



DIPLOMA INTERNATIONAL BUSINESS

DPB60163: BUSINESS PROJECT

TITLE: RICE BRAN ECO POT CLEAN DISHWASHING SOAP (RBEC)

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CONFIRMATION OF THE PROJECT

The project report title Rice Bran Eco Pot Clean Dishwashing Soap (RBEC) has been submitted, reviewed and verified as it fulfils the condition and requirement of the project writing as stipulated.

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We acknowledge this work is our own except that we have already explained to our source.

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We acknowledge that “the project above” and the intellectual property therein is the result of our original creation without taking or impersonating any intellectual property from the other parties.

We agree to release the “project” intellectual property to “the Polytechnic” to meet the requirement for awarding the **Diploma in International Business**.

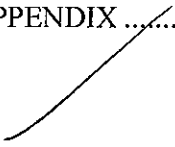
ABSTRACT

Dishwashing soap was an agent used to achieve hygiene in the cleaning environment. The vast majority of dishwashing agents sold over the counter typically contained some harsh chemicals that threatened life and affected well-being. The soap manufacturing sector in Malaysia dwindled downwards, and the food industries experienced an upsurge in detergent costs. Rice bran, therefore, served as a good natural abrasive in cleaning products and was usually dumped as waste. Unlike traditional dishwashing soap, which depended exclusively on non-renewable sources and often fell short by leaving residue or producing a strong smell, this project formulated Rice Bran Eco-Pot Clean (RBEC), a rice bran-based dishwashing soap. Thus, this project aimed to provide RBEC dishwashing soap for Ikan Bakar Malim Restaurant usage, to analyse the household perceptions on RBEC dishwashing soap, to predict the relationship between attitude, perceived behavioural control, subjective norms and behavioural intentions to use RBEC dishwashing soap. This project successfully provides RBEC and it tested its prowess as a sustainable alternative for Ikan Bakar Malim restaurant. The project took a significant step toward resolving major industry problems such as high detergent costs, insufficient workforce, and cleaning inefficiency by developing an inexpensive yet highly efficient soap that rinsed out easily. The quick washing process allowed for improved workforce productivity and a reduction in operational expenses. RBEC proved to be effective, paving the way for potential full commercial production for use in restaurants and the hospitality sector. The soap supported the cleaning process with lye, palm oil, and other essential materials such as fragrance, while rice bran was useful for cleaning. Testing was conducted at Ikan Bakar Malim Restaurant to establish its efficacy in grease and stain removal. It further promoted sustainability by utilizing agricultural waste, reducing chemical pollution, and introducing an economically viable product to the F&B market.

Research
method? !
Finding? !

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CHAPTER1

INTRODUCTION

BACKGROUND PROJECT

Dishwashing soap was a basic necessity used to clean eating and kitchen utensils, ensuring cleanliness and user health. Most dishwashing soaps on the market contained synthetic chemicals that negatively impacted the environment and human health. This highlighted the need for alternatives that were more environmentally friendly and sustainable. Aligned with SDG 3: Good Health and Well-Being, these alternatives reduced exposure to harmful chemicals, minimizing risks like skin irritation. (Published in 2015)

The soap and detergent manufacturing industry in Malaysia showed a decline, as reflected in the Manufacturing Index at Industry Level (2015=100). In 2022, the annual index stood at 92.5, a 1.2% decrease compared to 93.7 in 2021. Although the first quarter of 2022 recorded an increase to 99.3 (+11.6%), the index declined in the second quarter (94.7, -1.8%), third quarter (91.0, -12.1%), and fourth quarter (87.7, -15.1%). By January 2023, the index dropped further to 80.4, a 16.6% decline compared to 96.5 in January 2022. Rising raw material costs, changes in market demand, and supply chain challenges likely caused this decline. (Provided for 2015 (base year), 2021, 2022 and January 2023)

Meanwhile, the food outlet and restaurant industry recorded a 6.9% growth in 2022, with total revenue reaching RM42.5 billion. However, increases in raw material costs (+4.3%) and detergent usage (+7.1%) drove up operational costs. Food prices rose by 3.5%, contributing to a 2.8% increase in the Consumer Price Index for the food sector. To manage costs, businesses were advised to adopt cost-saving strategies and use more efficient cleaning agents. (Food Outlet and Restaurant Industry Reported for 2022). (Consumer Price Index (PCI) for the food Sector referenced for 2022).

