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Measurement of Warehouse Management System Performance using IT-BSC Method in the FMCG Industry

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Abstract. Companies that produce FMCG types of goods need the support of a reliable warehousing application system to support the circulation of goods in and out. A logistics system from the warehouse to be marketed. The warehouse management system that has been implemented needs to be evaluated to determine the system's performance needed to control the supply chain for producing goods for storage. Then, the company's marketing target areas will be distributed to branches in various cities and provinces. The company uses a warehouse management system (called SMP) that is currently running to support supply chain management operations. The purpose of this study will be to discuss the performance of the existing warehousing system in the company using the variable IT Balanced Scorecard (IT-BSC) perspective. The quantitative method will assist in discussing and collecting data using a questionnaire for sampling using the census method to all employees who use the system. From the proposed model hypothesis and statistical tests, it is found that two variables affect the performance of the warehousing system, namely the Business Contribution and Operational Excellence variables. It means getting a good warehouse management system performance if the system can make a real contribution and provide perfect operational services. In supporting the company's business.

Keywords: logistics distribution, warehouse management system, performance, IT balanced scorecard, FMCG.

1. Introduction

Information technology is currently very much needed by many modern companies in supporting the company's business processes, especially in this case are companies engaged in the production of consumer goods. Companies that produce FMCG goods in carrying out their business operations do much distribution of manufactured goods to be sent to various cities and provinces that are targeted for marketing. The warehousing management application system is one of the systems needed to support the operational activities of companies that produce consumer goods that are needed by the community.

This type of company adopts information technology to support business processes that enable it to meet user information needs. Today, information technology is no longer a competitive advantage in organizations. N. Yaghoubi, and H. R. Dehbani (2010)

The use of information technology (IT) has the potential to be the main driver and increase economic growth in the 21st century, Ehsan Borousan, Roozbeh H., Mahmoud M., and Aliread H. (2011)

At this time, many problems arise related to supply chain activities of production goods, storage of goods in warehouses, goods in and out of logistics, and delays in the delivery and distribution of goods to be sent to agents in various cities due to the limitations of the warehousing application system in producing the information needed by the company users.

The company appointed as the case in this study is a company established 37 years ago with the business of distributing FMCG goods. The company has branches and agents throughout Indonesia that handle the distribution of goods or products. In distributing goods, the company has a logistics center in charge of delivering goods to all depots and agents to meet customer needs for FMCG products.

Currently, the company has 105 branches and agents spread throughout Indonesia. To assist the logistics center in distributing goods to all branches and agents, the logistics center, known as LDC, uses the help of a warehouse management information system. The system will help to speed up and reduce the risk of damaged goods in the distribution process of food goods that have expired for consumption by consumers.

The problem that usually occurs in the FMCG industry is the high demand for products that require optimization and efficiency in the distribution process of inventory stock, all of which are closely related to the information needs of each user in the division involved. The goods with many types and variants, ranging from wafers, drinks, biscuits, and toothbrushes, in the goods distribution center need to be managed to facilitate the process of operational activities in charge of sending and receiving goods at the logistics center. Time constraints in the distribution of goods to all branches and agents can affect the delivery of goods that are not on time. The

availability of goods must be monitored in real-time to meet the needs of all branches and agents when needed.

Currently, the information system has been implemented in the company's logistics center in the context of operational warehousing efficiency using the WMS (Warehousing Management System) system. In general, there are three main objectives in implementing IS/IT in an organization, according to Ward & Pepard (2002) in the book Strategic Planning for Information Systems, namely: 1) the process to improve various business activities more efficiently can be done by making a proposal for an automation system in managing information. 2) the process to improve operational effectiveness by utilizing information for decision making. 3) the strategy of using IS and IT to increase organizational competitiveness by changing the style and way of doing business according to the business model.

Corporate governance management, the impact of consumption of a service on company performance caused by imperfect corporate internal governance mechanisms (Shim and Jung, 2020). An effective internal control process is the key to success that many large companies can use to achieve long-term sustainability. Yiwei Wang and Shanyue Jin (2021). In the study of Mou at all, 2016 Internal controls that are implemented effectively will help monitor the strength of senior management effectively. High quality internal control practically reduces in-service consumption in public companies (Mou at all, 2016).

According to Martinsons, Davison, and Tse (1999), recent surveys show that issues like these encourage many parties to 'measure the value of Information Technology and evaluate the performance of application systems to get the information that users need. Essential for the company The existence of application systems in companies is not always able to provide information services. It is realized that it is rather difficult to ensure the benefits of developing software applications that can meet the needs of company stakeholders (Dolins, 2006). According to Ahmad (2010), obtaining an information system that can meet the needs requires understanding the nature and characteristics of IT project investments that can accommodate all user needs by applying evaluation methods and criteria that follow this particular nature.

From the phenomena and problems that arise in this type of company, it will be interesting to examine. In this case, the author will evaluate and measure the warehousing management system that has been successfully implemented since 2019. Measurements will be carried out on several aspects, such as financial aspects and non-financial aspects. Financial aspects such as cost efficiency can arise from non-financial aspects due to more efficient business processes—non-financial aspects such as stakeholder trust, top management, and employees.

