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Applications of Goods Mutation Control Form in Accounting Information System: A Case Study in Sumber Indah Perkasa Manufacturing, Indonesia

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Abstract

This study analyzes the new GMCF method applied by the company with the aim to find out how the production of Accounting Information Systems (AIS) implemented by the company can be managed properly. The study also seeks to find out whether the company needs new system support facilities to facilitate the production performance reporting process of each division and evaluate the performance of GMCF systems in the company. The methods used are descriptive analysis techniques and statistical tests of Paired Sample T-Test comparison; this study uses production data of each unit of a product with random sampling to determine the level of product damage and compare production with the GMCF system and prior to using it. The results of the analysis found that the application of goods mutation control forms (GMCF) greatly influenced the smooth production reporting process, which resulted in an increase in achieving production targets and reducing the risk of product damage during the production process. The company also benefits from the efficiency of production costs when using the GMCF system and can quickly design policies for products that are damaged during the production process. In addition, the company can have damaged products repaired faster than before.

Keywords: Accounting Information System, Goods Mutation Control Form, System Production Process, Production Reporting Process, Designing Manufacturing

JEL Classification Code: B21, B26, D24, L15, P11

1. Introduction

In the digital era, the business world is developing rapidly in all fields. Competition is no longer about the price level of a product or service or the level of productivity of a company, but rather an emphasis on quality products or services. This new model of goods consumption highlights specific characteristics of product quality related to the location and proximity to the producer (Rossi Scalco et al., 2020). Furthermore, the late 21st century has witnessed revolutionary growth in the information technology management and information system infrastructure networks. In addition, extensive pressure has been applied by the 4th Industrial Revolution on the manufacturing supply chain to stay updated with the IT and IS trends for maintaining Competitiveness (Muneer, 2020). The importance of reducing the difficulty of improving product quality by enhancing the platforms' profitability and consumer surplus is underlined (Wen & Siqin, 2020). Product quality, convenience, satisfaction, and timeliness in achieving it are the most important factors of success in today's business competition. Understanding perceived market competition among businesses may help explain why certain businesses survive or fail (Byun et al., 2020). The production system is a process of change by utilizing technology by adding

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value to raw materials that are converted into finished goods effectively and efficiently. Many companies, e.g., Sony and Panasonic, have already successfully implemented the GMCF system to gain the flexibility and efficiency advantages that are enabled by the reconfigurable and the multi-skilled workers (Faruk & Faruk, 2020). In the process of making technological progress and product innovation, both governments and private sectors play important roles in actively searching new innovation tools with high efficiency (Lee & Xuan, 2019).

Sumber Indah Perkasa is a manufacturing company that carries out automotive maintenance business, and supplies various automotive accessories such as car wash products, body and motorcycle care and polishes. The role of accounting information systems is very large for the company, the production reporting system is implemented effectively and efficiently to avoid fatal mistakes and report manipulation. The company makes a policy of immediately implementing damage control efficiency by creating GMCF so that each division can work through interconnected information technology facilities, therefore good cooperation between divisions is needed. If the board is ineffective in maintaining its role properly, the whole system of governance can collapse (Rahman & Saima, 2018). This researcher wants to find out whether the entity requires an Accounting Information Systems (AIS) in the production reporting process, and evaluates the effectiveness and application of the Goods Mutation Control Form (GMCF). The Accounting Information Systems (AIS) field, just like the Information Systems (IS) field, covers a broad range of topics. The nature of accounting practices has evolved greatly over the years, especially as information systems have evolved (Kocsis, 2019). There are three factors affecting the accounting information system: a business strategy, information technology development, and organizational culture (Ha, 2020).

