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Good Manufacturing Practices Evaluation in the Na Oogst Cigar Industry Center of Jember Regency: A Case Study of CV. Dwipa Nusantara Tobacco

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ABSTRACT
Good Manufacturing Practices (GMP) are essential for maintaining product safety, hygiene, and consistency in the cigar manufacturing industry. This study evaluates the level of GMP compliance at CV. Dwipa Nusantara Tobacco, one of the key producers in the Na Oogst Cigar Industry Center of Jember Regency, and identifies areas requiring improvement to enhance product quality and competitiveness. Using a descriptive qualitative approach, data were collected through observations, interviews, and checklist assessments based on the Ministry of Industry Regulation No. 75/M-IND/PER/7/2010 and BPOM RI (2012). The evaluation identified three non-conformities-one minor related to inadequate handwashing facilities and two major involving the absence of laboratory testing for nicotine content and incomplete product labeling. The company achieved Level II GMP compliance, indicating that while most standards are met, several aspects still require corrective action. Recommended improvements include providing complete sanitation facilities, conducting regular laboratory nicotine analyses, and updating product labels to meet health regulation requirements. These measures are expected to strengthen GMP adherence, ensure consumer safety, and enhance the sustainability and reputation of the cigar industry in Jember Regency, a leading center for Na Oogst tobacco-based products.

Keywords - Good Manufacturing Practice, Na Oogst Cigars, Quality Compliance, Jember Regency.

1. Introduction

CV Dwipa Nusantara Tobacco is a cigar-processing enterprise located in Jember that focuses on producing hand-crafted cigars. The company has encountered several quality-related issues that affect product consistency, including a product recall that occurred in 2024. Based on internal company reports, the recall was caused by the discovery of defective cigars, consisting of 24 units with cracks and 20 units with excessive hardness. These incidents emerged partly because the company had not yet implemented Good Manufacturing Practices (GMP). GMP functions as a guideline to ensure that products are manufactured safely and meet accepted quality standards (Sahoo et al., 2024). Another challenge faced by the company involves the placement of its raw material storage facility, which is located far from the cigar production site. Ideally, raw materials should be stored near the production area to reduce transportation costs and prevent potential deterioration (Awuchi, 2023).

Established in 2019, CV Dwipa Nusantara Tobacco is situated at Jalan Kopral Soetomo No. 288 Jember. The company distributes its cigars across Indonesia and exports to several international markets such as Hong Kong and

Malaysia. Product promotion is mainly conducted through an official website to provide customers with information regarding the company's product lines. Two flagship products are offered: the Joker Series and the Johnny Series. The Joker Connecticut variant, priced at IDR 1,000,000 per box containing 14 cigars, serves as the company's premium product. The production process is arranged systematically from upstream to downstream to ensure that consumers receive cigars with consistent taste, aroma, and quality.

The problems experienced by the company have contributed to a decline in product performance, resulting in approximately 50% of products being withdrawn from the market. Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 highlights that GMP is closely related to sanitation practices and employee hygiene, which play a critical role in preventing defects during production. An efficient manufacturing process is essential for the growth of any industrial operation, including cigar production. According to (Singh et al., 2024), the tobacco industry roadmap shows a deterioration in product quality caused partly by inadequate implementation of GMP from raw material procurement through final processing.

Cigars are tobacco-based products whose quality is largely dependent on consumer preference. They also have substantial export value, with tobacco leaves serving as the primary raw material. Data from (Wijaya et al., 2023) shows that East Java remains the largest tobacco-producing region in Indonesia, with total production of 110.8 thousand tons in 2021. Central Java follows with 57.6 thousand tons, while West Nusa Tenggara ranks third with 53.1 thousand tons.

The industrial sector plays an important role in national economic development, including the tobacco-processing subsector. This industry contributes to economic activities in tobacco-producing districts, clove-growing regions, and cigarette manufacturing centers. Tobacco industries are prioritized because they utilize locally available resources, create business opportunities, and absorb a sizable workforce. Globally, Indonesia is ranked sixth among the world's major tobacco producers after China, Brazil, the United States, India, and Malawi with an output of 136 thousand tons or 1.19% of global production (Martins et al., 2022) and (Wahyono et al., 2024).

