

THE INFLUENCE OF PRODUCT INNOVATION AND SERVICE LEVEL AGREEMENTS ON B2B CUSTOMER SATISFACTION IN FORMING LOYALTY TO TELECOMMUNICATIONS PRODUCTS

Irawati Nawawi¹, Derriawan², Lola Fitria Sari³

^{1,2,3}Postgraduate School, Pancasila University, Jakarta, Indonesia

email: irawati.nawawi08@gmail.com, derriawan@univpancasila.ac.id, lola.fitria@univpancasila.ac.id

ABSTRACT

The objectives of this study are to analyze the influence of product innovation and service level agreements (SLA) on B2B customer satisfaction in shaping loyalty toward telecommunications products. Using a quantitative approach, data were collected through surveys of customers of PT SME, with a total of 240 respondents representing companies from various industries. The analysis was conducted using Structural Equation Modeling (SEM) to examine the relationships between variables. The findings indicate that product innovation has a positive and significant impact on customer satisfaction, ultimately enhancing customer loyalty. Furthermore, service level agreements also positively affect both customer satisfaction and loyalty, demonstrating that the clarity and consistency of SLA contribute to maintaining customer trust. The implications of this study highlight the importance of continuous product innovation strategies and the improvement of service standards in the telecommunications industry to enhance customer retention and business competitiveness.

Keywords: *Product Innovation, Service Level Agreement (SLA), Customer Satisfaction, Customer Loyalty*

INTRODUCTION

In the communications sector, where competition is fierce, customer loyalty can be a deciding factor in maintaining market share. Product loyalty in communications companies is critical to the sustainability and growth of the business. This loyalty reflects the extent to which customers choose to continue using the products or services of a particular company, even though there are other alternatives in the market. Customer loyalty is one of the key factors in the success of telecommunications companies. During increasingly fierce competition, companies are not only required to provide good service, but also to build strong relationships with their customers (Sani, 2023). Customer loyalty can be defined as a customer's loyalty to a brand or company. In the telecommunications sector, loyal customers tend to prefer to continue using a service despite offers from competitors. They are also more willing to recommend the service to others, which can increase the company's market share without the high cost of acquiring new customers (Ilham, Kumalasari, & Kurniadi, 2024).

Product innovation is crucial in maintaining loyalty. Companies that consistently introduce new features or improve their services are more likely to attract and retain customers. In the ever-changing world of communications, adapting to the latest trends and technologies is a must. Product innovation is a key factor in driving customer loyalty. In the communications industry, technology changes rapidly, and customers are

always looking for the latest solutions that can improve their experience. Evaluation of user experience is one of the ways to examine whether user experience is subjective and focuses on its product, system, and/or service (Subiyakto, *et al.*, 2021). For example, service providers that regularly introduce new features are more likely to attract customers who will stay loyal. Innovation not only increases the appeal of the product but also creates a positive perception in the eyes of customers (Setiawan, *et al.*, 2024). In addition to product innovation, a Service Level Agreement (SLA) also plays an important role in building loyalty. The SLA sets clear expectations between the company and the customer regarding service performance, such as response time and reliability levels. According to the de Azevedo *et. al* (2020), when a company can meet or exceed the SLA, customer trust in the brand will increase. This is important because customers feel protected and confident that their needs will be met properly (Julianti, Subiyantoro, & Nurmallasari, 2023).

Customer satisfaction is the result of product innovation and SLA compliance. Satisfied customers tend to be more loyal and recommend the product to others. Conversely, dissatisfaction can cause customers to turn to competitors. Thus, communication companies must focus on continuous innovation and maintain high service standards to increase customer satisfaction and encourage loyalty. Product and service quality are very influential. If customers feel that the service provided meets or even exceeds their expectations,

they are more likely to remain loyal. For example, in the telecommunications industry, a stable network and responsive customer service can increase customer satisfaction. Overall, a combination of product innovation, adherence to SLAs, and efforts to improve customer satisfaction are key to building strong loyalty in the competitive communications market (Slack, Singh, & Sharma, 2020).

In recent years, Indonesia has experienced a significant transformation in terms of the number of telephone subscribers. Data from the Indonesian Telecommunication Providers Association (ATSI's) and the Ministry of Communication and Information (Kominfo) show that telecommunications penetration continues to increase. This growth is driven by increased accessibility, the need for better communication,

and the adoption of new technologies. With the rapid growth of information and communication technology (ICT), telephone service penetration has undergone significant changes, both through cellular and wired networks. In general, based on the data in Table 1 below, the number of telephone subscribers in Indonesia in 2022 was recorded at 353,532,454 subscribers. In 2023, this number increased to 361,317,486 subscribers. This increase illustrates the significant growth in the use of telecommunications services in Indonesia, especially for cordless telephones (wireless) such as mobile phones. The increase of 7,785,032 subscribers from 2022 to 2023 shows that telecommunications services are increasingly becoming a primary need in an increasingly connected society.

Table 1. Number of Telephone Subscribers in Indonesia

Types of Network Hosting	Number of Indonesian Telephone Subscribers by Network Type Provider	
	2022	2023
Number of Subscribers	353,532,454	361,317,486
Wired Telecommunications	10,924,984	9,160,122
Wireless Telecommunications	342,607,470	352,157,364
Fixed Wireless Telephones	0	0
Mobile Telephones	342,607,470	352,157,364

Source: Ministry of Communication and Information

Telecommunication services with cables are increasingly being abandoned, especially in urban areas where the infrastructure is already supported by a stable wireless network. In addition, mobile phones offer higher mobility than fixed telephones with cables, so many people prefer mobile services that allow them to stay connected anytime and anywhere. Fixed telephone network, or better known as Public Switched Telephone Network (PSTN), is a telecommunications network that uses fixed telephone devices with cables as a connecting medium. PSTN has become one of the telecommunications infrastructures that is widely used by households and offices throughout

Indonesia. Initially, fixed telephone networks were developed to meet basic communication needs, but with the development of technology, PSTN has now been partially converted to support data and internet services (Kominfo, 2023).

Along with the development of the times and increasing mobility of society, the number of fixed telephone network customers continues to change. The 2022 Indonesian Telecommunication Statistics Report noted that PSTN customers are dominated by households compared to offices. However, offices remain one of the main users of fixed telephone services, especially in urban areas, where telecommunications infrastructure has been well established.

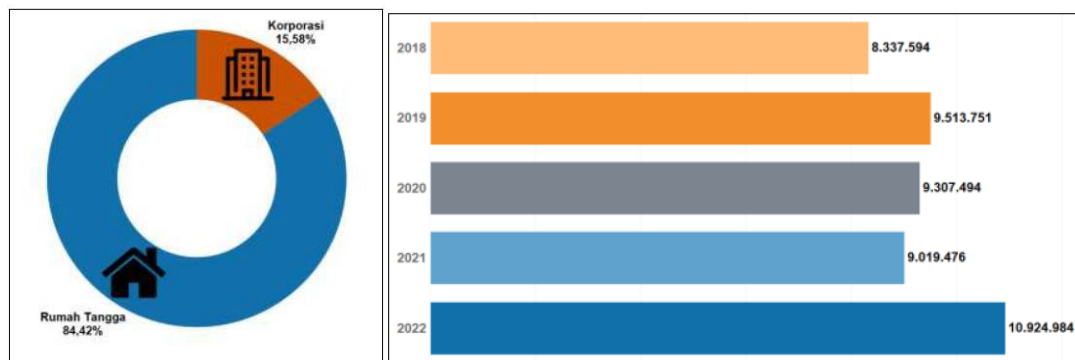


Figure 1. Network Customer Types in 2022 and Local Growth Remains 2018-2022

Source: (Kominfo, 2023, hal. 23-24)

The number of local fixed network customers in 2022 was recorded at more than 10.9 million customers. This number increased by 21.15% compared to the previous year, which only reached around 9 million customers. This increase shows that although cellular services continue to grow rapidly, the need for fixed telephone services, especially among offices, is still quite high. This can be caused by the stability and quality of calls offered by fixed telephone networks compared to mobile networks, which are sometimes affected by signal and coverage area problems (hal. 24). In 2022, the number of household customers was recorded to be around five times larger than the number of office customers. However, office customers still play an important role, especially for official communication services that require high reliability in running a company. This is where telecommunications companies are needed to meet the needs of these companies in their communications.

