Factors Causing Loss (LOSS) of Production Results in the Production of Water-Based Adhesive Glue (Waterbase Adhesive) at PT XYZ Bogor

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Abstract
Loss of production (output) is the occurrence of production results that do not match the original quantity of each raw material used. This loss of production output affects the calculation of production costs and certainly reduces the profit of the enterprise. This study looked for the causes of the factors that caused water-based adhesives to be lost during production. PT XYZ is one of the companies that produces water-based adhesive glue and places great emphasis on production losses in order to compete with similar companies in terms of market prices. Observation of the use of machine production tools, raw materials, and internal observations of the production process (methods) as well as labor (humans) involved in production. Based on previous similar tracing and direct observations during the production process, interviews with the production and procurement of materials (warehouse) departments, it was found that the cause of production loss losses from human resources (HR) factors

Keywords: loss of production, causative factors, human resources

INTRODUCTION

Adhesive is a material that is able to bind 2 or more tops using a strong & permanent bond. Generically, adhesives are materials that have high tensile strength & shear strength. The adhesive business continues to grow along with the development of industries that require adhesives. According to Lucky (2017), all products that are not sewn, nailed, and screwed use glue to connect components

Adhesive glue manufacturers in Indonesia are quite numerous and will continue to grow, in line with the growth of other industries that are indeed very dependent on the use of glue to glue materials into a product of community needs, such as furniture, packaging, electronic components, automotive, and many others. Domestic and foreign companies compete with a very high level of competition, so each company has its own policy in meeting the needs of industrial adhesives (customer oriented).

Different types of adhesives used in industry, according to Skeist (1990) can be grouped as follows:

1. Solvent-based adhesive type. (Solvent base)
   Adhesive Adhesive uses a special solvent to dissolve the adhesive resin known to the public as yellow adhesive. Widely used in the industry of shoes, leather bags, automobiles and electronic device accessories, etc.

2. Types of water-based adhesives (Waterbase)
   Adhesives use water as a solvent medium, there are adhesives that dissolve by heating to a certain temperature and adhesives that are dispersed with water. This method of dispersion of adhesives in water is widely known as white adhesives.

3. Types of solid plastic adhesives (Hotmelt)
   Granules such as hot melt adhesive, glue sticks, or plastic pellets whose adhesive adheres when used. by giving heat

4. Types of solvent-free adhesives
   It is similar to solvent-based adhesives in that it has similar physical properties, but in fact the solvent is the result of a reaction at the time of its production process, for example epoxy adhesive, PU, power glue (CA) glue, etc.
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Some other terms for certain adhesives include adhesive, slime, paste, and cement (Blomquist et al., 1983). Industries that use Skeist adhesives (1990):
1. Wood industry (wood processing industry)
2. Packaging and Paper Processing (Packaging and Paper Converting)
3. Chair table furniture
4. Handicrafts
5. Electronics industry
6. Car construction
7. Binder of textiles and paints etc.

Due to the diversity of the adhesive processing industry, many adhesive manufacturers focus on specific types of adhesives, and each adhesive manufacturer has its own market share, but each adhesive manufacturer has similar products. Competition is getting tougher because manufacturers don't want to lose their customers. Sutrisno (2013) stated that the competition in the adhesive industry is not only domestic products but also imported products or foreign companies operating in Indonesia. Customers are also divided into several market shares, some with lower prices and available products. It is the largest market, with some paying attention to services, but prices also have an impact. Price is a priority for most customers, so glue manufacturers need to look at the prices received in the market in order to find and innovate their products. That the same or similar products may be suitable for different customers with little change or adjustment to meet the needs of new customers. Each new customer should have the same characteristics as the current customer. This allows customers to easily receive products.

In market research, it is necessary to obtain exact price information and forward it to the product development (R&D) department to find a product that matches market demand. R&D needs to find innovation gaps by making new formulations and replacing raw materials, but still within quality standards. The product developed is of course presented to marketing until it is received by the customer in terms of price and quality. Swope (2014) stated, the successful sales of this developed product are certainly very profitable for the company. Because if it happens to an old customer, of course he will still be a customer and the company will not lose customers. If the development of this product is successful for new customers, the company will profit from acquiring these new customers and if retained will become regular customers.

