

# The effect of service quality, utilisation of management information systems, and communication on participant satisfaction with trust as an intervening variable on Taspen pension participants in the Tanjungpinang City

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## Abstract

**Purpose:** This study aimed to analyze the satisfaction of retired participants in Taspen in the Tanjungpinang city area.

**Methodology:** This study adopted a quantitative approach using a sample of 150 retired participants. Data were collected through questionnaires and analyzed using SPSS version 23 and SEM-PLS version 4 to test the measurement and structural models.

**Results:** Findings revealed that service quality and communication significantly affect trust, whereas the utilization of management information systems does not. In contrast, management information system utilization significantly affects satisfaction, whereas service quality and communication do not. Trust significantly affected satisfaction and mediated the relationship between service quality and satisfaction, but did not mediate the effects of system utilization and communication on satisfaction. The model explained 52.8% of the variance in trust and 48.9% of the variance in satisfaction.

**Conclusions:** Participant satisfaction was strongly influenced by trust, which bridged service quality and satisfaction. However, the role of management information systems and communication in driving satisfaction is more direct than that of trust.

**Limitations:** The study is limited to Taspen pension participants in Tanjungpinang City, which may reduce generalizability.

**Contribution:** This study contributes empirical evidence to the pension service management literature by highlighting the mediating role of trust and offering practical insights for improving service delivery, system utilization, and communication strategies.

**Keywords:** *Satisfaction, Service Quality, Trust, Utilization of Management Information Systems*

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## 1. Introduction

Taspen (Persero) is a State-Owned Enterprise (BUMN) engaged in old-age savings insurance and pension funds for the State Civil Apparatus (ASN) and State Officials. Taspen is trusted by the government to handle the welfare of all ASN employees. Taspen has four main products: old-age savings (ENT), pension programs, death insurance (JKM), and Work Accident Insurance (JKK). Civil servant pension payments can be paid in cash at the main branch office (KCU) or branch office (KC) of Taspen or through post offices and banks that collaborate with Taspen. Taspen has introduced many

innovations to improve the quality of service for its participants. In 2018, Taspen released an application called Taspen Authentication. Taspen Authentication is an application that functions to make it easier for retirees to prove their identity. The Taspen Authentication application can be downloaded for free on the Google Playstore and App Store with the aim of improving services that can be accessed through smartphone devices

This application works by pointing the smartphone camera at the face of the retired participant without having to come to the office or pay a partner for authentication. Taspen Authentication utilizes biometric data that are unique to each individual to avoid errors in pension payments. Taspen issued this new innovation by referring to the five principles of Taspen: the right people, the right time, the right administration, the right place, and the right number, so that the distribution of participants' rights is not mistargeted. When starting the authentication process, retired participants are asked to enter NOTAS (Taspen Number) in the column, and then retired participants are asked to pay attention to the instructions requested by the face detector, after which they must follow all instructions given on the screen. If it fails, the application will automatically repeat the process, and if successful, the application will display the enrollment data of the authenticated participant. Although employees have provided a clear explanation, some find it difficult to understand. This affects customer satisfaction when using applications. Proper communication can turn the disappointment that arises into customer satisfaction, so that customers can still decide to use our services, which is what is called winning the hearts of customers.

Here, trust relies on a person or something that is believed to have consequences for the relationship between the trustee and the trustee. Trust is manifested in the form of trusting a person or group of people. Pension savings are mandatory and have been regulated by Law No. 20 of 2023. However, Taspen still had to build trust among the retired participants. This is due to an incident in AJB Bumiputera, which is in arrears in payments to its customers. Quoted on the news page of the House of Representatives of Indonesia Commission IX, PT Jiwasraya, which defaulted, and PT Asabri, suffered losses due to errors in financial management and placement of the company's investment funds carried out by the company's old management. Trust affects customer satisfaction. High trust in the company by retired participants will provide a sense of satisfaction in using the product or service.

Given this phenomenon, the researcher is interested in conducting an analysis to determine the problems that occur by analyzing the influence of Service Quality, Management Information System Utilization, and Communication on Satisfaction through Trust. The results of this study are expected to identify the shortcomings of Taspen KC Tanjungpinang, where the researcher conducted research to provide the best solution related to the problems that have been previously expressed. The title of the research proposed by the researcher in this thesis is "The effect of service quality, utilisation of management information systems, and communication on participant satisfaction with trust as an intervening variable on taspen pension participants in the Tanjungpinang City"

## **2. Literature review**

### **2.1 Satisfaction**

The word "satisfaction" or *satisfaction* comes from the Latin words "*satis*" (the heart is quite good, adequate) and "*facio*" (to do or make), so it can be simply interpreted as an effort to fulfill something. According to Kotler (2012), satisfaction is a person's feelings of pleasure and disappointment caused by the performance or results of a product that are perceived to be better or worse than expected. Every service provided by a company to its consumers creates a value of satisfaction with the costs incurred to meet that satisfaction.

Kotlers (2009) stated that satisfaction is a state of liking or disliking the impression caused by the product received. Satisfaction is based on the fulfillment of needs and expectations, both from the products consumed and the services received and felt. Sahatatus et al. (2024) states that satisfaction is a summary of the psychological state produced when emotions overflow with inappropriate expectations and are multiplied by the feelings created about consumers who have experienced consumption. From the explanation above, it can be concluded that satisfaction is defined as the onset

of feelings of liking or disappointment with the product or performance received and getting the needs and desires that are in accordance with consumer expectations.

