Indonesia International Institute for Life Sciences

ENRICHMENT PROGRAM REPORT

PRODUCT INNOVATION AND APPLICATION INTERNSHIP IN THE SAVORY INGREDIENTS (CHEESE) DEPARTMENT OF A FLAVOR AND FRAGRANCE COMPANY

STUDY PROGRAM
Food Science & Nutrition

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< Title Page for School of Life Sciences>

INTERNSHIP REPORT

PRODUCT INNOVATION AND APPLICATION INTERNSHIP IN THE SAVORY INGREDIENTS (CHEESE) DEPARTMENT OF A FLAVOR AND FRAGRANCE COMPANY

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Submitted to

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Food Science and Nutrition

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Jakarta, Indonesia
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Approval Page

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We hereby declare that this EP project is from student's own work. The EP Report has been read and presented to i3L's Examination Committee. The EP has been found to be satisfactory and accepted as part of the requirements needed to obtain an i3L bachelor's degree.

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I, Audrey Laurelia Kwa, do herewith declare that the material contained in my EP Report entitled:

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ABSTRACT

This report explained in detail about the six-month internship program at PT. XYZ, a flavor and fragrance company that is dedicated to manufacturing and distributing different food ingredients. The author was placed under the Innovation and Application of Savory Ingredients for Cheese department, where various tasks of sample preparation and product innovation were appointed. Although there was not a specific research project during the enrichment program, through the tasks given, the author was able to learn different key points of product innovation and were able to identify the milestones in personal development. During the internship, a few challenges were faced, such as the difficulty to adapt to a fast-paced work environment and the unfamiliarity with the laboratory instruments. However, through resilience and the help of the supervisor and other mentors, these challenges were favorably solved. Some recommendations were mentioned in the report, in which some of them were ensuring personal engagement with the daily activities, taking initiatives and showing creativity, as well as seizing the opportunity to build valuable networks.

Keywords: *cheese department, flavors, internship, product development, product innovation*

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I. INTRODUCTION

1.1. A brief history

PT. XYZ is a research-oriented and innovation-driven company that emphasizes sustainable practices for its business. They manufacture many natural products, ranging from Indonesian botanicals to other naturals. Their broad range of products includes aroma ingredients (e.g. essential oils, aromatherapy ingredients, and proprietary blends), taste and wellness products (e.g. botanical extracts), and food and savory solutions (e.g. seasonings, cheese powders, dessert premixes), as well as providing distribution for specialty ingredients (e.g. hydrocolloid, natural colorants, and dairy ingredients).

PT. XYZ was founded in 1968 with its creations and innovative solutions for producing natural ingredients. It initially focused on the distillation and export of clove leaf oil. This company extended its range of products by producing clove leaf oil derivatives, such as eugenol. The manufacturing of natural botanical ingredients, such as cocoa, coffee, and tea also aided in the advancement of PT. XYZ's operations. Also being one of the very first companies that successfully gained the ISO 9002:1994 certification as a recognition for its quality management system, its management and operational procedures are continuously improved according to the latest standards. The company's scope of business continues to grow significantly over the years due to establishing a new factory, new business sectors, and new technological innovations.

1.2. Vision and mission

1.2.1. Vision

To be a regional leader in ingredients for the food, flavor, and fragrance industry through innovation, efficiency, and sustainable business practices

1.2.2. Mission

Create innovative solutions with sustainable natural-based ingredients for life.

1.3. The main activity

Being a significant figure in the industry of flavor and food ingredients, PT. XYZ established its capability for its expertise in the field. The company has a few active subsidiaries that are managing different sectors PT. XYZ is in, such as the aroma ingredients, food ingredients, and the sales and marketing. However, as the company is privately owned, the details of financial ventures and exact figures of its operations, such as the number of employees and annual revenue, are not disclosed to the public. Despite that, there are a few key indicators that might represent the company's global presence and market position.