The objectives of this study are 1. To determine the factors and indicators used to measure the performance of the warehouse management system by referring to the

IT Balanced Scorecard perspective variable. 2 to Provide recommendations for the development of warehousing management systems in the company.

This scope measurement analysis was conducted to evaluate the warehousing management system applied to companies engaged in the distribution of industrial FMCG goods.

According to Ma and Ye (2016), their research explains that in China, service consumption by management significantly reduces the performance of their companies. According to Li at all, 2012) that from the test results of the relationship between service consumption and company performance, it was found that management service consumption had a negative impact on organizational business performance.

The system performance measurement is carried out using the IT Balanced Scorecard method, which includes aspects of the company, operations, users, and sustainable development for the future.

2. Literature Review

According to Umar (2005), evaluation provides information about the extent to which particular activity has been achieved. Also, the difference in the achievement of specific standards determines. There is a difference between the two benefits compared to expectations and expectations to be gained.

Kaplan and Norton (2007) Performance disclose that the purpose of system measurement is to motivate all employees, from staff level to manager, to implement the business unit strategy. Companies that can translate strategy into a measurement index will be far more able to implement it because they can communicate the goals and objectives to all employees.

2.1. Measurement with balanced scorecard

According to Smith (2007), The Balanced Scorecard is a management tool that provides a complete measurement unit for senior executives to assess how organizations evolve, advance, and achieve strategic goals.

The Balanced Scorecard (BSC) provides the necessary tools for managers to direct future competitive success (Kaplan and Norton, 1996, p2). Today, organizations compete in such complex environments that an accurate understanding of their goals and methods for achieving them is paramount. BSC clarifies the mission and strategy of an organization into a comprehensive set of performance measures that provide a framework for measuring management strategies and systems.

BSC measures organizational performance through 4 balanced perspectives, namely: finance, customers, company business processes, and learning growth. BSC that is applied in the company to see financial transactions by monitoring the progress of capabilities simultaneously and get immeasurable profits in the future.

The concept of BSC was first developed by Robert S. Kaplan and David P. Norton (1996) in his book Translating Strategy Into Action: The Balanced Scorecard. A balanced Scorecard (BSC) is one of the methods of measuring and performance management for internal and external factors of a company. Currently, most companies still use financial measurement as a benchmark of company performance measurement, so managers do not know how far the impact is caused by the strategy they apply.

The Balanced Scorecard method transfers management with a framework that translates vision and strategy into an integrated measurement system: financial perspective, customer perspective, enterprise business process perspective, and learning growth perspective.. Four perspectives in the BSC state the existence of interconnectedness to be able to describe the company's strategy The relationship in the four perspectives is described as a unity in Figure 1.

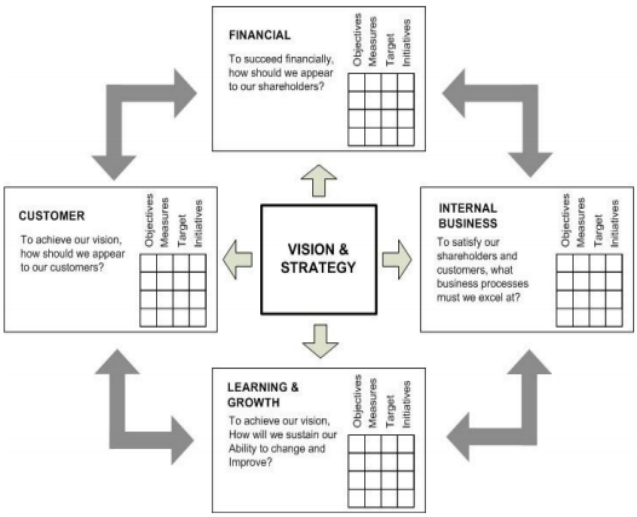

Fig.1: Balance scorecard (Kaplan & Norton,2001).

It begins by adopting the Kaplan and Norton BSC methods and the IT BSC model adapted by Van Grembergen to customize and evolve. The image below shows the TI GLI BSC framework filled with key steps based on the current strategy. This model is planned to add special steps and benchmarks. Benchmarks can be used primarily where the efficiency of "commodities" services is essential to evaluating IT performance.

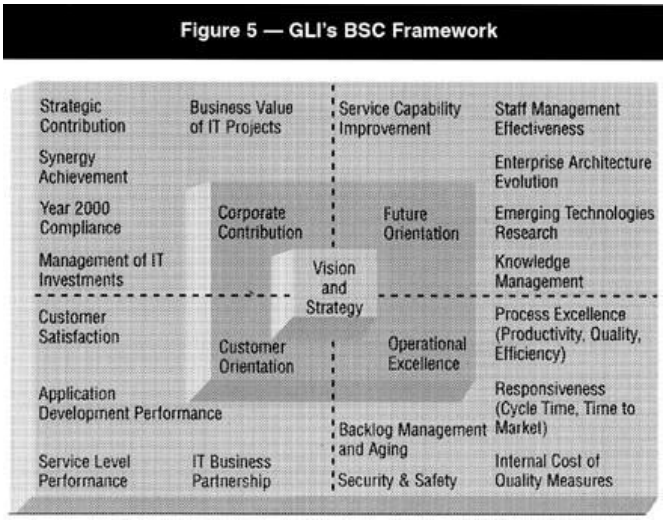

Fig.2: GLI's BSC Framework, Saull (2009) According to Van Grembergen.