## **2.2 Trust**

"Trust" is the trust of another person towards a certain party in carrying out a selling or buying relationship based on the trust in that person that something is expected to meet their expectations (Priansa, 2018). According to Kotler and Keller (2016), trust is the most important psychological factor, which is related to whether trust is true or not based on evidence, suggestions, authority, experience, and intuition.

According to Mayer, Davis, and Schoorman (1995), trust is an individual's readiness to accept the consequences of activities carried out by others, based on the desire that the other party can fulfill their wishes. According to Morgan, trust is a person's desire to rely on others who have faith in them. According to Deutsch (Ohide & Mbogo, 2017), trust is the behavior of an individual who expects someone to provide positive results. There is trust because the trusted individual can benefit from and do what the individual who gives trust wants. From some of the experts' definitions, trust can be interpreted as having a relationship with a person's trust in the truth or not. Trust is not immediately recognized by other parties but must be built from scratch and, of course, must be proven.

## **2.3 Quality of Service**

The term service comes from the word "*layan*" which means to help provide everything that is needed by others for the act of serving. Kotler (2012) states that customer satisfaction is a person's feelings of pleasure and disappointment caused by the performance or results of a product that are perceived, compared to their expectations. According to Tjiptono (2005), service quality is a dynamic condition related to products, services, human resources, processes, and the environment that meets or exceeds expectations. According to Wickof (in Tjiptono (2005)), service quality is the expected level of excellence and control of that level of excellence to meet customer desires. Parasuraman, Zeithaml, and Berry (1985) argued that service quality is what consumers expect from service by providing a comparison between the company's service to consumers and the service provided.

Goeth and Tjiptono (2005) state that service quality is a dynamic condition related to products, services, people, processes, and environments that meet or exceed expectations. Based on the above definitions of service quality, it can be concluded that service quality is a dynamic condition that involves various aspects that must meet or exceed customer expectations. Service quality emphasizes the level of excellence and ability to meet customer desires through various elements such as products, services, people, processes, and the environment.

## **2.4 Utilization of Management Information Systems**

According to Lestari et al. (2021), a management information system can be used by executives to obtain correct information and facilitate the management process. According to Pahlephi (2022), a planning system that is part of the internal control of a business is a management information system. Management information systems include documents, personnel, technologies, and procedures. According to Scott (1997), a management information system is a set of information systems that interact with each other, providing information for the benefit of operations or managerial activities.

According to Rajabi and Ghalehtimouri (2022), management information systems are a stage of management in which there is a system with power similar to that of the computer brain, where one of the strengths is to ensure the readiness of information data for users with the same need. According to Afrin, Sehreen, Polas, and Sharin (2020), the management information system or SIM is a unit of hardware and software that is exclusively designed to integrate data into one original and useful digital information.

According to El Fallahi, Ibenrissoul, and Adil (2022), a management information system is a system that integrates humans and machines to provide information in such a way as to support the operational, management, and decision-making functions in an organization or company. From some of the

definitions provided by the experts, it can be concluded that a management information system is used in an organization to obtain the right information to facilitate the management of management processes and decision-making. It involves various elements, such as documents, people, technology, and procedures, that interact to provide useful information for managerial operations and activities.

## **2.5 Communication**

In English, communication is derived from the Latin word *communication* and the word *communis*, which means the same. This means that every communication activity is carried out to achieve the same meaning for the communicator and the audience. According to Terry and Franklin, communication is the art of developing and gaining understanding among people. Communication is the process of exchanging information and feelings between two or more people and is important for effective management (Mondal, Akter, Moni, & Polas, 2023).

In addition, communication according to Carl Hovland in Effendy, Nurninawati, and Setiyawan (2022) also defines communication as *"The process by which an individual (the communicator) transmits stimuli (usually verbal symbols) to modify the behavior of other individuals (communities)."* The process by which a person (communicator) delivers stimuli changes the behavior of others (communicators). In the sense put forward by Carl, communication is defined as the process of conveying messages that are mostly in the form of language, both oral and written, to change behavior.

According to Sutadji (2016), communication is the process of sending and receiving messages or information between two or more individuals or groups. This process involves conveying a message through various channels, such as oral, written, or nonverbal channels, and involves understanding and responding to the message. According to Almagro and Edig (2024), communication is an activity in which a person conveys a message through certain media to another person, and after receiving the message, the recipient responds to the sender of the message.

## **2.6 Relationship Between Variables**

### **2.6.1 The Relationship of Service Quality Variables to Satisfaction**

Satisfaction can be interpreted as an attitude of happiness or disappointment formed after customers experience a company's products or services. Kotlers (2009) stated that consumer satisfaction is the level of a person's feelings after comparing the performance or results. If performance is in line with the fulfillment of consumer expectations, customers will be satisfied with the service. This means that consumers form a more pleasant perception of a product or service that has been positively evaluated.

One assessment of participant satisfaction was the quality of the company's service. According to Tjiptono (2005), service quality is a real behavior provided by companies that have a close relationship with consumer satisfaction and can encourage consumers to establish a strong relationship with the company and a long-term bond with it. Companies will continue to understand consumer needs and expectations.