PT. Smart Milenium Effisiensi hereinafter referred to as PT SME is a company that collaborates with various telecommunications operators to provide communication services to companies with certain networks. The main purpose of this partnership is to help these companies save communication costs, especially in the use of fixed telephone services and through the internet. In its partnership, PT SME has a cooperative relationship with all major telecommunications operators in Indonesia, but in practice, the company uses more services from Telkom, the largest telecommunications operator in the country. Telkom is known for its extensive network that covers most of Indonesia, so it is considered the best choice to ensure stable and reliable communication connections. However, this heavy dependence on one operator causes several problems, especially when there are technical disruptions or other problems that cause service to be interrupted. In a scenario like this, if PT SME does not have a backup number from another

operator that can be used by customers to maintain smooth communication. This condition affects PT SME's reputation as a reliable telecommunications service provider, because when Telkom experiences problems, communication with customers of companies using PT SME's services are also cut off. The absence of other operator backup options means that PT SME cannot quickly switch communication to another network, which disrupts communication and harms their customers. To overcome this problem, product innovation is needed in the form of adding backup numbers from other operators. Dependence on one telecommunications operator has a fairly high risk, especially in terms of the sustainability of the company's operations. When Telkom experiences disruptions, whether due to technical problems, network maintenance, or other unexpected issues, all communications using the Telkom network will be cut off. This can have a major impact on the continuity of the operations of PT SME's partner companies, most of which rely on fixed telephone communications and telephone communications via the internet to run their daily businesses. When communication is cut off, customers cannot contact the company, causing dissatisfaction. In a highly competitive business world, communication disruptions like this can damage a company's reputation and lead to lost business opportunities. Therefore, PT SMEs need to consider steps to address this dependency by providing more flexible and reliable communication solutions.

In the telecommunications industry, SLA plays an important role in determining the service standards that must be met by service providers. SLAs cover various aspects, including service availability, recovery time when there is an outage, and compensation given to customers if the service provider fails to meet the agreed standards. In the context of PT SME, the SLA agreed with partner companies must include a guarantee of reliable telecommunications service availability. However, when Telkom experiences an outage and PT SME

does not have a backup number from another operator, the company may not be able to meet the service standards set out in the SLA. This can cause customers to feel dissatisfied with the services provided and even ask for compensation following the provisions of the SLA. If the outage occurs for a long time, partner companies of PT SME may lose trust and choose to switch to other telecommunications service providers that can offer better service guarantees. Therefore, product innovation in the form of backup numbers from other operators is not only important to maintain communication continuity, but also to ensure that PT SME can meet the service standards agreed in the SLA. With the backup number as one of PT SME's product innovations can assure its customers that communication continues even though there is a problem with the main operator. This helps companies maintain customer trust and avoid potential SLA violations that could negatively impact the company's reputation. In

addition, PT SME can also update the existing SLA by including provisions regarding the use of backup numbers from other operators. This provides added value for customers because they feel safer with the guarantee that communication will continue to run smoothly even if there is a disruption to the main network. Thus, this innovation can also be an effective marketing strategy to attract more new customers and strengthen relationships with existing customers. This number backup can help PT SME in maintaining long-term relationships with customers, where customers who feel that their telecommunications company is always ready to face challenges and disruptions will be more likely to maintain their contracts and even recommend PT SME services to other companies. Thus, this innovation not only helps PT SME overcome technical problems, but also have a positive impact on customer satisfaction and loyalty.

Table 2 Customer Report Data at PT SME

Years	2020	2021	2022	2023	2024
Number of Customers	1034	1078	1221	1342	1315
Network customer disconnected	36	25	51	32	54
Total	998	1053	1170	1310	1261

Source: PT SME data 2020-2024

The data above shows an increase in the number of customers from 2020 to 2023. In 2020, PT SME had 1034 customers, which increased to 1342 in 2023, but experienced a decrease in the number of customers in 2024 to 1315 companies. The total number of active customers also increased, from 998 in 2020 to 1310 in 2023, but experienced a decrease in active customers in 2024 to 1261 companies. This shows that PT SME has not succeeded in retaining its customers. Although the number of customers increased from 2020-2023, there was a fluctuation in customers who stopped subscribing each year, and experienced the largest customer decline in 2024. The highest number of customers who stopped subscribing occurred in 2024 (54 customers), while the lowest was in 2021 (25 customers). This fluctuation indicates that several external or internal factors affect customer satisfaction over time.

In an era of increasingly competitive business competition, product innovation and service quality are important factors that must be considered by every telecommunications company. Companies that do not innovate or fail to provide high-quality services will have difficulty surviving in a dynamic environment. Product innovation allows telecommunications companies to continue to develop new features that can meet the changing needs of customers and forces companies to

continue to innovate so as not to be left behind by competitors. On the other hand, SLA or Service Level Agreement is an important mechanism in maintaining the quality of service received by customers. SLA assures customers that the services they receive meet certain standards, which ultimately increases their satisfaction. In addition, increasing customer expectations for service quality have made SLA an important tool in building and maintaining long-term relationships with customers.

The identified problems are as follows: (1) When viewed from the perspective of customers who have dropped out, the extent to which product innovation influences customer satisfaction is very important for PT. SME does not introduce new features or services that are relevant to the needs of B2B customers, which can result in dissatisfaction and decisions to switch to other providers, and affect customer loyalty. (2) Service Level Agreements (SLAs) are an important aspect in B2B relationships. It is possible that customers feel that the SLA offered does not meet expectations or is not met, which can cause loss of trust and lead to decisions not to renew contracts, and customer satisfaction decreases. (3) Despite the growth in the number of customers, inconsistent customer satisfaction can be seen from the high number of dropouts. This indicates that the company may not

meet customer needs and expectations properly, which affects customer loyalty. Fluctuations in the number of dropouts shown in the data show that the number of dropouts varies from year to year. This indicates that there are external or internal factors that cause dissatisfaction, which need to be identified. (4) Customer loyalty can also be seen from the increase in total customers from year to year, but customer satisfaction affects customer loyalty, as seen from the number of dropped out customers who have dropped out, indicating that the company may have failed to create loyalty. This may be due to a lack of product innovation and dissatisfaction with service-level agreements. Based on the background study above, it is necessary to conduct research related to "The Effect of Product Innovation and Service Level Agreements on B2B Customer Satisfaction in Forming Loyalty to Telecommunication Products". This research was conducted at PT SME.

LITERATURE REVIEW AND RESEARCH FRAMEWORK MODEL

Product Innovation

Product innovation is the process of developing and implementing new ideas in creating or updating existing products to meet consumer needs and increase competitiveness in the market (Lestari, 2019, hal. 7). Product innovation not only includes the creation of new products but can also involve significant changes to the features, design, or functions of existing products. Product innovation plays an important role in attracting and retaining customers. According to Basalamah and Erwaedy (2021, hal. 51), product innovation is an effort to create new products or improve existing products to meet consumer needs and respond to market changes. This innovation not only involves creating new products from scratch, but also involves developing existing products to create greater value for consumers. In a competitive business environment, product innovation is an important key to companies' survival and thriving because it allows companies to provide more relevant, efficient, and attractive products to consumers (Jusuf, 2022). Innovation necessitates retail business actors to with the expanding era of a willing market, and have understood the need of the customer (Nasution & Nasution, 2023).

In the context of the telecommunications industry, product innovation can be in the form of improving network service features, developing new devices, or even adding technology-based services that make it easier for customers to carry out their daily activities. Product innovation in telecommunications refers to the development and

application of new ideas to create or improve the products and services offered to users. With the rapid development of technology and changes in consumer needs, telecommunications companies must continue to innovate to stay relevant and competitive. This innovation can include hardware such as smartphones, network devices, and digital services such as communication applications and data packages.

Product innovation has several indicators that shape and determine the success of an innovation. These indicators cover various aspects that companies consider in developing products, including: (1) Suitability of Needs; innovative products must be able to answer real problems faced by consumers. Through market research and user needs analysis, companies can identify trends and preferences that can be used to develop more relevant products. Suitability of needs in telecommunications means that products and services must be designed to meet user expectations. (2) Product uniqueness, creating differentiation in a crowded market, resulting from creativity and in-depth research into consumer trends and needs, is not only attractive but also builds a strong brand image. Such innovations are usually born from in-depth research and development, as well as analysis of industry trends and consumer preferences. (3) Product Development Speed; refers to the company's ability to create and launch new products in a short time to seize opportunities and enable the company to adapt quickly to user feedback and market changes. This information can be obtained from case studies of companies that have successfully implemented rapid development strategies. Development speed is crucial in the telecommunications sector, given the rapid pace of technological change. (4) Ease of use; where products designed with intuitive interfaces and simple usage processes will enhance the user experience. User testing and direct feedback are key sources of information for evaluating this aspect. Users expect devices and services to be intuitive and easy to understand. For example, a telecommunications application that offers simple navigation and clear help features can enhance the user experience. (5) Product Benefit Enhancement; includes the value provided to consumers after using the product. Innovative products must be able to demonstrate advantages such as time efficiency, cost savings, or improved quality of life. Product impact research and successful case studies can be used to gather information about the benefits felt by consumers. Product benefits in telecommunications must be clear and significant to consumers. Products that offer high speed,

network stability, and innovative features will be more attractive to users.

