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THE EFFECT OF PERCEIVED QUALITY, PERCEIVED VALUE, BRAND PREFERENCE, AND CUSTOMER SATISFACTION ON SAP IMPLEMENTATION

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Abstract

Enterprise Resource Planning (ERP) is an information system in a company to optimize business processes and transactions. System Applications and Products (SAP) is one application that uses ERP system applications. The purpose of this study is to determine the effect of each variable indicating whether the system has been operating properly so that it can support maximum system performance. The research variables are brand preference, perceived quality, perceived value, and customer satisfaction. The data analysis method used a structural equation model or Structural Equation Model-Partial Least Square (SEM-PLS) using the SmartPLS 3.0 application. SEM-PLS analysis consists of two models, the structural model (inner model) and the measurement model (outer model). The case study used in this research is PT Hutama Karya Project, General Civil Division, a construction service company. Data collection was carried out using questionnaires to 56 respondents, who are users of the SAP application with a Likert scale measurement. The result shows that the variable Perceived Quality positively and significantly impacts on Customer Satisfaction, Perceived Value, and Brand Preference. Brand Preference has a positive and significant influence on Customer Satisfaction. Perceived value has a positive and significant influence on Brand Preference, but does not have a positive and insignificant effect on Customer Satisfaction. So, the user's perception of the benefits of SAP has no effect on Customer Satisfaction in implementing SAP as a data integration system.

Keywords: Perceived Quality, Perceived Value, Brand Preference, Customer Satisfaction, Partial Least Square

1. INTRODUCTION

Changes in the world's business have resulted in companies facing challenges to expanding markets and customer expectations (Ling X. Li, 2000; Umble et al., 2003; Tambovcevs & Merkuryev, 2009). In facing competition, companies need to efficiently coordinate all global demand, supply, and production processes (Lubis et al., 2021). With the emergence of Industry 4.0, new technologies have become available that help companies to monitor, integrate, and track processes through digital systems (Frank et al., 2019; Ferrari et al., 2021). The problem that often occurs in company management processes is the lack of integration between existing business processes. The functions of each work unit are not fully integrated (Mahardika et al., 2014; Ekawati et al., 2020). This makes companies need technology to support planning and control (Gozali & Supranto, 2020).

The Information Technology (IT) sector helps companies achieve their goals. One technology that can improve business capabilities through integrated system development is Enterprise Resource Planning (ERP) (Gupta & Kohli, 2006; Lubis et al., 2021). Enterprise Resource Planning (ERP) is a borderless information system that effectively and efficiently integrates all company units (Lee et al., 2020; Ekawati et al., 2020). ERP is an information system in a company to optimize business processes and transactions. ERP systems are able to integrate all of the company's business processes to maintain a competitive position and increase efficiency (Addo-Tenkorang, 2011).

ERP has been widely implemented in most of the world's large companies (AboAbdo et al., 2019). Indonesia is one of the countries that has implemented ERP to support its business

movements. ERP in Indonesia is implemented in various companies in several business sectors (Gozali & Supranto, 2020).

In recent decades, ERP systems have been implemented in construction companies facing the global competitiveness challenge (Mabert et al., 2003; Azevedo et al., 2014; Hewavitharana et al., 2019). ERP implementation in construction companies assists in project reporting and documentation, strengthens the supply chain supply chain, capable of remote procurement, improves decision-making capabilities, reduces project completion time, and lowers operational costs (Yang et al., 2007; AboAbdo et al., 2019a; Hewavitharana et al., 2019). In addition, ERP systems can improve supply chain performance, reduce cycle time, and minimize lead time (Hewavitharana et al., 2019). One of the software in the ERP system is System Applications and Products (SAP). Implementation of ERP using SAP in companies can increase productivity, handle business processes as a whole, and obtain real-time information (One et al., 2018; Lubis et al., 2021).

As a construction service company, PT Hutama Karya (Persero) General Civil Division was chosen as a case study because it requires the process of recording all stages of the project and its integration with modules that are related to one another. To answer the operational complexities that exist within the company and competition at the national and international levels, PT Hutama Karya, especially the General Civil Division Project, decided to implement an ERP system on SAP (Karya, 2022). Complex ERP systems are used to facilitate the use of SAP integrated in the system.

The use of SAP with an ERP system can provide information that is highly accurate, timely and accountable to facilitate management in its business processes and support decision making. SAP was developed to support a company in carrying out more effective and efficient operational activities (Lubis et al., 2021). SAP has several modules that have advantages and are continuous from one module to another (Puteri Andisty & Harmain, 2022). SAP implementation involves four main modules, namely the Project System (PS), Sales Distribution (SD), Materials Management (MM) and Finance and Controlling (FICO) modules. SAP has the ability to integrate all production processes and supporting activities into modules so that they support current transactions in accordance with the company's business processes (Yolanda & Dessyana, 2022).

The variables used in this research are perceived quality, perceived value, brand preference, and customer satisfaction. The relationship between these variables can be identified through a research framework and analysis through testing methods (Ningsi & Agustina, 2018). The analysis used is a structural equation model or Structural Equation Model-Partial Least Square (SEM-PLS) using the SmartPLS 3.0 application. Data analysis techniques in SEM-PLS consist of two models, namely the measurement model (outer model) and the structural model (inner model) (Arya Pering, 2020). SEM-PLS aims to test the measurement model and structural model so that evaluation results will be obtained in an overall picture of the model (Ringle et al., 2018).

Primary data collection in this study was carried out using a measurement method in the form of a questionnaire (Roopa & Rani, 2012; Taherdoost, 2016; Sigalingging & Permatasari, 2021). Then testing the measurement model and testing the structural model was carried out on the results of the questionnaire. The research questionnaire uses a Likert scale measurement which consists of a list of questions to find out and measure respondents' ratings by responding to 5 alternative answers to each question (Likert, 1932). The purpose of this study was to determine the effect of each variable on the implementation of ERP using integrated SAP at the Construction Services Company PT Hutama Karya General Civil Division. Evaluation is

carried out on each module in SAP (Hancerliogullari Koksalmis & Damar, 2022). The results of the influence analysis between these variables indicate whether the system has been operating properly so that it can support maximum system performance.

2. LITERATURE REVIEW

2.1 Perceived Quality

Perceived Quality is an overall consumer assessment of the attributes of a product (Hellier et al., 2003). Perceived quality is decomposed into five dimensions, namely tangibility, reliability, responsiveness, assurance, and empathy (Calvo-Porral et al., 2013). Perceived quality is very important for business continuity because this is a consumer's perception and evaluation of the advantages of certain product qualities as a whole compared to competing products, causing product differentiation in the minds of consumers (Kataria & Saini, 2019; Stollery & Jun, 2017). Perceived quality is also defined as the customer's perception of the quality of products and services (Mandala & Dewi, 2017). This Perceived Quality variable consists of 4 aspects of measurement, namely the period of use, usage warranty, ease of operation, and ease of repair (Ayu, 2009).

Perceived Quality is formed from the experience of each individual in using a product and can be used as a decision-making consideration so as to increase satisfaction in individuals (Ayu, 2009). Therefore, Perceived Quality has a positive effect on customer satisfaction. Based on the above arguments, it can be hypothesized that:

H_1. Perceived Quality has a positive effect on Customer Satisfaction.

The higher the Perceived Quality, the higher the user's Perceived Value regarding the benefits obtained from using a product (Ayu, 2009). Therefore, Perceived Quality has a positive effect on perceived value. Thus, it can be hypothesized that:

H_2. Perceived Quality has a positive effect on Perceived Value.

