
Production System Development, Aviary and Sliding Turning Product Innovation at Cv. Mitra Jaya Company Malang to Increase Sales

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ABSTRACT

Purpose: This research was carried out using an R & D (Research and Development) approach or development research that produces a product. By using the ADDIE method (analysis, design, development, implementation and evaluation). This research aims to develop a production system and product innovation. The resulting development products are in the form of development models, 1) Standard Operating Procedures, and 2) Product Innovation.

Design/methodology/approach: The model was developed with performance and needs analysis. In the initial development process, researchers consulted and validated with economic experts and IT experts to obtain input and suggestions about the model being developed and to determine the feasibility of the product development model. By using a questionnaire as a research instrument.

Findings: The research results obtained from the expert validation test results show that the model score obtained from the economic expert validation test results is (89.28), while the IT expert validation test (85) is in the very good category and does not need revision. In product trials carried out on 15 production employees at CV. Mitra Jaya Company has results with the highest score of 88.25, meanwhile, product innovation was tested on 4 consumers and obtained results with the highest score of 100. Thus, the Standard Operational Procedure development model can be used as a guideline in the production process, while product innovation can be applied to improve old products and new products to increase sales.

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I. INTRODUCTION

Free trade causes increased competition, making consumers more selective in choosing products. So every company must understand and always understand what is happening in the market and what the market wants. In order to be able to compete with competitors, companies need to make changes related to the way they develop products and innovate, as well as improve production systems in order to get higher quality output to respond to increasingly dynamic, complex and uncertain market changes. This is done so that the company is able to compete with competitors that continue to emerge.

One of the efforts that companies must make to win market competition is by always developing and innovating their products. According to Victor (2018) Product Innovation is something that can be seen as a product's functional progress that can take the product one step further compared to its competitors' products. This is because innovation is useful for adding more value to a company's products, such as improving design, color and function. So, with innovation, it is hoped that it can increase consumers' desire to buy.

In consuming a product, consumers not only look at the value or function of the product offered, but also pay attention to whether the product chosen has added value or superiority compared to other similar products. This is a consideration that companies need to pay attention to as a basis for carrying out the innovation process.

Because innovation is the right strategy to maintain a product's position in the market. Where most of the competitors' products appear static from year to year. (Setiawan: 2012). The stages of innovation can be carried out when the market begins to become saturated with the products offered, competitors appear, or there is demand from the market itself.

On the other hand, product innovation is very dependent on controlling the production system. According to Ginting (2013), the production system is a collection of sub-systems that interact with each other with the aim of transforming production input into production output, so strict supervision of the production process is needed to produce quality products.

Meanwhile, CV. Mitra Jaya Company still does not have guidelines governing the control of the current production system. During the establishment of CV. Mitra Jaya Company, the production system implemented in the company uses a piecework method, where workers tend to work on the production flow in their own way, which is not sequential, the most important thing is that it is completed quickly. So it often happens that the finished product does not comply with the expected product standards, starting from the size of the box between workers and other workers is always different, the finishing of the egg incubator is still not neat, and there is a lack of quality control. And this resulted in production targets not being achieved.

Table 1. CV Production Data. Mitra Jaya Company in 2018-2020

<i>Year</i>	<i>Production Targets</i>	<i>Production Amount</i>	<i>Number of Damaged Products</i>	<i>Percentage</i>	<i>Information</i>
2018	6.000	5.592	279	5%	Not achieved
2019	6.000	5.755	402	7%	Not achieved
2020	6.000	5.893	593	10%	Not achieved

Source : nurbaiti 2022

Based on the background of the problems contained in CV. Mitra Jaya Company Malang, the researcher is interested in conducting research with the title "PRODUCTION SYSTEM DEVELOPMENT, AVIARY AND SLIDING TURNING PRODUCT INNOVATION AT CV. MITRA JAYA COMPANY MALANG TO INCREASE SALES". The research method uses sources from previous research conducted by Tegeh and I Made Kirna (2013) and research by Fauziah (2016) where the research is based on research and development using the ADDIE method focusing on the development of the world of education. So researchers are interested in adopting and conducting research and development-based research by adopting the ADDIE method in CV manufacturing companies. Mitra Jaya Company Malang. In this case, the expected output is to design standard operational procedures which aim to be implemented as guidelines for the production process.

II. METHODS

The research method used by researchers is an effective development model that requires compatibility between the approach used and the product to be produced. The development model that will be planned follows the flow of ADDIE. (Sugiyono, 2016:38). ADDIE is an abbreviation for analysis, design, development, implementation and evaluation. At the analysis stage, it is related to the activity of analyzing the situation and environment so as to design a product according to what is needed. The design stage is an activity to design the product according to what is needed. The development stage is the activity of making and testing the resulting product. The Implementation Stage is an activity using products that have been tested. And evaluation is an activity of assessing the steps and products that have been made.

The target of this research is the Production Division as those who know about the production system currently implemented, totaling 15 people. Meanwhile, for product innovation, the research subjects came from 4 consumers. Product validation in this research was carried out by experts, namely economics experts for production systems, while product innovation was validated by IT (Information Technology) experts.