Research on service quality was conducted by Sirojudin, Welsa, and Ningrum (2023) who said that the results of the study showed that service quality had a positive and significant effect on participant satisfaction. This means that service quality is the main factor in the context of service, where consumers are facilitated in obtaining information and needs provided by the company. Thus, the following hypothesis is proposed:

H1 : Quality of service affects the satisfaction of the participants in the Tanjungpinang City area.

### **2.6.2 The Relationship of Information System Utilization Variables to Satisfaction**

In the current era of globalization, it is undeniable that information technology is increasingly sophisticated, and every human being is required to be able to follow the advancement of information technology, with the existence of an information system that runs in accordance with the expectations of this participant to satisfy the company's expectations. According to Mabhanda (2022), SIM is a management tool used to support the company's management in receiving, processing, and managing

the company properly and systematically, with the aim of supporting the creation of a company's performance.

This is in line with previous research conducted by Ndoh and Ubugadu (2024) entitled *The Influence of Smartphone Application-Based Management Information Systems and Service Quality on Customer Satisfaction at PT. Graha Ekakurir Siliwangi Pasar Kemis Route*. The results of this study show that partially variable management information systems positively affect customer satisfaction. Thus, the following hypothesis is proposed:

H2 : MIS use of management information systems affects the satisfaction of Taspen pension participants in Tanjungpinang.

### *2.6.3 The Relationship of Communication Variables to Satisfaction*

Communication is an activity that cannot be separated from our daily lives. According to (Jalasi & Ambad, 2020), communication is the process of conveying messages from one person to another, with the aim of changing attitudes both directly and indirectly. Good communication skills are necessary for interacting with others. In particular, if all daily activities must be related to other people, that person must have the ability to communicate well, because good communication can cause satisfaction in participants towards the company.

According to research by Sarker, Gain, Saha, Mondal, and Ifte (2024), interpersonal communication affects consumer satisfaction, and a proactive information process shows that satisfaction can be improved by communication. The findings are supported by the results of Rahman and Shanjabin (2022), where communication carried out by authorized officers in the Customs Office area is assessed by the community as service recipients regarding how employees or officers can be friendly and open in providing services, including information and direction to people who need services. Thus, the following hypothesis is proposed:

H3 : Communication affects the satisfaction of retired Taspen participants in Tanjungpinang City.

### *2.6.4 The Relationship of Service Quality Variables to Trust*

To increase consumer trust and loyalty, companies in any field must provide good service quality. This is in accordance with the results of research by Suhera and Nasiatin (2024) entitled *The Influence of Service Quality on Customer Trust and Loyalty Mediated by Customer Satisfaction*. Quality of service affects trust because the quality of service provided by Beauty Clinic Inc. to customers is generally good enough to give rise to trust in the face of each customer. If a good quality of service is provided to customers, they will feel satisfied and believe that the company provides quality service according to customer expectations. Thus, the following hypothesis is proposed:

H4 : Quality of service affects the trust of the Taspen retirement participants in the Tanjungpinang City area.

### *2.6.5 The Relationship of Variables of Management Information System Utilization to Trust*

The application of information systems and technology can be considered successful if it increases customer trust, which, in turn, can improve company performance. With the implementation of information systems and technology, companies must prepare their human resources (HR) (Baron & Cruz, 2023). The application of technology in a company's information system should consider the user of the system so that the technology applied can be useful according to the user's responsibilities and capabilities. Budianto et al. (2023) explained that by adding a variable of trust in new information system technology, it further improves individual performance. Thus, the following hypothesis is proposed:

H5 : The use of influential management information systems to trust Aspen pension participants in the region of Tanjungpinang City.

### *2.6.6 The Relationship of Communication Variables to Trust*

Communication is another variable that affects trust. Thalib, Kumadji, Edis, and Saikim (2023) stated that trust can be interpreted as trust that arises because customers feel satisfied and comfortable in

fulfilling the responsibilities of the provider of goods and services. Trust is the willingness to engage in exchanges with trusted partners because of their reliability and integrity.

According to Siahaan et al. (2020), communication conveys information through the exchange of thoughts, messages, or information, such as speech, writing, or behavior. Good communication is often associated with the quality and quantity of information. Thus, effective communication can create trust in customers. This is in accordance with Tamindael and Ruslim (2021), who stated that communication positively influences trust. Thus, the following hypothesis is proposed:

H6 : Communication affects the trust of retired Taspen participants in Tanjungpinang City.

#### *2.6.7 The Relationship of Confidence Variables to Satisfaction*

Customer trust is an important factor that supports a company's performance in competition in the marketing environment and can contribute to relationship loyalty (Alamsyah, 2022). Customer trust in a product or service usually arises because customers judge the quality of the product based on what they see, understand, or feel; therefore, it is important for the company to build customer trust in the product or service it offers so that the level of customer trust in the company is higher and customer satisfaction is created (Arikunto, 2012).

Customer satisfaction is a feeling of happiness or disappointment that arises from comparing perceived performance with expectations (Nurdiniawti, 2020). The relationship between trust and satisfaction of participants is whether customer expectations are estimated or customer trusts about what they will receive if they buy or consume a product, either goods or services, and the performance or results felt are the customers' perceptions of what they receive after consuming the product they purchased. Thus, the following hypothesis is proposed:

H7 : Trust affects the satisfaction of retired Taspen participants in Tanjungpinang City.