1.3.1. PT. XYZ's market reach

PT. XYZ's global reach is exhibited in its establishment of offices in a few countries, including Indonesia, Malaysia, Singapore, and Tanzania. In Indonesia, the company focuses on various

aspects of business, which is reflected in the availability of different business sites, such as the headquarters, which is located in Tanah Abang, Central Jakarta. Other locations of the company in Indonesia are the sales offices in Semarang and Surabaya, as well as plants in Central Java, West Java, and Ungaran. Apart from its renowned reputation in Indonesia, PT. XYZ also has a strong international footprint through exporting its products to numerous countries across Asia, Europe, North America, and beyond. Through a network of partners and distributors, the company has built a reputation for reliability, quality, and creativity in the food and beverage sector.

The company serves a broad range of customers and clients, ranging from food and beverage manufacturers, restaurants, specialty food brands, and food developers. Due to its deep understanding and commitment to flavor profile development and client satisfaction, the company is able to make itself stand out among competitors and gain recognition and trust from both existing customers and potential clients.

1.3.2. PT. XYZ's products and services

As has been known among the food sector, PT. XYZ offers a wide range of products and services. The products may include natural oils, flavoring materials, spices, seasoning, and extracts to cater to the aforementioned types of clientele. Considering this broad range of products and the types of clients the company has, PT. XYZ has significant production, research, and development capabilities. In relation to the service the company provides, it invests heavily in research and development to continue meeting its mission of bringing solutions regarding flavor profiles and food production efficiency. Additionally, due to the industry's demands and PT. XYZ's scale of operations, the number of employees of the company could potentially range from hundreds to over a thousand skilled employees.

1.3.3. Innovation and Application departments

The innovation and application acts as one of the main building blocks of the company. This division creates and establishes different formulations that utilize the existing manufactured materials into final products, assisting numerous companies and clients to be able to make successful products that can perform well in the market. The company was able to be more focused on providing complete solutions to construct the product's finished items by further dividing the innovation and application divisions into sweet and savory applications. The Innovation and Application department is further divided into several departments (see **Figure 1.**), such as the Savory Ingredients. The products manufactured by the department of Savory Ingredients may include seasonings and sauces. Additionally, the Sweet Products Innovation and Application department is managed under another subsidiary of PT. XYZ that is different from that of its savory counterpart. The focus of the Sweet Products department may also include seasonings and sauces, but ice cream premix, syrups, and powder-served drinks are also their basis of operations.

1.4. Organizational structure

As displayed in **Figure 1.**, the Commercial team is immediately under the supervision of the President Director. This Commercial division is divided into several departments, including Innovation and

Application for Savory Ingredients, Innovation and Application for Food Service, Sales Manager for Coffee Solution, Business Development, and Sales for Food Service. These departments are then further divided into several subcategories.

To explain in a more detailed manner, the President Director is responsible for overseeing the overall operations of each of the divisions under commercial control. The Commercial teams are also obliged to report and refer to the President Director for their activities. The President Director has to show visionary and open leadership, management of all divisions, as well as ensuring that the activities of the Commercial team stays aligned with the company's goals and objectives.

As can be seen in **Figure 1.**, the Innovation and Applications department is further divided into two subcategories, which are the Savory Ingredients and Food Service. The Department of Savory Ingredients is more focused on the production of savory goods in the business-to-business market. Here, the products constructed are usually utilized or modified further by their clients to create products that will eventually enter the market. On the other hand, the responsibilities of the Department of Food Service is more centered around the businesses of quick-service restaurants and other food chain businesses.

The Business Development team plays an important role in the expansion of the company. This team specializes in working alongside other divisions to reach the desired goals. Their main responsibility includes identifying new business opportunities and helping the company expand its footprint in the market. Their roles typically include conducting market research, managing client relationships, developing business plans, and collaborating with other teams to ensure alignment between business development and sales efforts, as well as division performance tracking.

