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Business Analysis Using Business Models Canvas

Owppin As a Case Study

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Abstract

This work is a problem-solving thesis, it addresses the problem faced the case study company (Owppin), a company situated in Nigeria, and it is into the production of toothpick. Owppin a facing a waste challenge as the waste generated during her operation is becoming a menace to the organization. The waste is constituting an environmental hazard, and it is also causing the company unnecessary fines from the environmental agency.

The purpose of the study is to help find a lasting solution to the waste generated by the company. The study focuses on the whole organization and sees the organization as a complete system. The work uses business model canvas as enumerated by its founder Osterwalder. This framwork was considered so as to understand Owppin business processes. And. Also to help see the business at a glance.

The study also make use of the system theory to help analyse the problem with the objective of not considering only the obvious which was the waste, but the entire organization and its environment as a unit. An holistic approach (System theory) was use , which was found useful in the root cause analysis and decision making process.

The combination of business model canvas and system theory was helpful in enumerating possible solutions that will not only eliminate the problem (waste generation) but also add more value proposition to the business at large.

Language: English
Key Words: Business model canvas, Organization, system theory, business plan

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1. Introduction

We are now living in the idea age. Businesses and organizations succeed because of great and innovative ideas and businesses can become bankrupt because of lack of ideas. Majority of the most successful organizations or businesses became successful not because of the wealth and social status of its owners or founders, but because of the ideas and innovations they put into the business or organization.

Imagine what we could achieve if we could improve the quantity and quality of business ideas that we generate. We could create a businesses that would change the world. We could change the lives of millions of people and leave a mark in history. We could make each of our existence to be more adventurous and interesting. We could significantly improve our ability to generate successful business ideas, simply by been creative and innovative.

For examples.
Do we remember Blockbuster Video? It declared bankruptcy shortly after Netflix and Redbox demonstrate that they could do a better job by delivering movies and games to Customers through the use of emails, the Internet, and vending machines. The emergence of a new business model can affect companies in so many ways and can also affect other industries as well. For instance, Netflix has more than 20 million customers who through the Internet, can watch television programs on computers or game consoles at any time they desire with the capability of skipping any advertisements.

Imagine what this means for a television broadcasting industry, where most of the income generated are funded by advertisers who buy time slots on the traditional premises that:

(1) advertisements will be embedded in programs that are broadcast to huge audiences at certain days and times, and

(2) television-viewing audiences cannot filter out advertisements.

The Internet has also transformed business models in other sectors, such as music, advertising, retail, and publishing. Recruiting firms, for example, traditionally depended on highly skilled, full-time employees who made hundreds of phone calls, travel within and across country to meet prospective recruits. Today, the recruiting industry is significantly different; in many cases, work-from-home or part-time workers, who search Web sites from their homes or place of desire, have replaced full-time employees and even reach out to more recruits than the traditional full-time recruiters. (Tim, Alexander, and Yves, 2012, 21)

Everyone is talking about digital transformation these days. In fact, it is important to remind ourselves that simply adding a digital component to an existing business does not fundamentally transform it. New technologies can enable business innovations strive or improve, but the technology is just a means to an end. In this era of rapid changes and growing complexity in businesses, rapid learning and value creation becomes more valuable. Making decisions using huge, noisy, messy data requires good business analysis. It is important to appreciation and advocate for the analysis of the whole of business. (Laursen and Thorlund, 2017, 13)

1.1 Problem Area

Owppin Limited is classified under Fast Moving Consumer's Goods (FMCG). It is into the business of toothpick production which is certainly and obviously its business idea. I want to believe that this idea came out of the need to help provide a hygienic way of removing leftover or stuck foods in our teeth (this believe was coin from the mission statement of Owppin Limited as evidence in her website). African has lots of delicacies and most of which usually sticks between teeth. The traditional way of getting this removed was with the use of broom sticks made from dried palm tree leaves. This is not hygienic as it is made from any fallen palm tree leaves. Moreso, it is not handy and not readily available, hence the production of toothpicks in handy packs will help resolve this issue.

The most interesting thing in food industries is that people cannot do without food. It is also amazing to state that in food business, government policies, cultural difference, technologies, innovations, and many other factors that can affect business has little or no effects on food businesses. The market is very huge here in Nigeria and many other Africa countries this is due to the numerical advantage of her population and because almost everyone uses toothpicks. The floss is not so common in Nigeria and Africa, so the use of toothpicks is in high demand.