To produce cigars that are safe and of high quality, CV Dwipa Nusantara Tobacco must ensure optimal performance in raw material handling, production activities, workforce skills, and supporting infrastructure. The adoption of GMP is therefore crucial to maintain product integrity and quality. The challenges identified above illustrate the need for improved GMP implementation in the company. These considerations form the basis for conducting a study entitled "Good Manufacturing Practices Evaluation in the Na Oogst Cigar Industry Center of Jember Regency: A Case Study of CV. Dwipa Nusantara Tobacco."

2. Method

2.1. Research Design and Population

This research applied a qualitative descriptive design to examine the implementation of Good Manufacturing Practices (GMP) at CV Dwipa Nusantara Tobacco Jember. The qualitative approach aims to understand phenomena based on field data by describing, interpreting, and analyzing information relevant to GMP compliance (Li et al., 2024). Data were gathered through observations and interviews to evaluate how GMP principles are applied within the cigar production process. The population of this study consisted of individuals directly involved in company operations, specifically the business owner and the production manager, who possess the necessary knowledge and characteristics to provide valid and relevant information for analysis.

2.2. Sampling Technique

Purposive sampling selected the cigar business owner, production manager, and a qualified academic expert to provide GMP checklist and interview data.

2.3. Research Variables

2.3.1. Variable Classification

Variables for GMP assessment refer to the official GMP guidelines and include the following components: production location, building conditions, sanitation facilities, machinery and equipment, raw materials, process control, final product, laboratory, employees, packaging, labeling, storage, sanitation programs, transportation, documentation, training, product recall, and guideline implementation (Al Azawei et al., 2025).

2.3.2. Operational Definitions

Operational definitions were adapted from the (Asadi et al., 2021) and (Ahmadi et al., 2023). hese standards encompass production environment, facility integrity, sanitation, equipment management, material inspection, process control, product quality, testing, workforce competency, packaging, labeling, storage, maintenance, transportation, documentation, training, recall, and compliance monitoring.

2.4. Research Instruments

The research employed a structured checklist based on the Indonesian Ministry of Industry Regulation No. 75/M-IND/PER/7/2010. The checklist evaluation involved marking responses on each GMP requirement to identify implementation levels. Documentation of the cigar production process was also conducted.

2.5. Research Location and Duration

The study was carried out at the cigar manufacturing facility of CV Dwipa Nusantara Tobacco, located on Jalan Kopral Soetomo No. 288, Ambulu District, Jember. The research spanned six months, from February to August 2025, covering all phases from initial data collection to final analysis.

2.6. Data Collection Procedures

Data were collected through several methods:

a. Observation
   Direct observation of the production environment and processes.
b. Interviews
   Structured discussions with the business owner and production staff.
c. GMP Checklist Evaluation
d. Assessing GMP compliance using official criteria.
e. Secondary Data Review
   Gathering supporting documents and literature.
f. Documentation
g. Recording conditions and processes within the facility.

2.7. Data Analysis Techniques

2.7.1. Cigar Production Analysis

Data from observations and interviews were analyzed descriptively to provide a detailed overview of the cigar production flow, from raw materials to final product completion.

2.7.2. GMP Assessment Analysis

GMP implementation was evaluated based on deviation categories: minor, major, serious, and critical, as defined by (BPOM, 2020). Levels I–IV indicate compliance quality, ranging from good (Level I) to very poor (Level IV).

2.8. Expert Selection Criteria

Following (Wardani et al., 2023), expert selection involved two categories:

a. Practitioners
   Individuals with hands-on experience in cigar production, represented by the business owner and production manager.
b. Academics
   Professionals with formal education and academic careers in GMP, represented by a qualified university lecturer.