Service Level Agreement (SLA)

According to Keller and Ludwig (2002), a service level agreement (SLA) is a formal contract between a service provider and a client that outlines the specific services to be delivered. In a business context, SLAs are essential to ensure transparency and clear expectations, as well as to build trust between service providers and users. SLAs are not only a guarantee to customers that they will receive services according to the promised standards, but also a tool for companies to measure and manage the quality of the services they provide (Rahmawati, 2022).

In the telecommunications industry, SLAs are very important because customers expect reliable and uninterrupted service. The use of the internet and other telecommunications services has become a basic need in everyday life, both for personal and business purposes (Sugiat & Sudirman, 2024). Therefore, customers tend to pay more attention to the quality of service they receive. SLAs are influenced by several things, such as Service Reliability, Response Speed, Clarity of Agreement, Responsibility, and Disruption Compensation. The following is a more detailed explanation of the things that influence SLAs, as follows: (1) Service Reliability; refers to the ability of the service provider to provide consistent and reliable service as promised. The SLA usually includes a percentage of promised uptime, such as 99.9% uptime for telecommunications services. This reliability is critical for companies that rely on the service for their day-to-day operations. A good SLA will outline how the service provider will measure and report this performance. (2) Response Time; The SLA typically specifies a maximum time to respond to a support ticket, as well as the time required to resolve the issue. For example, for critical issues, the SLA may state that the provider must respond within one hour. This ensures that customers feel supported and that issues can be resolved quickly. (3) Clarity of Agreement; The SLA should be written in clear, unambiguous language, covering all details regarding the service provided. This includes definitions of terms used, scenarios addressed, and procedures for reporting issues. With this clarity, the risk of misunderstandings and disputes can be minimized, and all parties can carry out their roles properly. (4) Responsibilities; which outline the roles and obligations of each party. The service provider is responsible for providing the service according to the agreed standards, while the customer also has the responsibility to provide the information and

access necessary for the service to run properly. In a good SLA, these responsibilities should be described in detail, including procedures for reporting problems and carrying out maintenance. (5) Interruption Compensation; provisions in the SLA that regulate the actions taken if the service provider fails to meet the established standards. This usually takes the form of a refund, discount, or service credit for the period of the interruption. These provisions are important to protect customer rights and provide incentives for the service provider to fulfill its obligations.

Customer Satisfaction

Customer satisfaction is the level of positive feelings or judgments experienced by customers after using a product or service. It reflects the extent to which customer expectations are met or exceeded (Uzir, Jerin, Al Halbusi, Abdul Hamid, & Abdul Latiff, 2020). Customer Satisfaction will be greatly influenced by the existence of service and the quality of the product itself. (Husain & Sani, 2020). Customer satisfaction is very important for companies because it affects loyalty, customer retention, and word of mouth recommendations. Companies that can maintain high levels of customer satisfaction tend to experience better growth and higher profits (Sugiat J. , 2023). Therefore, competitive pricing and following the quality of the product offered is very important to achieve optimal customer satisfaction. Customer satisfaction is one of the most important factors in long-term business success.

Things to consider in customer satisfaction are seen from several aspects such as Conformity to expectations, Product quality, Customer response, Price value, and Overall service. Here is a more detailed explanation of the aspects of customer satisfaction as follows: (1) Expectation of conformity; refers to the extent to which the product or service received by customers matches their expectations. If the product or service meets or even exceeds expectations, customers will be satisfied. Conversely, if the service or product does not meet expectations, customers may be disappointed. (2) Product quality; High-quality products that meet or even exceed industry standards will increase customer satisfaction. Quality can be measured through various aspects, such as durability, reliability, and product performance. (3) Complaint response; A fast and efficient complaint handling process can turn a negative experience into a positive one. Customers who feel their complaints are heard and handled well tend to have higher levels of satisfaction, even after experiencing problems (Rahmawati & Susilowati, 2021). Companies must have a clear

system for receiving, processing, and resolving customer complaints to build trust and loyalty. (4) Price value; refers to customers' perceptions of the balance between the price paid and the quality of the product or service received. Customers will be satisfied if they feel they are getting good value for their money. Therefore, companies need to set competitive prices under the quality offered. (5) Overall service; includes all customer interactions with the company, from the purchasing process to after-sales support. Friendly, fast, and professional service will improve the overall customer experience. Poor service can decrease satisfaction even if the product is of high quality.

Customer Loyalty

Customer loyalty is a long-term commitment that customers have to a brand or company, which is reflected in consistent purchasing behavior and positive attitudes toward the brand (Park, Macinnis, Priester, Eisingerich, & Iacobucci, 2020). In a competitive business world, customer loyalty is a valuable asset, because loyal customers can generate sustainable income and help companies survive in a challenging market. Satisfied customers are more likely to become loyal customers. Customer loyalty is a condition where customers continue to use the same product or service for a long period of time and even recommend it to others. Things that influence customer loyalty such as Repurchase Intention, Recommendation, Service Satisfaction, Perception of Loyalty, and Competitors. Here is a more detailed explanation of things that influence customer loyalty: (1) Repurchase intention; customers who are satisfied with their previous experiences are more likely to repurchase products or services in the future. This intention is influenced by various factors, including product quality, service satisfaction, and perceived value. If customers feel that they have received good benefits from their previous purchases, they are more likely to repurchase (Sawhani, 2021, hal. 43). Therefore, companies should focus on creating positive experiences to encourage repurchase intentions. (2) Recommendations: those received from loyal customers are one of the most powerful forms of endorsement for a brand. Satisfied customers often share their positive experiences with friends and family, either directly or through social media. These recommendations not only increase brand trust but can also attract new customers without the added expense of advertising. To encourage recommendations, companies need to ensure that customers have a great experience and provide incentives for them to share their positive experiences. (3) Service satisfaction; who are satisfied with the service they

receive are more likely to return and remain loyal to the brand. Service quality encompasses a variety of aspects, such as speed of response, accuracy of solutions, and friendliness of staff. Companies that can provide services that exceed customer expectations are more likely to build strong loyalty (Sani, 2023). (4) Perceived loyalty; is how customers understand and evaluate their relationship with a brand. Customers who have a positive perception of a brand are more likely to show high loyalty. Therefore, companies must focus on building a strong brand image and establishing an emotional connection with customers. This can be achieved through effective communication, developing products that match customer expectations, and responding well to their needs. (5) Competitors; companies must actively monitor the market and understand the strengths and weaknesses of competitors. By conducting competitive analysis, companies can identify opportunities for differentiation and innovation, thereby maintaining customer loyalty even in competitive market conditions.

Prior Research and Framework Models

According to previous research conducted by Quintania dan Sasmita (2021); Worek and Sepang (2021) state that product innovation has a positive and significant effect on customer satisfaction with cosmetic products and pawnshop services. In telecommunication industry product, research by Hajar *et al.* (2022); Yulistira (2023) inferred that product innovation significantly influences to the customer satisfaction. Innovative products that meet customer needs tend to generate and impact customer loyalty, even though product innovation does not have a significant impact on customer need (Waha, Kindangen, & Wenas, 2023) on the Starbucks Drive Thru consumer. By involving customers in the product innovation process through continuous customer feedback, companies can understand consumer needs and wants more deeply and identify potential areas for better product development (Jusuf, 2022).

H₁: Product Innovation has a positive influence on Customer Satisfaction

Innovative products provide an opportunity for companies to stand out in a competitive market, as well as enabling companies to attract more customers. Research conducted by Worek and Sepang (2021) states that product innovation has a positive and significant effect directly to customer satisfaction of cosmetic products and pawnshop services. In this case, product innovation and SLA can be seen as factors that drive customer satisfaction, which in turn affects customer loyalty. Four things that need to be considered are communication, service quality gaps, infrastructure

and technology, and key performance indicators used in evaluating the impact of SLA on customer satisfaction and customer loyalty after product innovation. Meanwhile, according to research conducted by Putransyah (2024) inferred that a service-level agreement (SLA) has a positive and significant direct effect on customer loyalty, even though SLA does not have a significant impact on customer loyalty (Huang, Lee, & Chen, 2019). In the context of telecommunications firms, Yang (2015); Putri (2024); Zam Zam and Hendayani (2024) revealed that the service quality of customers has a positive and significant effect on Gopay Application and wifi.id customer loyalty.