This researcher considers that the need for an accurate and maximum accounting information system in the production system reporting process is really needed by manufacturing companies, in order to achieve effective and efficient production, to reduce the cost of the risk of errors in the product manufacturing process, so that the achievement of production targets can be maximized. AIS has evolved over the years to support the growth in the volume of transactions handled, the velocity of transactions supported, the amount of data processed, the variety of data types collected, and sources of data including sensors and external entities. Such complex accounting systems require significant investments and it is critical to minimize errors in AIS (Kim et al., 2017). The conceptual framework of this study explains the evaluation of the application of GMCF in Accounting Information Systems (AIS), the researchers will evaluate before and after the GMCF application of the problem of defective or damaged products and the level of achievement of production targets that affect the reporting process of manufacturing companies' production systems. The application of GMCF in Accounting Information Systems (AIS) affects the smooth reporting of manufacturing company production systems so as to reduce production costs and increase the achievement of production targets (see Figure 1).

2. Research Methods

This study uses a quantitative approach, using different test to analyze before and after using GMCF. Quantitative research methods can be interpreted as research methods that use numerical or numerical data, used to examine populations or specific samples, sampling techniques carried out by field surveys, data collection using research instruments, and quantitative data analysis. A quantitative approach is very important to explore the level and variation of changes (within and between units) caused by the implementation strategy (Smith & Hasan, 2020). Data processing and

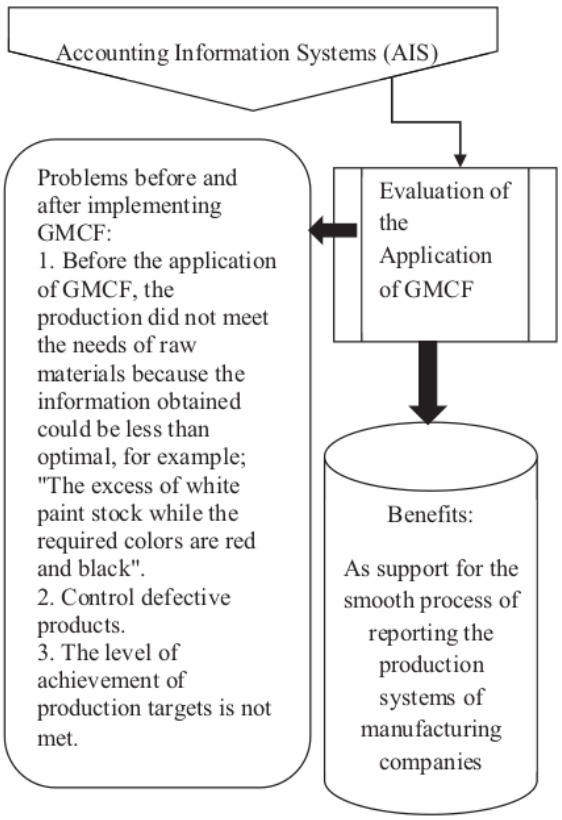

Figure 1: Conceptual Framework

analysis techniques in this study were performed using Paired Sample T-Test statistical tests. When we are comparing two means and the data have the same people providing measurements of both alternatives (the satisfaction rating of two designs, or the time for the performance of some task for two designs), we have what is referred to as "paired data." The term makes sense, in that a data point from one alternative is identifiably "paired" with a data point from the other alternative (Fritz & Berger, 2015). The hypotheses are the same as in the previous chapter:

H0: μ1= μ2
H1: μ1≠ μ2

Another way to notate the "pairing" of the data is by changing the above notation to

H0: μ1− μ2=0
H1: μ1− μ2≠0,

and specify D = μ1 - μ2, where D means "true average difference" (for the same variable using two alternatives) and write

H0: D =0
H1: D ≠0

In other words, is the average (true) difference (D) between the time it takes for someone to do two zero tasks (H0 true) or not zero (H0 false, H1 true). If we accept H0 (concluding that H0 is true), this actually says that there is not enough evidence to reject H0 (Fritz & Berger, 2015). Here are the hypotheses:

H0: *There is no difference before and after the application of GMCF in the Accounting Information System (AIS) as a supporting reporting system for manufacturing companies.*

H1: *There are differences before and after the application of GMCF in Accounting Information Systems (AIS) as a support for the smooth reporting of manufacturing companies' production systems.*

Paired Test Formula Sample t-test:

$$t = \frac{x_1 - x_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{2^2}{n_1} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