2.2. IT balanced scorecard

According to Van Grembergen and Van Bruggen (2000), The concept of the Balanced Scorecard can be used when carrying out the IT function process, had developed the IT Balanced Scorecard further in 1997. In the IT Balance Scorecard approach, we see organizations from four perspectives. The four perspectives are corporate contributions, Customers, Internal Business, learning, and future orientation.

Van Grembergen (2000) modified the Balanced Scorecard to see perspectives from an IT perspective, and Balanced Scorecard was modified into the IT Balanced Scorecard. Perspective in Balanced Scorecard tailored to IT needs, e.g., Financial Perspective changed to perspective business / corporate contribution. The balanced scorecard changes are illustrated in Figure 3.

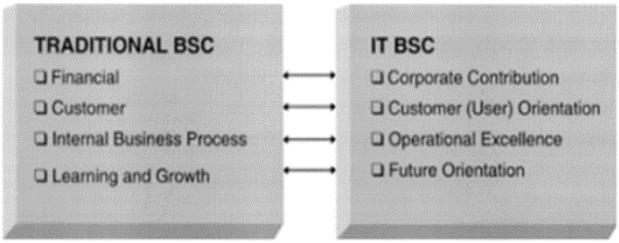

Fig.3: Transformation BSC to IT-BSC (Win Van Grembergen, 2000).

Here is a picture table IT Framework Balanced Scorecard with four perspectives with more detail along with the mission and suggestions: corporate contribution

perspective, user orientation perspective, operational excellence perspective and future orientation.

The conclusion of this research can bring the IT department to support the company's business strategy to optimize all existing processes within the company and ensure that IT investment can be appropriate to align with its vision, mission, and organizational strategy.

According to Mohammad I.A. (2013), the BSC concept has been widely developed for measurement related to IT management. It has been applied to various IT function analysis and process functions to see IT management performance. Information Technology as an internal service provider, must change the generic perspective accordingly. To present an example of metrics from an IT balanced scorecard developed and implemented by an international financial group. Van Grembergen et al. (2003) describe the elements of the IT perspective of the BSC, which can be detailed as follows 'contribution perspective. The company evaluates the performance of IT organizations from the point of view of IT management executives, customer orientation perspective evaluating IT performance from the company's business point of view the company's internal business.

The operational excellence perspective can show the performance of IT processes from the point of view of managing an organization's IT. The future perspective shows readiness to face the future challenges of the company's IT organization.

Perspective	Objective	Example Metrics
Corporate	• Business/IT alignment • Value delivery • Cost management • Risk management • Intercompany synergy	• Operational budget approval • Business unit performance • Attainment of expense and recovery targets • Results of internal audits • Single system solutions
Customer	• Customer satisfaction • Competitive costs • Development performance • Operational performance	• Business unit survey ratings • Attainment of unit cost targets • Major project scores • Attainment of targeted levels
Operational excellence	• Development process • Operational process • Process maturity • Enterprise architecture	• Function point measures • Change management effectiveness • Level of IT processes • State of the infrastructure assessment
Future	• Human resource management • Employee satisfaction • Knowledge management	• Staff turnover • Satisfaction survey scores • Implementation of learned lessons

(Adapted from Grembergen, W.; R. Saull; S. De Haes; "Linking the IT Balanced Scorecard to the Business Objectives at a Major Canadian Financial Group," *Journal of Information Technology Cases and Applications*, 2003)

Fig. 4 . Examples of matrics for an IT balance scorecard (Van Grembergen et al. (2003).

2.3. IT balanced score card (BSC-IT)

According to research by Van Grembergen, at.all (2011), measurements of specific IT fields need to be carried out to develop the BSC concept into IT-BSC. This study's specific objectives support the IT BSC perspective according to the organization's needs.

1. The perspective of the company's goals: IT is used according to users' technology and market development needs [10].
2. Objectives of the customer perspective: The relationship between employee satisfaction, customer satisfaction, and organizational performance is very close. Competition is getting more challenging between service companies because many aspects support the acceleration of change, but consumers are getting smarter. So, that progressive improvement and development must be explored periodically to achieve the company's vision.
3. Operational excellence objective: Complexity Reduction helps uncover hidden costs and enables the company to determine which products are making money, what customers value, and which bottlenecks of the company or process are preventing effective action, setting plans for more significant growth and increased profits.
4. Future perspective goals: The best way to achieve effectiveness is to use cost control. It means being concerned with measuring the variance of the cost base and taking the necessary actions to achieve the minimum possible cost.