The tendency of the user or users in choosing a product is influenced by how much the product is known to the user and it is known as Brand Preference. Brand Preference is influenced by Perceived Quality (Kusuma & Miartana, 2018). This proves that the higher the Perceived Quality, the higher the Brand Preference. Therefore, Perceived Quality has a positive effect on Brand Preference. Thus:

H_3. Perceived Quality has a positive effect on Brand Preference.

2.2 Perceived Value

Perceived Value is a customer's assessment of the overall product benefits based on the customer's assessment of the benefits and costs of obtaining and using the product (Hellier et al., 2003). Therefore, the benefits obtained by the customer will be directly proportional to the level of customer satisfaction. Perceived value has meaning as a consumer's view and evaluation that the value offered is commensurate with the price or sacrifice paid to obtain the product (Kataria & Saini, 2019). Perceived value is divided into 4, namely emotional value, social value, performance, and cost of money. (Sweeney & Soutar, 2001). This Perceived Value variable consists of 3 measurement aspects, namely feature completeness, price, and product design (Ayu, 2009). In this study, the authors will discuss perceived value of money/cost as one of the variables studied because perceived value of cost affects consumers' choice of a brand based on the price of the product and compared to all the utilities in it (Chandrawati & Vidyanata, 2022).

Perceived Value of a product is based on how much the benefits are obtained rather than the costs incurred, so that Customer Satisfaction can be felt by users. Perceived value plays an important role and is an important variable related to customer satisfaction (Juliana et al., 2022). This shows that the higher the Perceived Value, the higher the Customer Satisfaction. Therefore, Perceived Value has a positive effect on Customer Satisfaction. Thus, it can be hypothesized that:

H_4. Perceived Value has a positive effect on Customer Satisfaction.

Perceived Value of a product are also based on how well the product is known to users (Ayu, 2009). This shows that the higher the Perceived Value, the higher the Brand Preference (Ar, 2012). Therefore, Perceived Value has a positive effect on Brand Preference. Based on the above arguments, it can be hypothesized that:

H_5. Perceived Value has a positive effect on Brand Preference.

2.3 Brand Preference

Brand Preference as a comparison made by consumers on a product with other products (Hellier et al., 2003). Brand preference is a customer's tendency towards a particular brand (Chang & Liu, 2009). When a brand can meet consumer expectations, the consumer will fall in love and choose the product. Brand preference is a consideration or information received by a customer which will influence the pattern of purchasing a product (Widana & Darma, 2018). Brand preference arises when a customer is used to a brand but can switch to another brand if the brand is difficult to find or obtain (Wang, 2010). Companies must develop Brand Preference in order to maintain their products in market competition. The Brand Preference variable consists of 3 measurement aspects, namely product name, product suitability, and good product reputation (Ayu, 2009). The level of user tendency in choosing a product (Brand Preference) will increase the possibility of users to obtain satisfaction with the product. This shows that the higher the Brand Preference, the higher the Customer Satisfaction (Poranki, 2015a). Therefore, Brand Preference has a positive effect on Customer Satisfaction. Thus:

H_6. Brand Preference has a positive effect on Customer Satisfaction.

2.4 Customer Satisfaction

Customer Satisfaction is overall customer satisfaction obtained from the product's ability to fulfill customer desires (Hellier et al., 2003). Consumer satisfaction reflects one's assessment of the performance of a product or service in relation to what is expected. If performance falls short of expectations, consumers will be disappointed. If the performance is as expected, the consumer will be satisfied (Kotler & Keller, 2012). Customers who are satisfied and happy with the products or services provided tend to repurchase, spread positive word-of-mouth, and even become ambassadors for a company. Conversely, dissatisfied customers will seek and switch to other product or service providers (Wirtz et al., 2012). The Customer Satisfaction variable consists of 4 measurement aspects, namely satisfaction with product durability, satisfaction with product performance, satisfaction with product features, and satisfaction with reusability (Ayu, 2009).

2.5 System Applications and Products (SAP)

Enterprise Resource Planning (ERP) is software or a system that integrates applications in manufacturing, finance, sales and marketing, logistics, HR, and other functions within a company (Jacobs & Chase, 2018). ERP itself can be interpreted differently according to the company or sector concerned. (AboAbdo et al., 2019b) said that ERP in the field of construction is defined as software with one database that seeks to integrate various business

processes to increase efficiency. SAP is an ERP application to help companies plan and carry out production activities. This application was developed to support organizations so that they are more efficient and effective in carrying out their operational activities (Maulidina et al., 2020). According to Seto (2013) SAP consists of modules that support all company transactions and each module is interrelated with one another (Bashirudin et al., 2017). With the integrated module in the SAP system, making the production process within the company more effective. Apart from providing data in real time, SAP is able to minimize errors in inputting data into the system.

3. RESEARCH METHOD

This study uses a quantitative approach to the survey method. According to (Stockemer, 2019) quantitative research is related to statistical calculations that aim to obtain a numerical description of phenomena and determine the relationship between two or more variables. This study uses primary data collection and secondary data. Secondary data sources are expected to play a role in helping reveal the expected data.

The technique of determining the number of samples used is purposive sampling and census sampling. The purposive sampling technique or judgment sampling is a sampling technique from the population and is chosen deliberately based on considerations and research objectives (Mweshi & Sakyi, 2020; Etikan & Babatope, 2019). The census sampling technique is a sampling technique with all members of the population used as samples.

Primary data in this study were obtained by distributing questionnaires to predetermined respondents, namely users or users of the Integrated SAP application in the General Civil Division of PT Hutama Karya (Persero). The questionnaire used uses a Likert scale measurement with 5 answer choices and a total of 20 question indicators. This research questionnaire measures four variables, namely Perceived Quality, Perceived Value, Brand Preference, and Customer Satisfaction distributed via Google Form to users of each SAP module in 17 projects of the General Civil Division with a total sample of 68 people In this study, using the causality model, which is a model that measures the relationship between variables. To test the hypothesis, the analysis technique used is Structural Equation Model-Partial Least Square (SEM-PLS) using the SmartPLS 3.0 application with the aim of testing the causal relationship between variables (Shmueli et al., 2019).

4. RESULTS AND ANALYSIS

This study used a survey method by distributing questionnaires to 68 respondents. The respondent criteria used in this study were SAP users who process data in the Project System (PS), Sales and Distribution (SD), Material Management (MM) and Finance and Controlling (FICO) modules.

Analysis of research data using SEM-PLS with the help of the SmartPLS 3.0 application. Partial Least Square (PLS) is a structural equation analysis or Structural Equation Model (SEM). SEM-PLS analysis was carried out using Confirmatory Factor Analysis (CFA), which was then calculated and evaluated for the outer model and the inner model.

4.1 Research Framework

This research has a frame of mind or what is commonly called a research framework. The research framework is a preliminary model of a problem in research and the relationship between the variables studied. The purpose of the research framework is to guide and facilitate the direction of research.

This study uses six hypotheses that predict the relationship between exogenous and endogenous variables. The formulation of this hypothesis is described in the form of a research framework or structural model. This research framework describes the process of influencing Perceived Quality, Perceived Value, Brand Preference, and Customer Satisfaction. The framework for this research is presented in Figure 1.