#### *2.6.8 The Relationship of Service Quality Variables to Satisfaction Through Trust*

According to Parasuraman et al. (1985), service quality is a level of service that can meet or exceed consumer expectations, while consumer loyalty is the willingness of consumers to subscribe to a company by buying and using its products repeatedly and happily recommending them to friends.

Parasuraman et al. (1985) argue that customers must have trust in the company, customers will feel safe in making transactions with the company and transactions made will be guaranteed with certainty. Trust plays an important role in establishing long-term relationships to achieve customer loyalty, especially in terms of customer trust in the quality, reliability, and integrity of the services delivered by the company.

This study is based on the results of research conducted by Sirojudin et al. (2023), entitled *The Influence of Service Quality and Value Felt by Participants on Participant Satisfaction with Trust as a Mediation Variable at PT Taspen (Persero) Yogyakarta Branch Office*. He stated that quality of service and perceived value had a positive effect on the trust and satisfaction of retired participants. Trust also mediated the influence of perceived value on satisfaction. However, trust did not mediate the influence of service quality on participant satisfaction. Thus, the following hypothesis is proposed:

H8 : Service quality affects the satisfaction of Taspen pension participants in the Tanjung Pinang City area, with trust as an intervening factor.

#### *2.6.9 The Relationship of Variables of Management Information System Utilization to Satisfaction Through Trust*

Adamu, Olayinka, and Usman (2024) state that management information systems are a collection of information system interactions tasked with collecting and managing data to provide useful information for all levels of management in company planning and control efforts. According to Kasmir (2018), customer satisfaction refers to a person's expectations or feelings regarding the purchase of goods or services. These expectations and realities determine the level of customer satisfaction.

Participant satisfaction is created from the participant's happy experience using the company's products and services, which arises from the comparison of expected performance and services. In the use of the management information system in the Taspen Authentication application, participants evaluated the performance of the application and the quality of service based on their expectations and felt positive, negative, or neutral in response to the experience. Thus, the following hypothesis is proposed:

H9 : The use of management information systems affects the satisfaction of Taspen retirement participants in the Tanjungpinang City area, with trust as an intervention.

#### 2.6.10 The Relationship of Communication Variables to Satisfaction Through Trust

According to Yahaya, Salahudeen, and Zubairu (2021), communication can be effective if the message is received and understood as intended by the sender of the message, the message is followed up with an action by the recipient, and there are no obstacles to it. Trust exists when a group believes in the trustworthiness and integrity of its partner. Trust is the expectation held by an individual that a person's words are reliable.

Trusted groups need to have high integrity and be trustworthy, which are associated with qualities that are consistent, competent, honest, fair, responsible, helpful, and kind. Trust is a number of specific trusts about the integrity and honesty of the trusted party and the ability to keep promises (Maharani, Yahya, Putra, & Pramono, 2023).

Based on the results of Kurniasih and Elizabeth (2021), the path coefficient and significance of communication's influence on trust as an intervening variable can be said to mediate (acting as an intervening variable). The mediation nature of trust is partial because of the large indirect influence of communication on it. Thus, the following hypothesis is proposed:

H10 : Communication affects the satisfaction of Taspen retirement participants in the Tanjungpinang City area with trust as an intervening

### 2.7 Conceptual Framework

The framework of this study uses intervening variables, which theoretically affect the relationship between independent and dependent variables indirectly. Intervening variables can strengthen and weaken the relationships between variables.

The framework of this study includes the determination of Service Quality, Utilization of Management Information Systems, and Communication on the satisfaction of retired participants with trust as an intervening variable, which will be tested by validity and reality tests. Related to the variables to be studied and to make it easier for researchers and readers to understand the flow of thought in this research, the author proposes it in the form of the following images:

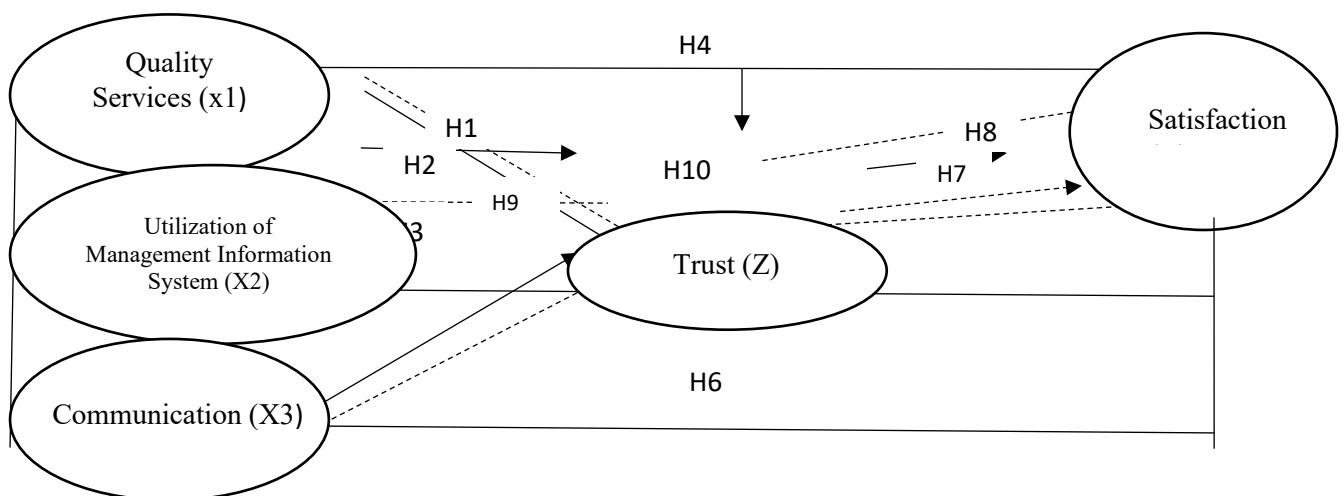


Figure 1. Research Conceptual Model

Information:

- X1 : Independent Variable (Exogenous) Service Quality
- X2 : Independent Variable (Exogenous) Utilization of Management Information System
- X3 : Independent Variable (Exogenous) Communication
- Y : bound variable (endogenous) Satisfaction
- Z : the intervening variable Trust

### 3. Research methodology

#### 3.1 Data Collection Methods

Data collection techniques were used to obtain the data and information needed to support this research, which requires a large amount of data from inside and outside the company. To obtain data and information for this study, the author collected data with questionnaires (questionnaires) from Taspen retirement participants in the Tanjungpinang City area, so the population amounted to 5,370 retired participants. An overview and the number of respondents to the Taspen retirement participants in the Tanjungpinang City area are presented in Table 1.

Table 1. Respondent Distribution

No	Gender	Number of Respondents	Percentage
1	Male	71	47%
2	Female	79	53%
<b>Sum</b>		150	100%
1	< 45 years	26	17%
2	46 – 60 years old	102	68%
3	>61 years	22	15%
<b>Sum</b>		150	100%
1	Self-Retirement	77	51%
2	Widow/Widower Pension	55	37%
3	Orphan Retirement	15	10%
4	Parental Pension	3	2%
<b>Sum</b>		150	100%

#### 3.2 Variable Definition

The following is the operational definition of variable

Table 2. Variable Definition

Variable	Indicators	Statement Grains	Scale
Satisfaction Tjiptono (2005)	Overall Customer Satisfaction	1,2	Likert
	Knowledge	3,4	
	Customer Satisfaction Dimension	5,6	
	Confirmation of expectations	7	
	Interest Repurchase Attitude	8	
	Willingness to Recommend	9,10	
	Customer Dissatisfaction		
<b>Total</b>		<b>10</b>	
Variable	Indicators	Statement Grains	Scale
Trust Mayer et al. (1995)	Integrity	1,2,3,4	Likert
	Goodness	5,6,7,8	
	Competence	9,10,11,12	
<b>Total</b>		<b>12</b>	
Variable	Indicators	Statement Grains	Scale



Service Parasuraman et al. (1985)	Existence Reliability Responsiveness Guarantee Empathy	1,2 3,4 5,6 7,8 9,10	Likert
<b>Total</b>		<b>10</b>	
Variable	Indicators	Statement Grains	Scale
Utilization of Management Information System White (1984)	Information Humans as information processors System concept Information and management concepts Decision-making concept Value information	1 2 3 4 5 6	Likert
<b>Total</b>		<b>6</b>	
Variable	Indicators	Statement Grains	Scale
Communication Sutardi (2016)	Understanding Pleasure Influence on attitude Improved relationships Action	1,2,3 4,5 6,7 8,9 10,11	Likert
<b>Total</b>		<b>11</b>	

#### 4. Result and discussion

##### 4.1 Measurement Model Analysis (outer model)

###### 4.1.1 Convergent Validity

Convergent validity measures the magnitude of the correlation between constructs and latent variables. Convergence validity testing was observed from the *loading factor* of each construction indicator. A *loading factor* value of  $> 0.7$  is ideal, indicating that the indicator is valid for measuring the constructed construction. In empirical research, a *loading factor* value of  $> 0.5$  is accepted. Some experts accepted a value of 0.4. This value indicates that the construction presentation can explain variations in the indicator (Shrestha, 2021).