3. Discussion

3.1. Results

Based on the assessment conducted at the cigar factory of CV Dwipa Nusantara Tobacco in Jember, the design and evaluation of Good Manufacturing Practices (GMP) were carried out using a checklist questionnaire to identify areas for quality improvement. From a total of 18 variables and 56 sub-variables examined, three

nonconformities were identified within the facility, as summarized in Table 1.

Table 1. Good Manufacturing Practices Assessment

NO	Element Evaluated	Nonconformities			
		MI	MJ	SE	KR
C	FACILITIES AND SANITATION				
1	The handwashing facilities were not placed correctly, lacked running water, soap, towels or hand dryers, waste bins, and were insufficient in number.	√			
H	LABORATORY				
2	The company does not have an internal laboratory and has not utilized a reliable government or private laboratory.		√		
K	LABELING AND PRODUCT INFORMATION				
3	he product labels do not comply with the requirements stated in Ministry of Health Regulation No. 28 of 2013 regarding the inclusion of health warnings and health information on tobacco product packaging.		√		
Total Conformities		53			
Total Nonconformities		3			
Critical Nonconformities		0			
Serious Nonconformities		0			
Major Nonconformities		2			
Minor Nonconformities		1			

Source: Processed Research Data, 2025 (complete data in Appendix 2).

Table **1.** displays four categories of nonconformities, each with its own level of severity. Minor nonconformities may affect product quality, while major nonconformities can reduce production efficiency. Serious nonconformities pose potential risks to product safety, and critical nonconformities directly endanger product safety and require immediate compliance with GMP standards for industrial operations (BPOM, 2020).

The GMP evaluation results at CV Dwipa Nusantara Tobacco identified three types of nonconformities: one minor and two major. The minor nonconformity was associated with sanitation facilities, specifically the absence of adequate handwashing stations for workers. This issue may impact product quality, as employees must ensure hand hygiene before and after production processes to prevent contamination of cigars.

Meanwhile, the major nonconformities were found in the laboratory and product labeling variables. The company has not conducted laboratory testing for nicotine content in its products, and the product labels lack essential information such as composition and nicotine levels.

Given the three identified nonconformities, CV Dwipa Nusantara Tobacco must prioritize corrective actions for the major nonconformities, particularly those relating to laboratory testing and product labeling. These issues require urgent attention because major nonconformities can compromise product safety and regulatory compliance. The absence of nicotine content information and incomplete labeling violate the requirements outlined in Ministry of Health Regulation No. 28/2013 concerning health warnings and product information for tobacco packaging. Since cigars fall under regulated tobacco products, failure to meet these requirements may affect the perceived quality and compliance of the final product. Therefore, improvements should be focused on the variables categorized as major nonconformities.

3.2. Discussion

3.2.1. Analysis of the Cigar Production Process

A cigar is a tobacco-based product composed of rolled tobacco leaves, typically consisting of three main components: the wrapper, the binder, and the filler. Cigar production does not require additional chemical ingredients; it relies solely on properly processed tobacco leaves. The Na Oogst tobacco variety is commonly used because it has higher elasticity compared to Voor Oogst leaves. Before becoming a finished cigar, tobacco leaves undergo a series of stages including fermentation, sorting, blending, weighing, rolling, wrapping, molding, drying, cooling, storage, re-sorting, and final finishing.

In designing the Good Manufacturing Practices (GMP) framework for CV Dwipa Nusantara Tobacco, most requirements relate to workers and production conditions. Therefore, a clear understanding of each production stage is essential. The general process flow of cigar manufacturing is as follows:

a. Tobacco Leaf Fermentation

At CV Dwipa Nusantara Tobacco, tobacco fermentation is carried out by stacking tobacco leaves in woven bamboo containers and covering them with similar woven bamboo lids for approximately 2–3 years. This prolonged process helps develop the aroma, texture, and structural characteristics needed for high-quality cigar leaves. The raw materials used include Na Oogst (NO) tobacco leaves, sourced from three channels: tobacco warehouse partners, contracted farmers, and the company's own tobacco cultivation.