The instrument used in this research was a questionnaire. The questionnaire in this research was used to measure the validity and feasibility of product innovation and standard operational procedures prepared by researchers using a formula.

Table 2 Answer Options for Validation Sheet

<i>No.</i>	<i>Answer</i>	<i>Score</i>
<i>1</i>	<i>Not enough</i>	<i>1</i>
<i>2</i>	<i>Enough</i>	<i>2</i>
<i>3</i>	<i>Good</i>	<i>3</i>
<i>4</i>	<i>Verry good</i>	<i>4</i>

$$\text{Mark} = \frac{\text{acquisition score}}{\text{maximum score}} \times 100$$

Table 3 Validity Criteria

<i>No.</i>	<i>Score</i>	<i>classification</i>
<i>1</i>	<i>76-100</i>	<i>Verry good</i>
<i>2</i>	<i>51-75</i>	<i>Good</i>
<i>3</i>	<i>26-50</i>	<i>Enough</i>
<i>4</i>	<i>0-25</i>	<i>Not Enough</i>

- a. "Very Good" category (can be used without revision), total score 76% - 100%. Predicate A.
- b. "Good" category (can be used with minor revisions), total score 51% - 75%. Predicate B
- c. "Fair" category (can be used with major revisions), total score 26% - 50%. Predicate C.
- d. "Poor" category (not suitable for use), total score 0%-25%. Predicate D.

This research uses qualitative descriptive. Qualitative descriptive analysis to process data in the form of employee responses (responses) to product innovation and standard operational procedures prepared by researchers. From the results of the qualitative descriptive data, three types of data will be obtained, namely validity, effectiveness and feasibility of product innovation and standard operational procedures prepared by researchers.

III. RESULTS AND DISCUSSION

A. Results

Performance analysis was carried out to determine the problems faced by the production system implemented by CV. Mitra Jaya Company Malang uses a piecework method, where workers tend to work on the production flow in their own way, which is not sequential, the most important thing is that it is completed quickly. As a result, many finished products do not meet the expected product standards, as well as a lack of quality control needed to ensure that the product produced is in accordance with the expected product. Another problem found was that the previous egg incubator product had a deficiency in that it still used a manual drive.

Needs analysis, namely determining Standard Operational Procedures as guidelines for the production system required by CV. Mitra Jaya Company Malang to achieve production targets. Analysis of other needs required by CV. Mitra Jaya Company is concerned with egg incubator product innovation, namely by perfecting the egg incubator machine from manual to a fully automatic system.

The design stage is the activity of preparing a design draft for Standard Operating Procedures (SOP) according to needs selected from the results of performance analysis and needs analysis.

1. Draft Standard Operating Procedures (SOP)
 - a. Study the company's business processes
 - b. Collect other information related to main duties, authority and responsibilities.
 - c. Create a draft Standard Operating Procedure (SOP)
2. Product Innovation Design
 - a. Identification of problems
 - b. Identify market needs
 - c. Preparation of Innovation Plans
 - d. Control and Improvement

In developing or making soup, it consists of several items, as follows; (1) Standard Operational Procedure Cover; (2) Table of Contents; (3) Company Profile; (4) Organizational Structure; (5) Job Description; and (6) Production Procedure Standard Operational Flow Diagram.

In carrying out product innovation, several stages are carried out, including; (1) Refining the semi-automatic egg incubator machine variant to use a digital thermostat type MJST220, making it easier for consumers to regulate the temperature; (2) Adding an automatic drive mode to make it easier for consumers to hatch eggs; (3) Adding thermohygro to make it easier for consumers to know the humidity level in the egg incubator; (4) Change the rotating shelf feature to a sliding shelf, because based on observations the success rate of sliding shelves is greater than rotating shelves. Because the shelf moves, the eggs rotate so there is movement in the eggs; (5) Innovating by perfecting small capacity machines with digital thermostat type XH-W3001, automatic drive type MJST220 and dynamo drive type TYD49-D4 SYNCHRONOUS MOTOR; and (6) Providing additional equipment such as egg binoculars for free.

The validation stage aims to obtain input from validators, namely IT experts and economic experts, then the input will be used as evaluation material. The results of the expert validation test are described as follows:

- 1) Cahya Riam Krisna, SE

Table 4 Economic Experts' Assessment of Standard Operating Procedures

<i>No.</i>	<i>Description</i>	<i>Evaluation</i>	<i>Information</i>	<i>Score</i>
<i>1</i>		<i>Appearance</i>		
	<i>The size of the letters used is appropriate and easy to read</i>	<i>Good</i>	<i>The font size is appropriate so it is easy to read</i>	<i>3</i>
	<i>Illustrations in the form of proportional images</i>	<i>Good</i>	<i>The picture illustrations are very helpful and appropriate</i>	<i>3</i>
<i>2</i>		<i>Contents</i>		
	<i>The contents and objectives of each Job Description and SOP are in accordance with the topic</i>	<i>Verry Good</i>	<i>The material in the Job Description and SOP is appropriate to the topic</i>	<i>4</i>
	<i>The material presented is coherent and clear</i>	<i>Verry Good</i>		<i>4</i>
	<i>The images displayed contain a clear message</i>	<i>Verry Good</i>	<i>The explanation in the picture is clear</i>	<i>4</i>
<i>3</i>		<i>Language</i>		
	<i>The sentences used are clear and easy to understand</i>	<i>Sangat Baik</i>	<i>Already using standard language</i>	<i>4</i>