2.4. Supply chain management

According to Lambert in Attamah Joseph Ikechukwu (2019), supply chain management is the network management of all activities involved in the delivery of products from raw material suppliers to customers, which includes entities sourcing of manufacturing raw materials for assembly, warehousing and circulation of goods in and out of inventory, submission of order entries for ordered materials, distribution to destinations, delivery to customers and information systems to monitor all production processes.

According to the Council of Supply Chain Management Professionals (2011). explained that most companies have integrated logistics data in organizations which include: incoming and outgoing goods from the warehouse, shipping transportation, handling raw material ordering planning, logistics network management, inventory systems.

2.5. Performance measurement

According to Kaplan and Norton (1996), the successful implementation and implementation of management has become a demand on organizations to improve measurable performance, as the need to improve the company's performance measurement. Performance measurement is carried out by observing whether there is

an increase that occurs beyond the short and long term value targets, creating activities to improve customer service, maintaining quality and growing organizational learning.

The process of measuring company performance using metrics and elements that need to be considered as follows: revenue growth, net profit, productivity, customer satisfaction and employee retention that represent performance results.

The results study of Attamah Joseph Ikechukwu's research (2019) explain that the supply chain management process needs to be designed effectively by integrating with suppliers as chain partners, using a lean and agile strategy, while maintaining high product quality, being responsive and accommodating customer demands, paying close attention to the socio-economic aspects of partners have a positive impact on organizational performance.

3. Research Methodology

Evaluate the application of the warehousing system at the company using the IT Balance Scorecard method to measure the performance of the warehousing system. The selection of variables and indicators is made by searching literature studies in journals and research related to the application of warehousing systems. From the results of these indicators, it will be made statements in the questionnaire, which then the data will be processed by factor analysis methods. The output will be analyzed to produce a Key Performance Indicator report as a performance measurement report of the Warehouse Management System.

Use IT to take steps to conduct performance measurement research on warehousing systems at a company, especially for the balance Scorecard method to measure performance from four perspectives in measuring the extent of conformity of existing IT strategy to support ongoing business strategy.

3.1. Research model

The framework to be used in this research is as follows:

Implementation of Information Systems is a form of corporate strategy to be able to continue to compete and continue to grow in the increasingly fierce business competition. IT Balance scorecard is a method to translate the vision and mission of strategic management into operational goals and sizes. IT Balance Scorecard measures IT performance from four perspectives: Business Contribution, User Orientation, Future Orientation, and Operational Excellence (IT Platform).

IT Balance Scorecard is a method that balances measurement from 2 aspect that is financial and non-financial. By evaluating the performance measurement with IT Balance Scorecard method, it is expected that the role of IT in the company can improve the performance of the company or organization both from the financial side and non-financial.

The steps to be undertaken in this research will begin by identifying the current ongoing system in the field, formulating the problem to be completed, and conducting a literature study with previously prepared journal journals related to IT Balanced Scorecard.

Based on the above explanation, this research will refer to the use of factors that have been determined based on a literature study to evaluate Warehouse Management system performance from the point of view of internal users. By conducting confirmatory factor analysis on the data formed based on the indicators to obtain a model that can be used to test the hypothesis on the performance of the Warehouse Management System company. The research model can be seen in Figure 4 Research Model.

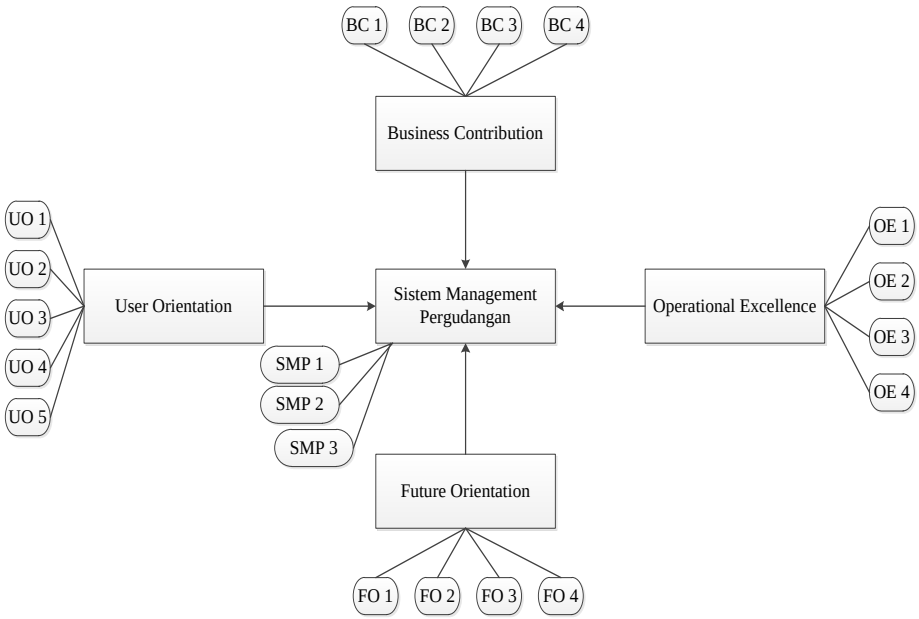

Fig. 5: Research model.