Like any other production processes, waste is always generated in one form or the other. It is safe to say that waste generation is normal of any process, however, poor waste management and uncontrolled waste generation can become overwhelming and problematic. This is the situation facing Owppin as an organization. The waste generated during her operational process is much, and it is in different forms (Figure 1 and Figure 2). The waste ranges from off-cuts from a bamboo pole, under-size after splitting, broken long sticks and dust form from sawing and shaping. Also, waste is generated during sharpening process as well.

Figure 1: Other forms of bamboo waste (https://www.youtube.com/watch?v=9UFEZa6lSO0).

Figure 2: Other forms of bamboo waste (https://www.youtube.com/watch?v=4ggRvZrlKpA).

Every year Owppin always strive to reduce this waste, on average Owppin could only achieve 50% utilization of the raw material. 40% if not 50% of the waste material can be reuse for other purpose that can yield a lot of revenue for the company. The focus of this thesis is to find a way of reducing the waste generated.

1.2 Aim

The purpose of this thesis is to use business model canvas to showcase the company operation processes at a glance, identify the company strengths and weaknesses, and propose a solution to help reduced its waste by:

- Focusing on the company core business area
- Utilising the waste in other forms that could create more value proposition.
- Reduce or eliminate fines from Environmental Agency through the waste utilization.
- Support the Green House Initiatives by eradicating waste burning.

1.3 Theory and Methods

The motive in this thesis is to use systems theory which is a way of looking at the business holistically as opposed to just being a management theory. Systems theory would afford us the possibilities of combining it with any other business theories which could help make our analysis easier and also make inferences from the analysis better.

The method to be used for this thesis work will be a theoretical and qualitative analysis using both business position and company land scape (Financial implication and equipment space) as well as the market situation and customer survey.

1.4 Thesis structure / Layout

Chapter two will focus on business in general which will serve as the theoretical background of the thesis. It will cover business ideas, business theories, business models and why we consider model canvas for this thesis. Chapter three will be about Owppin as a company using business ideas and theories to enumerate the business idea of Owppin and model canvas for its business model. Chapter four will be on proposed business improvement which will serve as a result from the analysis of the business using business model canvas, and chapter five will be a summary of the thesis.

2. Business Idea

The concept of a "business idea" is at the very heart of entrepreneurship and innovation. It represents the initial impetus, the creative seed, from which successful ventures and groundbreaking innovations are born. A business idea serves as the foundation of entrepreneurial endeavours, encapsulating the vision, innovation, and market insight that underlie prosperous ventures.

2.1 Theory

In this chapter, an exploration will be conducted into the definition and intricacies of a business idea. The interconnectedness between business ideas, creativity, and innovation will be examined to shed light on how these elements drive entrepreneurial success and fuel progress in the ever-evolving world of business.

This investigation will then lead to an examination of various Business Theories, from which the most suitable theory for this thesis will be selected. Finally, within this chapter, an exploration will be undertaken into the Business Model Canvas as detailed in "Business Model Generation" by Alexander Osterwalder and Yves Pigneur (2010)

Much has happened in the business world, and much is still happening and many more is still going to happen. The popular movie industry, Blockbuster filed for bankruptcy in 2010 and closed all its remaining stores in 2013, due to Netflix's for their disruptive business idea. A&P supermarkets (which the Wall Street Journal once dubbed "Walmart before Walmart") gave up the ghost in 2015, shortly after its 156 years in the business. In June 2017, Whole Foods Market, which had done so much to overthrow the traditional business idea for supermarkets, was acquired by Amazon, which has been turning the entire retail sector upside down over the past two decades.

According to Johnson, M. W (2018), the business landscape has been marked by significant shifts, with more changes on the horizon. Examples abound with a strong competition from the iPhone and the tech giant Google's Android system, RIM's BlackBerry fell into a death spiral from which it is still struggling to recovered from. And in 2014, the Finnish tech giant Nokia sold its once world- beating mobile phone unit to Microsoft. Unable to stop the unit from bleeding, Microsoft also handed it off to Foxconn barely two years after it was acquired, writing off at least $9 billion. In 2015, Google reorganized itself (develop new business idea) under the umbrella of a new holding company called Alphabet, redoubling its commitment to making big, winning wagers on what its cofounder Larry Page calls "the business of starting new things." The gales of creative destruction have never ceased to blow.

Johnson, M.W (2018) also pointed out that what has been fascinating and gratifying over the years, is seeing, again and again, how intensely important the art and science of business ideas and business innovation remains, and how relevant it has been. One thing we need to point out is that digital transformation and business idea or innovation are not necessarily the same things. Everyone is talking about digital transformation these days; why in fact, it is becoming something of a catchphrase. But it is important to remember that simply adding a digital component to an existing business or innovation does not fundamentally transform the business.