Each bamboo fermentation container holds around 50 kg of tobacco leaves. The leaves are fermented under controlled room conditions-70% humidity and about 30°C temperature-to achieve the desired moisture level of roughly 12% (Ilgaz et al., 2023). Based on observations, the fermentation environment used by CV Dwipa Nusantara Tobacco already aligns with recommended post-harvest standards for tobacco, which specify temperatures between 27–30°C and humidity levels of 70–80. The fermentation process can be seen in Figure 1.

Figure 1. Tobacco Leaf Fermentation by CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

b. Tobacco Leaf Sorting

After the fermentation stage, the tobacco leaves undergo a manual sorting process to separate the stems from the leaf lamina. At CV Dwipa Nusantara Tobacco, this step involves four trained workers, each responsible for sorting around 10 to 15 bundles of tobacco daily. Every bundle typically contains 28 to 30 leaves. The workers carefully classify the leaves into two categories-high-quality leaves and damaged ones-to ensure that only premium materials continue to the next production stage. Sorting is a crucial step for maintaining consistent quality and meeting company standards.

The sorting process emphasizes selecting tobacco leaves that meet strict quality standards, such as maintaining a moisture content of about 12%, having a consistent brown color, and being free from mold, tears, or other defects. Through this process, the leaves are divided into two main categories: the high-quality leaf lamina, which is used as the core raw material for cigar production, and the midribs, which are typically regarded as waste. However, these midribs still hold economic potential since they can be sold for other uses, contributing to added value within the production system. This careful classification ensures that only premium

materials move forward to the next stages of production, maintaining product consistency and quality. Figures 2 and 3 visually depict the sorting stages and outcomes, underscoring the essential role of this process in standardizing cigar characteristics and reinforcing the company's dedication to producing high-quality cigars.

Figure 2. Sortasi Daun Tembakau CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

Figure 3. Tobacco Leaf Bones from CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

c. Blending (Peracikan)

The blending stage at CV Dwipa Nusantara Tobacco aims to create the filler mixture that forms the inner core of the cigar. Each cigar variant has a different filler composition to produce distinct aromas and flavor profiles. The company adjusts the blend depending on the specific type of cigar being manufactured. Therefore, blending is a crucial step to ensure that each product line carries its unique, predetermined characteristics.

Table 2. Presents the filler compositions used for the various cigar products produced by CV Dwipa Nusantara Tobacco.

No.	Cigar Product	Composition		
		Wrapper	**Binder**	**Filler**
1.	Joker Robusto	Traditional Besuki Na Oogst Tobacco	Besuki Tobacco	Blend of Selected Indonesian Tobaccos
2.	Joker Lonsdale	Besuki Tobacco	Connecticut Tobacco	Criollo and Vorstenlanden Tobacco
3.	Joker Connecticut	Indonesian Connecticut Tobacco	Indonesian Connecticut Tobacco	Connecticut, Vorstenlanden, and Besuki Tobacco Blend
4.	Johnny Short Robusto	Besuki Tobacco	Besuki Tobacco	Criollo and Besuki Tobacco
5.	Johnny Half Corona	Besuki Tobacco	Besuki Tobacco	Mixed Indonesian Tobacco Varieties

Source :CV. Dwipa Nusantara Tobacco, 2025

d. Weighing

The weighting stage involves measuring and adjusting the filler quantity based on the desired cigar size. At CV Dwipa Nusantara Tobacco, each cigar typically contains three to four filler leaves, one binder leaf, and one wrapper leaf. This ensures consistent shape and quality.

e. Bunching

The next process, bunching, combines the measured filler and binder using a rolling tool, producing a compact "bunch" that resembles a cocoon. This step is performed manually by skilled workers to maintain uniformity and precision in production.