The company is engaged in consumer goods that produce various products for everyday needs. Starting from a traditional health drink with high-quality standardized materials and processes, today, the company has grown more modern without leaving the positive values posed by the company's founders.

Various products have been successfully produced and sold in the market, such as food and beverages, until products have long been a part of consumer life in Indonesia. The company has produced some products: toothbrushes, wafers, cup drinks, candy, health drinks, and herbal medicine.

3.2. Hypotheses

The hypothesis formed in this research are:

- Hypothesis 1 based on Business Contribution:
- H0: The Business Contribution perspective does not affect the performance of the Warehouse Management System.
- H1: The Business Contribution perspective affects the performance of the Warehouse Management System.
- Hypothesis 2 based on User Orientation:
- H0: User Orientation Perspective does not affect Warehouse Management System performance.
- H1: User Orientation Perspective affects the performance of the Warehouse Management System.
- Hypothesis 3 Based on Future Orientation:
- H0: The Future Orientation perspective does not affect the performance of the Warehouse Management System.
- H1: The Future Orientation Perspective affects the performance of the Warehouse Management System.
- Hypothesis 4 Based on Operational Excellence:
- H0: The Operational Excellence Perspective does not affect the performance of the Warehouse Management System.
- H1: The Operational Excellence Perspective affects the performance of the Warehouse Management System.

3.3. Method and collect data

The data collection method is to conduct questionnaires to employees in the warehouse and company center. According to Sugiyono (2008) questionnaire is a technique of data collection conducted by providing a set of questions or written statements to the respondent to be answered. Through questionnaires distributed to employees concerned with the company warehousing system, it is expected to know how the performance of the Warehouse Management System in the company.

Sampling is done in this research with the census method. Because the respondents are only about 100 people, it will be done census method to all warehousing employees and divisions related to warehousing operations, such as the logistic division and IT division that handles the warehousing management system.

The population used in this research are employees of the company located in LDC or central warehouse and head office employees related to the Warehouse Management system. The sampling method is the census method because data collection will be done in one location, LDC / Warehouse Center, and other divisions (logistics and IT). Divisions to be taken care of divisions

involved in warehousing systems involved divisions such as warehouse operations, warehouse admin entry, IT support center, EDP warehouse, Logistics, and Bookkeeping warehouse.

This research will use questionnaires distributed to employees of companies associated with the warehousing system. Questions and statements in the questionnaire are designed per the information requirements required for testing this research.

For any questions in the questionnaire distributed to respondents, respondents will be given some alternative answers that state the respondent's agreement with the statement. Alternative answers are given using a Likert scale (1932) divided into five categories, namely Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

3.4. Data analysis method

A reliability test is a test of the degree of consistency of the relevant data and whether the data can be trusted according to predefined criteria. The data can be reliable if it always gives the same results if tested on the same group at different times and occasions. The Cronbach alpha method will be used to test this study's reliability.

Test validity is the degree of accuracy of the instrument (measuring instrument) in performing the measuring function so that the data is obtained following the purpose of the measurement activities. The value of validity is generally the result of correlation. The validity testing process in this case study uses SPSS.

Structural Equation Modeling (SEM) is a useful statistical tool for solving multilevel models simultaneously that linear regression equations cannot solve. SEM is a combination of regression analysis and factor analysis. SEM is used to solve the equation model with the dependent variable of more than one variable. According to Imam Ghozali's (2008) Structure, Equation Modeling SEM is a combination calculation of two separate statistical methods from factor analysis developed in psychology and psychometrics, as well as an equation model that is simultaneously developed in econometric theory. The latent variables will be measured through several indicators to be observed. This research will use the SMART-PLS data processing tool.

4. Results and Discussion

Here is the result of data processing conducted by researchers on data obtained through distributing questionnaires to respondents' companies.

Data Demographic of Respondents, Methods of data collection are done by using questionnaires distribution method in Warehouse and head office area. Questionnaires have been prepared based on several perspectives IT Balanced Scorecard and the assessment perspective on Warehouse Management System.

Questionnaires were distributed to 100 respondents. In the questionnaire, there are also some supporting questions regarding Gender, Age, Education, Work Period, and assessment of the current WMS System.

4.1. Test Validity and reliability

Test Validity is done using SPSS 24 version, an application to get the value of R Calculate. The variable questionnaire is valid when R calculates the variable> R Table with n = 30 (0.361) and the questionnaire variable is not valid when R Calculates <R Table with n = 30 (0.361).

Test Reliability is done by considering the value of Cronbach's Alpha. According to Sugiyono (2008), A variable can be said to be reliable if the value of Cronbach's alpha is more significant than 0.7. The higher the coefficient value (close to 1), the data has high reliability.

Here is a summary of the results of the validity test and the reliability of the variables in the questionnaire using n = 30.

