective is to analyse the factors of infrastructure selection, assess the impact of the infrastructure choice on cost effectiveness, and provide practical recommendations to practitioners. It is hoped that this research can provide guidance for digital wallet fintech start up to optimize IT infrastructure, improve cost efficiency, and thrive in a dynamic business environment.

The research has several advantages, namely: cost-effectiveness optimization to help digital wallet fintech start up manage budgets more efficiently, providing practical recommendations to practitioners to make decisions about IT infrastructure, providing indepth understanding of the process of selecting IT infrastructures, as well as contributing to understanding the fintech industry and relevant IT Infrastructure.

METHOD

Mixed methods were chosen as an approach in this research with the aim of digging a deeper understanding of research problems. Creswell and Clark (2017) emphasized the importance of a mixed approach in dealing with the complexity of research. 'The Convergent Parallel Design' will be outlined as a research methodological framework, explaining how this design is implemented to answer research questions and showcasing strategies taken to research goals.



Source : Creswell & Plano Clark (2017) Figure 1. The Convergent Parallel Design

RESULTS AND DISCUSSION

Results of Quantitative Research

1. Respondent demographics

The demographic sample showed that the majority of participants were men (78%), with a balanced distribution of working time from less than 1 year to more than 5 years. The majority held roles as IT Manager (44%), followed by Head of IT (30%) and CTO/CIO (26%). It reflects variations in individual characteristics in the field of IT management.

2. Conceptual Framework for Quantitative Research

This conceptual framework analyzes the impact of the choice of information technology infrastructure (IT) on the cost efficiency of a fintech start up. There are three main components that mediate such influences, namely scalability, data security, and flexibility. The main hypothesis states that the type of IT infrastructure directly affects cost efficiency, while scalable, data safety, and the flexibility of each.



Figure 2. Conceptual Framework for Quantitative Research

3. Relationship Between Type of IT Infrastructure and Cost Effectiveness

Research shows that there is a significant relationship between the type of IT infrastructure and cost effectiveness in a digital wallet fintech start up. The findings indicate that cloud-based IT infrastructure has a positive impact on the cost efficiency of Indonesian fintech start up. The study is consistent with the trend of adoption of cloud-based IT infrastructure in the Indonesian fintech industry. The results of this research provide insight into the importance of cloud infrastructure in the cost management strategy of fintech companies. Although these findings are useful, it is worth remembering that the generalization of the findings can be influenced by the unique characteristics of each fintech start up, the level of technological maturity, and changing regulations.

4. Contribution to Scalability, Data Security, and Flexibility

Scalability, data security, and flexibility tests in the context of Indonesian fintech start-ups provide an overview of their contribution to cost effectiveness. Research shows a significant positive relationship between scalability, data security, and flexibility with cost effectiveness. Researchers, policymakers, and industry practitioners need to pay attention to the importance of choosing an IT infrastructure that can support the dynamic growth of digital wallet services safely and efficiently.

Table 1. Quantitative Result

Quantitative Result

- No Relationship Between Type of IT Infrastructure and Cost Effectiveness
- 1 There is a significant relationship between the type of IT infrastructure and cost effectiveness.
- 2 The choice between On Premises-based and Cloud-based solutions affects the financial efficiency of fintech start-ups.
- 3 Cloud infrastructure is in line with emerging trends in the Indonesian fintech industry, offering scalability, flexibility, and cost efficiency.

4 The positive results highlight the importance of cloud infrastructure for fintech companies looking for optimal cost management strategies in Indonesia. Contribution to Scalability, Data Security, and Flexibility

Scalability, data security, and flexibility together contribute to cost effectiveness.

The impact of these factors on IT infrastructure has varying effects on cost efficiency.

Fintech start-ups should consider scalability, flexibility, and data security comprehensively when planning their strategic IT infrastructure.

Policy makers and regulators should consider the impact of IT infrastructure choices on cost effectiveness when setting the fintech sector guidelines.

Results of Qualitative Research

The qualitative section of the research aims to enhance researchers' understanding of on-premises and cloud infrastructure selection strategies by fintech start-ups in Indonesia, those operating in the digital wallet industry. The research uses a semi-structured interview approach to learn more about the factors that influence IT infrastructure decisions and their impact on the efficiency of the company's operating costs. This qualitative method allows researchers to gain an immediate understanding of the fintech industry and enrich quantitative data with real perspective and experience on the implementation and management of IT infrastructure.