Figure 4. Cigar Rolling Stage at CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

f. Wrapping

Wrapping is the process of covering the bunch with the wrapper leaf (dekblad). This step is also performed manually by rolling the wrapper around the bunch to achieve a smooth and uniform appearance. After wrapping, the cigar is trimmed and shaped using a specialized cutting tool to ensure it meets the desired length and diameter specifications. The purpose of the wrapping stage is to enhance the visual appeal and overall uniformity of the finished product.

g. Molding

The molding stage involves placing the wrapped bunch into a cigar mold. This step is crucial for maintaining the cigar's shape and preventing the filler from expanding after being wrapped. CV Dwipa Nusantara Tobacco uses molds with dimensions tailored to different cigar products, depending on customer orders. The use of molds ensures that each cigar has a consistent form as specified by the company. An example of the molding equipment is shown in Figure 5.

Figure 5. Cigar Printing Equipment CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

h. Drying

In the drying stage, completed cigars are placed in a designated storage area. The purpose of drying is to remove strong odors, reduce moisture, prevent pest development, and allow various tobacco scents to blend harmoniously. This process typically lasts for approximately three days. Figure 6 shows the drying storage used at CV Dwipa Nusantara Tobacco.

Figure 6. Cigar Storage Box for Drying by CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

i. Freezing

The cooling or freezing stage follows the drying process, where cigars are placed in a controlled low-temperature environment for sterilization and odor removal. This stage, lasting about two to three days, helps stabilize the aroma and ensures product hygiene before storage.

Figure 7. CV. Dwipa Nusantara Tobacco's Cigar Product Cooling Processing Plant

Source :CV. Dwipa Nusantara Tobacco, 2025

j. Aging

Aging is the longest storage phase before the product enters the market. During this stage, cigars are stored in a warehouse under controlled temperature conditions. The purpose of aging is to allow the various aromas in the cigar to mature and blend according to consumer preferences. Aging is a long-term process, typically lasting between three to six months. Figure 8 displays the aging process conducted at CV Dwipa Nusantara Tobacco.

Figure 8. Aging Stages of CV. Dwipa Nusantara Tobacco Cigars

Source :CV. Dwipa Nusantara Tobacco, 2025

k. Sorting (Sortasi)

Sorting at CV Dwipa Nusantara Tobacco occurs twice-initially during raw material processing and again at this final stage. In the second sorting phase, finished cigars are graded based on color uniformity and physical appearance. Defective cigars are separated to reduce the risk of product returns and prevent damaged products from reaching the market. Figure 4.9 shows the sorting activities for finished cigars.

Figure 9. Cigar Sorting at CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

l. Finishing

Finishing is the final stage of production, involving packaging and labeling. Each cigar is labeled with its product type and production date. CV Dwipa Nusantara Tobacco uses two types of packaging: wooden boxes for the Joker series and paper-based packaging for the Johnny series. Figure 10 presents the packaging used for both product lines.

Figure 10.Cigar Packaging Used by CV. Dwipa Nusantara Tobacco

Source :CV. Dwipa Nusantara Tobacco, 2025

3.2.2. Design Analysis at the Cigar Factory

Every manufacturing company bears full responsibility for ensuring that its products are safe and of acceptable quality before being released to the market. This principle is applied by CV. Dwipa Nusantara Tobacco Jember, a company specializing in the production of cigars. To maintain product safety, hygiene, and consistency, the company implements Good Manufacturing Practice (GMP) as a fundamental guideline for industrial operations. This practice is also in line with the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, which outlines several key aspects that must be fulfilled by manufacturing industries, including location and production environment, building requirements, sanitation facilities, machinery and equipment, and raw materials.

a. Location and Production Environment

The location of CV. Dwipa Nusantara Tobacco is strategic and easily accessible for both two-wheeled and four-wheeled vehicles. However, the road in front of the factory is partly damaged due to the frequent passage of heavy trucks and agricultural machinery, as the factory is situated in an area that also serves as an access route to farmland and plantations. Despite this, the factory's interior and exterior environments are relatively clean, organized, and properly maintained, although improvements in layout arrangement could further enhance workflow efficiency.