H₂: Service Level Agreement has a positive influence on Customer Loyalty

H₃: Product Innovation has a positive influence on Customer Loyalty

Product innovation alone is not enough. Customer satisfaction depends not only on the product quality and product benefits, but also on the customer's overall experience with the company, which includes the quality of service provided. A well-designed and implemented SLA can increase customer trust in the service provider, which is the basis of customer satisfaction. Consistently meeting SLAs not only increases customer trust but also reduces customer uncertainty regarding the quality of service they receive (Tiatama, 2016). This is where the importance of SLA in maintaining and improving customer satisfaction lies (Nasution & Nasution, 2021). In the context of telecommunications firm, Rahmawati and Susilowati (2021); Yudistira (2023); Sugiat (2023); and Ekawati *et al.* (2024) revealed that the service quality of customers has a positive and significant effect on Indihome's end-of-customer satisfaction.

H₄: Service Level Agreement has a positive influence on Customer Satisfaction

This satisfaction is not only influenced by product quality, but also by other factors such as product innovation and SLA implementation, both of which are very important in providing added value to customers. Product Innovation serves to meet the evolving needs and expectations of customers. When companies introduce new features or relevant solutions, customers feel cared for and involved, which can increase their satisfaction. SLAs play a vital role in setting

expectations regarding service quality, where clear and met SLAs, such as response time and service availability, build trust between service providers and customers. If SLAs are met, customers are more likely to be satisfied, which is a prerequisite for creating loyalty. In the context of telecommunications firms, Huang *et al.* (2019); Hajar *et al.* (2022); Putri (2024); Zam Zam and Hendayani (2024); Ekawati, *et al.* (2024), which inferred that customer satisfaction have affect and significant influence on customer loyalty.

H₅: Customer Satisfaction has a positive influence on Customer Loyalty

According to the Robinson (2014, hal. 52), a conceptual model is a description of the model that is to be developed. This model must be able to ensure that the construction must meet the structure, form, content, and have meaning with parameters that are limited to certain measures in decision making (Husain, 2019).

The framework thinking in this study is based on the theory that product innovation and service level agreements, or SLA, are two key factors that can influence customer satisfaction and customer loyalty.

Product innovation allows companies to offer more relevant products and meet customer needs in a better way. Meanwhile, SLAs ensure that the services provided follow agreed standards, thus creating a satisfying customer experience. Product innovation refers to the development and improvement of features, designs, or technologies that provide added value to customers. Innovative products not only meet customer needs but also create new and interesting experiences, thereby increasing their satisfaction. On the other hand, SLAs serve as a guarantee from service providers to customers regarding service quality standards and availability. Clear and realistic SLAs can help manage customer expectations and ensure that they receive services according to the promised commitments. Customers who are satisfied with innovative products and high-quality services will be more likely to remain loyal to the company. Customer loyalty is then manifested in the form of repeat purchases, long-term retention, and willingness to recommend products or services to others. Schematically, the relationship between these variables can be described in the following conceptual model:

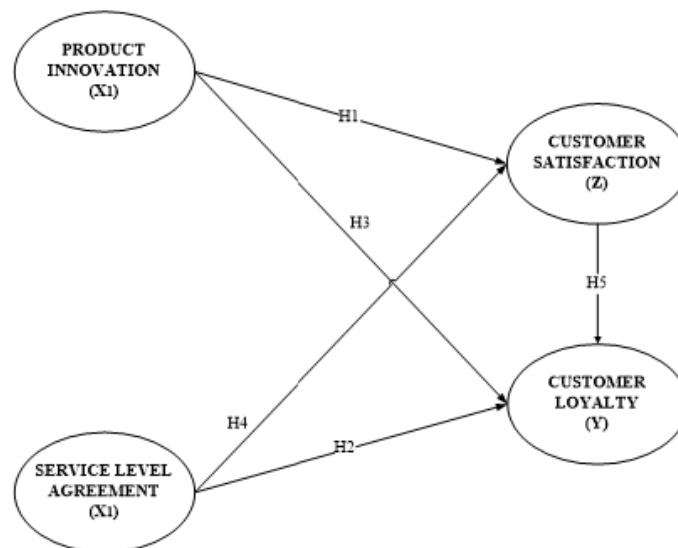


Figure 2. Research Model Development

Source: Author's Proposed (2024)

RESEARCH METHODS

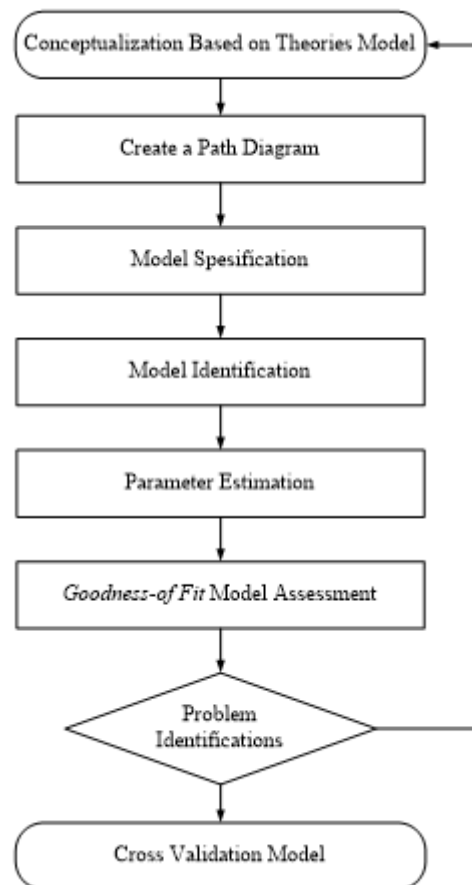
This study takes a causal research type by a quantitative approach in which identifies the extent and nature of cause-and-effect relationships between two or more variables (Mertler, 2022, hal. 108). The focus of this research covers the influence of product innovation and service level agreements (SLA) on customer satisfaction and loyalty, so the selection is very appropriate considering the role of PT SME in the telecommunications industry.

This study uses subjects from cover all corporate customers, as many as 1261 companies that receive services from PT SME in various regions and industrial sectors. Purposive sampling is a sampling technique based on certain considerations (Sugiyono, 2023, hal. 133), where the sample is selected based on certain criteria relevant to the research objectives. The criteria are: (i) Active Customers are used only for customers who are still actively using PT SME services in the last 2-3 years, who are selected as samples. (ii) Experience with Products and Services. The sample consists of customers who have used PT SME products and services for at least 2 years to ensure they have direct experience with product innovation and SLA. (iii) Variation in Industry Type. To obtain representative results, samples were taken from customers in various industrial sectors who use PT SME telecommunications services.

In this research, primary data were collected through distributing questionnaires to customers of PT SME. This questionnaire was designed as a structured measurement tool, which functions to obtain information from respondents directly regarding the research variables being studied (Taherdoost, 2016). The questionnaire distributed will be a reference in analyzing this study, namely using the Structural Equation Modeling (SEM) approach, where this method is often used in consumer behavior research (Handayani, Derriawan, & Hendratni, 2020).

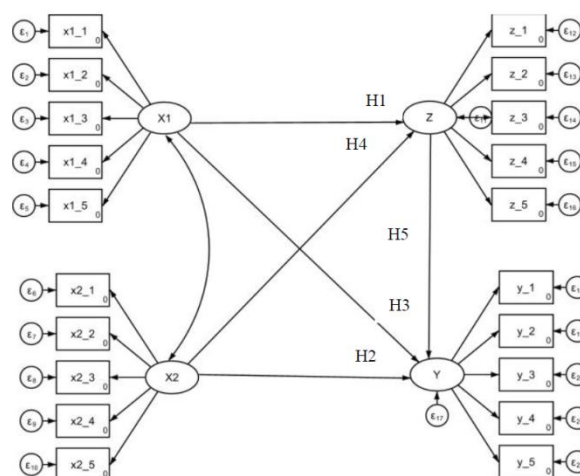
Measurement of the Innovation Product (X₁) variable adopted five indicators: suitability of needs, product uniqueness, development speed, ease of use, and product benefits. Service Level Agreement (X₂) variable adopted five indicators: service reliability, speed of response, clarity of agreement, responsibility, and compensation for disruptions. Customer Satisfaction (Z) variable adopted five indicators: expectation of conformity, product quality, complaint response, value for money, and overall service. Customer Loyalty (Y) variable adopted five indicators: repurchase intention, recommendations, service satisfaction, perceive of loyalty, and competitors. Overall of these instruments are measured using a 'Likert' scale.