Rice bran, the bran left after rice milling, was often discarded or burned, causing pollution. While it was used in industries like organic fertilizer and livestock feed, rice bran remained underutilized. Finding innovative uses for rice bran reduced waste and added value to agriculture. Aligned with SDG 12: Responsible Consumption and Production, utilizing rice

bran showcased upcycling by transforming agricultural waste into valuable dishwashing soap, reducing resource wastage. (Published in 2015)

Often considered low-value waste, rice bran contained silica and organic substances suitable for industrial applications like soap making. Processing rice bran turned it into a high-value material, replacing synthetic chemicals in cleaning products. Aligned with SDG 9: Industry, Innovation, and Infrastructure, this approach supported sustainable industrialization by fostering innovation and reducing reliance on synthetic chemicals. (Published in 2015)

Rice bran components acted as natural cleaning agents. Silica-rich rice bran ash served as a mild abrasive, effectively removing oil and dirt without damaging surfaces. Additionally, rice bran functioned as an additive in soap formulations to enhance cleaning ability without harmful chemicals. Aligned with SDG 6: Clean Water and Sanitation, the rice bran-based soap dissolved easily in water, reducing hard-to-rinse residues that could harm water quality. (Published in 2015)

Using rice bran in dishwashing soap production was an innovative way to reduce agricultural waste and promote the recycling economy. Compared to conventional detergents, rice bran-based soaps were more biodegradable and environmentally friendly, helping reduce water pollution and protecting marine ecosystems. Aligned with SDG 11: Sustainable Cities and Communities, this also helped reduce organic waste generated by farming communities, contributing to sustainability. (Published in 2015)

The food and beverage (F&B) industry depended on effective dishwashing soap to maintain food hygiene and safety. By adopting rice bran-based dishwashing soap, the industry embraced sustainable practices, reduced pollution, and built an eco-friendly image. Moreover, utilizing agricultural byproducts like rice bran fostered innovation, contributing to multiple SDGs, particularly promoting sustainable manufacturing and resource efficiency.

BUSINESS PROBLEM OR ISSUE

Conventional dishwashing detergents contained harsh chemicals, which posed risks to health and the environment. Phosphates, sulphates, and artificial fragrances were among the compounds found in many conventional dishwashing detergents. When these compounds came into contact with the skin or were ingested in small amounts through residue left on dishes, they could cause harm.

Existing dishwashing products relied on non-renewable resources, contributing to unsustainability. Many dishwashing detergents included petroleum-derived solvents and surfactants. The process of extracting and processing non-renewable resources increased greenhouse gas emissions, depleted natural resources, and caused environmental degradation.

Customers claimed there was inconsistency in cleanliness, with some plates still having residue or dirt marks, especially on greasy or burnt food. Eco-friendly or charcoal cleaning often did not meet expectations, and some found the length of the wash cycle too long or less effective. Some consumers also found the aroma too strong and lingering on plates, while others preferred an unscented version.

BUSINESS PROJECT OBJECTIVE

1. To provide RBEC dishwashing soap for Ikan Bakar Malim Restaurant usage. ✓
2. To analyse the household perceptions on RBEC dishwashing soap. ✓
3. To predict the relationship between attitude, perceived behavioural control, subjective norms and behavioural intentions to use RBEC dishwashing soap. ✓

THE JUSTIFICATION OF BUSINESS PROJECT

In the food industry, maintaining clean kitchen equipment was essential. However, many companies faced challenges in managing operating costs, particularly in purchasing high-quality detergents. High costs pressured companies to seek more economical alternatives without reducing cleaning effectiveness. Additionally, labour shortages caused delays in washing kitchen equipment, leading to slower kitchen operations and lower productivity.