Figure 1 explains that H1 shows the effect of Perceived Quality on Customer Satisfaction. H2 shows the effect of Perceived Quality on Perceived Value. H3 shows the effect of Perceived Quality on Brand Preference. H4 shows the effect of Perceived Value on Customer Satisfaction. H5 shows the effect of Brand Preference on Perceived Value. H6 shows the effect of Brand Preference on Customer Satisfaction.

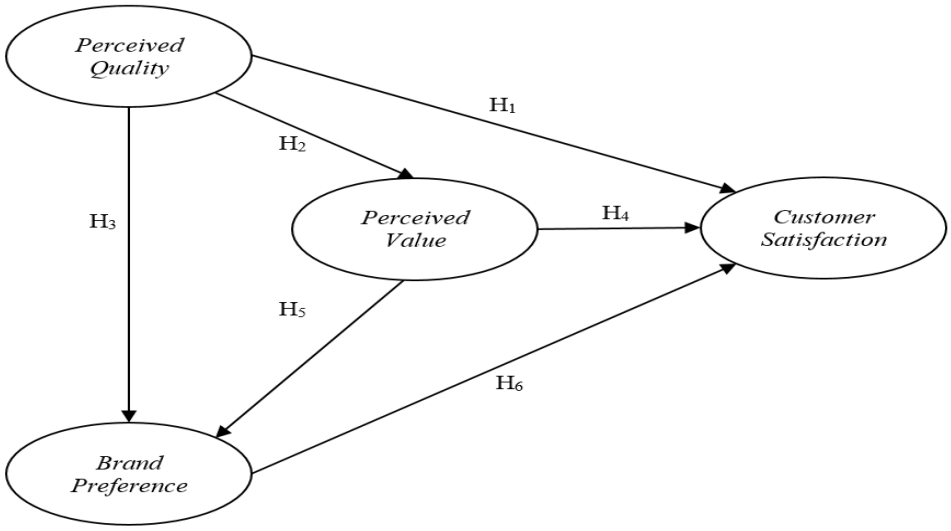

Figure 1: Research Method

4.2 Outer Model

The outer model is a model that describes the relationship between latent variables (constructs) and their indicators. This model shows a specific relationship between endogenous and exogenous latent variables with measurement indicators. The measurement model is assessed using validity and reliability tests. The criteria for this measurement model are obtained from the SmartPLS 3.0 application by calculating construct reliability and validity and discriminant validity.

4.2.1 Validity Test

Validity or validity is the level of accuracy of the scale in carrying out its measurements. It is said to be valid if the test tool can accurately measure the variable to be tested. There are two types of validity in SEM-PLS, namely convergent validity and discriminant validity.

a) Convergent Validity Test

Convergent validity indicates that a set of indicators represents one latent variable and underlies the latent variable. Convergent validity values can be seen through the outer loading values on exogenous and endogenous variables. The outer loading value shows the correlation between the indicators and their latent variables. A correlation with an outer loading value of > 0.5 is said to meet convergent validity.

Table 1: Outer Loading Research Result

	Brand Preference	Customer Satisfaction	Perceived Quality	Perceived Value
BP1	0,841			
BP2	0,805			
BP3	0,752			
BP4	0,834			
BP5	0,775			
BP8	0,726			
CS1		0,815		
CS3		0,749		
CS4		0,732		
CS5		0,838		
CS8		0,764		
CS9		0,691		
PQ1			0,680	
PQ4			0,756	
PQ5			0,619	
PQ9			0,501	
PV1				0,728
PV3				0,833
PV6				0,808
PV7				0,820

Based on Table 1 it can be seen that the outer loading value on the PQ9 indicator is 0.501. This means that the PQ9 indicator is still acceptable but the relationship between the indicator and the latent variable is in the sufficient category. Indicators with an Outer Loading value of 0.6 such as indicators PQ1, PQ5, and CS9 also mean that they are still acceptable, but the relationship between indicators and latent variables is in the sufficient category. While indicators that have an outer loading value of 0.7 such as PQ4, PV1, PV3, PV6, PV7, BP1, BP2, BP3, BP4, BP5, BP8, CS1, CS3, CS4, CS5, and CS8 are included in the high validity category. . This indicates that the relationship between the indicators and their latent variables is good.

b) Discriminant Validity Test

Discriminant validity is the extent to which a latent variable (construct) is truly different from other latent variables, or in other words the latent variable is unique. The criterion for discriminant validity is cross loading. In particular, the outer loading on the latent variable must be greater than all the outer loading on the other latent variable.

Table 2: Cross Loading Research Result

	Brand Preference	Customer Satisfaction	Perceived Quality	Perceived Value
BP1	0.841	0.700	0.646	0.723
BP2	0.805	0.674	0.628	0.675
BP3	0.752	0.542	0.579	0.654
BP4	0.834	0.742	0.726	0.834
BP5	0.775	0.583	0.597	0.660
BP8	0.726	0.653	0.564	0.637
CS1	0.728	0.815	0.645	0.724
CS3	0.565	0.749	0.578	0.577
CS4	0.620	0.732	0.658	0.537
CS5	0.726	0.838	0.605	0.740
CS8	0.544	0.764	0.563	0.571

CS9	0.588	0.691	0.574	0.559
PQ1	0.523	0.604	0.68	0.583
PQ4	0.616	0.551	0.756	0.619
PQ5	0.554	0.427	0.619	0.452
PQ9	0.310	0.444	0.501	0.335
PV1	0.618	0.619	0.581	0.728
PV3	0.774	0.691	0.705	0.833
PV6	0.683	0.639	0.582	0.808
PV7	0.748	0.647	0.644	0.820

The cross-loading value in Table 4.7 indicates the level of correlation between latent variables. The cross-loading value on the Brand Preference variable indicator shows a higher value when compared to other variable indicators. The BP1 indicator has a cross loading of 0.841, BP2 has a cross loading of 0.805, BP3 has a cross loading of 0.752, BP4 has a cross loading of 0.834, BP5 has a cross loading of 0.775, and BP8 has a cross loading of 0.726. These values are greater than other variable indicators. This means that the Brand Preference latent variable is able to better predict the indicators in the block and informs that each indicator is different and has varied values.

4.2.2 Reliability Test

Reliability describes the level of accuracy of a measuring instrument in measuring research variables. It is said to be reliable when the resulting values are the same if tested on the same object at different times. To test the reliability, the parameter in the form of Cronbach's Alpha is used with the help of the SmartPLS 3.0 application. If the value of Cronbach's Alpha > 0.6 then the latent variable has good reliability.

Table 3: Cronbach's Alpha Research Result

No.	Latent Variable	Cronbach's Alpha
1.	Perceived Quality	0,879
2.	Perceived Value	0,858
3.	Brand Preference	0,529
4.	Customer Satisfaction	0,810

Based on Table 3 it can be seen that the variables Perceived Quality, Perceived Value, and Customer Satisfaction have Cronbach's Alpha values > 0.6. Meanwhile, the Brand Preference variable has a Cronbach's Alpha value of <0.6 but can still be used because its value exceeds 0.5.

Apart from using Cronbach's Alpha parameters, the reliability of the measurement model can also be determined through the Composite Reliability (CR) value. A model in SM-PLS is said to be reliable if it meets the requirements of Cronbach's Alpha or Composite Reliability > 0.6. Composite Reliability value output is obtained from PLS Algorithm → Quality Criteria → Construct Reliability and Validity → Composite Reliability. The results of the reliability test based on the Composite Reliability value in this study can be seen in Table 4.