Pilot Test Study is an important initial step in research to ensure the validity and reliability of the instruments that will be used in the main data collection stage.

**Figure 3. SEM Model Phases***Source: (Gunarto, 2018)*

Researchers must conceptually define the construct being studied and determine its dimensionality in the indicators or manifest variables. The conceptualization of the model, designed based on a strong theory, is then made into a framework of relationships among the variables. This diagram illustrates latent (unobserved) variables and observed variables, as

well as the direction of influence among these variables. To measure the validity of the questionnaire given to the respondent by standardized loading factors (SLF score), while construct reliability (CR) is used to see whether the research instrument is reliable or not, which requires the acquisition of a value greater than 0.7 (Hair Jr., Hult, Ringle, Sarstedt, & Danks, 2021).

**Figure 4. Model Diagram on the Relationship of Exogenous and Endogenous Variables***Source: Author Proposed (2024)*

$$Z = H1X_1 + H4X_2 + \epsilon_1$$

$$Y = H5Z + H3X_1 + H2X_2 + \epsilon_2$$

The process of ensuring that the proposed model has a unique solution and can be estimated

with the available data. A model is said to be identified if the amount of data is sufficient to calculate all model parameters. If this research meets the specifications and model identification, then model estimation can be carried out. Researchers can use Maximum Likelihood (MLE). MLE produces the best parameter estimates if the data used meets the assumption of multivariate normality, with a recommended sample size of 100-200. Researchers use this method with a sample size of 240 samples with this method. Model fit in SEM is evaluated using various goodness of fit criteria that measure the extent to which a theoretical model fits the observed data, with absolute, incremental, and parsimony fit indices. Modifying the model is necessary if the results are not fit. Based on the evaluation results, researchers can modify the model by adding significant relationships or removing irrelevant paths. Modifications must be based on theoretical considerations and not just on following statistical results. Cross-validation model is a technique to test the stability and generalization of the model by dividing the data into two or more subsets. The first model is the model development and modification, and the second part is used for validation or sample testing purposes (validation sample). This process is repeated several times with different data divisions to ensure that the

model results are not dependent on a particular data set. The hypothesis testing stage is carried out, and decision-making is done by looking at the t-statistic value and the p-value. The t-statistic value used is 1.96, so the criteria are H_a accepted and H_0 rejected when the t-statistic > 1.96 or if the p-value < 0.05 or vice versa.

RESULTS AND DISCUSSION

Results

In the pilot test study, initial data were collected from a small number of respondents, 30 (thirty) respondents who had similar characteristics to the target population. Respondents responded to the questionnaire, and the data were analyzed using various statistical methods, such as Validity and Reliability Analysis Tests. Validity analysis tests were conducted to ensure that each indicator in the questionnaire truly represents the construct to be measured. The reliability of the instrument was tested by calculating the Cronbach's Alpha value. The *Cronbach's Alpha* score is used to evaluate internal consistency, namely the extent to which indicators in one construct provide consistent results. In this pilot study, the Cronbach's Alpha value for all variables was examined to ensure that each construct had adequate reliability.

Table 3 Data Validity Test of 30 Respondents

	Item Coefficients	Sig.	Yields Test
X _{1.1}	0.818	0.000	valid
X _{1.2}	0.835	0.000	valid
X _{1.3}	0.859	0.000	valid
X _{1.4}	0.828	0.000	valid
X _{1.5}	0.436	0.016	valid
X _{2.1}	0.686	0.000	valid
X _{2.2}	0.703	0.000	valid
X _{2.3}	0.750	0.000	valid
X _{2.4}	0.693	0.000	valid
X _{2.5}	0.667	0.000	valid
Z.1	0.878	0.000	valid
Z.2	0.896	0.000	valid
Z.3	0.828	0.000	valid
Z.4	0.861	0.000	valid
Z.5	0.952	0.000	valid
Y.1	0.939	0.000	valid
Y.2	0.956	0.000	valid
Y.3	0.929	0.000	valid
Y.4	0.956	0.000	valid
Y.5	0.879	0.000	valid

Source: Recapitulation from Output Programs (2024)

The coefficients scoring (Table 3) in each item show a significant item coefficient value with a p-value < 0.05. This indicates that all items have a strong relationship with the total score of each variable. This is very important in research because valid instruments ensure that the data obtained can be relied upon to describe the phenomena being

studied. Thus, the results of this validity test provide a strong basis for proceeding to the next stage of analysis, such as reliability testing and analysis of relationships between variables, to ensure that the entire research framework is well-measured.

Table 4 Data Reliability Test of 30 Respondents

Latent Variable	Cronbach's Alpha
Product Innovation (X_1)	0.806
Service Level Agreement (X_2)	0.717
Customer Satisfaction (Z)	0.929
Customer Loyalty (Y)	0.962

Source: Recapitulation from Output Programs (2024)

Besides that, it also shows the Cronbach's alpha results on each latent variable have a score > 0.6 (Sugiyono, 2023, hal. 130) ; these scores are 0.806 for Product Innovation, 0.717 for Service Level Agreement, 0.929 for Customer Satisfaction, and 0.962 for Customer Loyalty. With good model

specifications, SEM analysis can provide valid, reliable, and theoretical results. The overall data used is 240 respondents. Using this model ensures the validity and reliability of indicators in representing research variables.

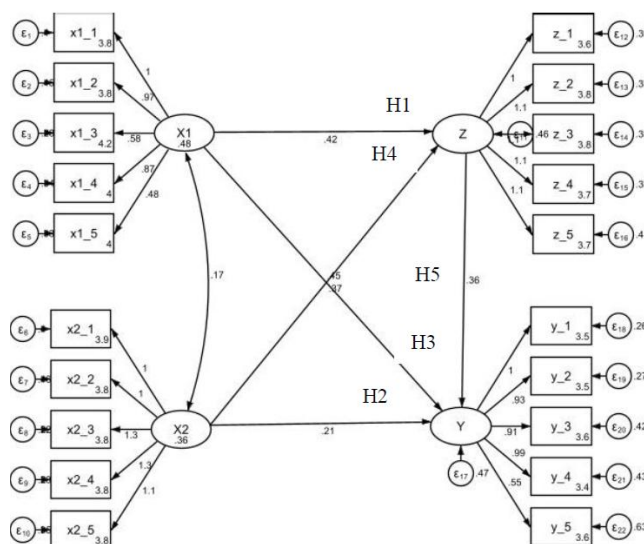


Figure 5. Tested Model Diagram among Exogenous and Endogenous Variables

Source: Author Proposed (2024)

The measurement specification in the Outer Model includes the assessment of reflective relationships, where indicators reflect latent variables. This is indicated by high factor loadings on several indicators, indicating a significant contribution of the indicators to the latent construct. While in the Inner Model, the causal relationship between latent variables is indicated by the influence arrow. From Figure 5 above, it shows that the path coefficient values between exogenous and endogenous variables are as follows: (1) For the score of X_1 to Z, the path coefficient is 0.42, (2) For the score of X_2 to Z, the path coefficient is 0.37, (3) For the score of Z to Y,

the path coefficient is 0.36, (4) For the score of X_1 to Y, the path coefficient is 0.45, and (5) For the score of X_2 to Y, the path coefficient is 0.21.

In the Outer Model context or measurement model, model identification focuses on the relationship between latent variables and their indicators. In the Inner Model or structural model, model identification focuses on the causal relationship between latent variables. This model aims to test the direct, indirect, or total effects between exogenous and endogenous variables. The model is evaluated using fit indices such as CFI, TLI, RMSEA, and SRMR to ensure the compatibility of the model with data. In addition,

inter-variable influences are tested through the path coefficient (path coefficients) and statistical significance (p-value).

Estimation of the parameters in the measurement of the model aims to measure the validity and reliability of each indicator that represents the latent variable.