The front area of the factory is paved with concrete to prevent water accumulation. Nevertheless, during heavy rainfall, puddles may still occur. The factory environment remains well-kept thanks to the workers' consistent attention to cleanliness, especially in the production area, to create a safe and comfortable workplace. The location meets GMP standards by being free from pollution, with adequate drainage and environmental management, as regulated by the (Owusu-Apenten & Vieira, 2022).

b. Building

The factory buildings at CV. Dwipa Nusantara Tobacco meet the standard design criteria for tobacco processing industries. The company has two main buildings: the main production building measuring approximately 6×10 meters and the raw material storage building measuring 6×9 meters. The storage building is separated from the main production area and was previously a residential house. This separation requires strict supervision during the transportation of raw materials to prevent contamination or damage.

c. Design and Layout

The building layout follows the proper sequence of the cigar production process in accordance with GMP principles. The raw material reception area is divided into several rooms for sorting and fermenting tobacco leaves, equipped with containers and covers for the fermentation process. The production area does not have permanent partitions, creating a more spacious and efficient workspace, while the aging room has a separate section to maintain temperature control for finished cigars.

d. Building Structure

- Floors: The production floor is waterproof, smooth, and easy to clean. It is made of ceramic material that meets GMP standards and facilitates sanitation.
- Walls: The walls in the production room are clean and crack-free, while those in the raw material storage area show some peeling due to humidity, which can potentially affect the quality of stored leaves.
- Roof: The roof structure is strong, leak-resistant, and easy to clean from dust and cobwebs, meeting hygiene standards for tobacco industries.
- Doors: The factory uses waterproof metal and glass doors that can be easily opened or slid for smooth worker movement and safety during emergencies.
- Windows and Ventilation: The production area has no windows but is equipped with five ceiling ventilations

for air circulation. The storage area has two windows and top ventilations to ensure adequate airflow and ease of cleaning.

- Lighting: The production and storage areas are well-lit, with 11 lamps installed in the main factory and 9 lamps in the storage area. Lights in essential areas, such as the aging room and toilets, remain on continuously.

e. Sanitation Facilities

Sanitation facilities are provided to support hygiene and safety. The water supply system uses a water tank connected to pipes sourced from groundwater for cleaning and sanitation. Waste management focuses mainly on solid waste, such as damaged leaves and midribs, which are either sold to farmers for briquette production or reused as fillers for low-grade cigars. Cleaning facilities include toilets near the production and storage areas, though handwashing sinks are not yet available. The factory has one toilet in the production area and another in the storage area, both cleaned weekly.

f. Machinery and Equipment

The production process is largely manual, utilizing tools such as digital scales, scissors, cigar molds, and a humidor machine for temperature control. Equipment is cleaned after every use, and the humidor, maintained at 16–22°C, is wiped and sanitized every two weeks. All equipment meets technical standards, ensuring easy cleaning, durability, and prevention of contamination from oil, metal, or lubricants (Board, 2025).

g. Materials

The only material used in production is Na Oogst tobacco leaves without additives. Each cigar consists of three layers: the wrapper (dekblad), binder (omblad), and filler. The company sources raw materials from partner farmers, tobacco warehouses, or its own cultivation fields. The raw material meets the Indonesian National Standard (SNI) for cigar tobacco, with a moisture content of approximately 12%, measured using a moisture meter. The quality criteria for Na Oogst cigar tobacco are summarized in Table 3.

Table 3. Quality Requirements of Na Oogst Tobacco for Cigars

No	Description	Requirements		
		Wrapper	**Binder**	**Filler**
1	Moisture Content (%)	10–13%	10–13%	Max 13%
2	Ash Content (%)	Max. 17%	Max. 17%	Max. 17%
3	Silicate Ash	Max. 1.5%	Max. 1.5%	Max. 1.0%
4	K_2O (Potassium Oxide)	Max. 5.5%	Max. 5.5%	Max. 5.5%
5	CaO (Calcium Oxide)	Max. 7.0%	Max. 7.0%	Max. 7.0%
6	MgO (Magnesium Oxide)	Max. 7.0%	Max. 7.0%	Max. 1.7%
7	Chloride	Max. 1.7%	Max. 1.7%	Max. 1.7%
8	Nicotine	1–2%	1–2%	1–2.5%
9	Nitrogen	Max. 4%	Max. 4%	Max. 4%
10	Sugar	0.4–1.5%	0.4–1.5%	0.4–1.5%
11	Actual Coefficient	Max. 0.3%	Max. 0.3%	Max. 0.3%
12	Condition	Tobacco le		