In the case of the Sales Manager of Coffee Solution, this department focuses on a brand of coffee machines and solutions for different customers, such as offices and clients that may need various coffee beverages. Although the brand of the coffee machines and solutions are requested to remain confidential, it was stated that this department's operations mainly revolve around the selling and marketing of that particular brand. This may include sales process management, continuous search of potential customers, negotiation, and closing deals. Similar to the job description and responsibilities of the sales for coffee solution, the last department is Sales for Food Service. As has been mentioned earlier, whenever food service is involved, this company focuses on clients that are quick-service restaurants and food chain businesses. Hence, the sales for food service will most likely focus on the management of clients around those types of businesses.

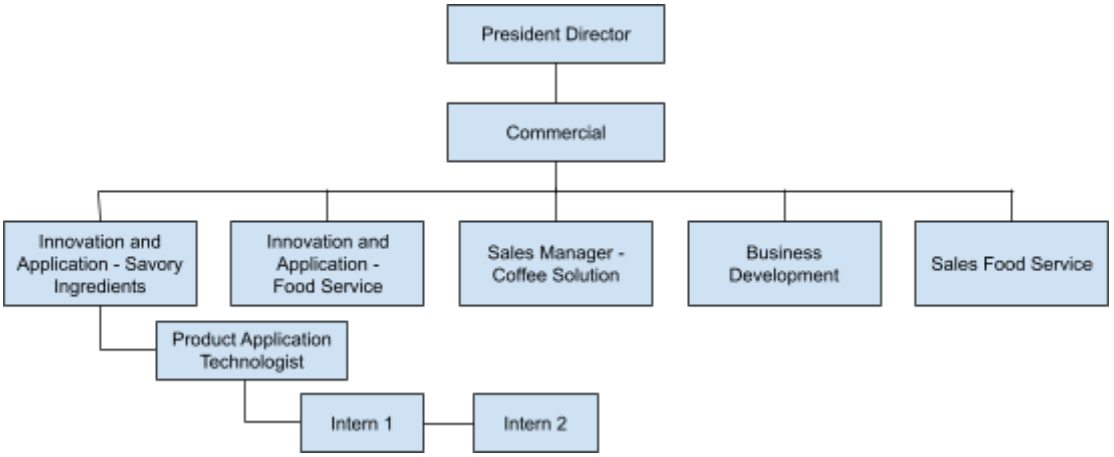

Figure 1. Organizational structure of PT. XYZ

1.5. The student's unit or department

Under the Department of Innovation and Application for Savory Ingredients, more specifically regarding products of cheese, the author's work centers on the efficient, appropriate, and strategic application of raw materials in cheese products. This may include starches, emulsifiers, and flavoring materials which are applied to make cheese products such as powder, processed cheese, cream fillings, cream coating, and cheese sauces. The author's responsibilities and duties include assisting the application of ingredients, conducting product innovation, and sample preparation. The development process consists of several steps that involve the adjustment or modification of ingredients until the desired sensorial properties are achieved.

I. INTERNSHIP ACTIVITIES

2.1. Working Conditions

Throughout the enrichment program period in PT. XYZ, all activities conducted in the company were conducted off-site and on the company. The author's work placement was located in Tanah Abang, Jakarta Pusat, where the internship started from July 2024 to December 2024. The working schedule was almost always regular from 8 AM to 5 PM. As the author's internship is specifically in the Department of Innovation and Application for Savory Ingredients in Cheese Products, the daily activities carried out also revolved around the mentioned food category. The team consisted of two supervisors and two interns, who typically worked in the savory laboratory. At one time, the team could handle multiple projects at once, hence the company could fall under the classification of a fast-paced company.

2.2. Internship Tasks and Experience Gained

The author was assigned to assist the daily activities of the Cheese Department during the six-month internship program. The typical daily activities can be classified as follows.