	<i>The spelling used is in accordance with EYD</i>	<i>Baik</i>	<i>3</i>
		<i>Total</i>	<i>25</i>
Mark	$= \frac{\text{acquisition score}}{\text{maximum score}} \times 100$ $= \frac{25}{28} \times 100$ $= 89,28 \text{ (Verry Good) Can be used without revision.}$		

2) Muhammad Subhan, ST

Table 5 IT Experts' Assessment of Product Innovation

No.	Description	Evaluation	Information	Score
1	<i>The MJST220 type digital thermostat is easy to regulate the temperature</i>	<i>Good</i>	<i>It is easier for consumers to regulate the temperature</i>	<i>3</i>
2	<i>Auto drive mode</i>	<i>Good</i>	<i>Efficient and makes it easier to hatch eggs</i>	<i>3</i>
3	<i>Use of Thermohygro</i>	<i>Good</i>	<i>Makes it easier to know the humidity level</i>	<i>3</i>
4	<i>Changing the rotating shelf feature to a sliding shelf</i>	<i>Verry Good</i>	<i>Can increase the success rate of egg hatching</i>	<i>4</i>
5	<i>Innovation and improvement of small capacity hatching machines</i>	<i>Verry Good</i>		<i>4</i>
		<i>Total</i>		<i>17</i>
Mark	$= \frac{\text{acquisition score}}{\text{maximum score}} \times 100$ $= \frac{17}{20} \times 100$ $= 85 \text{ (Verry Good) Can be used without revision.}$			

This Standard Operational Procedure is implemented in activities that take place within the company from factory opening to factory closing time at CV. Mitra Jaya Company after obtaining approval from the validator and supervisor.

The final stage of developing the production system and product innovation is evaluating the implementation of Standard Operating Procedures and Product Innovations that have been produced.

B. Discussions

The results of this research development are Standard Operational Procedures and Products for Full Automatic Egg Incubator Machines Type ST (Sledding Turning) and Aviary.

Table 6 CV Sales Data. Mitra Jaya Company in 2019-2022

<i>Year</i>	<i>Production Targets</i>	<i>Sale</i>	<i>Information</i>
<i>2019</i>	<i>6.000</i>	<i>3.702</i>	<i>Not Achieved</i>
<i>2020</i>	<i>6.000</i>	<i>5.904</i>	<i>Not Achieved</i>
<i>2021</i>	<i>6.000</i>	<i>6.850</i>	<i>Achieved</i>
<i>Jan-Juni 2022</i>	<i>3.000</i>	<i>3.351</i>	<i>Achieved</i>

Source : sale of CV. Mitra Jaya Company

Based on the table above, it can be seen that before the Product Innovation was carried out in 2019 and 2020, the sales data for Egg Incubator Machines had still not reached the production target. Meanwhile, after carrying out Product Innovation from 2021 to June 2022, based on the sales data table, it can be seen that sales exceed the production target, so it can be concluded that when sales increase above the production target, the production target has automatically been achieved.

IV. CONCLUSION

This research is generally to find out whether production system development and product innovation can influence sales at CV. Mitra Jaya Company Malang. So the conclusions obtained from the research results are as follows: (1) The results of this research are in the form of a development model for Standard Operational Procedures and Products for Full Automatic Egg Incubator Machines Type ST (Sledding Turning) and Aviary which have passed expert validation tests and product trials; (2) The final form of the Standard Operational Procedure consists of (a) Flow Diagram; (b) Job Description; (c) Standard Operating Procedures; (d) Product Standards; and (e) Quality Control; (3) Meanwhile, the final form of product innovation is in the form of improvements to the ST Type (Sledding Turning) Full Automatic Egg Incubator Machine and the Aviary Type Egg Incubator Machine; and (4) Development of a soup-based production system and product innovation is able to increase sales after being implemented from January 2021 to June 2022 based on sales data.

A limitation in this research is that the references used in this research are mostly taken from educational science. So the resulting SOP suggestions for companies can be used as guidelines in the production process activities carried out by CV companies. Mitra Jaya Company Malang because the Standard Operational Procedure proposed by researchers can increase company sales. Meanwhile, for future researchers: (1) The resulting development model can be used as a reference for further research, especially those that will develop production systems; (2) Enriching references originating from the business world; and (3) Designing Standard Operational Procedures regarding raw materials.

Production system development is not only through implementing SOPs but can be further developed by updating production equipment and machines to become automatic and product innovation can be carried out consistently in the future following developments in information technology.

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