It was certainly not the introduction of the iPod that transformed the music market, it was the new business idea and model that Apple wrapped around it. Also, there were many electronic book readers on the market in the 1990s, although, they were majorly novelties. It was when Amazon introduced in 2007 new business idea and model that allowed readers to search Amazon's vast selection of titles books and fill their devices and gadget with a single click, that the e-book came into space.

Johnson, M.W (2018) also made it known that giving the refrigerator the capability to take count of its contents and categorise it or enhancing a wristwatch with the capability to monitor its wearer's blood pressure and heartbeat rate, does not guarantee that consumers will patronise these products. New technology cannot assure success, rather the competitor's new, cheaper, or better product that does the job is what the consumers really want, without a compelling customer value proposition, a powerful and good profit formula, and a set of key processes and resources that can deliver the right product or service to the right people in the right price and ways, even the most outstanding new technologies can fail to gain significant advantage in the marketplace.

Johson, M.W (2018) concluded however that, with a fresh business idea or business innovation, a fully mature product can achieve dramatic positive changes in growth. Even the brightest business leaders have blind spots; the most visionary and even the most cautious are fallible and can make mistakes.

2.1.1 What is a Business Idea?

The following definitions provide various perspectives on business ideas, entrepreneurship, and innovation, and they come from renowned thinkers, entrepreneurs, and business leaders. Each definition highlights different aspects of what constitutes a successful business idea or venture.

"The business enterprise has two, and only two, basic functions: marketing and innovation." - Peter Drucker

"The only way of discovering the limits of the possible is to venture a little way past them into the impossible." - Arthur C. Clarke

"A startup is a company designed to grow fast. Being newly founded does not in itself make a company a startup. Nor is it necessary for a startup to work on technology, or take venture funding, or have some sort of 'exit.' The only essential thing is growth. Everything else we associate with startups follows from growth." - Paul Graham

"A brand is the set of expectations, memories, stories, and relationships that, taken together, account for a consumer's decision to choose one product or service over another." - Seth Godin

"I think that's the single best piece of advice: constantly think about how you could be doing things better and questioning yourself." - Elon Musk

"I never perfected an invention that I did not think about in terms of the service it might give others. I find out what the world needs, then I proceed to invent." - Thomas Edison

“Imagination is more important than knowledge. To raise new questions, new possibilities, to regard old problems from a new angle, require creative imagination and marks real advance in science.” [Albert Einstein]

The realm of business thrives on the power of ideas – concepts with the potential to revolutionise industries, amass wealth, and reshape economies. A business idea stands as the foundational scheme upon which prosperous entrepreneurial ventures are constructed. It serves as the spark that ignites the journey of entrepreneurship. At its core, a business idea represents a concept, a plan, or a vision that identifies a market opportunity and outlines a strategic path to capitalize on it. Essentially, a business idea is the bedrock of entrepreneurship, encapsulating the vision, innovation, and market insight that underlie successful ventures. Understanding the dynamics of a business idea holds paramount importance for both aspiring entrepreneurs and established businesses aiming to remain competitive in a swiftly evolving world.

History has amply demonstrated the transformative potential of a well-crafted business idea, capable of reshaping industries, propelling economic advancement, and positively impacting society on a grand scale. It stands as a testament to the remarkable depths of human creativity and innovation. The essence of entrepreneurship lies in the capacity to generate novel and distinct concepts through imaginative and innovative thought processes, which subsequently metamorphose into opportunities (Drucker, 2002)

Lumpkin and Dess (1996) affirm that innovativeness, risk-taking, proactiveness, competitive aggressiveness, and organizational autonomy constitute pivotal factors in pioneering breakthroughs. Hence, entrepreneurial orientation is deemed essential in the business process, encompassing the identification of opportunities, innovation, and the exploitation of those opportunities (Chen et al., 2012). Consequently, creativity and innovation, especially within entrepreneurship, are heralded as pivotal, with creative entrepreneurs expected to be catalysts for job creation in society. Marvianta et al. (2013) assert that creativity is indispensable and requisite in enhancing business ideas.