2.2.1. Sample Preparation

Different types of products were frequently produced daily, which may include cheese powders, cheese sauces, cream fillings, and processed cheese. In the process of sample preparation, the author worked collaboratively with the supervisor and fellow intern in the department to produce the samples in an accurate and timely manner. These samples were then processed according to the respective purposes, such as to be sent to other departments (e.g. Marketing division or Quality Control division) or to be sent to different clients as samples. Customarily, the marketing department or quality control division is obliged to release a sample request form to the research and development department, in which these sample requests are then granted and the samples can be produced in the laboratory.

2.2.2. Product Application Development

To create a desirable final product, a chain of development processes was done by the Cheese department. More often than not, the clients of the company would already have a benchmark product that can be used as a reference by the department to replicate or create a product that is as similar as possible to the benchmark. This benchmark was continuously evaluated to identify the key components and characteristics which could be applied to the final product.

The author consistently participated in the product innovation, application, and development process through making product bases, conducting calculations necessary to produce the product, and refining the ingredients composition. For all of the products, the author contributed to assisting the supervisors and main team members to explore different ingredients and compositions. Different types of projects may include new product development, benchmarking, cost reduction, transitioning between natural and synthetic coloring materials, and other profile adjustments of food products.

2.2.3. Sensory Analysis

As has been mentioned earlier, the product innovation and development process may include the formulation of new products based on a certain benchmark given by the clients. After a series of flavor profile development or appearance matching, it is ideal for the product to have the desirable characteristics. To know whether the product is already as similar as possible to the benchmark or not, a triangle test is often conducted at the end of the development process. The main purpose of the sensory analysis was to draw a conclusion if the prototype is significantly different from the benchmark. The triangle test was usually prepared for ten to twenty panelists.

2.2.4. Arrangement of Laboratory

The start of the author's internship overlapped with the establishment of a new laboratory facility in the company. Therefore, due to the newly renovated and transferred materials from the old laboratory to the new one, the classification of ingredients and the organization of the system of the new laboratory was not established yet. Along with the new laboratory team members, the authors collaborated to lay the foundations of the operations. Additionally, the author also helped to initiate the organization of different materials, such as ensuring the proper classification of flavors and ingredients.

2.2.5. Applied 5R

The abbreviation "5R" stands for *Ringkas, Rapi, Resik, Rawat, dan Rajin*. As a part of the operational establishment of the new laboratory facility, the author was assigned to create a raw materials classification system and create labels for the storage of the ingredients. On top of that, the author was also expected to always maintain the cleanliness of the laboratory and ensure all the raw materials and instruments were put back to their initial placement after usage.

2.3. Theory and Practice Comparison

Throughout the internship, the author has successfully applied numerous skills and knowledge learned during the academic learning process in university. Some daily activities that need the application of knowledge learned from university may include conducting sensory evaluation, utilizing different laboratory equipment (e.g. pH meter, micropipette, and Brix meter). Additionally, the author also got the chance to apply the fundamental theoretical knowledge regarding food ingredients, such as in the field of food chemistry and new product development. Along with the application of knowledge, the author also obtained various new skills and knowledge from the internship. Through the availability of laboratory-scale instruments for the food industry, the author was able to learn to operate those equipment, such as roll refiner, homomixer, and wafer maker. Considering the frequency of usage, the author has been familiar with the procedures of making different types of products.

2.4. Difficulties Encountered

In the very first month of the internship, the author faced several difficulties and challenges due to the demanding work pace and unfamiliar environment. Some foreign industrial and business terminologies were often mentioned by the company's employees, hence the author had to take initiatives to quickly adapt to the existing culture of the company. Due to unfamiliarity with the

machines, such as the roll refiner and thermomix, the time taken to operate the machines were initially longer. However, as time passes by, the author has gotten more accustomed to the operations of different machines available in the laboratory. Through the learning process in the internship, the author made sure to take notes when there was new information gained and always tried to ask questions to confirm any confusion. The assistance and helpfulness of the company employees also greatly helped the author to quickly adapt and learn the company culture and work habits.