Table 5 Model Measurement Yields

Indicators	Coefficients	z-Score	Sig (P > Z)
X _{1.1}	1.000	-	0.000
X _{1.2}	0.966	9.72	0.000
X _{1.3}	0.577	8.23	0.000
X _{1.4}	0.870	9.8	0.000
X _{1.5}	0.480	6.87	0.000
X _{2.1}	1.000	-	0.000
X _{2.2}	1.020	9.53	0.000
X _{2.3}	1.314	11.48	0.000
X _{2.4}	1.281	11.59	0.000
X _{2.5}	1.107	10.16	0.000
Z.1	1.000	-	0.000
Z.2	0.926	17.11	0.000
Z.3	0.913	14.43	0.000
Z.4	0.989	14.97	0.000
Z.5	0.548	8.36	0.000
Y.1	1.000	-	0.000
Y.2	1.127	14.13	0.000
Y.3	1.097	14.11	0.000
Y.4	1.105	13.93	0.000
Y.5	1.056	13.38	0.000

Source: Recapitulation from STATA (2024)

Based on the results of the analysis, indicators in the measurement model show the loading factor that fits the criteria (> 0.5), indicates that each valid indicator to measure the latent variables it represents, This gives confidence to the conclusions resulting from the model, which supports the theory that product innovation and service level agreements play an important role in increasing customer satisfaction and loyalty. A good construct validity in the measurement model

also strengthens the credibility of the results of this study. This first equation describes the relationship between variables can be written as follows:

$$1^{st} \text{ Equation} \rightarrow Z \\ = 0.420X_1 + 0.374X_2 + \varepsilon_1$$

$$2^{nd} \text{ Equation} \rightarrow Y \\ = 0.358Z + 0.450X_1 \\ + 0.213X_2 + \varepsilon_2$$

Table 6 Model Suitability Test Criteria through *Goodness of Fit*

Fit Statistic	Abbreviation	Cut-off	Value	Description	Results	
Likelihood Ratio	chi2_ms(164)	> 0.05	656.255	Model vs. Saturated	Poor Fit	
	p > chi2		0.000			
Population Error	chi2_bs(190)	0.000	3135.966	Baseline vs. Saturated	Poor Fit	
	p > chi2		0.000			
	RMSEA	< 0.05	0.112	Root Mean Squared Error of Approximation		
	90% CI,	< 0.09	0.103			
	Lower bound	acceptable fit	0.121	Probability RMSEA ≤ 0.05		
Upper bound	0.000					
Information Criteria	Pclose				Good Fit	
			10684.804	Akaike's Information Criterion		
	AIC	0.000	10914.526	Bayesian Information Criterion		
Baseline Comparison	BIC	0.000		Bayesian Information Criterion	Marginal Fit	
	CFI	approaching	0.833	Comparative Fit Index		
	TLI	numeral 1	0.806	Turker-Lewis Index		
	Size of Residuals	SRMR	< 0.08	0.073		Standardized Root Mean Squared Residual
		CD	approaching numeral 1	0.978		Coefficient of Determinations

Source: Recapitulation from Output Programs (2024)

The yields of the decision-making analysis of the data in the table above indicate that the model does not meet the model criteria ("Fit"). Based on the table, the Likelihood Ratio shows a p value > chi2 of 0.000 for the model vs. saturated and baseline vs. saturated. Because this value is less than 0.05, the decision for the Likelihood Ratio is "Poor Fit", which indicates that the model does not fit the data significantly. This indicates that there is a significant difference between the proposed model and the actual data, so the model is considered not good enough in representing the data. In addition, the Population Error is indicated by the RMSEA value of 0.112, with a 90% CI between 0.103 and 0.121, and a pclose value of 0.000. Because the RMSEA exceeds the cut-off of less than 0.05 and pclose is less than 0.05, the decision for the Population Error is "Poor Fit". This indicates that the population error rate does not meet the criteria for good model fit, because a higher RMSEA value indicates a larger model deviation from the accepted data. Information Criteria is indicated by the AIC (Akaike's Information Criterion) value of 10,684.804 and BIC (Bayesian Information Criterion) of 10,914.526. Both of these values are used to compare alternative models, with lower values indicating a better model. Although these values are relative to other models, the "Good Fit" status indicates that these information criteria support the

model's fit to the data. Therefore, based on the table, the model is declared "Fit" for the Information Criteria measure. Baseline Comparison is indicated by the CFI value of 0.833 and the TLI of 0.806. Based on the model fit criteria, the CFI and TLI values that are considered "fit" are close to the number 1. Because both of these values are close to that number, it can be concluded that the model meets the criteria for good fit in the baseline comparison. Therefore, the model can be declared "Marginal Fit" based on the results of the CFI and TLI evaluations. The Size of Residuals is indicated by the SRMR value of 0.073, which is still below the fit threshold of 0.08, so it is considered fit. In addition, the CD (Coefficient of Determination) value is 0.978, indicating the model's ability to explain a very good data variance, approaching the maximum value of 1. Based on these two indicators, SRMR indicates a good model fit, and CD supports the validity of the model. Thus, for the residual size, the model is declared "Good Fit" according to the applicable model fit criteria. By conducting a Goodness of Fit model fit test, the test formed has met several criteria such as Information Criteria indicated by the AIC (Akaike's Information Criterion) and BIC (Bayesian Information Criterion) values, Baseline Comparison indicated by the CFI and TLI values, and Size of Residuals indicated by the SRMR value stating "Fit" and has

met the criteria for a good measurement model (Fit).

Discussions

The yields of the analysis show that product innovation (X_1) has a positive and significant influence on customer satisfaction (Z), with a high coefficient and a significant p value ($p < 0.05$) or equivalent to a coefficient of 0.420 and a significance level of 0.000 ($p < 0.05$). This finding indicates that the better the product innovation carried out by the company, the higher the level of customer satisfaction. Product innovation includes the development of new features, quality improvement, and product adjustments to dynamic customer needs. This is in line with research conducted by Hajar *et al.* (2022); Yudistira (2023), where customers highlighted that continuous product innovation in the telecommunications industry can increase customer satisfaction through the provision of more advanced features, more efficient services, and continuous improvement of product quality. These factors contribute to building customer trust so that they feel more satisfied with the services provided. Thus, companies that continue to innovate are better able to maintain customer loyalty and increase competitiveness in a competitive market.

The yields of the analysis of the data provided indicate that the Service Level Agreement (SLA) (X_2) has a positive and significant influence on Customer Loyalty (Y), with a strong regression coefficient and a significance level ($p < 0.05$) or equivalent to a coefficient of 0.213 and a significance level of 0.046 ($p < 0.05$). A good SLA is not only a tool for measuring company performance in providing services, but also reflects the company's commitment to meeting customer needs consistently. This is in line with research conducted by Worek and Sepang (2021), which highlights that clearly defined SLAs provide more trust to customers because they have measurable expectations of the services they will receive. This is especially true in the technology and telecommunications sectors, where SLAs are a strategic element in market competition. The study notes that customers who feel protected by SLAs tend to trust the company more, even if they face occasional problems. Customer loyalty also increases because customers see SLAs as a form of company responsibility to provide services that meet agreed standards. In addition, the study is not in line with Huang *et al.* (2019), where SLAs do not always guarantee customer loyalty, especially if other factors such as price and product innovation are more dominant in influencing customer decisions. However, in the

telecommunications industry, well-fulfilled SLAs remain a key element in building long-term relationships with customers.

The yields of the analysis of the data provided show that product innovation (X_1) has a positive and significant effect on customer loyalty (Y), with a strong regression coefficient and a significance value ($p < 0.05$) or equivalent to a coefficient of 0.450 and a significance level of 0.000 ($p < 0.05$). Product innovation, which includes the development of new features, improving quality, and providing solutions that are relevant to customer needs, plays an important role in creating customer loyalty. This is in line with research from Yang (2015), which highlights that product innovation is one of the key factors in maintaining customer loyalty in the telecommunications industry. In the study, companies that consistently introduce innovation in their products and services managed to maintain customer loyalty despite being in a very competitive market. The study also shows that customers are more likely to be loyal to brands that continue to update their products according to their needs, either through improvements in technology, design, or functionality. In the context of telecommunications, for example, innovative features such as faster data services and intuitive applications are the main reasons customers continue to use products from certain providers.

The results of the analysis show that service level agreements (SLAs) (X_2) have a positive and significant effect on customer satisfaction (Z), with a strong regression coefficient and a significant value ($p < 0.05$) or equivalent to a coefficient of 0.374 and a significance level of 0.000 ($p < 0.05$). A good SLA provides clarity and transparency to customers regarding the promised service standards, such as noise, response speed, and problem-solving. This is in line with research from Putransyah (2024), which revealed that with a Service Level Agreement (SLA), companies will tend to focus more on meeting predetermined standards, which in turn increases customer satisfaction and overall company reputation. In addition, the study is not in line with Nudia Ahsanah (2024), who highlighted that customer satisfaction is more influenced by factors of convenience and quality of service than trust in SLA. However, in the B2B market, SLA is a major factor in ensuring service stability, which is critical for businesses that rely on reliable communication, and thus remains a key element in building long-term customer satisfaction.