However, in the realm of business idea creation, continual innovation assumes the role of a mediator. Creativity, in essence, serves as the fundamental driver of innovation (Rodríguez-pose & Lee, 2013), which, in turn, plays a central role in nurturing creativity for the generation of business ideas. Within the intricate interplay of creativity, innovation, and business ideas, previous research conducted by experts has unearthed gaps. Sutapa et al. (2017) discovered that the effect of invention on innovation was not of significant magnitude. Yet, empirical reality underscores that participants in creative industries rely on innovation to unearth distinctive and original business ideas. (Anjaningrum and Sidi, 2018)

Findings from the research conducted by Bashor & Purnama (2018) reveal that creativity exerts a favourable influence on competitive advantage. Furthermore, Hana (2013) contends that innovation is a strategic imperative for businesses seeking to excel in competition and capture new customers. Given the diverse perspectives of experts, further research is warranted to delineate the mediating role of innovation in relation to essential business ideas.

Marvianta et al. (2014) posit that the development of ideas is a process underpinned by strategic design. This strategy involves the accumulation of diverse information relevant to the business, encompassing insights about consumers, current trends, products, technology, and more. Individuals endowed with creativity tend to actively pursue information pertaining to the business they aspire to create or develop. As creativity intensifies, so does the inclination to explore business opportunities vigorously. Consequently, business ideas born from creative and innovative thought processes are perceived to possess a higher degree of quality, making them more likely to materialize into real-world enterprises.

Creativity constitutes an innate element within individuals that necessitates nurturing and cultivation. It represents an individual's capacity to forge fresh ideas and to perceive existing problems and opportunities from novel vantage points (Zimmerer et al., 2008). In the realm of business development, creativity assumes a pivotal role, ensuring the sustainability of businesses and the continuous generation of fresh ideas to retain customers. Those harbouring creativity perpetually seek out business opportunities through innovative strategies they formulate. The presence of creativity in an individual significantly influences the emergence of new ideas for identifying business opportunities. Heinonen et al. (2011) unearthed a positive and substantial correlation between imagination and the perceived feasibility of a business idea. Individuals who manifest high levels of creativity in entrepreneurship invariably apply their competencies in organizational management (Sulantara et al., 2020)

Larsen & Lewis (2007) affirm that one of the most salient attributes of entrepreneurs is their capacity for innovation. A creative business idea often arises from innovation, which involves reimagining old business concepts and presenting them with distinct advantages to enhance user convenience and satisfaction. Creativity is the genesis of every innovation; innovation is the diligent endeavour that follows the conception of ideas, typically requiring the concerted efforts of individuals endowed with varied yet complementary skills (Tan et al., 2005) Creativity and innovation, however, are intertwined components in the development of a business ideas.

Creativity exerts a positive and substantial influence on innovation, and both variables wield a marked and favourable impact on the incubation of business ideas (Hadiyati, 2011). A competitive milieu is a dynamic arena characterized by incessant transformation, necessitating organizational members' creative ideation and adaptive attitudes. Such an environment compels intelligent organizations to harness their inherent creativity and potential to innovate. Organizations that embrace business creativity maintain their competitive edge by nurturing entrepreneurship and nurturing enduring relationships with their clientele (Suardhika and Suryani, 2016)

Nonetheless, creativity is not the sole factor influencing the development of business ideas. Various intermediary variables play a role, as evidenced by Kalay & Lynn's research (2015), which furnishes empirical evidence emphasizing innovation as the paramount key to attaining dominance and exceptional industrial performance. The findings from Suparman & Ruswanti's study (2017) indicate that product innovation exerts either a direct or indirect influence on the performance of the creative industry, with competitive advantage serving as a mediating factor. In today's reality, consumers exhibit heightened discernment in their product choices. Only products distinguished by their uniqueness, creativity, and innovation can successfully compete in the global. (Anjaningrum & Sapoetra, 2018)

2.2 Business theories

Peter F. D (1994) states that there has been an extensive period, possibly not since the late 1940s or early 1950s, since we have witnessed such a profusion of new and significant management techniques as we do in the present day. These techniques include downsizing, outsourcing, total quality management, economic value analysis, benchmarking, and reengineering, each of which carries substantial influence. However, excluding outsourcing and reengineering, these tools are primarily designed to bring about a different approach to what is already being done.

They serve as guides on how to do things differently, focusing on the "how to do" aspect. Nevertheless, the central challenge facing management, particularly in large companies that have enjoyed long-term success, is increasingly shifting towards the "what to do" aspect. This is a familiar narrative: a company that was once regarded as a superstar finds itself facing stagnation, frustration, and often, an overwhelming crisis that seems unmanageable.

Peter F. D (1994) also observe that this phenomenon is not limited to businesses alone; it occurs just as frequently outside the business realm. It can be observed in labour unions, government agencies, hospitals, museums, and religious organizations, often presenting even greater challenges in those domains. The underlying cause of nearly every crisis is not poor execution of tasks or the pursuit of wrong objectives. In fact, in most cases, the organizations are doing the right things, but without yielding the desired outcomes. This apparent paradox can be attributed to the misalignment of the organization's foundational assumptions with the reality it operates in.