The result of the questionnaire with 20 questions and 30 samples found that 18 questions were valid and two were not. Next, we used 18 questions to distribute to a sample of 100 respondents.

Confirmatory Factor Analysis (Outer Model)

Confirmatory factor analysis was performed to examine the relationship pattern between several latent constructs. The analysis is done, and the loading factor of all constructs under study is found. The hypothesis has been determined. Confirmatory factor analysis is performed to see all the questions that have been made related or not in representing each of its latent variables.

Figure 5 shows the Output Path Diagram as the result of confirmatory factor analysis, which has been done using SMART-PLS application version 2.

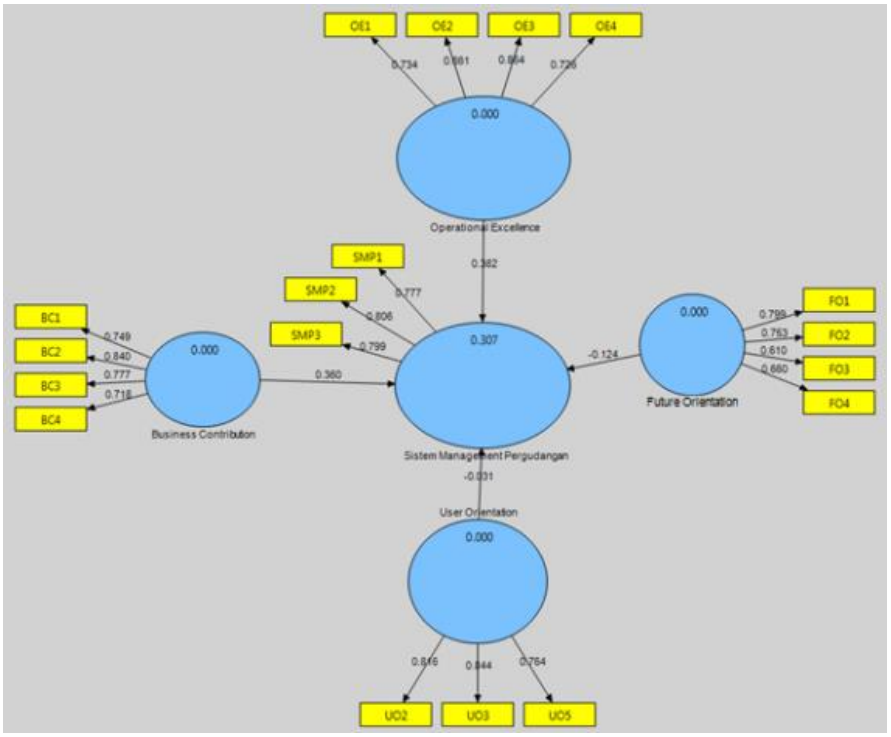

Fig. 6: Output path diagram using PLS algorithm.

The following table shows the loading factor value in the first test of the PLS algorithm

Table 1. Loading factor value

Variable	Indicator	*Loading Factor*
Business Contribution	BC1	0,749
	BC2	0,84
	BC3	0,777
	BC4	0,718
User Orientation	UO2	0,815
	UO3	0,844
	UO5	0,764
Future Orientation	FO1	0,798
	FO2	0,753
	FO3	0,609
	FO4	0,659
Operational Excellence	OE1	0,734
	OE2	0,661
	OE3	0,864
	OE4	0,726
Warehouse Management System (SMP)	SMP1	0,777
	SMP2	0,806
	SMP3	0,799

According to Wijayanto (2008), the minimum AVE value in a state where reliability has been achieved is 0.50. AVE values lower than 0.50 indicate that the indicator has a high average error rate. The results of the AVE calculation in this study indicate that the average error rate level is low because the value of AVE is > 0.50. The following is an attachment of the AVE table count of this study.

Table 2: AVE value.

Variable	AVE
Business Contribution	0.596462
Future Orientation	0.503336
Operational Excellence	0.562105
Warehouse Management System (SMP)	0.630523
User Orientation	0.653957

Hypothesis testing / Inner Model

According to Imam Ghozali (2006), the statistical t-test shows how much one independent variable's influence individually explains the dependent variable.

Tests were performed using a significant level of 0.05 (α = 5%). Criteria do acceptance or rejection of hypotheses:

1. If the value of t statistical < t table (1.96), then H0 is accepted, then the hypothesis is rejected. This means that independent variables have no significant effect on the dependent variable.
2. If the value of t statistical > t table (1.96), then H0 rejected, then H1 accepted. This means that independent variables significantly affect the dependent variable.

Here is the result of internal model testing conducted by the researcher to see whether the variable has a significant relationship or not to the dependent variable studied. The calculation results can be seen in Figure 7.