Table 4: Composite Reliability Research Result

No.	Latent Variable	Composite Reliability (CR)
1.	Perceived Quality	0,909
2.	Perceived Value	0,895
3.	Brand Preference	0,737
4.	Customer Satisfaction	0,875

Based on Table 4, it was found that the four latent variables in this study had a Composite Reliability value of > 0.6. The variables Perceived Quality, Perceived Value, Brand Preference,

and Customer Satisfaction have a CR value of 0.903 each; 0.963; 0.847; and 0.788. This indicates that the four research variables have good reliability.

4.3 Inner Model

The inner model is a model that describes the relationship between latent variables (constructs). The latent variable relationship is based on theory or practical experience observed by previous researchers. The inner model analysis is based on the quality criteria analysis. The results that can be obtained are based on the results of the PLS Algorithm in the SmartPLS 3.0 application including R-Square, f-Square, and Collinearity Statistics (VIF).

4.3.1. R-Square

R-Square is a measure of the proportion of variation in endogenous variable values that can be explained by exogenous variables. The higher the R-Square value means the better the prediction model of the proposed research model. There are three criteria for R-Square values, namely:

- If the R-Square value is > 0.75 then it is substantial (big or strong).
- If the R-Square value = 0.50 then moderate (moderate).
- If the R-Square value = 0.25 then it is weak (small).

The output R-Square value is obtained from PLS Algorithm → Quality Criteria → R-Square. The R-Square value in this study can be seen in Table 5.

Table 5: R-Square Research Result

	R-Square
Perceived Value	0,623
Brand Preference	0,810
Customer Satisfaction	0,744

An explanation of the path on the R-Square based on Table 5 is as follows:

- The R-Square model of path 1 on the Brand Preference variable is obtained from the Perceived Quality and Perceived Value variables, which are equal to 0.810. This value is above 0.75. This means that the ability of Perceived Quality and Perceived Value in explaining Brand Preference is 81% and is included in the substantial or strong category.
- R-Square model line 2 on the variable Perceived Value obtained from the variable Perceived Quality, which is equal to 0.623. This value is in the range of 0.50-0.75. This means that Perceived Quality's ability to explain Perceived Value is 62.3% and is included in the medium category.
- R-Square model path 1 on the variable Customer Satisfaction obtained from the variables Perceived Quality, Perceived Value, and Brand Preference, which is equal to 0.744. This value is in the range of 0.50-0.75. This means that the ability of the three variables in explaining Brand Preference is 74.4% and is included in the medium category.

4.3.2 f-Square

f-Square is a measure used to determine the amount of influence exerted by exogenous variables on endogenous variables. There are three criteria for the value of f-Square, namely:

- If the value of f-Square = 0.02 then the exogenous variables have a small/bad effect on the structural arrangement.

- If the value of f-Square = 0.15 then the exogenous variables have a moderate effect on the structural arrangement.
- If the value of f-Square = 0.35 then the exogenous variables have a big/good influence on the structural arrangement.

The output value of f-Square is obtained from PLS Algorithm → Quality Criteria → f-Square. The f-square value in this study can be seen in Figure Table 6.

Table 6: f-Square Research Result

	Perceived Quality	Perceived Value	Brand Preference	Customer Satisfaction
Perceived Quality		1,654	0,118	0,119
Perceived Value			0,957	0,048
Brand Preference				0,098
Customer Satisfaction				

Based on Table 6, it can be seen that the Perceived Quality variable has a large or good influence on Perceived Value, but has a weak influence on Brand Preference and Customer Satisfaction. The Perceived Value variable has a large influence on Brand Preference, but has a weak effect on Customer Satisfaction. Brand Preference has a weak influence on Customer Satisfaction in the structural order.

4.3.3 Collinearity Statistics (VIF)

Collinearity or collinearity testing is carried out to prove the correlation between latent variables whether the correlation is strong or not. If there is a strong correlation, it means that the model has problems. This problem is called collinearity. If collinearity occurs, then a variable that is strongly correlated with other variables in the model has an unstable prediction. The value used to analyze it is by looking at the Variance Indication Factor (VIF) value. There are two VIF score criteria, namely:

- If the VIF value > 10 then there is a collinearity problem for all indicators.
- If the VIF value < 10 then there is no collinearity problem in all indicators.

The output of Collinearity Statistics (VIF) values is obtained from PLS Algorithm → Quality Criteria → Collinearity Statistics (VIF). Inner VIF values in this study can be seen in Table 7.

Based on Table 7 it can be seen that all variables have a VIF value above 10. This indicates that there is no collinearity problem between the variables and the predictive power between the variables is stable.

Table 7: Inner Variance Indication Factor (VIF) Research Result

	Perceived Quality	Perceived Value	Brand Preference	Customer Satisfaction
Perceived Quality		1,000	2,654	2,968
Perceived Value			2,654	5,194
Brand Preference				5,264
Customer Satisfaction				

Apart from using the PLS Algorithm, the inner model analysis is also carried out through Bootstrapping. The results that can be obtained based on the results of Bootstrapping in the SmartPLS 3.0 application are direct effects or direct relationships. Direct effect analysis is useful for testing the hypothesis of the direct effect of exogenous variables on endogenous variables. The criteria for this direct effect include the path coefficient, P-Value, and T-Statistics.

4.3.4 Path Coefficient

Path coefficients show the direction of the relationship in hypothesis testing. The output of the Path coefficient value is obtained from Bootstrapping → Final Results → Path coefficient → Original Sample. The path coefficient in this study can be seen in Figure 2.

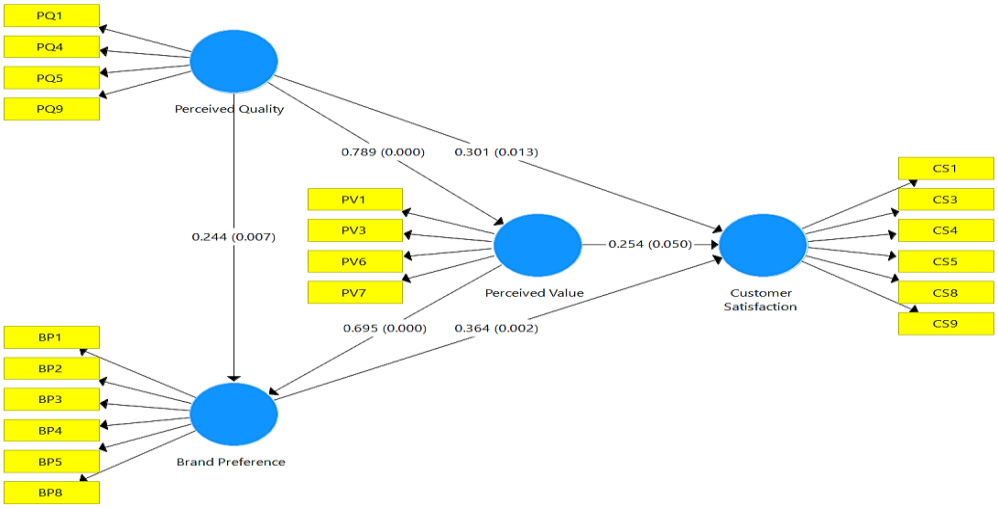

Figure 1: Path Coefficient in Research Model

The path coefficient can be seen in the arrows connecting the two latent variables. Based on the SmartPLS 3.0 output in Figure 4.9, the Path coefficient values for all paths are positive. Recapitulation of the research Path coefficient values can be seen in Table 8.

