UNIVERSITI TEKNOLOGI MARA

FACULTY OF APPLIED SCIENCES

TECHNOLOGY ENTREPRENEURSHIP (ENT600)

NEW PRODUCT DEVELOPMENT
INKIE (INK FROM COW'S DUNG)

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1.0 EXECUTIVE SUMMARY

In 2023, around 21 thousand metric tons of printing ink were produced in Malaysia (Statista, 2024) and 3.6 million tones worldwide (Global Printing Inks Market Overview | Smithers, n.d.). Throughout the last few years, printing ink has witnessed a spike in demand as it is utilized for printing books, posters, magazines, newspapers, calendars, journals and photographs. However, like many other manufacturing sectors, ink production emits large amounts of greenhouse gases which can be harmful for humans and the environment itself. On top of that, improper management of chemical waste could pollute the air, and damage the ecosystem. With an insight to create green chemistry products and control waste management, therefore, an innovation towards producing a more sustainable and eco-friendly ink is being figured out. Cow dung has been chosen as the product-based substance due to the fact that in Malaysia, cow is one of the highest numbers of mammals and its dung can be obtained effortlessly. The production of eco-friendly ink begins with collection and separation of cow dung from various farms, cellulose extract, sterilization, cellulose modification, formulation, quality control, packaging and distribution. Interviews with manufacturers and consumers have been done to understand their preferences, differences and viewpoint regarding the creation of cow dung ink. As a result, 5 elements have been determined to be implemented in this new product development which are cost-effectiveness, eco-friendly, fast-drying, vivid and opaque colors, and excellent adhesion. This eco-friendly ink comes with various packaging sizes; refillable ink cartridges, and containers for bulk supply, according to who is the end customer. A smaller size for business to customer sector and bigger size for business to business sector. The packaging is composed of recyclable containers, which reduces the overall environmental impact, as an effort to optimize eco-friendly practices.

2.0 INTRODUCTION

The collection of design, engineering, and research procedures that come together to produce and introduce a new product to the market is known as new product development, or NPD. In contrast to standard product development, new product development focuses on creating a completely original concept and carrying it through to completion, resulting in a new product. This may be used when creating a brand-new product, making improvements to an existing one to maintain its appeal and competitiveness, or bringing an outdated product to a new market. Offering items that satisfy customers' needs and demands has never been more crucial in the cutthroat industry of today. Entrepreneurs cannot depend on their current goods to keep ahead of the competition since customer needs, habits, technology, and the market are all changing quickly. They must innovate, which entails creating and effectively introducing new goods.

Basically, there are seven main stages of creating a new product development. First is idea generation. This stage involves brainstorming for new product ideas or how to improve existing products. During this stage, business owners will find out the customer’s needs and wants. The second step is idea screening. The goal of this second stage of new product development is to narrow down all the created ideas to those that have the best possibility of succeeding. Then, all the ideas are developed into concepts. A concept usually contains the target market, features and benefits of the products and estimated cost of designing and launching the products. Next, entrepreneurs need to start marketing strategy to introduce the new product to the market and create a business analysis. Then, the product development phase includes developing the product concept into a final product to be marketed. This is the stage where a prototype must be created, tested and the business owner must collect all the feedback. The next step is the test market; releasing the final product to the market to analyse its performance. Finally, the product is ready to be launched.

NPD offers many advantages to a business such as it will help entrepreneurs to keep abreast of emerging trends and technologies while outperforming the competition with innovative solutions. Next, it also allows businesses to increase product offerings and discover new revenue sources while trying to adjust to the shifting of consumer demands. By using resources more efficiently, NPD not only enhances the perception of a company's brand but also expands the company and guarantees sustainability.

2.1 PROBLEM STATEMENT

a) The Effect of Normal Ink Production on the Environment

Standard ink manufacturing mostly uses artificial chemicals, including binders, solvents, and colors derived from petroleum. During production and discarding, these materials produce a great deal of pollution in addition to depleting non-renewable resources. The ensuing chemical waste can pollute the air, damage ecosystems, and taint water sources. Furthermore, acquiring and processing raw materials have a significant carbon impact, which worsen climate change. A change to sustainable ink substitutes that lessen environmental damage and encourage resource efficiency is necessary to address this problem.

b) Challenges in Waste Management

Even while cow dung is frequently used as fertilizer in agriculture, it is not always used effectively, particularly in areas where animal production is prevalent. Methane emissions, a powerful greenhouse gas, are caused by improper handling of this waste and contribute to global warming. Cow dung may contaminate soil and water supplies in places where it is thrown out or improperly kept, further taxing nearby ecosystems. Reusing cow dung to make ink can turn this waste into a useful resource that supports a circular economy and helps to lessen environmental problems.

c) Farmers' Economic Feasibility

Beyond its conventional applications as biogas or fertilizer, cow dung is a waste that farmers frequently undervalue. The financial stability of rural communities might be improved by establishing a market for cow dung as a raw material for the creation of ink. However, the establishment of a dependable supply chain is necessary to allow this to be profitable. This entails providing incentives for farmers to engage, guaranteeing equitable remuneration, and creating effective mechanisms for collection and transportation that preserve cost-effectiveness without raising the ultimate cost of the commodity.