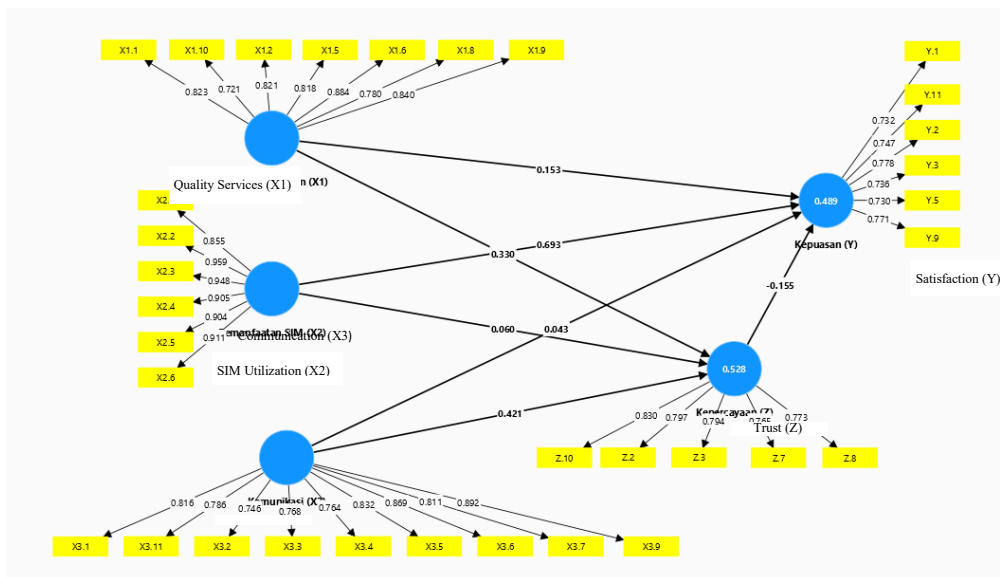


Figure 2. Outer Loading 2  
Source: Primary data, processed with PLS, 2024

Table 3. Convergent Validity Test

	Outer Loadings
X1.1 <- Quality of Service (X1)	0,823
X1.10 <- Quality of Service (X1)	0,721
X1.2 <- Quality of Service (X1)	0,821
X1.5 <- Quality of Service (X1)	0,818
X1.6 <- Quality of Service (X1)	0,884
X1.8 <- Quality of Service (X1)	0,780
X1.9 <- Quality of Service (X1)	0,840
X2.1 <- SIM Utilization (X2)	0,855
X2.2 <- SIM Utilization (X2)	0,959
X2.3 <- SIM Utilization (X2)	0,948
X2.4 <- SIM Utilization (X2)	0,905
X2.5 <- SIM Utilization (X2)	0,904
X2.6 <- SIM Utilization (X2)	0,911
X3.1 <- Communication (X3)	0,816
X3.11 <- Communication (X3)	0,786
X3.2 <- Communication (X3)	0,746
X3.3 <- Communication (X3)	0,768
X3.4 <- Communication (X3)	0,764
X3.5 <- Communication (X3)	0,832
X3.6 <- Communication (X3)	0,869
X3.7 <- Communication (X3)	0,811
X3.9 <- Communication (X3)	0,892
Y.1 <- Satisfaction (Y)	0,732
Y.11 <- Satisfaction (Y)	0,747
Y.2 <- Satisfaction (Y)	0,778
Y.3 <- Satisfaction (Y)	0,736
Y.5 <- Satisfaction (Y)	0,730
Y.9 <- Satisfaction (Y)	0,771
Z.10 <- Trust (Z)	0,830
Z.2 <- Trust (Z)	0,797
Z.3 <- Trust (Z)	0,794
Z.7 <- Trust (Z)	0,765
Z.8 <- Trust (Z)	0,773

Source: Primary data, processed with PLS, 2024

1. Based on the above table on the Service Quality variable (X1), seven statements declared *convergent validity* as latent variables.
2. Based on the above table on the variables of Management Information System utilization (X2), six statements declared *convergent validity* as latent variables.
3. Based on the above table on the communication variable (X3), where there were nine statements, *convergent validity* was declared as a latent variable.
4. Based on the table above, for the confidence variable (Z), five statements were declared *as latent variables with convergent validity*.
5. Based on the above table on the satisfaction variable (Y), where there are six statements, *convergent validity* is declared as latent.

#### 4.1.2 Validity of Discrimination

Discriminatory validity was conducted to ensure that each concept of each latent model was different from other variables. The validity of discrimination from reflective models was evaluated through *cross-loading*, and the AVE value was compared with the square of the correlation between the constructs. Another measure of the validity of discrimination is that the root value of *the Average Variance Extracted (AVE)* > 0.05, which means that it must be higher than the correlation between the construct and other constructs, or the AVE value must be higher than the square of the correlation

between the constructs (Maharani et al., 2023). The table below shows the validity of discrimination from the research model by examining *the cross-loading*.

Table 4. Validity of Discrimination

	(Z)	(Y)	(X3)	(X1)	(X2)
Trust (Z)					
Satisfaction (Y)	0,197				
Communication (X3)	0,763	0,188			
Quality of Service (X1)	0,765	0,168	0,880		
SIM Utilization (X2)	0,163	0,730	0,147	0,099	

Source: Primary data, processed with PLS, 2024

Based on the above table, the results of the correlations between the variables are valid and reliable. Internal consistency analysis is a form of reliability analysis used to assess the consistency of results across items on the same test. Internal consistency testing uses a composite reliability value, with the criterion that a variable is said to be reliable if the composite reliability value is  $> 0.600$  (Hair, Hult, Ringle, & Sarstedt, 2014).

Table 5. Internal Consistency Analysis

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	(X2)
Trust (Z)	0,852	0,858	0,894	0,628	
Satisfaction (Y)	0,845	0,862	0,885	0,561	
Communication (X3)	0,935	0,941	0,945	0,657	
Quality of Service (X1)	0,914	0,918	0,932	0,662	
SIM Utilization (X2)	0,960	0,964	0,968	0,836	

Source: Primary data, processed with PLS, 2024

Based on the internal consistency analysis data in the table, the results were reliable.

#### 4.2 Structural Model Analysis (inner model)

This test is to determine the path coefficient of the structural model, the purpose of which is to test the significance of all relationships or hypothesis testing. This test consists of three stages: collinearity testing, direct influence hypothesis testing, and indirect influence testing.