Table 8: Path Coefficient Research Result

Variable Relationship	Path Coefficient	Explanation
Perceived Quality → Customer Satisfaction	0,301	Positive
Perceived Quality → Perceived Value	0,789	Positive
Perceived Quality → Brand Preference	0,244	Positive
Perceived Value → Customer Satisfaction	0,254	Positive
Perceived Value → Brand Preference	0,695	Positive
Brand Preference → Customer Satisfaction	0,364	Positive

A positive path coefficient value indicates that the effect of an exogenous variable on the endogenous variable is unidirectional. For example, in the Perceived Quality exogenous variable to the Brand Preference exogenous variable. The path coefficient value or the path coefficient is +0.244. This indicates that Perceived Quality has a unidirectional influence on Brand Preference. If the Perceived Quality value increases, the Brand Preference value also increases.

4.3.5 P-Value

P-Value or probability value indicates the level of significance between latent variables. The P-Value output is obtained from Bootstrapping → Final Results → Path coefficient → P-Value.

The P-Value in this study can be seen in Figure 3. The P-Value in Figure 3 is found in the one-way arrows connecting the latent variables.

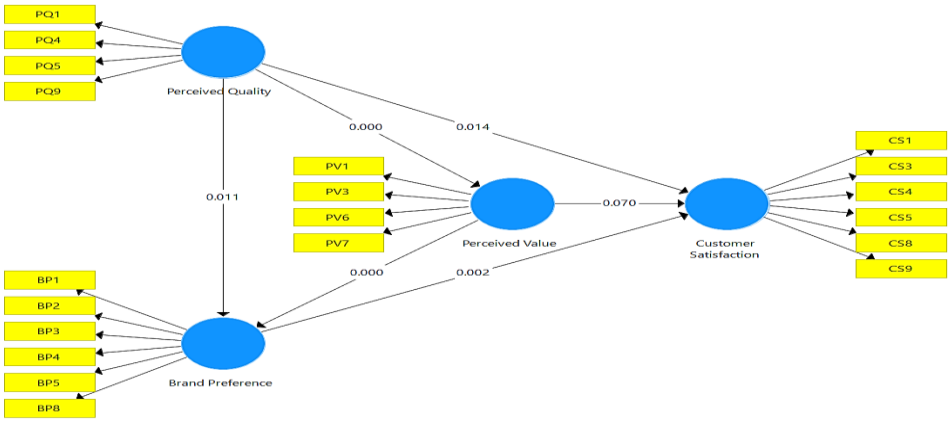

Figure 2: P-Value in Research Model

Based on Figure 3 it can be seen that the P-Value is indicated by the path between the variables on the arrows. The probability value or P-Value on all paths is significant, except for the effect of the Perceived Value variable on Customer Satisfaction because the P-Value is 0.07. This value does not meet the significance criteria which must be below 0.05. The research P-Value is presented in Table 9.

Table 9: P-Value Research Result

Variable Relationship	P-Value	Explanation
Perceived Quality → Customer Satisfaction	0,014	Significantly affected
Perceived Quality → Perceived Value	0,000	Significantly affected
Perceived Quality → Brand Preference	0,011	Significantly affected
Perceived Value → Customer Satisfaction	0,070	No significant effect
Perceived Value → Brand Preference	0,000	Significantly affected
Brand Preference → Customer Satisfaction	0,002	Significantly affected

4.3.6 T-Statistics

T-Statistics can be used to see the evaluation of structural models. The T-Statistics output is obtained from bootstrapping → Final Results → Path coefficient → T-Statistics. Apart from using the P-Value parameter, the significance of the influence relationship between variables can also be determined by the T-Statistics value which must be above 1.96. The T-Statistics in this study can be seen in Figure 4. The T-Statistics in Figure 4 are found in the one-way arrows connecting the latent variables.

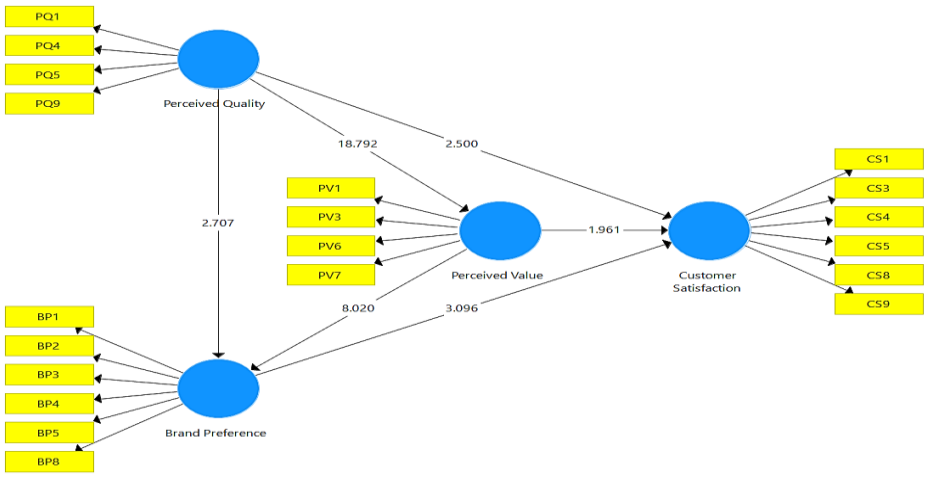

Figure 3: T-Statistics in Research Model

Based on Figure 4, the T-Statistics value on the Perceived Quality exogenous variable on the Brand Preference exogenous variable is 2.707. The T-Statistics values for all paths have a significant effect, which is above 1.96. This indicates a significant predictive effect between latent variables. The recapitulation of the research T-Statistics values can be seen in Table 10.

Table 10: T-Statistics Research Result

Hubungan Variabel	T-Statistics	Explanation
Perceived Quality → Customer Satisfaction	2,459	Significantly Affected
Perceived Quality → Perceived Value	18,828	Significantly Affected
Perceived Quality → Brand Preference	2,561	Significantly Affected
Perceived Value → Customer Satisfaction	1,816	Significantly Affected
Perceived Value → Brand Preference	7,561	Significantly Affected
Brand Preference → Customer Satisfaction	3,143	Significantly Affected

4.4 Hypothesis Test Result

The criteria for testing the research hypothesis are:

- Accept the hypothesis if T-Statistics > 1.96 or P-Value < 0.05.
- Reject the hypothesis if T-Statistics < 1.96 or P-Value > 0.05.

Based on the research criteria above, it is necessary to recapitulate the interpretation of the relationship between variables presented in Table 11.

Table 11: Interpretation of Influence Relationship between Latent Variables

Variable Relationship	Path Coefficient	P-Value	T-Statistics	Explanation
Perceived Quality → Customer Satisfaction	0,301	0,014	2,459	Significantly affected
Perceived Quality → Perceived Value	0,789	0,000	18,828	Significantly affected
Perceived Quality → Brand Preference	0,244	0,011	2,561	Significantly affected
Perceived Value → Customer Satisfaction	0,254	0,070	1,816	No significant effect
Perceived Value → Brand Preference	0,695	0,000	7,561	Significantly affected
Brand Preference → Customer Satisfaction	0,364	0,002	3,143	Significantly affected

Hypothesis 1: Perceived Quality has a positive effect on Customer Satisfaction

Based on the results of research that has been carried out through analysis through hypothesis testing, it is known that Perceived Quality has a positive influence on Customer Satisfaction. This can be seen from the Path coefficient value of 0.301 with P-Value (P) = 0.014 <0.05 and T-Statistics = 2.459, so the hypothesis is accepted. A positive value on the path coefficient means that the higher the Perceived Quality of the user, the higher the Customer Satisfaction. The results of this study are in accordance with the research of (Pedraja Iglesias & Guillén, 2004) where their research states that the factors that determine the level of customer satisfaction are the quality obtained and the price of the goods they receive. It is further explained that the satisfaction obtained increases along with the level of quality they feel from a restaurant.