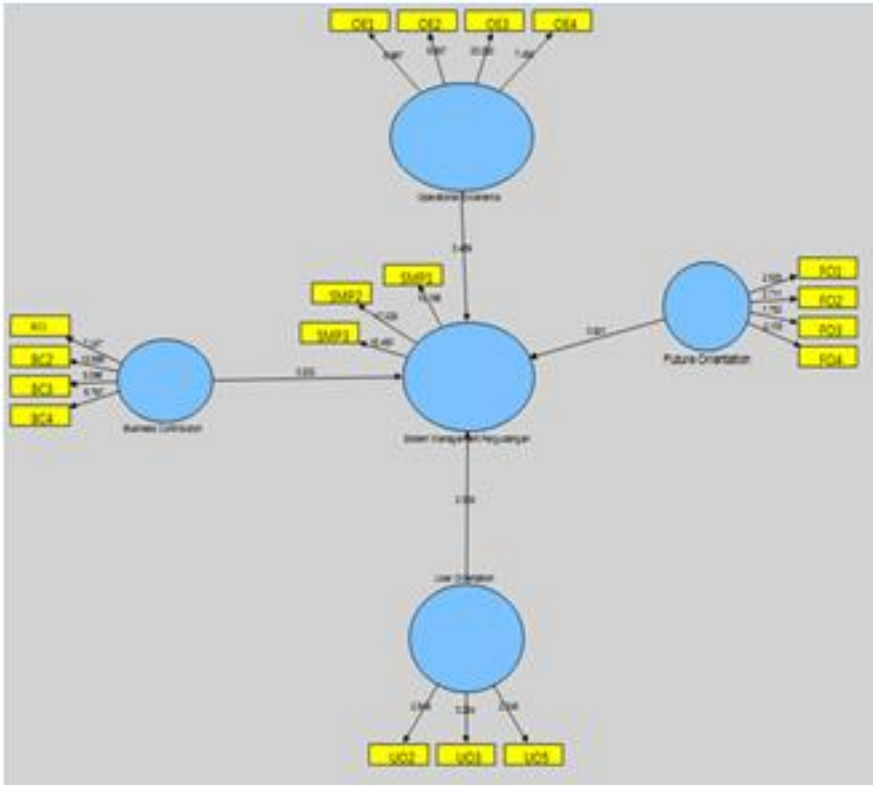

Fig. 7. Output path diagram using PLS algorithm.

The t-test is intended to test whether the independent variables are a partially significant effect on the dependent variable. My test results are attached in the table below.

Table 3: Table path coefficient.

Hypothesis	Original Sample (O)	T Statistics (|O/STDEV|)	Significansi
BC -> SMP	0.36	3.201	Significant
FO -> SMP	-0.124	0.921	No Significant
OE-> SMP	0.382	3.459	Significant
UO-> SMP	-0.031	0.305	No Significant

There are two variables of four that have significant influence if we look at the value of t-Statistic Business Contribution variables and Operational Excellence variables. In comparison, there are two variables that have no significant effect on the junior variable: Future Orientation and User Orientation. Based on the above data, here are the structural equations of this research:

$$Y = 0.360*X1 - 0.124*X2 + 0{,}382*X3 - 0.031*X4$$

$$SMP = 0.360 * BC - 0.124 * FO + 0.382 * OE - 0.031 * UO$$

Hypothesis (H1) Testing Business Contribution

- *H0: The Business Contribution Perspective does not affect the performance of the Warehousing Management System.*
- *H1: Business Contribution Perspective affects the performance of Warehousing Management System.*

In the table coefficient in table 3 above, the value of t statistics = 3.20 > 1.96 so that H0 is rejected and H1 accepted, which means the BC variable has a significant effect on the SMP variable.

Hypothesis (H2) Testing User Orientation

- *H0: User Orientation Perspective does not affect the performance of the Warehousing Management System.*
- *H1: User Orientation Perspective affect the performance of the Warehousing Management System.*

In the coefficient table, 4.9 above the value of t statistics = 0.305 < 1.96 so that H0 is accepted, and H1 is rejected, which means the UO variable has a negative and insignificant effect on the SMPS variable.

Hypothesis (H3) Testing Future Orientation

- *H0: The Future Orientation perspective does not affect the performance of the Warehouse Management System.*
- *H1: The Future Orientation Perspective affects the performance of the Warehouse Management System.*

In the table coefficient, 4.9 above the value of t statistics = 0.921 < 1.96, so H0 is accepted, and H1 rejected, which means the variable FO has no effect and is not significant to the SMP variable.

Hypothesis (H4) Testing Operational Excellence

- *H0: The Operational Excellence Perspective does not affect the performance of the Warehouse Management System.*
- *H1: The Operational Excellence Perspective affects the performance of the Warehouse Management System.*

In the table above, the value t statistics = 3.46 > 1.96 so that H0 is rejected and H1 accepted, which means the OE variable has a positive and significant effect on the SMP variable.

4.2. Data analysis results

From results of data analysis and testing of the four hypotheses. Where hypothesis 1,2,3,4 is submitted following the theoretical justification described in chapter 2. The proposed model has been tested for suitability by using a statistical t-test.

Based on the above table hypothesis that has been tested in this study, there are two variables, User Orientation and Future Orientation. that do not affect the SMP variable. Two variables have a significant effect on the variable Business Contribution variable and variable Operational Excellence. From this results can be used to improving and developing a warehousing management system for company.