##### 4.2.1 Testing the significance of the structural model path coefficient (Structural Model Path Coefficient)

This test has two stages: testing the direct influence hypothesis and testing the indirect influence hypothesis. Testing the significance of the structural model *path coefficient (structural model path coefficient)*. This test determines the path coefficients of a structural model, which is used to test the significance of all relationships or hypotheses.

##### 4.2.2 Direct Effect Testing

Testing the direct influence hypothesis aims to prove the hypotheses of the direct influence of one variable on other variables (without intermediaries). If the probability value of *the P-value is  $< Alpha$  (0.05)*,  $H_0$  is rejected (the influence of the variable with other variables is significant). If the probability value of *the P-value is  $> Alpha$  (0.05)*, then  $H_0$  is accepted (the influence of one variable on another variable is insignificant).

Table 6. Direct Influence

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
Kepercayaan (Z) -> Kepuasan (Y)	-0,155	-0,151	0,082	1,882	0,031
Komunikasi (X3) -> Kepercayaan (Z)	0,421	0,429	0,082	5,130	0,000
Komunikasi (X3) -> Kepuasan (Y)	0,043	0,023	0,097	0,450	0,327
Kualitas Pelayanan (X1) -> Kepercayaan (Z)	0,330	0,339	0,104	3,183	0,001
Kualitas Pelayanan (X1) -> Kepuasan (Y)	0,153	0,168	0,099	1,540	0,063
Pemanfaatan SIM (X2) -> Kepercayaan (Z)	0,060	0,050	0,048	1,244	0,108
Pemanfaatan SIM (X2) -> Kepuasan (Y)	0,693	0,701	0,040	17,324	0,000

Source: Primary data, processed with PLS, 2024

1. The direct influence of X1 on Z has a coefficient of 3.183 (positive); thus, an increase in the value of variable X1 is followed by an increase in variable Z. The influence of X1 on Z has a *P-value* of  $0.001 < 0.05$ ; therefore, it is stated that the influence between X1 and Z is significant.
2. The direct influence of X1 on Y has a coefficient of 1.540 (positive), followed by an increase in the value of the X1 variable and an increase in the Y variable .
3. The direct influence of variable X2 on Z has a coefficient of 1.244 (positive), and an increase in the value of variable X2 is followed by an increase in variable Z. The influence of X2 on Z has a *P-value* of  $0.108 > 0.05$ , indicating that the influence of X2 on Z is insignificant.
4. The direct influence of variable X2 on Y has a coefficient of 17.324 (positive); thus, an increase in the value of variable X2 is followed by an increase in variable Y. The influence of X2 on Y has a *P-value* of  $0.000 < 0.05$ ; therefore, it is stated that the influence of X2 on Y is significant.
5. The direct influence of variable X3 on Z has a path efficiency of 5.130 (positive), and an increase in the value of X3 is followed by an increase in the Z variable of Z. The influence of the X3 variable on Z has a *P-Value* of  $0.000 < 0.05$ ; therefore, it is stated that the influence between X3 and Z is significant.
6. The direct influence of variable X3 on Y has a coefficient of 0.450 (positive); thus, an increase in the value of variable X3 is followed by an increase in variable Y. The influence of variable X3 on Y has a *P-value* of  $0.327 > 0.05$ ; therefore, it is stated that the influence between X3 and Y is insignificant.
7. The direct influence of Z on Y has a path coefficient of 1.882 (positive); then, an increase in the value of Z will be followed by an increase in the Y variable of Y. The influence of Z on Y is significant because the *P-value* is  $0.031 < 0.05$ .

#### 4.2.3 Indirect Effect Testing

Testing the indirect influence hypothesis assumes that if the value of the indirect influence coefficient is greater than that of the direct influence coefficient, then the intervening variable mediates the relationship between one variable and another. On the other hand, if the value of the indirect influence coefficient  $<$  the direct influence coefficient, then the intervening variable does not mediate the relationship between one variable and another variable

Table 7. Indirect Influence

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
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Communication (X3) -> Trust (Z) -> Satisfaction (Y)	-0,065	-0,066	0,044	1,501	0,068
Service Quality (X1) -> Trust (Z) -> Satisfaction (Y)	-0,051	-0,047	0,026	1,978	0,025
SIM Utilization (X2) -> Trust (Z) -> Satisfaction (Y)	-0,009	-0,009	0,010	0,887	0,188

Source: Primary data, processed with PLS, 2024

1. Based on the above table, the value of the indirect influence coefficient of variable X1 on Y is 1.978 > 1.540 (direct influence on Y). with a *p-value* of 0.025; thus, it can be stated that Z mediates the influence between X1 and Y.
2. Furthermore, based on the table above, the value of the indirect influence coefficient of variable X2 on Y is 0.887 < 17.324 (direct influence on Y). with a *p-value* of 0.188, indicating that Z does not mediate the influence of X2 on Y.
3. Based on the table above, the value of the indirect influence coefficient of variable X3 on Y is 1.501 > 0.450 (direct influence on Y). with a *p-value* of 0.068. Thus, it can be stated that Z does not mediate the influence between X3 and Y.