In connection with this research, the research respondents have felt the differences and advantages that are felt when implementing SAP compared to other ERP applications. Seen in the implementation of project control, respondents chose to use SAP. This is also because SAP can integrate four modules at once so that it further strengthens that the assessment of the quality obtained related to SAP gives satisfaction in implementing the ERP system.

Hypothesis 2: Perceived Quality has a positive effect on Perceived Value

This can be seen from the path coefficient value of 0.789 with P-Value (P) = 0.000 <0.05 and T-Statistics = 18.828, so the hypothesis is declared accepted. This means that the quality of SAP that is felt by customers affects the assessment of the benefits that users feel from the SAP application itself. A positive value on the path coefficient indicates the higher the Perceived Quality of the user, the higher the Perceived Value.

The results of this study are in line with research conducted by (Setiowati & Liem, 2018), namely Perceived Quality has a significant relationship to Perceived Value. According to (Kim & Choi, 2013). Perceived Value is related to experience in using a product or service. When the quality of a product is bad, it will affect the assessment of the product. So based on this research, users who are research respondents provide a good assessment of the quality of SAP so that they also experience positive benefits from implementing SAP.

Hypothesis 3: Perceived Quality has a positive effect on Brand Preference

Perceived Quality has a positive influence on Brand Preference, this can be seen from the path coefficient value of 0.244 with P-Value (P) = 0.011 <0.05 and T-Statistics = 2.561, so the hypothesis is declared accepted. That is, Perceived Quality has a significant and positive influence on Brand Preference so that when the Perceived Quality of SAP users increases, the Brand Preference of SAP users also increases.

Similar research conducted by (Kusuma & Miartana, 2018) supports the results of this study, stating that Perceived Quality has a significant effect on Brand Preference. Perceived Quality according to (Aaker, 1997) is a customer's assessment of the quality or advantages of a product because it obtains what is expected (Krisno & Samuel, 2013). Meanwhile, according to (Hellier et al., 2003) it is explained that Brand Preference is a comparison made by consumers of one product with another product so that when a product meets consumer expectations, consumers will definitely prefer and choose this product (Kusuma & Miartana, 2018). In line with this research, the advantages of SAP in integrating four modules at once have been felt by users so that they prefer and choose to apply ERP using SAP rather than other applications.

Hypothesis 4: Perceived Value has a positive effect on Customer Satisfaction

Based on the hypothesis testing that has been done, it is found that Perceived Value has no effect on Customer Satisfaction. This can be seen from the path coefficient value of 0.254 with

P-Value (P) = 0.07 > 0.05 and T-Statistics = 1.816, so the hypothesis is declared rejected. Described by (Eggert & Ulaga, 2002) that Perceived Value and Customer Satisfaction are different constructs where Perceived Value is a cognitive-based construct and Customer Value is an affective-based construct, so that Perceived Value is less able to indicate influence on Customer Satisfaction. In addition, other studies state that Perceived Value is difficult to predict constructs (Mulyanegara & Tsarenko, 2009).

Based on this research, it is known that developing SAP applications requires high costs, causing users to feel dissatisfied. It was explained that Perceived Value is the result of a customer's assessment of the benefits received compared to the costs incurred for a product (Yuliansyah & Handoko, 2019; Chandrawati & Vidyanata, 2022). That is, the price which is an indicator of Perceived Value is considered by the user (user) has no effect on user satisfaction, where the costs sacrificed in SAP development are greater when compared to the benefits felt by users, causing dissatisfaction with SAP implementation.

Hypothesis 5: Perceived Value has a positive influence on Brand Preference

This can be seen from the path coefficient value of 0.695 with P-Value (P) = 0.000 <0.05 and T-Statistics = 7.561, so the hypothesis is declared accepted. That is, Perceived Value has a significant and positive influence on Brand Preference so that when the Perceived Value of SAP users increases, the Brand Preference of SAP users also increases.

In line with research conducted by (Wang, 2010) proving that the Perceived Value of a food product can affect Brand Preference and intention in buying a product. Further explained, there is a positive influence from Brand Preference, so Perceived Value or assessment of product benefits is considered important because creating Perceived Value in customers will increase positive attitudes towards a brand (Wang, 2010).

In connection with this research, users are more likely to choose to use SAP applications due to the benefits and functions that users feel about implementing SAP in their daily activities. In other words, the assessment of the benefits (Perceived Value) of the SAP application affects the user's Brand Preference.

Hypothesis 6: Brand Preference has a positive effect on Customer Satisfaction

Brand preference has a positive effect on customer satisfaction, this can be seen from the path coefficient value of 0.364 with P-Value (P) = 0.002 <0.05 and T-Statistics = 3.143, so the hypothesis is declared accepted. That is, Brand Preference has a significant and positive influence on Customer Satisfaction so that when Brand Preference for SAP users increases, satisfaction with SAP implementation also increases.

This research is supported by the results of a study conducted by (Poranki, 2015b) showing that customers are satisfied with one of the milk brands on the market. One of the reasons for the satisfaction obtained by Bangalore customers is that the milk product is considered to be able to meet customer expectations and is only available in a few places. Further explained by (Rust and Oliver, 1994) customer satisfaction can be driven by many factors, one of which is brand preference where brand preferences reflect positive cognitive judgments that create satisfaction with a brand (Jamal & Al-Marri, 2007).

Brand preference is a tendency for customers to choose a brand over other brands that can be caused by good habits or experiences with the brand (Ardhanari, 2008). The tendency of respondents to choose SAP over other ERP applications is due to their good experience with the brand. Customers' positive experience with SAP is reflected in the satisfaction felt by

respondents because SAP consists of four modules and integration in the SAP system makes the production process more effective and provides data in real time.

5. CONCLUSIONS

The result shows that the variable Perceived Quality has a positive and significant impact on Customer Satisfaction, Perceived Value, and Brand Preference. Brand Preference has a positive and significant influence on Customer Satisfaction. Perceived value positively and significantly impacts on Brand Preference, but does not have a positive and insignificant effect on Customer Satisfaction. So, the user's perception of the benefits of SAP has no effect on Customer Satisfaction in implementing SAP as a data integration system. SAP application development requires high costs, causing users to feel dissatisfied. That is, the price which is an indicator of Perceived Value is considered by the user has no effect on user satisfaction, where the costs sacrificed in SAP development are greater when compared to the benefits felt by users, causing dissatisfaction with SAP implementation.