Production costs according to The Mekary Journal (2022), are production costs incurred by companies to produce a product that is marketed. However, if in the production process there are many production losses, then these profits will be lost or reduced. The production team works in accordance with the Production Operating Standards (SOP) but the production losses are still large, it is likely to affect the overall selling price of the product, and make it difficult to compete with competitors increasing. Customers certainly do not want to increase prices while competitors' products do not go up. The rapid change in business competition has caused the level of competition to become more and more realistic. Sari Ria (2020) explains that this increasingly fierce competition leads to fluctuations in demand, lower customer loyalty, and shorter product life cycles. With the increasingly fierce competition, customers who benefit from a wide range of products are becoming increasingly critical of the company's products.

From the perspective of human resource management (HR), article writing focuses on investigating various factors that cause the loss of production results. Losses on the loss of production products inevitably occur in every production process, but minimizing production losses can have a significant impact on selling prices and can compete and increase the profits of a company. PT XYZ believes that even though it is competitive in price, it is important to always evaluate superior products in terms of product quality and consistency so that the product still exists in the eyes of customers.

METHOD
This research is categorized as descriptive with a qualitative approach. This method is a study that uses perceptual and written materials to find something that cannot be reliably measured (intangible). This method provides insight into information through non-numerical or non-statistical data. The location of this survey is PT XYZ in Bogor. The purpose of this study is to identify several factors that cause the loss of production results in terms of human resource management (HR).

The subjects of this survey were (1) production managers, (2) production operator staff, (3) quality control staff, and (4) warehouse management staff. The method used to collect the data is to conduct detailed interviews and documentary surveys. In other words, if the interview is a data collection technique by asking and answering questions directly to the source, then the interview is a direct interaction between the researcher and the respondent. Document research is a data collection technique through document research to obtain data or information related to the problem under study.

Data analysis in this study is descriptive qualitative. This research was carried out before and after data collection, carried out within a certain period of time. The data analysis used in this study was Miles and Huberman's data engineering model. The data used in this study is primary data, where the data source obtained directly from the original source (not through intermediary media), is in the form of individual subject opinions. In this study, the research instrument is the human instrument or the researcher himself, starting to establish the focus of the research, choosing informants as data sources, collecting data, assessing data quality, data analysis, interpreting data to making conclusions on research findings. In addition, the instrument used is an interview guide with problem formulation guidelines. The number of subjects is at least 10 people until data saturation is achieved which means that no new information from the research subjects is found again.

The subjects of this study are the environment and situation of work facilities, namely production machines, materials or raw materials, process methods or ways of production processes, and human workers or employees. Sampling data collection is carried out directly, namely sampling techniques with certain considerations or the informant chosen is an expert individual and has a role, authority, and status that is in accordance with the focus of research and information needs. Data analysis activities in the form of data presentation, drawing conclusions or validation. To find out the validity of the data, researchers need to test the validity of the data. Validity test is the interpretation of data from the results of a measurement or evaluation. The validation test of this study is a reputation test. The data reliability test is a test of the reliability of survey data. The testing method is triangulation, a data acquisition technique that combines various data acquisition techniques with existing data sources. According to Sugiono (2011), the use of triangulation is expected to further improve data accuracy.

Researchers conducted detailed interviews on the use of production machines, production handling, use of raw materials, and how workers carry out the production process to (1) production managers, (2) production operator staff, (3) quality control staff, and (4) Warehouse management staff.
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Figure 2. Production Department Workflow, Source PT XYZ 2022

The following is data on the loss of production results during the period 2019-2021...