Information:
x1 = Sample Average 1
x2 = Sample Mean 2
s1 = Sample Standard Deviation 1
s2 = Sample Standard Deviation 2
s12 = Sample Variance 1
s22 = Sample Variance 2
r = Correlation between two samples

Correlation Coefficient:

$$r_{xy} = \frac{xy}{\sqrt{\sum x^2 y^2}}$$

Information:
r_{xy} = Correlation between variables x with y
$x = (x_i - x)$
$y = (y_i - y)$

Decision:
H0 is accepted if : Sig> 0.05 (not significant)
H1 accepted if : Sig <0.05 * (significant)
: Sig <0.01 ** (very significant)

3. Results

Percentage of production target achievement data before and after the application of GMCF that will be tested by researchers (see Table 1).

Table 1: Data Percentage of Production

Division	Percentage of Production Target Achievement (%)	
	Before	After
Injection	73,2	91,2
Burrs	73,1	91
Rub	73	90,9
Wash	72,8	90,8
Spray	72,1	89,8
Sticker & Logo	72	90,9
Fernish	71,9	90,8
Lis	71,8	90,7
PVC	71,7	90,6
Sterofoam	71,5	90,5
Assembly	71,2	90,4
Garment	72,9	89,9
Average	72,27	90,63
Total	939,47	1.178,13
Average Difference		18,36
Total		238,66

From Table 1, the researcher will test the data before and after the application of GMCF, and the percentage of production target data achievement so that differences can be known. The normality test is used in this study to see whether the data to be used are a normal distribution or not (see Table 2). The normality test presents statistics to test complete samples, test distribution assumptions for other locations, and family-scale distributions (Öztürk, 1988). A large proportion of such test procedures are reviewed and listed by Shapiro and Brain (Öztürk, 1988).

The results of the normality test before and after the application of GMCF showed that the data were normally distributed, the significance value of the Shapiro-Wilk test showed more than 0.05, before the application of 0.211 and after the application of 0.199. In this section we will concentrate on design with paired samples (see Table 3): the t test for paired samples with a mean, because this is the only test found in our review (Rietveld & van Hout, 2017) the Wilcoxon Signed Ranks test (WSR.

The results of the descriptive statistics summary of the two sample data on the average achievement of production targets before and after the application of the Goods Mutation Control Form (GMCF) increased. So, basically, the evaluation before or after the completion time is "paired." One person gives two data points and we know which two come from the person given (Fritz & Berger, 2015). Descriptive statistical test results showed that before the application of GMCF, the average achievement of production targets was 72.2667 percent, whereas after the application of FPMB, the average achievement of production targets was as much as 90.6250 percent. N indicates the amount of data that is before and after as many as 12, standard deviations indicate heterogeneity that occurs in data before and after an application is 0.69326 and 0.42239. Standard Error Mean before and after an application is 0.20013 and 0.12193.

With the implementation of GMCF in the previous month, the value of Reject decreased dramatically by 39 units with a percentage of 0.85% from the production of 4,611 units. Whereas in the months before GMCF implementation, the Reject Production figures were very high and the production results were less than the maximum, the total production of 3,623 units with a reject production value of 102 units with an average percentage of 2.81 percent per month. This approach considers the estimation equation approach to estimate the correlation function of the pair, but for Alpha numbers > 0.05 (Coeurjolly et al., 2019) there is no relationship between before and after using GMCF (see Table 4).

Correlation test results show that the correlation of two variables amounted to 0.310 with a significance of 0.326. Shows that the correlation between the two average achievements of production targets before and after the application of the Goods Mutation Control Form (GMPF) is no significant (see Table 5).

The basis for the decision to accept or reject H0 in this test is as follows.

1. If t- value > t-table and probability (Asymp.Sig) <0.05, then H0 is rejected and H1 is accepted.
2. If t- value > t-table and probability (Asymp.Sig)> 0.05, then H0 is accepted and H1 is rejected.

The t-value is -92,061 with sig 0,000. Because the sig value <0.05, it can be concluded that H1 is accepted, meaning that the average achievement of production targets before and after the implementation of the Goods Mutation Control Form (GMCF) is that there are differences, thus it can be stated that the application of the Goods Mutation Control Form (GMCF) is very influential on smooth production reporting process so that the achievement of production targets increases.