References

- AboAbdo, S., Aldhoiena, A., & Al-Amrib, H. (2019a). Implementing Enterprise Resource Planning ERP System in a Large Construction Company in KSA. Procedia Computer Science, 164, 463–470. https://doi.org/10.1016/j.procs.2019.12.207
- AboAbdo, S., Aldhoiena, A., & Al-Amrib, H. (2019b). Implementing Enterprise Resource Planning ERP System in a Large Construction Company in KSA. Procedia Computer Science, 164, 463–470. https://doi.org/10.1016/j.procs.2019.12.207
- Addo-Tenkorang, R. (2011). Enterprise Resource Planning (ERP). Computers in Industry.
- Ar, A. A. (2012). Effect of Perceived Values on the Brand Preference and the Purchase Intention. 8.
- Ardhanari, M. (2008). CUSTOMER SATISFACTION PENGARUHNYA TERHADAP BRAND PREFERENCE DAN REPURCHASE INTENTION PRIVATE BRAND. 2.
- Arya Pering, I. M. A. (2020). Kajian Analisis Jalur Dengan Structural Equation Modeling (Sem) Smart-Pls 3.0. Jurnal Ilmiah Satyagraha, 3(2), 28–48. https://doi.org/10.47532/jis.v3i2.177
- Ayu, Y. S. P. (2009). Pengaruh Perceived Quality, Perceived Value, Brand Preference, Consumer Satisfaction, dan Consumer Loyalty pada Repurchase Intention.
- Azevedo, P. S., Azevedo, C., & Romão, M. (2014). Application Integration: Enterprise Resource Planning (ERP) Systems in the Hospitality Industry. A case study in Portugal. Procedia Technology, 16, 52–58. https://doi.org/10.1016/j.protcy.2014.10.067
- Bashirudin, I., Fausa, E., & Sari, A. D. (2017). Implementasi ERP SAP dalam pembuatan report demografi organisasi (Studi kasus PT. Krakatau Steel (Persero) Tbk.). Teknoin, 23(3), 241–252. https://doi.org/10.20885/teknoin.vol23.iss3.art5
- Calvo-Porral, C., Lévy-Mangin, J.-P., & Novo-Corti, I. (2013). Perceived quality in higher education: An empirical study. Marketing Intelligence & Planning, 31(6), 601–619. https://doi.org/10.1108/MIP-11-2012-0136
- Chandrawati, A. A., & Vidyanata, D. (2022). Pengaruh Perceived Quality dan Perceived Value of Cost terhadap Loyalitas Pelanggan melalui Kepuasan Pelanggan pada Fresh.Co. Jembatan: Jurnal Ilmiah Manajemen, 19(1), 49–68. https://doi.org/10.29259/jmbt.v19i1.17758
- Chang, H. H., & Liu, Y. M. (2009). The impact of brand equity on brand preference and purchase intentions in the service industries. The Service Industries Journal, 29(12), 1687–1706. https://doi.org/10.1080/02642060902793557
- Eggert, A., & Ulaga, W. (2002). Customer Perceived Value: A Substitute for Satisfaction in Business Markets? Journal of Business & Industrial Marketing, 17(2/3), 107–118. https://doi.org/10.1108/08858620210419754

- Ekawati, I., Alfi, R., & Nesti, L. (2020). Pengukuran Efektifitas Implementasi ERP-SAP Pada Industri Teh Di PTPN IV.
- Etikan, I., & Babatope, O. (2019). A Basic Approach in Sampling Methodology and Sample Size Calculation. 1.
- Ferrari, A. M., Volpi, L., Settembre-Blundo, D., & García-Muiña, F. E. (2021). Dynamic life cycle assessment (LCA) integrating life cycle inventory (LCI) and Enterprise resource planning (ERP) in an industry 4.0 environment. Journal of Cleaner Production, 286, 125314. https://doi.org/10.1016/j.jclepro.2020.125314
- Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. International Journal of Production Economics, 210, 15–26. https://doi.org/10.1016/j.ijpe.2019.01.004
- Gozali, A., & Supranto, J. (2020a). Evaluasi Implementasi Enterprise Resources Planning pada Perusahaan Manufaktur dengan Model DeLone dan McLean. Jurnal Manajemen Bisnis dan Kewirausahaan, 4(2), 21. https://doi.org/10.24912/jmbk.v4i2.7516
- Gozali, A., & Supranto, J. (2020b). Evaluasi Implementasi Enterprise Resources Planning pada Perusahaan Manufaktur dengan Model DeLone dan McLean. Jurnal Manajemen Bisnis dan Kewirausahaan, 4(2), 21. https://doi.org/10.24912/jmbk.v4i2.7516
- Gupta, M., & Kohli, A. (2006). Enterprise resource planning systems and its implications for operations function. Technovation, 26(5–6), 687–696. https://doi.org/10.1016/j.technovation.2004.10.005
- Hancerliogullari Koksalmis, G., & Damar, S. (2022). An Empirical Evaluation of a Modified Technology Acceptance Model for SAP ERP System. Engineering Management Journal, 34(2), 201–216. https://doi.org/10.1080/10429247.2020.1860415
- Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2003). Customer repurchase intention: A general structural equation model. European Journal of Marketing, 37(11/12), 1762–1800. https://doi.org/10.1108/03090560310495456
- Hewavitharana, T., Nanayakkara, S., Asoka Perera, & Perera, J. (2019). Impact of Enterprise Resource Planning (ERP) Systems to the Construction Industry. 1227892 Bytes. https://doi.org/10.6084/M9.FIGSHARE.8868392
- Jacobs, F. R., & Chase, R. B. (2018). Operations and supply chain management (Fifteenth edition). McGraw-Hill Education.
- Jamal, A., & Al-Marri, M. (2007). Exploring the effect of self-image congruence and brand preference on satisfaction: The role of expertise. Journal of Marketing Management, 23(7–8), 613–629. https://doi.org/10.1362/026725707X2266
- Juliana, J., Putri, F. F., Wulandari, N. S., Saripudin, U., & Marlina, R. (2022). Muslim Tourist Perceived Value on Revisit Intention to Bandung City with Customer Satisfaction as Intervening Variables. Journal of Islamic Marketing, 13(1), 161–176.
- Karya, H. (2022, January 12). Adaptif dalam Transformasi Bisnis, Hutama Karya Implementasi ERP Secara Menyeluruh. https://www.hutamakarya.com/adaptif-dalam-transformasi-bisnis-hutama-karya-implementasi-erp-secara-menyeluruh
- Kataria, S., & Saini, V. (2019). The mediating impact of customer satisfaction in relation of brand equity and brand loyalty: An empirical synthesis and re-examination. South Asian Journal of Business Studies, 9(1), 62–87. https://doi.org/10.1108/SAJBS-03-2019-0046
- Kim, H., & Choi, B. (2013). The Influence of Customer Experience Quality on Customers' Behavioral Intentions. Services Marketing Quarterly, 34(4), 322–338. https://doi.org/10.1080/15332969.2013.827068
- Kotler, P., & Keller, K. L. (2012). Marketing Management (14th ed.). Prentice Hall: Pearson.
- Krisno, D., & Samuel, H. (2013). Pengaruh Perceived Quality, Perceived Sacrifice dan Perceived Value terhadap Customer Satisfaction di Informa Innovative Furnishing Pakuwon City Surabaya. JURNAL MANAJEMEN PEMASARAN PETRA, 1(1), 1–12.