II. PROJECT DESCRIPTION

3.1. Introduction

Product innovation is essential in the food industry as it is the key to creating products that are fresh and innovative in the market. In order to find which types of products are relevant, it is necessary for companies to conduct market research to discover economic opportunities for growth. Identifying appropriate product types can lead to a higher competitive advantage, consumer satisfaction, and profitability (Commonwealth of Australia, 2024). Other than considering the entry of a new product to the market, product innovation is a starting point for the continuous development of an existing product as well. Therefore, product innovation does not only ensure the relevance of a certain product when it newly enters the market but also ensures that the product stays relevant in the market for a long time (Earle, 1997).

As the author did not have any research project during the enrichment program, the author mainly focused on assisting the process of product innovation and development. Customarily, the project initially arrived through the marketing team before being forwarded to the research and development team, or in the author's case, more specifically the cheese department. Discussion then took place among the relevant departments to communicate the clients needs and different perspectives on the product profiles and characteristics. It was then followed with formulation establishment by the key developers. A series of developments then happened, accompanied by numerous evaluations done by the relevant departments until the desirable product properties were achieved (See section 2.2.2.). After the product development has been completed, the project would be marked as finished and submitted to the respective clients. Depending on the clients' needs, the evaluations done by the clients could lead to reworking with the purpose of further product improvement. Additionally, there could be multiple projects that were worked on simultaneously by the cheese department.

3.2. Objective

The company's objective in product innovation is to achieve the client's satisfaction and approval, which eventually leads to the adoption and release of the company's application product to the market.

3.3. Project types

As has been aforementioned, the PT. XYZ is considered to have a well-built reputation in the field of food and beverage production. It has successfully proven its capability to produce quality products that can be released to the markets. It was a frequent occurrence that the company provided the employees with the market products whose formulations were originated by PT. XYZ. Through the market product evaluation, they were able to conduct further evaluation about the product to improve their performance. With that being said, there were great quantities of market products that were the creations of PT. XYZ, along with the ongoing projects that were being worked on and would be released in the future.

Throughout the internship, the author was tasked with producing different types of cheese products and samples. To explain in a more detailed manner regarding the different types of samples, it is important to acknowledge that there were different raw materials, methods, and specific notes for each product to ensure efficient manufacturing, which led to a good quality end product or sample. Detailed explanations for the products can be found below (see **Appendix 3.** for visual representations).

3.3.1. Cheese powder

Cheese powders are often produced to be used as it is by the clients or it can also be used to enhance the profiles of other products, such as sauces or coatings. Some examples of cheese powders that were often made were cheddar cheese powders, parmesan cheese powders, and yogurt cheese powders. In order to make good-quality cheese powders, the author needed to ensure that the flavoring materials were equally distributed throughout the product and the colors were plated optimally to the whole powder. This was done to ensure the powder has an optimum flavor release and a desirable appearance.

In the production process of cheese powders, multiple varieties of powdered ingredients were applied to produce a final product of cheese powder. For instance, maltodextrin was often used as a filler in cheese powders due to its tasteless properties. Additionally, maltodextrin is considered to be cost-effective, highly soluble, and has a low hygroscopicity. These properties allow maltodextrin to be a valuable ingredient in cheese powders, considering cheese powders are often utilized to improve the profile and mouthfeel of different food products (Turk-Gul et al., 2023).

It was also not a rare occurrence to have liquid flavoring materials or colorants to be incorporated into cheese powders. In the case of liquid flavoring materials, these flavors can be first plated to salt or monosodium glutamate to ensure that the flavors are sufficiently distributed throughout the powder particles before incorporating other ingredients to the mixture. This helps the production of cheese powders to not lead to the formation of clumps. Additionally, if the liquid flavoring materials are not plated well enough, the flavoring materials might not be incorporated into the powder thoroughly. This may happen if the flavoring materials are left behind on the walls of the container that was used for the production or when the powder is being passed through a sieve.

Similar to liquid flavoring materials, it was also essential for liquid colorants to be plated to the powder. However, it was important to be aware of the colorant's properties. For example, different colorants may have different solubility (i.e. water-soluble and oil-soluble). In the case of water-soluble colorants, they could be plated to salt or monosodium glutamate, whereas oil-soluble and oleoresins need to be plated to fatty materials, such as whole milk powder or fat powders.