The results of the analysis show that customer satisfaction (Z) has a positive and significant effect on customer loyalty (Y), with a

high regression coefficient value and a significance level ($p < 0.05$) or equivalent to a coefficient of 0.358 and a significance level of 0.000 ($p < 0.05$). This relationship indicates that the higher the level of satisfaction felt by customers towards a service or product, the more likely they are to remain loyal. Satisfied customers tend to make repeat purchases, recommend products or services to others, and persist despite competitors. This is in line with research from Zamzam and Hendayani (2024), highlighting that the higher the level of customer satisfaction with the services provided by PT SME, the more likely customers are to continue using the service and recommend it to others. Thus, increasing customer satisfaction can be a primary strategy in strengthening customer loyalty in the telecommunications industry. In addition, company services also have a positive influence on customer loyalty. In addition, the study is in line with Ekawaty *et al.* (2024), who highlighted that customer satisfaction is a major factor in forming loyalty, especially in highly competitive industries. Thus, increasing customer satisfaction is an important strategy to maintain loyalty and business competitiveness.

CONCLUSION

Product innovation has a positive and significant impact on customer satisfaction. Product innovation that includes the development of new features, quality improvement, and adjustment to customer needs has been proven to be able to increase positive customer perceptions of services. Customers feel more satisfied when the products they use provide relevant and expected benefits. This confirms that product innovation is not only an important element in attracting customer attention but also a key strategy to maintain customer satisfaction in the long term, while creating a competitive advantage for the company. Service Level Agreements (SLAs) have a positive and significant impact on customer loyalty. Clear, reliable, and consistent SLAs give customers confidence that the company can meet their needs well. Customers feel more comfortable and tend to remain loyal because of the certainty of service quality, fast response, and problem-solving following the agreement. This confirms that SLAs are not only technical tools but also important strategies for building long-term relationships, increasing loyalty, and retaining customers amidst tight market competition. Product innovation has a positive and significant effect on customer loyalty. Product innovation that offers new features, quality improvements, and solutions that are relevant to customer needs creates a positive experience and strengthens customer relationships with the

company. Customers who feel that the product continues to develop according to their expectations tend to be more loyal, by showing behaviors such as repeat purchases and recommendations to others. This confirms that product innovation is a strategic element that not only increases competitiveness but also maintains customer loyalty in the long term. Service Level Agreements (SLAs) have a positive and significant effect on customer satisfaction. Clear SLAs, including reliability, response speed, and consistent problem solving, create trust and comfort for customers. Customers feel valued and receive services according to expectations, thus increasing their overall satisfaction. This shows that SLAs not only function as formal contracts but also as strategic tools to ensure high service quality, strengthen customer relationships, and improve customer experience in various aspects of the services offered by the company. Customer satisfaction has a positive and significant effect on customer loyalty. Customers who are satisfied with a service or product tend to show higher loyalty through repeat purchases, recommendations to others, and brand trust. Satisfaction creates a strong emotional connection between customers and the company, thus strengthening their loyalty despite competition. This confirms that maintaining customer satisfaction is a strategic key to maintaining loyalty in the long term, while increasing the company's competitiveness in an increasingly competitive market.

The importance of uniqueness in terms of product innovation, development, and service response reliability is needed to remain competitive in a dynamic market. By increasing product innovation and clarity of Service Level Agreements (SLAs), it is necessary to maintain high customer loyalty. For example, SLAs should include fast response and transparency of agreements to increase customer trust. For consumers, it is recommended to be more selective in choosing a service provider by considering aspects of product innovation and clarity of Service Level Agreements (SLAs). Consumers are advised to understand the details of the SLA, such as compensation for service disruptions and provider response time, to ensure the protection of their rights as customers. In addition, consumers also need to take advantage of the product innovation features provided, such as the latest technology-based services, to improve communication efficiency and productivity. It is recommended to expand the scope of the study by adding other relevant variables, such as brand image or price, to provide a more comprehensive

picture of the factors that influence customer satisfaction and loyalty.

REFERENCES

- Azevedo, L. M., Estrella, J. C., Toledo, C. F., & Reiff-Marganiec, S. (2020). A Multi-Objective Optimized Service Level Agreement Approach Applied on a Cloud Computing Ecosystem. *IEEE Access*, 8, hal. 122469-122479. doi:10.1109/ACCESS.2020.3006171
- Basalamah, R., & Erwaedy, A. (2021). *Manajemen Inovasi dalam Bisnis*. Malang: AE Publishing.
- Ekawaty, C., Julyarman, N., & Abdullah, A. (2024). Analisis Pengaruh Service Quality, Customer Satisfaction, Switching Cost dan Corporate Image terhadap Customer Loyalty pada Pengguna Indihome Telkom di Kota Palopo. *Economics and Digital Business Review*, 5(1), 326-337. doi:10.37531/ecotal.v5i1.997
- Gunarto, M. (2018). *Analisis Statistika dengan Model Persamaan Struktural (SEM): Teoritis dan Praktis*. Bandung: CV. Alfabeta.
- Hair Jr., J. F., Hult, G. T., Ringle, C. M., Sarstedt, M., & Danks, N. P. (2021). An Introduction to Structural Equation Modeling. Dalam *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. Classroom Companion: Business*. (1st Ed., pp. XIV, 197). Springer, Cham. doi:10.1007/978-3-030-80519-7_1
- Hajar, M. A., Alkahtani, A. A., Ibrahim, D. N., Al-Sharafi, M. A., Alkaws, G., Iahad, N. A., . . . Tiong, S. K. (2022, May 23). The Effect of Value Innovation in the Superior Performance and Sustainable Growth of Telecommunications Sector: Mediation Effect of Customer Satisfaction and Loyalty. *Sustainability*, 14(1), 6342. doi:10.3390/su14106342
- Handayani, J., Derriawan, & Hendratni, T. W. (2020). Pengaruh Desain Produk terhadap Keputusan Pembelian dan Dampaknya pada Kepuasan Konsumen Shopping Goods. *Journal of Business and Banking*, 10(1), 91-103. doi:10.14414/jbb.v10i1.2261
- Huang, P.-L., Lee, B. C., & Chen, C.-C. (2019). The Influence of Service Quality on Customer Satisfaction and Loyalty in B2B Technology Service Industry. *Total Quality Management & Business Excellence*, 30(13-14), 1449-1465. doi:10.1080/14783363.2017.1372184
- Husain, T. (2019). An Analysis of Modeling Audit Quality Measurement Based on Decision Support Systems (DSS). *European Journal of Scientific Exploration*, 2(6), 1-9.
- Husain, T., & Sani, A. (2020). Kepuasan Pelanggan Toko Online yang Dipengaruhi Kualitas Produk dan Layanan. *JITK (Jurnal Ilmu Pengetahuan dan Teknologi Komputer)*, 5(2), 291-296. doi:10.33480/jitk.v5i2.614
- Ilham, Kumalasari, F., & Kurniadi, H. (2024). Kontribusi Pemasaran Pengalaman dan Ekuities Merek dalam Membangun Loyalitas Pelanggan Sepeda Motor Yamaha. *ASSET: Jurnal Manajemen dan Bisnis*, 7(1), 12-22. doi:10.24269/asset.v7i1.9252
- Julianti, K. D., Subiyantoro, & Nurmalsari, N. (2023). Customer Relationship Management Strategy at PT POS Indonesia (Persero) Ngawi Branch Office. *Epicheirisi: Jurnal Manajemen, Administrasi, Pemasaran dan Kesekretariatan*, 7(2), 1-9. doi:10.32486/epicheirisi.v7i2.623
- Jusuf, D. I. (2022). Product Innovation: Maintaining Competitiveness in a Competitive Market. *Jurnal Ekonomi*, 11(02), 1684-1689.
- Keller, A., & Ludwig, H. (2002). Defining and Monitoring Service-Level Agreements for Dynamic e-Business. *LISA '02: Proceedings of the 16th USENIX Conference on System Administration* (hal. 189-204). Philadelphia, Pennsylvania, USA: USENIX Association.
- Kominfo. (2023). *Data Penyelenggaraan Pos dan Informatika*. Direktorat Pengendalian Pos dan Informatika, Direktorat Jenderal Penyelenggaraan Pos dan Informatika. Jakarta: Kementerian Komunikasi dan Informatika Republik Indonesia. Diambil kembali dari <https://pelaporan.komdigi.go.id/file/filespublikasi/2024/02/bd674258-95a1-4baa-b877-2cdd7814cc49.pdf>
- Lestari, E. (2019). *Manajemen Inovasi: Upaya Meraih Keunggulan Kompetitif* (Cetakan 1). Surabaya: Universitas Brawijaya Press.
- Mertler, C. A. (2022). Chapter 7 • Quantitative Research Methods. Dalam *Introduction to Educational Research* (3rd Ed., hal. 108-143). California: SAGE Publications.
- Nasution, S. A., & Nasution, A. E. (2021). Pengaruh Kualitas Pelayanan, Faktor Emosional, Biaya dan Kemudahan terhadap Kepuasan Konsumen pada