Table 1. Production Loss Chart for the 2019-2021 period

<table>
<thead>
<tr>
<th></th>
<th>JAN</th>
<th>FEB</th>
<th>ART</th>
<th>APRIL</th>
<th>MEI</th>
<th>JUN</th>
<th>JUL</th>
<th>AGT</th>
<th>SEP</th>
<th>OKT</th>
<th>NOP</th>
<th>DES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td></td>
<td>1.99%</td>
<td>1.96%</td>
<td>2.58%</td>
<td>2.15%</td>
<td>2.48%</td>
<td>2.05%</td>
<td>3.22%</td>
<td>3.53%</td>
<td>2.63%</td>
<td>2.50%</td>
<td>3.08%</td>
</tr>
<tr>
<td>2020</td>
<td>2.06%</td>
<td>2.59%</td>
<td>3.76%</td>
<td>2.97%</td>
<td>5.11%</td>
<td>2.95%</td>
<td>3.03%</td>
<td>3.43%</td>
<td>2.55%</td>
<td>2.40%</td>
<td>2.15%</td>
<td>2.07%</td>
</tr>
<tr>
<td>2021</td>
<td>2.36%</td>
<td>1.88%</td>
<td>2.32%</td>
<td>2.05%</td>
<td>1.50%</td>
<td>1.50%</td>
<td>1.45%</td>
<td>1.74%</td>
<td>2.07%</td>
<td>2.57%</td>
<td>2.02%</td>
<td>2.01%</td>
</tr>
</tbody>
</table>

Table 1 shows the percentage of loss due to loss of production per month for the period 2019-2021. It is important to understand that each production does not produce 100% of the production output (output) which is equal to the amount of incoming raw materials (inputs) However, the phenomenon of loss of production loss is not small due to the higher cost of production. Manufacturing workers realize that production losses affect sales because the profit is different every time the company's profit is calculated for a certain period, a certain product, with the same price of raw materials and selling price.

RESULTS AND DISCUSSION

Result
This research was conducted using qualitative descriptive analysis. The data obtained are reduced using triangulation tables. Respondents used pseudonyms to protect the confidentiality of the company. The following respondent data can be seen in the table:

<table>
<thead>
<tr>
<th>No.</th>
<th>Initial Informant</th>
<th>Position</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SR</td>
<td>Kep. Production</td>
<td>Man</td>
</tr>
<tr>
<td>2</td>
<td>RV</td>
<td>Foreman</td>
<td>Man</td>
</tr>
<tr>
<td>3</td>
<td>OAK</td>
<td>Operator</td>
<td>Man</td>
</tr>
<tr>
<td>4</td>
<td>UB</td>
<td>Operator</td>
<td>Man</td>
</tr>
<tr>
<td>5</td>
<td>TR</td>
<td>Packaging</td>
<td>Man</td>
</tr>
<tr>
<td>6</td>
<td>AXLE</td>
<td>QC</td>
<td>Man</td>
</tr>
<tr>
<td>7</td>
<td>MR</td>
<td>Logistics</td>
<td>Man</td>
</tr>
<tr>
<td>8</td>
<td>DD</td>
<td>Logistics</td>
<td>Man</td>
</tr>
<tr>
<td>9</td>
<td>MF</td>
<td>Adm</td>
<td>Woman</td>
</tr>
<tr>
<td>10</td>
<td>KS</td>
<td>Manager</td>
<td>Man</td>
</tr>
</tbody>
</table>

Based on findings that track the factors that cause production losses, including machinery, materials, methods, and human variables are:

1) Engine Factor

There are three side effects of the machine here that cause loss of production results.

First, the boiler engine, the boiler engine is used to alternately heat two mixing tanks. Small mixer with indirect heating and large mixer with direct heating. For example, a longer warm-up time results in higher losses. Since the raw material contains many components, the mixing time is long and the water evaporates, as a solvent or dispersion medium.

Secondly, problems with hoists or cranes used to lift raw materials from downstairs to upstairs often fail, production is stopped while the cooking process continues, and the time taken is longer because the production handlers are machined manually.

Third, in the mixing process that does not require a cooking process (blending), the manufacturing time is fast and the loss depends on the product produced. Viscous products have a higher loss than liquid products, which easily pass through the filter.

2) Material Factor (Raw Material)

The material or raw material used for production consists of materials in the form of powder, diluted and viscous liquid, or volatile liquid. For one product in one process at least two types of raw materials., both the cold process and the cooking process Loss occurs a lot in the use of powder raw materials (powder), because it is easily carried away by the wind at the time of mixing and stirring. Because in these two processes the stirring machine rotates causing air movement Losses occur a lot for products whose results are viscous

3) Method factor (Manufacturing Process)

The manufacturing process method already has SOPs, but it is often violated, as evidenced when researchers’ observations. Each manufacturing process has a mixing order of 1, 2, etc., but the order of manufacturing may change, for ease of handling. It is not dangerous to change the order because there is no chemical reaction at the time of compounding, but it takes time to adjust. Losses due to production losses often occur in products that have a long-time tuning process.