- Kusuma, N. B. A. P., & Miartana, I. P. (2018). Brand Awareness, Brand Loyalty, Perceived Quality,Brand Association, Brand Preference, dan Purchase Intention. Jurnal Manajemen Dan Bisnis, 15(2).
- Lee, A. H. I., Chen, S.-C., & Kang, H.-Y. (2020). A decision-making framework for evaluating enterprise resource planning systems in a high-tech industry. Quality Technology & Quantitative Management, 17(3), 319–336. https://doi.org/10.1080/16843703.2019.1626073
- Likert, R. (1932). A Technique for the Measurement of Attitudes. New York University.
- Ling X. Li, L. (2000). Manufacturing capability development in a changing business environment. Industrial Management & Data Systems, 100(6), 261–270. https://doi.org/10.1108/02635570010301188
- Lubis, P. D. K., Lubis, I. T., Muda, I., & Nedelea, A. M. (2021). Management Process Administration in Enterprise Resources Planning (ERP) Systems Applications and Products in Data Processing (SAP) in PTPN III Sei Dadap. 10(3).
- Mabert, V. A., Soni, A., & Venkataramanan, M. A. (2003). Enterprise resource planning: Managing the implementation process. European Journal of Operational Research, 146(2), 302–314. https://doi.org/10.1016/S0377-2217(02)00551-9
- Mahardika, D. K., Sukarsa, I. M., & Buana, P. W. (2014). Pemodelan ERP pada Perusahaan Manufaktur dengan. 2(1).
- Mandala, K., & Dewi, D. A. P. (2017). Pengaruh Perceived Quality terhadap Perceived Value yang Dimediasi oleh Perceived Risk. E-Jurnal Manajemen Unud, 6(5).
- Maulidina, R., Rizki, N. A., & Dewi, R. S. (2020). Perencanaan dan Implementasi SAP pada PT XYZ dengan Menggunakan Metode Accelerated SAP (ASAP). JURIKOM (Jurnal Riset Komputer), 7(1), 83. https://doi.org/10.30865/jurikom.v7i1.1856
- Mulyanegara, R. C., & Tsarenko, Y. (2009). Predicting brand preferences: An examination of the predictive power of consumer personality and values in the Australian fashion market. Journal of Fashion Marketing and Management: An International Journal, 13(3), 358–371. https://doi.org/10.1108/13612020910974492
- Mweshi, G. K., & Sakyi, K. (2020). Application of sampling methods for the research design. Archives of Business Research, 8(11), 180–193. https://doi.org/10.14738/abr.811.9042
- Ningsi, B. A., & Agustina, L. (2018). Analisis Kepuasan Pelanggan Atas Kualitas Produk dan Pelayanan Dengan Metode SEM-PLS. Jurnal Statistika dan Aplikasinya, 2(2), 8–16. https://doi.org/10.21009/JSA.02202
- One, K. Q., Ridwan, A. Y., & Alam, P. F. (2018). Perancangan Sistem Enterprise Resource Planning Modul Purchasing (MM-PUR) Menggunakan Aplikasi SAP sengan Metode SAP Activate di PT XYZ. 5(5), 3418–3427.
- Pedraja Iglesias, M., & Guillén, M. J. Y. (2004). Perceived quality and price: Their impact on the satisfaction of restaurant customers. International Journal of Contemporary Hospitality Management, 16(6), 373–379. https://doi.org/10.1108/09596110410550824
- Poranki, K. R. (2015a). Brand Preference and Customer Satisfaction of Branded Milk in India. 05(08).
- Poranki, K. R. (2015b). Brand Preference and Customer Satisfaction of Branded Milk in India. 05(08).
- Puteri Andisty, M., & Harmain, H. (2022). Penerapan System Application and Product (SAP) pada Administrasi Kepegawaian (Penerima Santunan Hari Tua (SHT)) di PT. Perkebunan Nusantara II Kebun Bandar Klippa. Al-Kharaj : Jurnal Ekonomi, Keuangan & Bisnis Syariah, 5(3), 1291–1298. https://doi.org/10.47467/alkharaj.v5i3.1625
- Ringle, C. M., Sarstedt, M., Mitchell, R., & Gudergan, S. P. (2018). Partial least squares structural equation modeling in HRM research. The International Journal of Human Resource Management, 31(12), 1617–1643. https://doi.org/10.1080/09585192.2017.1416655
- Roopa, S., & Rani, M. (2012). Questionnaire Designing for a Survey. The Journal of Indian Orthodontic Society, 46, 273–277. https://doi.org/10.5005/jp-journals-10021-1104
- Setiowati, R., & Liem, Y. (2018). Impact of Packaging Design on Perceived Quality, Perceived Value, Brand Preference, and Repurchase Intention of Candy Products in Jakarta.

- Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: Guidelines for using PLSpredict. European Journal of Marketing, 53(11), 2322–2347. https://doi.org/10.1108/EJM-02-2019-0189
- Sigalingging, E. D., & Permatasari, D. I. (2021). Pengaruh Kualitas Sistem dan Kualitas Informasi terhadap Kepuasan Pengguna Enterprise Resource Planning-System Application and Product in Data Processing (ERP-SAP) dengan Perceived Usefulness sebagai Variabel moderating pada Pelindo I (Persero) Sumatera Utara. JIMAT (Jurnal Ilmiah Mahasiswa Akuntansi), 12(01), 1046–1057.
- Stockemer, D. (2019). Quantitative Methods for the Social Sciences: A Practical Introduction with Examples in SPSS and Stata. Springer International Publishing. https://doi.org/10.1007/978-3-319-99118-4
- Stollery, A., & Jun, S. H. (2017). The antecedents of perceived value in the Airbnb context. Asia Pacific Journal of Innovation and Entrepreneurship, 11(3), 391–404. https://doi.org/10.1108/APJIE-12-2017-040
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. Journal of Retailing, 77(2), 203–220. https://doi.org/10.1016/S0022-4359(01)00041-0
- Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3205040
- Tambovcevs, A., & Merkuryev, Y. (2009). Analysis of ERP Systems Implementation in the Construction Enterprises. Scientific Journal of Riga Technical University. Computer Sciences, 39(1). https://doi.org/10.2478/v10143-010-0002-1
- Umble, E. J., Haft, R. R., & Umble, M. M. (2003). Enterprise resource planning: Implementation procedures and critical success factors. European Journal of Operational Research, 146(2), 241–257. https://doi.org/10.1016/S0377-2217(02)00547-7
- Wang, E. S.-T. (2010). Impact of Multiple Perceived Value of Consumer's Brand Preference and Purchase Intention: A Case of Snack Foods. Journal of Food Products Marketing.
- Widana, I. W., & Darma, G. S. (2018). Branding Denpasar Smart City Guna Meningkatkan Kunjungan Wisatawan. Jurnal Manajemen dan Bisnis, 15(1).
- Wirtz, J., Chew, P., & Lovelock, C. (2012). Essentials of Service Marketing (2nd ed.). Pearson Education South East Asia.
- Yang, J.-B., Wu, C.-T., & Tsai, C.-H. (2007). Selection of an ERP system for a construction firm in Taiwan: A case study. Automation in Construction, 16(6), 787–796. https://doi.org/10.1016/j.autcon.2007.02.001
- Yolanda, Y., & Dessyana. (2022). Pengaruh Kualitas Sistem dan Kualitas Informasi terhadap Kepuasan Pengguna Enterprise Resource Planning-System Application and Product in Data Processing (ERP-SAP) pada PT Inalum (Persero) Sumatera Utara.
- Yuliansyah, A., & Handoko, T. D. (2019). Pengaruh Perceived Quality dan Perceived Value terhadap Brand Loyalty melalui Customer Satisfaction J-Klin Beauty Jember. Journal of Economic, Bussines and Accounting (COSTING), 2(2), 292–301. https://doi.org/10.31539/costing.v2i2.560