- Pengguna Aplikasi Jasa Gojek di Medan. *Prosiding Seminar Nasional Kewirausahaan - II*, 2, pp. 142-155. Medan: Universitas Muhammadiyah Sumatera Utara. doi:10.30596/snk.v2i1.8247
- Nasution, S. A., & Nasution, S. P. (2023). The Determinants Factor on Repurchase Intentions: A Study from Developing Economies. *International Journal of Management Science and Application*, 2(2), 87-107. doi:10.58291/ijmsa.v2i2.216
- Nudia Ahsanah, D. (2024). *Pengaruh Kualitas Layanan, Kepercayaan dan Kemudahan Mobile Banking Muamalat Din terhadap Kepuasan Nasabah pada Bank Muamalat Indonesia KCU Medan Baru*. Fakultas Ekonomi dan Bisnis Islam. Medan: UIN Sumatera Utara.
- Park, C. W., Macinnis, D. J., Priester, J., Eisingerich, A. B., & Iacobucci, D. (2020). Brand Attachment and Brand Attitude Strength: Conceptual and Empirical Differentiation of Two Critical Brand Equity Drivers. *Journal of Marketing*, 74(6), 1-17. doi:10.1509/jmkg.74
- Putransyah, S. N. (2024). Pengaruh Peningkatan Kualitas Layanan terhadap Service Level Agreement (SLA) pada Bank BRI Kendal. *KNOWLEDGE: Jurnal Inovasi Hasil Penelitian dan Pengembangan*, 4(1), 16-28. doi:10.51878/knowledge.v4i1.2980
- Putri, L. A. (2024). *Survey on Quality, Satisfaction and Loyalty of B2B Customer at PT. Telkom Witel Yogyakarta*. International Management Study Program. Yogyakarta: Universitas Islam Indonesia.
- Quintania, M., & Sasmita. (2021). Pengaruh Desain dan Inovasi Produk terhadap Kepuasan Konsumen dan Dampaknya pada Loyalitas Konsumen (Studi Kasus pada Konsumen Lipstik Wardah Kosmetik Jabodetabek). *Media Ekonomi*, 20(1), 26-38. doi:10.30595/medek.v20i1.9491
- Rahmawati, A. (2022). *Pengaruh Peningkatan Kualitas Layanan terhadap Service Level Agreement di Lingkup Kerja Bank Rakyat Indonesia Kanwil Yogyakarta*. Yogyakarta: Universitas Islam Indonesia.
- Rahmawati, A. N., & Susilowati, L. (2021). Analisis Kualitas Pelayanan dan Persepsi Harga terhadap Kepuasan Pelanggan (Studi Kasus pada Pelanggan IndiHome di STO Injoko Witel Surabaya Selatan). *Jurnal Sosial Ekonomi dan Politik*, 2(3), 9-16.
- Robinson, S. (2014). *Simulation: The Practice of Model Development and Use*. London: John Wiley & Son, Ltd. doi:10.5555/2755296
- Sani, L. L. (2023). *Strategi Relationship Marketing yang Dilakukan Segmen Government PT Telkom Witel Yogyakarta dalam mempertahankan Loyalitas Pelanggan*. Fakultas Ekonomi dan Bisnis. Yogyakarta: Universitas Islam Indonesia.
- Sawhani, D. K. (2021). *Keputusan Pembelian Online: Kualitas Website, Keamanan dan Kepercayaan* (Vol. 1). Surabaya: Scopindo Media Pustaka.
- Setiawan, Z., Zebua, R. Y., Suprayitno, D., Hamid, R. S., Islami, V., & Marsyaf, A. (2024). *Buku Ajar Perilaku Konsumen* (Cetakan 2). Jambi: PT. Sonpedia Publishing Indonesia.
- Slack, N., Singh, G., & Sharma, S. (2020). The Effect of Supermarket Service Quality Dimensions and Customer Satisfaction on Customer Loyalty and Disloyalty Dimensions. *International Journal of Quality and Service Sciences*, 12(3), 297-318. doi:10.1108/IJQSS-10-2019-0114
- Subiyakto, A., Aisy, R., Sudarsono, B. G., Sihotang, M., Setiyadi, D., & Sani, A. (2021). Evaluation of User Experience is One of the Ways User Experience is Subjective and is Focused on the Use of a Product, System, or Service. *The 2nd Science and Mathematics International Conference (SMIC 2020): Transforming Research and Education of Science and Mathematics in the Digital Age*. 2331, hal. 060019-1-6. Jakarta: AIP Publishing. doi:10.1063/5.0041676
- Sugiat, J. (2023). Pengaruh Kualitas Produk dan Kualitas Pelayanan terhadap Kepuasan Pelanggan Indihome Studi Kasus Pada PT. Telekomunikasi Indonesia Kandatel Garut. *Jurnal Mirai Management*, 8(2), 328-334. doi:10.37531/mirai.v8i2.5600
- Sugiat, M., & Sudirman, A. (2024). Model Analysis of the Mediation Effect of Customer Satisfaction on Customer Loyalty in Mitratel Companies: The Role of CRM and Company Reputation as Predictors. *Jurnal Manajemen Indonesia*, 24(1), 105-120. doi:10.25124/jmi.v24i1.7353
- Sugiyono. (2023). *Metode Penelitian Kombinasi (Mixed Methods) dengan 9 Desain* (2 ed., Vol. 2). Bandung: Alfabeta.
- Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the

Validation of a Questionnaire/Survey in a Research. *International Journal of Academic Research in Management*, 5(3), 28-36. doi:10.2139/ssrn.3205040

Pelanggan pada Aplikasi Gopay. *Al-Kharaj: Jurnal Ekonomi, Keuangan & Bisnis Syariah*, 6(8), 5807-5821. doi:10.47467/alkharaj.v6i8.3635

- Tiatama, A. (2016). *Perencanaan Tata Kelola Manajemen Keamanan Informasi Menggunakan Information Technology Infrastructure Library (ITIL) V3. Pada D~Net Surabaya*. Surabaya, Program Pasca Sarjana. Institut Teknologi Sepuluh Nopember.
- Uzir, M. H., Jerin, I., Al Halbusi, H., Abdul Hamid, A., & Abdul Latiff, A. S. (2020). Does Quality Stimulate Customer Satisfaction where Perceived Value Mediates and the Usage of Social Media Moderates? *Heliyon*, 6(12), e05710. doi:10.1016/j.heliyon.2020.e05710
- Waha, K., Kindangen, P., & Wenas, R. (2023). Pengaruh Kualitas Pelayanan, Inovasi Produk, dan Store Atmosphere terhadap Kepuasan Pelanggan pada Strabucks Drive Thru Kawasan Megamas Manado. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 11(1), 52-64. doi:10.35794/emba.v11i1.44590
- Worek, S. E., & Sepang, J. L. (2021). Pengaruh Inovasi Produk dan Kualitas Layanan terhadap Kepuasan Nasabah melalui Keputusan Pembelian PT. Pegadaian (Persero). *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 9(2), 404-412. doi:10.35794/emba.9.2.2021.33476
- Yang, S. (2015). Understanding B2B Customer Loyalty in the Mobile Telecommunication Industry: A Look at Dedication and Constraint. *Journal of Business & Industrial Marketing*, 30(2), 117-128. doi:10.1108/JBIM-05-2013-0105
- Yudistira, J. (2023). *Pengaruh Kualitas Produk, Kualitas Layanan dan Harga Produk terhadap Kepuasan Konsumen pada Layanan Internet Wifi Id PT Telkom Indonesia Kota Bandung Tahun 2022*. Manajemen Bisnis dan Telekomunikasi & Informatika. Bandung: TELKOM University. Diambil kembali dari <https://openlibrary.telkomuniversity.ac.id/pustaka/202974/pengaruh-kualitas-produk-kualitas-layanan-dan-harga-produk-terhadap-kepuasan-konsumen-pada-layanan-internet-wifi-id-pt-telkom-indonesia-kota-bandung-tahun-2022.html>
- Zam Zam, F. M., & Hendayani, R. (2024). Pengaruh Kualitas Pelayanan dan Kepuasan Pelanggan terhadap Loyalitas