Source: Indonesian National Standard (1989)

h. Process Control

To minimize the occurrence of products that fail to meet quality standards, strict preventive measures must be implemented throughout the production process. At CV. Dwipa Nusantara Tobacco, process control is conducted to ensure that every stage-starting from raw materials to the final product-meets company specifications. Process supervision involves setting detailed requirements for raw materials, composition, production, and distribution, followed by consistent implementation and review of the control system's effectiveness. Quality inspection focuses on the final product, including checks on shape, color, and diameter. The cigars

produced follow the parejo design, characterized by straight sides and a round or box shape. Tobacco leaves are graded by color-red (reddish brown, best quality), blue (greenish brown, containing chlorophyll), and yellow (greenish-yellow, unsuitable). Each batch is examined by the Quality Control (QC) team, which verifies conformity with company standards and records details such as product name, manufacturing date, production code, and batch quantity.

Raw Material Control is also crucial for ensuring production continuity and efficiency. All raw materials undergo sorting before storage to confirm suitability. Daily monitoring is required to prevent damage, especially during the critical fermentation stage. The ideal raw material should have approximately 12% moisture content, elastic and rounded leaf shape, and a reddish-brown color.

i. Final Product

The finished products of CV. Dwipa Nusantara Tobacco are cigars of varying sizes and compositions. Before distribution, cigars undergo final sorting to ensure uniformity in color, length, and diameter, as documented in Table 4.

Table 4. Final Cigar Products of CV. Dwipa Nusantara Tobacco

No	Cigar Product	Composition	Length (P)	Diameter (D)
		Wrapper	**Binder**	**Filler**
1	Joker Robusto	Besuki Na Oogst Traditional Tobacco	Besuki Tobacco	Mixed Indonesian Tobacco
2	Joker Lonsdale	Besuki Tobacco	Connecticut Tobacco	Criollo, Vorstenlanden Tobacco
3	Joker Connecticut	Indonesian Connecticut Tobacco	Indonesian Connecticut Tobacco	Connecticut, Vorstenlanden, Besuki Tobacco
4	Johnny Short Robusto	Besuki Tobacco	Besuki Tobacco	Criollo, Besuki Tobacco
5	Johnny Half Corona	Besuki Tobacco	Besuki Tobacco	Mixed Indonesian Tobacco

Source: CV. Dwipa Nusantara Tobacco, 2025

j. Laboratory, Employees, and GMP Implementation at CV. Dwipa Nusantara Tobacco

CV. Dwipa Nusantara Tobacco does not have its own laboratory. Since cigars require nicotine level testing, samples should be analyzed in government laboratories in accordance with SNI 01-0393-1989, yet this test has not been conducted. The company employs 37 workers, divided into several roles including raw material handling, production, agronomy, management, logistics, and administration. Workers follow the company's SOP, although handwashing facilities are not yet provided. Employees must wash their hands before and after production, refrain from wearing jewelry, and maintain personal hygiene.

Cigars are packaged in wooden or thick paper boxes, depending on the series, each with different quantities. Labels include brand and producer information but do not yet display nicotine content. Products undergo a three-stage storage process-drying, cooling, and aging-at controlled temperatures (18–27°C) and humidity (70–80%). Routine sanitation includes sweeping, mopping, and cleaning equipment daily. Raw materials are transported using open trucks, while finished cigars are shipped in closed vehicles to prevent contamination.

Documentation covers all production stages, though product recall data are incomplete. Training on GMP and hygiene for employees has not yet been conducted. Product recalls occur when defects appear, such as cracked cigars or mold issues. Implementation of GMP follows Minister of Industry Regulation No. 75/M-IND/PER/7/2010, audited every two years by the Jember Health Office.