1. Qualitative Data Collection Methods

In this study, four Chief Technology Officers (CTOs) of a digital wallet fintech start-up in Indonesia were interviewed through a semi-structured interview approach. The aim is to learn how to choose an IT infrastructure, both on premises and in the cloud, and how it affects the company's operating cost effectiveness. Semi-structured interviews are used to give sources the flexibility to explain their experiences and perspectives in depth. Sources selection criteria include direct experience in strategic decision-making related to IT infrastructure and their role in improving operational efficiency. Each interview was conducted online and lasted for an hour. This process ensures efficient time and does not interfere with the daily activities of the source. Soon after that, a transcript of the interview was made to ensure accurate data analysis. This research gathers data and identifies the main topic of the conversation. This research provides important insights into best practices for managing IT infrastructure in the fintech industry.

2. Semi Structural Interview Results

Researchers use a perspective that emphasizes the quality of interaction and the depth of analysis rather than the quantity of samples when building these qualitative research methodologies. Researchers understand that the quantitative research is not limited to the minimum sample number, according to Martha & Kresno's view (2016). This allows researchers to make flexible decisions about the number of informants they take. According to Martha & Kresno (2016), researchers acknowledge that research focused on a single informant can be very beneficial in some circumstances, as it allows the researcher to explore dimensions and perspectives that may not be revealed in conventional research activities. Thus, this approach allows for more focused and indepth research, where each informant is selected because of their ability to provide significant insights into the subject being studied. Therefore, the selection of researchers to use a relatively small number of informants is not a limitation, it is a deliberate methodological choice that helps researchers understand the phenomenon being studied.

The results of the interview showed that the infrastructure model chosen by the digital wallet fintech company was influenced by a number of important factors. Fast and efficient scalability is a major reason for choosing a cloud-based infrastructure. This decision is supported by cost analysis that shows savings, which emphasizes the importance of faster efficiency and innovation offered by the cloud.

Factors that influence the choice between cloud and on-premises infrastructure include the need for business agility, scalability on demand, and optimization of resource management. Respondents 2 chose on premises infrastructure to gain full control over data and systems, highlighting security and the ability to comply with local regulations as primary considerations.

Cost management is significantly affected by the selection of IT infrastructure. Respondent 1 indicated that adoption of the cloud significantly reduced operating costs, turning many capital costs into predictable operational costs. In contrast, Respondent 2 indicates that initial investments in infrastructure on premises will result in lower operating cost in the long term because they no longer rely on subscription-based services.

Among the important things that emerged from the interview were the dynamics of IT infrastructure selection in the fintech industry, in digital wallet companies. This analysis found that, in addition to improved infrastructure security on premises, cloud solutions offer operational flexibility, also offering control. Other factors, such as operating costs and how quickly they can adapt to market changes, are also important considerations in decision-making.

3. Interpretation of qualitative data

The interview results show that fintech companies face many challenges when choosing IT infrastructure, especially when it comes to improving cost efficiency while still prioritizing innovation and security. The ability to adapt to new technologies and market demands quickly is critical in the rapidly evolving fintech industry without compromising data security and control. The specific needs of the company and its operating environment are thoroughly considered before choosing between cloud and onpremises. According to this interpretation, a flexible and responsive IT strategy is essential to support the long-term business goals of fintech companies.

Synthesis and Integration of Research Results

The research uses data integration strategies to understand the methods of selecting IT infrastructure in digital wallet fintech companies. The integration results show a strong preference for cloud infrastructure, with a focus on flexibility, scalability, data security, and cost effectiveness. The findings provide important guidance for fintech companies in planning or reviewing their IT infrastructure strategies, with the aim of lowering operating costs and enhancing their ability to innovate and thrive in a competitive market.

1. Identification Shared Themes

The researchers found several factors that influence the IT infrastructure choices made by digital wallet fintech start-ups. These factors point to important things that companies should consider when they design their IT infrastructural strategies to reduce costs and drive growth. Qualitative and quantitative research is combined in this study. The commonly identified problems are presented in Table 2.