3.3.2. Cheese sauces

Throughout the author’s period of internship, the Cheese department continuously tried to provide numerous variations to their cheese sauces products. Products such as mac and cheese

sauces, garlic parmesan sauces, and truffle cheese sauces were just a few examples of their long-list of available formulations. These sauces' applications also varied, ranging from the application of dipping sauces to the application of sauces for burgers. The department also constantly sought to improve the stability of their cheese sauce products. This attempt was reflected in the tests of different methods for cheese sauce production. In the laboratory, cheese sauces were made using a thermomix. Initially, the process of cheese sauce making was as follows: dry mixing of the ingredients, incorporation of oil, incorporation of acid without any heat before finally heating the sauce at 90^{o}C for 15 minutes.

However, after several changes, the final procedure of producing cheese sauces started with dry mixing the ingredients and mixing it with water inside the thermomix under a controlled speed until all the water-soluble materials had dissolved. It was then followed by heating the mixture until 65^{o}C to activate the starch inside the sauces. According to Kadam et al. (2015), starch gelatinization will occur at a temperature ranging from 60-80^{o}C and this is when the starch granules will increase in size and absorb water at a higher rate. A study has shown the structural changes to the starch induced by heat treatment might improve the stability of emulsion (Liu et al., 2018). Therefore, it could be concluded that the main objectives of the production of cheese sauces include achieving stability of the emulsion, providing different variations of sauces, as well as ensuring the product's overall profile was desirable and acceptable.

3.3.3. Cream Filling

This product is applicable to numerous food applications in the market. During the internship, the author got the opportunity to conduct the application of cream fillings in crackers and as dipping cream. Some examples of the cream fillings made include cinnamon cream cheese dipping cream, sweet cheddar twist, and salty cheese filling. In the production of cream filling, two types of fats were used, which are shortening and palm oil. The ratio between these two ingredients was often adjusted and modified depending on the desired flowability of the product. The melting point of regular shortenings were stated to range from 40-46^{o}C (Sumartini, 2020), whereas the melting point of palm oil is at a cooler temperature of 35^{o}C. When a more runny cream filling is desirable, the ratio of palm oil to shortening will be higher.

The production of cream filling involves the use of a roll refiner. The machine used in the laboratory has three smooth rollers, each of them positioned right next to each other. In the cream filling refining process, the mixture of cream filling will be passed through the smooth rollers. For cream fillings to be deemed as desirable, the product has to have a smooth mouthfeel, equal flavor distribution, and appropriate consistency. Hence, the use of roll refiner is to ensure equal particle distribution and to decrease the particle sizes of the powders. As the ingredients of the cream filling might include gritty and coarse powder particles, the roll refiner is utilized to improve the mouthfeel and smoothness of the cream filling.

3.3.4. Processed cheese

Processed cheese is a term for a product that utilizes real cheese and other food ingredients, such as emulsifiers, colorants, water, and oil. Some good characteristics of a processed cheese include having a firm structure, smooth texture, and smooth surface. Along with the increase of

consumer's interest in purchasing processed cheese, there are different types of processed cheese that can be found in the market, such as spreads, slices, and cubes (Riandani & Irfan, 2022).

In making processed cheese, all the ingredients were mixed together under a controlled speed in the thermomix. This process was maintained until the texture of the mixture was smooth and not gritty or sandy. This is an important step to ensure that the final product is desirable and the smoothness of the processed cheese can also determine the flavor release.

According to Riandani and Irfan (2022), a few of common ingredients used in processed cheese may include emulsifying salts, acidity regulators, and preservatives. The emulsifying salts used are usually trisodium citrate, disodium phosphate, and sodium hexametaphosphate. These compounds are used to aid the homogenization between the oil and water components. An acidity regulator that is often used in the making of processed cheese is lactic acid. The addition of an acidity regulator is an essential step as it is necessary to control the pH of the product. Additionally, the common preservatives added to processed cheese are potassium sorbate and nissin.