3.2.3. Evaluation of the GMP Design Checklist for the Cigar Factory

The evaluation of Good Manufacturing Practice (GMP) implementation at CV. Dwipa Nusantara Tobacco was conducted based on (BPOM, 2020) and (Board, 2025). The results

identified three non-conformities in production facilities, as shown below:

Table 5. GMP Design Checklist Evaluation Results

No	Inspected Element	Type of Non-Conformity
1	The handwashing facilities are not properly located, lack running water, soap, towels or hand dryers, trash bins, and are insufficient in number.	Minor
2	The company has no in-house laboratory and has not utilized certified government or private laboratories.	Major
3	The product label does not comply with Minister of Health Regulation No. 28/2013 on health warnings and information for tobacco product packaging.	Major

Source: GMP Design Checklist Data, 2025

Based on the GMP checklist evaluation, CV. Dwipa Nusantara Tobacco recorded one minor and two major non-conformities. According to (Farinsyah et al., 2025) and (BPOM, 2020) assessment criteria, this places the company in Level II compliance, as summarized below:

Table 6. GMP Compliance Level

No	Level	Minor	Major	Serious	Critical
1	Level II	1	2	0	0

Source: GMP Assessment Data, 2025

his classification means that while the company meets basic GMP requirements, it still has several non-conformities that may affect product quality and safety control efficiency.

a. Minor Non-Conformity (Corrective Action Recommended)

The minor non-conformity involves inadequate handwashing facilities. The absence of running water, soap, and hand-drying equipment may compromise product hygiene. Restrooms also lack tissues or dryers. These issues could indirectly affect product quality due to insufficient sanitation for workers involved in production.

b. Major Non-Conformities (Improvement Required)

Major issues include the absence of laboratory testing for nicotine content and incomplete product labeling. The company has not yet conducted nicotine analysis nor displayed nicotine information on packaging, which is essential to comply with health labeling regulations for tobacco products by (Cunningham, 2022 and Moodie et al., 2022).

3.2.4. Quality Improvement Efforts for Cigar Production

Although CV. Dwipa Nusantara Tobacco satisfies most GMP establishment requirements, improvements are still needed to achieve full compliance. The company, being at Level II, must address the identified non-conformities to ensure long-term product quality and safety.

Table 7. Recommendations for GMP Improvement

No	Inspected Element	Non-Conformity	Recommended Action
1	Handwashing facilities are incomplete and improperly located.	Minor	Install handwashing stations equipped with running water, soap, and hand dryers or tissues to maintain worker hygiene.
2	Lack of laboratory testing for nicotine levels.	Major	Conduct certified laboratory testing to determine nicotine content in the cigar products.
3	Product label lacks nicotine information.	Major	Update product packaging to include nicotine content and health warnings per Minister of Health Regulation No. 28/2013.

Source: GMP Improvement Recommendation Data, 2025

To enhance quality, the company should provide sufficient handwashing and sanitation facilities, ideally one per ten workers, with running water, soap, and drying equipment as required by (Garg et al., 2021; and Organization, 2024). Proper facility design ensures hygiene and minimizes contamination risks.

Additionally, laboratory nicotine testing must be performed, and packaging should clearly state nicotine content and composition to align with Minister of Health Regulation No. 28/2013. This regulation mandates that all tobacco-based products meet national standards to protect consumers from addictive substances. Implementing these corrective measures will strengthen GMP compliance, enhance product safety, and uphold the reputation of CV. Dwipa Nusantara Tobacco in the cigar manufacturing industry.

4. Conclusion

Based on the analysis of Good Manufacturing Practice (GMP) implementation at CV. Dwipa Nusantara Tobacco Jember, it can be concluded that the factory is categorized as Level II according to the GMP checklist evaluation. This indicates the presence of both minor and major non-conformities-the minor affecting product quality, and the major influencing product safety control efficiency. Improvement efforts should focus on providing adequate handwashing facilities to enhance employee sanitation, conducting laboratory tests to determine the nicotine content in cigar products, and updating product labeling to include nicotine information in accordance with health and safety regulations.

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