4. Discussion

The research conducted aims to determine the differences before and after the application of the Goods Mutation Control Form (GMCF). Before GMCF, Sumber Indah Perkasa Manufacturing uses the form in the shape of a table

Table 2: Normality Test (Saphiro-Wilk)

Indicator	DF	Sig
Before	12	0,211
After	12	0,199

Table 3: Paired Sample Statistic

Indicator	N	Mean Value	Standard Deviation	Standard error Mean
Before	12	72,2667	0,69326	0,20013
After	12	90,6290	0,42239	0,12193

Table 4: Correlations Test

Indicator	t-Value	t-table	Sig (2-tailed)
Before and After	92,061	1,7823	0,000

Table: 5 Paired Sample t-test

Paired Sample Correlations			
Indicator	**N**	**Correlation**	**Sig**
Before and After	12	0,310	0,326

of production results in each division and filling the table separately by each division, so there is no supervision of an item in the production process. Researchers and all company staff concerned designed a new information system in the form of a GMCF (All Items Mutation Control Form). GMCF is an Accounting Information System (AIS) that is used by Sumber Indah Perkasa Manufacturing as the basis of information that will be used in accounting data management, so that data that has been processed can be recapitalized for information needs such as salary bonuses, a recapitulation of production results, production costs, PPIC and needs other information. The recording system in each GMCF is filled by all divisions in one form that runs according to the production process and according to the order of the divisions so that they are no longer separate as before. The GMCF was designed based on the results of a meeting with researchers, staff teams, and all heads of the company's production divisions so that goals and targets can be achieved together.

GMCF is composed of all divisions such as the injection, grinding, rubbing, washing, paint, sticker, fernish, trim, PVC, styrofoam, and assembly divisions. The code format used in GMCF is an arrangement of numbers, (4.2) is derived from the date and number of the GMCF order issued, and the combination (J / 18) where "J" is the number of months used as letters and "18" is the year of GMCF making. Example: On 4 October 2018 there are eight helmet production orders to be issued so that the code format is [4.1 J / 18] [4.2 J / 18] [4.3 J / 18] [4.4 J / 18] [4.5 J / 18] [4.6 J / 18] [4.7 J / 18] [4.8 J / 18] at each GMCF issued for processing based on the order and the process flow of each production division. Based on the results of research conducted before and after the application of GMCF on Accounting Information Systems (AIS) is a support for the smooth process of reporting the production system of manufacturing companies that can be assessed through rejecting data on production results and the percentage of achievement of production targets.

5. Conclusion

It was concluded that, through the application of GMCF, the information obtained becomes accurate and it is known which division is more dominant in *defective goods*, so that an appropriate handling policy can be made on the number of *defective goods*, namely, through the policy of making GMCF By-Pass. GMCF By-Pass is made to manage *defective goods* so that it has the same sale value again while maintaining the quality of the product produced, by reducing the number of *defective goods* the factory overhead costs can be minimized. Given the results of the summary of the descriptive statistics of the two data sample, the average achievement of production targets before and after the application of the Goods Mutation Control Form (GMCF) rose from 72.2667 to 90.6250. Increasing the percentage of production targets by using GMCF proves that Accounting Information Systems (AIS) are very helpful in managing the company's needs to deal with increasingly complex problems so that work becomes more effective and efficient. Thus, it can be stated that the application of the Goods Mutation Control Form (GMCF) is very influential on the smooth process of production reporting so that production targets are achieved.

The results of the correlation test shows that the correlation between the two variables concluded there was no significant relationship between before and after. This shows that there is no significant correlation between the two average achievements of production targets before and after the application of the Goods Mutation Control Form (GMCF). Based on the results of hypothesis testing or paired samples t-test, it was concluded that H1 was accepted, meaning that the average achievement of production targets before and after the application of the Goods Mutation Control Form (GMCF) was different, thus it could be stated that the application of the Goods Mutation Control Form (GMCF) greatly influences the smooth production reporting process so that the achievement of production targets increases.

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