3.4. Conclusion and recommendations

The author has gained valuable knowledge and experience through the work assigned during the internship. With the different projects of making cheese powders, sauces, cream fillings, and processed cheese, the author is considered to be more acquainted with the operations of the company and has gotten the experience of the overall process of product development in the food industry. New information about food ingredients, food additives, and processings have also been gained and would be a significant aid to the author's future work experience.

Recommendations for future internship experiences may include attempting to explore different laboratory instruments, such as deepening the knowledge regarding beverage making or confectionery products production, outside the realm of cheese products. It was also important to pay more attention and be more detail-oriented when working on products' formulations to avoid preventable mistakes. Other than that, investigating and focusing on a single project during the internship may help to strengthen the knowledge of the products inside the company in a deeper manner.

III. SELF REFLECTION

A variety of new skills have been gained through the six-month internship at PT. XYZ. Utilizing different types of laboratory equipment (e.g. thermomix and roll refiner) was often tasked to the author on a daily basis, further improving the author's familiarity with the routine of production of different products. Every once in a while, the author was also given the opportunity to aid the work of the Sweet Products Innovation and Application department, hence widening the scope of experience the author had over the course of the internship. In the process of product innovation, the author was required to conduct different calculations that were used to modify the product bases to achieve the desired profile. This enhanced the author's insight about the properties of the products and what was required to be done to achieve the objective of product innovation. Through working closely with the supervisors and other employees at PT. XYZ, the author got the opportunity to first-hand experience the operations and work culture of the food industry, which could be a valuable asset in future employment interests and career paths.

The author had the chance to show different self-qualities and strengths which allowed the author to contribute to the daily operations of the company. It was a gratifying experience for the author to be able to receive trust and reliance from the colleagues during the internship. The qualities that may help enhance the internship experience may include being able to do multiple tasks in a timely and accurate manner. This was an especially important quality to have during the internship considering the fast-paced nature of the company. Other than that, qualities that may show throughout the internship include being able to communicate clearly, collaborative abilities, and being detail-oriented. Although the internship experience was overall pleasant and amicable, the journey of internship had its hardships from time to time. It was initially challenging to adapt to a new work environment, especially when PT. XYZ was known for being a demanding and fast-paced environment. At times, the author's self-criticism, lack of confidence, and difficulties of asking for help might get in the way of experiencing the internship to the fullest. Fortunately, the warm and kind atmosphere of the company greatly helped the author to be more comfortable.

The success of the internship has been greatly affected by the three core i3L values of honesty, grit, and role-modeling. These values enabled the author to maintain moral standards in all undertakings, exhibit positive work attitude, and overcome obstacles with resilience. In addition to these values, the author was able to use knowledge in a variety of fields, such as food additives, flavor chemistry, and new product development, on the account of the lessons taught in i3L's academic endeavors. The development of soft skills through i3L's BRIGHT sessions also improved the author's capacity to flourish in a fast-paced workplace. The author will always hold their internship experience close to their heart, from the very first product created to the very last.

IV. CONCLUSION AND RECOMMENDATION

The six-month internship was conducted at PT. XYZ as a part of the enrichment program fulfillment has successfully helped solidify the author's knowledge and skills relevant to the food industry. With the identity of PT. XYZ as a reputable company in the field of flavor and fragrances, the author got the opportunity to learn numerous skills and knowledge regarding food additives, flavor chemistry, and new product development. Working in the Cheese department, various daily tasks were given, such as producing cheese powders, sauces, cream fillings, and processed cheese. As time passed by, the author had become more familiar with the operations of the company and was able to be more comfortable in providing assistance to the product innovation process in the department. Other than sample preparation, tasks such as assisting in product development, sensory evaluation, and the arrangement of laboratory equipment were also given.