## 5. Conclusion

### 5.1 Conclusion

The results of processing all SMART-PLS variables can be summarized as follows:

1. Service quality (X1) positively influences the satisfaction (Y) of Taspen retirement participants in the Tanjungpinang City area. This effect was positive and insignificant. This indicates that the quality of service is improving. In this study, the quality of service was not correlated with retired participants. Based on the results of this study, Hypothesis 1 was not accepted.
2. The use of management information systems (X2) positively influenced the satisfaction (Y) of Taspen retirement participants in the Tanjungpinang City area. This effect was positive and significant. This means that if the use of the management information system improves, the satisfaction of the retired participants is good. In this study, the correlation between the use of management information systems and satisfaction of retirement participants was included in the high correlation category. Based on the results of the research that has been carried out, hypothesis 2 is accepted.
3. Communication (X3) positively influences the satisfaction (Y) of the retired participants in Taspen in the Tanjungpinang city area. This effect was positive and insignificant. Communication does not guarantee the growth of satisfaction among retirement participants. In this study, the correlation between communication and satisfaction among retired participants was included in the low-correlation category. Based on the results of this study, Hypothesis 3 was not accepted.
4. Quality of service (X1) positively influences the trust (Z) of the retired participants in the Tanjungpinang city area. This effect was positive and significant. This means that if the quality of service improves, the trust of retired participants is good. In this study, the correlation between service quality and trust in retired participants was included in the high correlation category. Based on the results of the research that has been carried out, hypothesis 4 is accepted.
5. The use of management information systems (X2) had a positive influence on the trust (Z) of Taspen retirement participants in the Tanjungpinang City area. This effect was positive and insignificant. In this study, the correlation between the use of management information systems and the trust of retirees was included in the low-correlation category. Based on the results of this study, Hypothesis 5 was not accepted.
6. Communication (X3) positively influences the trust (Z) of the retired Taspen participants in the Tanjungpinang City area. This influence was positive and significant. This means that if communication improves, the participants' trust will be good. In this study, the correlation between communication and trust in retired participants was included in the high correlation category. Based on the results of the research that has been carried out, hypothesis 6 is accepted.
7. Trust (Z) has a positive influence on the satisfaction (Y) of Taspen retirement participants in Tanjungpinang City. This influence was positive and significant. This means that if trust improves,

- the satisfaction of retired participants is good. In this study, the correlation between trust and satisfaction among retired participants was included in the high-correlation category. Based on the results of the research that has been carried out, hypothesis 7 is accepted.
8. Service quality (X1) positively influenced the satisfaction (Z) of Taspen retirement participants in the Tanjungpinang City area, with trust (Y) as the mediating variable. This effect was positive and significant. Based on the results of the mediation test, there was an intervening effect of the variable of confidence of retired participants in the relationship between the variable of service quality and satisfaction of retired participants. This was proven through a mediation test, in which all four stages of regression showed significance. Therefore, the mediation variable was considered a full mediation variable. Based on the results of the research that has been carried out, hypothesis 8 is accepted.
  9. The use of the management information system (X2) does not have a positive influence on the satisfaction (Y) of Taspen pensioners in the Tanjungpinang City area, with trust (Z) as a mediating variable. This effect was positive and insignificant. Based on the results of the mediation test, there was no intervening effect of the variable of retirees' confidence in the relationship between the variables of the use of management information systems and retirees' satisfaction. Therefore, based on the results of this study, Hypothesis 9 was not accepted.
  10. Communication (X3) positively influenced the satisfaction (Z) of Taspen retirement participants in the Tanjungpinang City area, with trust (Y) as the mediating variable. This effect was positive and insignificant. Based on the results of the mediation test, there was no intervening effect of the confidence variable of retired participants on the relationship between the communication variable and the satisfaction of retired participants.

## 5.2 Suggestion

In connection with the things that the author has conveyed above, the author will provide some suggestions that are expected to be useful for the Taspen KC Tanjungpinang office to support the problem and achieve the following goals:

1. For Taspen KC Tanjungpinang
  - a. Quality of Service
 

In an effort to improve the variable of service quality, it can be prioritized to improve the speed of Taspen KC Tanjungpinang employees in responding to complaints from retirement participants via *WhatsApp* because sometimes retirement participants are constrained to come directly to the office, either because of the distance from home, so they can only rely on *WhatsApp* or via phone to ask questions.
  - b. Utilization of Information Systems
 

Taspen should pay more attention to the Taspen Authentication application system, considering the number of retired participants who operate the application, so that a system upgrade is needed so that when retired participants use the application, there is no disruption, especially at the beginning of the month.
  - c. Communication
 

Communication skills in Taspen KC Tanjungpinang employees must be maintained by observing the number of retired participants who are satisfied with communicating with employees and who do not experience any difficulties in understanding the directions or explanations of Taspen KC Tanjungpinang employees.
  - d. Trust
 

To further improve the quality of the Taspen Authentication Application, Taspen KC Tanjungpinang should increase participants' confidence in using the application and realize the purpose of making the application, namely, as an alternative authentication process for retired participants, so that there is no need to authenticate at the office or payment partner.
  - e. Satisfaction
 

It is hoped that Taspen KC Tanjungpinang will improve the provision of services through *WhatsApp*, because it is one of the values that increases the satisfaction of retired participants.

## 2. For the next researcher

For future research, it would be better to examine other variables besides service quality, the use of management information systems, and communication to satisfaction through the trust that has been

researched in this study. This is because there are still several other factors that can affect the fertility of retired participants, and the ability to measure them is better.

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