To address these challenges, there was high demand for effective and cost-saving cleaning products. Companies sought solutions to reduce soap usage without compromising cleanliness. They also needed products to speed up the washing process and improve workforce efficiency, reducing operating costs while maintaining hygiene standards. This project aimed to meet the growing demand with an innovative solution.

The soap product developed in this project had unique advantages. It was cost-effective, with a coarser texture that required less soap per wash. It sped up the washing process by effectively removing stubborn oil and dirt, saving time. Its easy-to-rinse formula reduced water usage and made washing faster. These features offered a better alternative to traditional soaps that required more product or time to clean.

Effective detergents played a key role in lowering operating costs. By reducing washing time, companies allowed employees to focus on other productive tasks. A faster process also improved workforce efficiency, minimizing the need for additional workers and lowering salary costs. The soap's efficiency reduced worker fatigue by minimizing scrubbing efforts, ensuring better work quality and less strain on employees.

This project provided companies with a competitive edge by lowering costs and increasing efficiency. By using less soap while achieving excellent cleaning results, companies optimized expenses without compromising hygiene. This product had potential applications in industries like restaurants, hotels, and catering, offering more efficient washing solutions. If proven effective, it could be commercialized widely and meet the needs of a larger market.

SCOPE OF BUSINESS PROJECT

The rice bran-based dishwashing soap effectively cleaned stubborn oils and dirt while avoiding harmful chemicals. The product was primarily targeted at food companies and Malim Grilled Fish Restaurant to improve cleaning efficiency and reduce cleaning soap costs. Malim Grilled Fish Restaurant served as the main testing site to evaluate its performance. After successful trials, the soap was planned for commercialization and broader use in restaurants across the food industry.

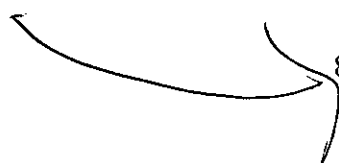
From a sustainability perspective, the project focused on using rice bran, an agricultural byproduct, as the main ingredient. By replacing harsh chemical detergents, the soap reduced environmental pollution and provided a safer alternative for users. It also minimized the negative impacts on workers exposed to chemical cleaners that caused skin irritation.

The soap was formulated using lye, water, oil, fragrance, and rice bran ash, chosen for their ability to effectively remove grease and stubborn stains without harmful chemicals. This combination ensured the soap cleaned efficiently, left no harmful residues on utensils, and was safe for use. The inclusion of rice bran ash made the soap more environmentally friendly by utilizing a natural, recyclable resource and reducing waste.

To finalize the soap's formulation, the project involved research and development (R&D). The soap was produced through mixing, drying, refining, and packaging. Testing at Malim Grilled Fish Restaurant helped assess its effectiveness in removing oils and crusts, based on feedback from restaurant owners and kitchen workers. These tests informed performance improvements.

The project's goal was to develop a cheaper, eco-friendlier, and more effective soap for removing stubborn dirt and grease. Food industry businesses benefited by reducing cleaning costs, speeding up the cleaning process, and ensuring kitchen utensils were thoroughly cleaned.

DIFERENTIATION

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This is differentiation between Rice Bran Eco Pot Clean Dishwashing Soap with Dishwashing in the market:

Rice Bran Eco Pot Clean Dishwashing Soap	Dishwashing in the market
Effective for mild to moderate grease but may require more scrubbing for heavily greasy dishes. The natural enzymes help in breaking down oils.	Formulated for strong grease-cutting power with chemical degreasers, making it more effective for tough grease and oil removal.
Produces less foam compared to synthetic dishwashing paste. The cleaning action relies more on natural enzymes and oils rather than foaming agents. Some people associate less foam with less effectiveness, but it still cleans well.	High-foaming formula due to synthetic surfactants. Many people prefer more foam, as it creates a perception of better cleaning. Excessive foam does not necessarily mean better cleaning performance.
Mild or naturally scented with essential oils like lemon. Free from artificial perfumes and synthetic fragrances. May have a light earthy or nutty scent from the rice bran itself.	Strongly scented with synthetic fragrances that may contain allergens. Often formulated with artificial colors to appear more appealing. Some contain antibacterial chemicals that may not be necessary for dishwashing.