By providing a real-world application of academic information and encouraging a rise in the technical skills, the PT XYZ internship was a significant milestone in the author's learning process. The author gained insights into market trends and managed to hone different soft skills, such as collaborative and time management skills. The author's connection also consequentially grew from a collaborative environment, which promoted extensive professional networking. Through overcoming obstacles and adjusting to a fast-paced work environment, the internship encouraged substantial personal development. This event demonstrates its significant influence on both personal and professional endeavors.

In order to improve future internship opportunities and experience, it is recommended for students to try to be more actively engaged in their daily activities in their respective placements of internships. It is also beneficial for the interns to seize opportunities to build networks that may help them in the future when they are paving for their career paths. On the other hand, i3L may support their students for their internships through providing guidance in the forms of seminars or counselling for students' professional development and career building. Workplace ethics, leadership, and real-life knowledge applications can be the areas that are emphasized on.

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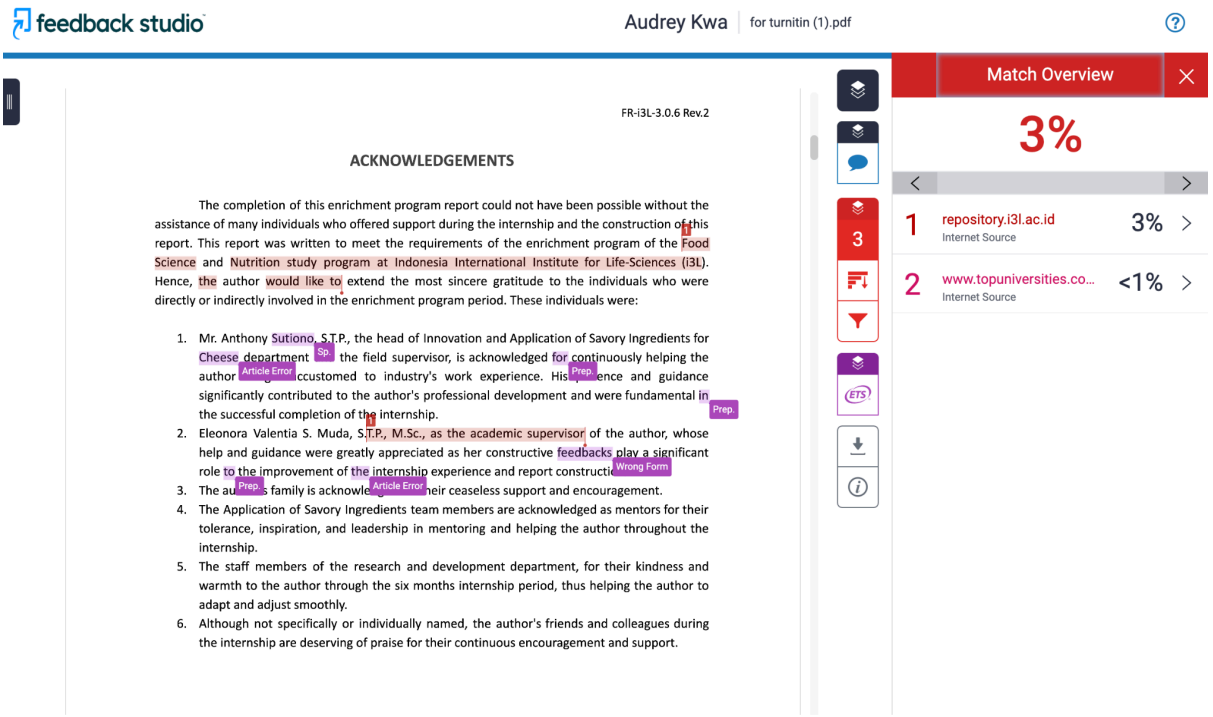
APPENDICES

Appendix 1. Turnitin results



Appendix 2. Public communication evidence

Appendix 3. Figures of final products

Cheese powders	Cheese sauces	Cream fillings	Processed cheese