Table 2. Identity Shared Themes							
No	Theme		Description				
1	Security a Trust	and	In both research methods, data security is the focus. It shows that security and trust are top priorities for fintech companies, regardless of infrastructure choices. Qualitative respondents stressed the importance of having full control over data to ensure security, while quantitative data showed that strong data security correlates				
			positively with cost effectiveness.				
2	Scalability a Flexibility	and	Scalability and flexibility are the second topics associated with both methods. In support of rapid growth and demand fluctuations, fintech startups need an easily customizable IT infrastructure. Many respondents viewed the cloud infrastructure as a better option to the desired level of scalable and flexible.				
3	Cost Effectiveness		Cost effectiveness is another common theme, with both methods showing that the choice of IT infrastructure has a significant impact on the company's operating costs. While cloud infrastructure offers the potential for cost savings through operational efficiency and cost reductions upfront, some qualitative respondents also acknowledge the value of investment on premises in the context of greater data control and security.				

Table 2. Identify Shared Themes

4 Strategic The final focus is that choosing IT infrastructure is not only a technical decision but also a strategic one. This decision includes considering how the IT infrastructure helps with long-term goals, in achieving a competitive position in the highly competitive fintech market.

The conclusion to identify these common themes allows us to understand more deeply about the key considerations in the selection of IT infrastructure in a fintech start up. The results show that companies must address data security challenges, scalability and flexibility needs, and the strategic consequences of their infrastructure choices while striving to improve cost effectiveness. To sustained growth and long-term success in the fintech industry, it is important to align IT infrastructure options with the overall business strategy.

2. Meta Inference Analysis

During the meta inference analysis phase, researchers combined the results of quantitative and qualitative research to gain a better understanding of the IT infrastructure selection strategy in the newly established digital wallet fintech company. This process involves searching for patterns, similarities, and differences that help a better understanding of the research subject, as presented in Table 3. The researchers want to use this analysis to get important information about this research.

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No	Category		Description	Details
1	Similarity	of	Similar findings between	Both approaches emphasize that data
	findings		quantitative and	security, scalability, and cost
			qualitative data	effectiveness are crucial when choosing
				an IT infrastructure.
2	Contradictions a	ınd	The differences that	Contradictions over the cost efficiency
	Resolutions		arise from the findings	of the cloud infrastructure and data
			and how to solve them	security concerns are resolved by
				exploring the context of infrastructure
				adoption based on corporate growth
				phases and regulatory requirements.
3	Complete t	the	How the findings of the	While qualitative data provides context
	findings		two methods	and in-depth understanding of IT
			complement each other	infrastructure choices, quantitative data
				provide statistical evidence.
4	Meta-Inference		Conclusions or	Data security, scalability, flexibility,
	Implications		implications of meta-	and cost efficiency are key factors in
			inference analysis	choosing an IT infrastructure for a
				fintech business.

Table 3. Meta Inference Analysis

3. Data Triangulation

Data analysis is important in this study to validate the results. The integration of quantitative and qualitative research results shows that the use of cloud infrastructure has a positive impact on the cost effectiveness of digital wallet fintech companies. Triangulation of data from both research methods reinforces the conclusion that the cloud infrastructure provides important strategic and operational advantages for the company.

4. Integrated findings

Data integration produces key findings related to the selection of IT infrastructure in fintech companies. Qualitative analysis suggests that cloud infrastructures can provide advantages in scalability, flexibility, and data security. Meanwhile, quantitative results show a relationship between cloud infrastructure and better cost effectiveness. Synergies between qualitative and quantitation findings suggest that fintech companies need to carefully consider their IT infrastructure decisions, taking into account cost aspects, operational flexibility and data safety. Overall, this integrative outcome provides valuable insights for the fintech industry, especially digital wallet start up, in developing effective and efficient IT infrastructure strategies.

CONCLUSION

This study concluded that the choice of IT infrastructure between on premises and the cloud by a digital wallet fintech start up can affect cost efficiency. Fintech start up tend to choose cloud infrastructure because of its scalability, flexibility, and cost effectiveness. While there are advantages, fintech companies also consider data security, privacy, compliance, and operational controls. Adopting a cloud infrastructure can reduce operational and maintenance costs, as well as strengthen the company's market position. Recommendations include assessment of specific needs, investment in data security, and development of internal IT competence. Recommends for further research include broader comparative studies, focus on data security aspects, regulatory impact assessments, and in-depth cost-benefit analysis. All the suggestions are expected to help fintech start up optimize their IT infrastructure strategy.

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