4) Human Variability Factor
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Human variables as employees are the main subjects of the study, from the results of interviews, work observations and data processing. Employee error factors (human error) occur quite often at every stage of the production process. The production stages that are directly in contact with workers are Preparation (stage1), Mixing (stage2), Packing (stage7). (Figure 2)

At the preparation stage, raw materials there is a weighing process, more or less in weighing can occur, but weighing errors due to human error are not significant enough to the production results, because the operator weighs by following the type of scales for example for large scales (300Kg) for the amount to be overwritten and vice versa if the raw material is as little as possible (<10 Kg) using a scale of 10-20 kg.

The mixing process is the mixing of raw materials that have been weighed and checked QC. Production loss can occur if the remaining raw materials do not get clean in all, this is more often the case for viscous raw materials such as pasta. Employees can't wait to clean up the remnants that are packed with plastic, for example by squeezing, in this case the remaining raw materials are still there but are tried to a minimum, from the observation results the rest is still 1-2%.

The packing stage is the last part of the production process that is in direct contact with workers. Gasket (loss) occurs in this process because the process of going down passes through a fine filter (filter). If the diluted product process drops quickly and the loss is low <1%) and the viscous product the process drops longer and often changes the filter so that the losses can be more (>2%) and once reach 5%.

The stages of the process are very dependent on performance based on employees. Employees need to be briefed on the value of losses if the loss of production results (loss) is large. The head of production is obliged to always supervise, direct, & educate his subordinates the meaning of production loss.

Amelia & Riyanto (2020) stated the importance of training to increase skilled Human Resources (HR), high work motivation, & always willing to learn to improve work performance. Human resources are the most crucial factor of production compared to several other factors of production because it is humans who have initiatives or ideas, organize, process, & lead all factors of production.

The company cannot perform its duties without human resources. Paying more attention to the human resources in the company is the key to success in achieving organizational or business goals. Success in achieving a goal depends on the human being. It is clear in an enterprise that the human element and all its aspects should receive primary attention.

As a production factor that plays an important role and is not owned by other factors, manusia also has the ability to engineer, control, and use other factors. In addition as a resource consisting of individuals that can be influenced and developed by different types of behaviors, environments, personalities and talents. Human resources are also a complex component, this is the main concern of PT XYZ adhesive factory in Bogor, to improve the performance of production workers in increasing productivity.

CONCLUSION

Based on the results and discussions with the Human Resource Management (MSDM) study, the factors causing the loss of adhesive production results at PT XYZ, Bogor can be drawn the following conclusions:
1. Labor The human factor as a person (human being), is an important factor in the production and productivity of business processes. The most fundamental factor in the success of production is the labor or personnel factor. If the talent is weak, unskilled and uncreative, then the manufacturing industry will not produce goods or services that conform to the company's standards. Preventing production losses when workers realize that the company suffers losses as a result of an unsuitable work style and
immediate superiors, that is, production managers who are not able to direct, educate or motivate them
2. Other factors that affect production loss in this study are:
3. The machine in this case as a tool and means of supporting the work of employees, the heating capacity must be increased so that the cooking process is faster.
4. The handling of raw materials must be distinguished by paying attention to the physical properties of each raw material used for production, raw materials for liquids, powders or granules and in the form of pastes, have different handling characteristics and must be under supervision, carried out by employees who are skilled and experienced, so from the beginning it has been anticipated to reduce losses
5. The production process method must be reviewed or updated, if there is a change or addition of work support tools and special handlers of certain raw materials

BIBLIOGRAPHY

Biaya Produksi (Cost of Production) dalam Pelaporan Keuangan, Jurnal by Mekary Academia.edu
Rizka Prameswi Kamania, Setyo Riyanto. (2020). The Effect of Motivation, Work Discipline, And Compensation Toward Employee Performance,
Sutrisno, Ano. (2013). Analisis Strategi Pemasaran Produk Perekat Pada PT. Kleiberit Indonesia, IPB University