4.3. Implications management

The implication management of this research is connected to evaluating the warehousing management system. Improving the warehousing management system in terms of strategic planning is necessary. IT teams and outsourcing supported the system as system providers and top management support to continue developing a better warehousing management system in terms of speed and efficiency.

The results suggest to the average assessment questionnaire, the assessment of the warehouse management system is 4.29 out of 5, which means that the current system is considered good enough by the respondents. The results of this research can be used as an analysis to plan, develop and implement warehousing management systems in the future.

After testing all variables affecting the dependent variable of SMP, some results can be used as a benchmark to improve the variables with no significant effect. The researcher gives some recommendations for improvement to be applied in the company.

There are three systems currently running simultaneously: warehouse management systems, sales and distribution systems, and Oracle ERP systems. Three people are on admin duty to input data into each system. In this case, the company wasted because the data input process can only be done on one system, extracting and loading data against two other systems. Here is an overview of the data input process that is running at this time.

The data input process involving three admins can also cause a difference in data due to input errors by the admin. Data integration can minimize or eliminate the risk of input errors by the admin and also can be efficient in terms of business processes and costs incurred by the company. Here is a system that I recommend in order to optimize the data input process.

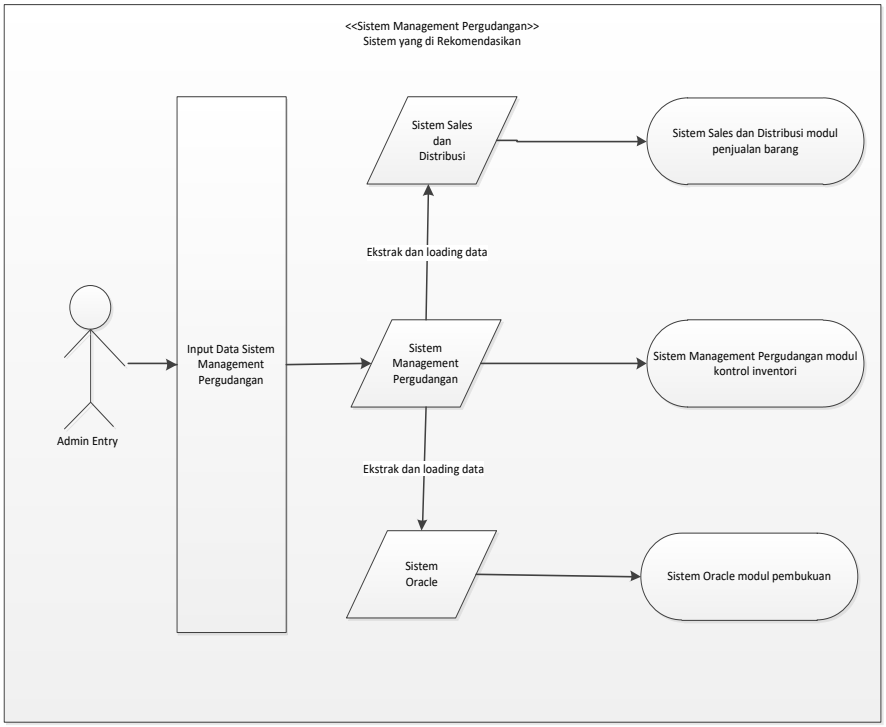

Fig. 8: Design flow warehouse management systems.

In this process, the warehousing management system needs to add a data extract feature for the Sales and Distribution system and the oracle system. While both systems also need to provide a feature to perform loading data so that data can be entered automatically into the system. An integrated system can streamline existing business processes, as well as cost and control processes, and become more simple.

5. Conclusion

Based on the discussion result of data processing that has been done, then the conclusion is:

1. Based on respondents' assessment of the current warehouse management system, the average assessment results of 4.29 out of 5, which means the current system is considered reasonable by the respondents.
2. Of the four factors, only two variables significantly affect the dependent variable based on a t-statistical test: Operational Excellence and Business Contribution. Test t-statistic with a significant value of 5% indicates that t statistic of Business Contribution variable is 3.201 and t arithmetic of variable Operational Excellence is 3.46. In contrast, the User Orientation and Future Orientation variables have a t value of 0.305 and 0.921. If the variable has a value of t statistic > t table (1.96) means that the variable has a significant

influence on the dependent variable and if the variable has t value < t table (1.96) means that the variable has no Significant on the dependent variable. It can be concluded here that only two variables have to affect significant value to the dependent variable of performance SMP, namely the Business Contribution variable. Next is the Operational Excellence variable, meaning that to get a good warehouse management system performance if the system can make a real contribution and provide perfect operational services in supporting the company's business.

Based on the above conclusions, the following are suggestions that researchers provide to the company through the results as follows:

Improve the performance of the Warehousing Management System by developing a system integrated with all existing systems in the company, such as distribution systems. The Oracle database systems and queuing management systems require admin input data, respectively, so it can efficiently work processes.

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