He continue by saying these assumptions shape the organization's behaviour, influence its decisions on what actions to take and what to avoid, and define its perception of meaningful results. These assumptions revolve around markets, encompassing the identification of customers and competitors, understanding their values and behaviour. They pertain to technology and its dynamics, as well as the assessment of a company's strengths and weaknesses. Furthermore, these assumptions underpin what a company considers valuable and what it ultimately earns revenue for. They are the very essence of what is referred to as “BUSINESS THEORY”.

Peter F. D (1994) said that every organization, regardless of its nature, operates based on a business theory. A well-defined theory, characterized by clarity, consistency, and focus, holds immense power. A remarkable example of this is seen in 1809 when Wilhelm von Humboldt, a German statesman and scholar, established the University of Berlin based on a revolutionary theory of the university. For over a century, Humboldt's theory shaped the

German university system, particularly in the realms of scholarship and scientific research, until the ascent of Hitler disrupted its influence.

Likewise, he said, in 1870, Georg Siemens, the visionary architect, and initial CEO of Deutsche Bank, formulated a clear business theory. His vision aimed to unify the still fragmented and predominantly rural Germany through industrial development, leveraging entrepreneurial finance. Within two decades, Deutsche Bank emerged as Europe's leading financial institution, a position it has maintained despite the challenges posed by two world wars, inflation, and the Nazi regime.

Additionally, in the 1870s, Mitsubishi was founded upon a distinct and innovative business theory, which propelled it to become a leader in a burgeoning Japan within a decade, and later transformed it into one of the pioneering multinational corporations within two more decades.

Similarly, he outline that the success and struggles of companies such as General Motors and IBM, which have long dominated the U.S. economy in the latter half of the twentieth century, can be attributed to their respective business theories. However, the prevailing issue faced by numerous large and prosperous organizations worldwide today is that their existing business theories no longer prove effective, leading to a state of dissatisfaction and decline.

Peter F. D is of the opinion that business theories encompass a set of assumptions, suggestions, or accepted facts that offer a logical and coherent explanation for the cause-and-effect relationships observed among various phenomena. They are often regarded as proposed laws or guiding principles that organizations adopt to navigate market dynamics, competition, innovation, and organizational culture. These theories have evolved over time and are continuously tested to ensure their relevance in an increasingly complex, uncertain, and asymmetric world.

In summary, he concluded that business theories are foundational assumptions, suggestions, or accepted facts that explain cause-and-effect relationships in organizations. They provide frameworks and concepts to help navigate modern business environments, enabling organizations to adapt and succeed amidst evolving challenges.

Here are some of the key business theories:

2.2.1 Agency Theory

The concept of agency theory revolves around examining the dynamics between principals (owners) and agents (managers) within organizations. It delves into the inherent conflicts of interest that can arise due to differing goals and information imbalances. A significant contribution to this field was made by Jensen and Meckling in their seminal work published in 1976. Their research primarily focuses on the challenges arising from the separation of ownership and control in corporations, which gives rise to what is known as agency problems. They shed light on how managers may prioritize their own interests and propose mechanisms to align the interests of principals and agents.

Another noteworthy article by Fama and Jensen in 1983 also explores the theme of ownership and control separation and its influence on corporate decision-making. Their work examines the implications and consequences of this separation, offering valuable insights into the dynamics of organizational governance.

Overall, agency theory plays a crucial role in understanding the complexities of the principal-agent relationship within organizations, highlighting the need for effective mechanisms to mitigate conflicts of interest and align the interests of owners and managers. The contributions of Jensen, Meckling, Fama, and others have significantly advanced our understanding of these dynamics and provided a foundation for further research and practical applications in the field of organizational governance. (Jensen, M. C., and Meckling, W. H. (1976), Fama, E. F., and Jensen, M. C. (1983))

2.2.2 Resource-Based View (RBV)

The resource-based view places emphasis on the significance of resources and capabilities unique to a firm in attaining and maintaining a competitive advantage. Barney (1991) suggests that firms possessing resources that are valuable, rare, difficult to imitate, and lack substitutes can establish a sustainable competitive advantage. Building upon this perspective, Wernerfelt (1984) expands the concept by asserting that the distinctiveness and longevity of a firm's resources play a pivotal role in achieving long-term success. (Wernerfelt, B. (1984), Barney, J. (1991))

2.2.3 Transaction Cost Theory

Transaction cost theory examines the economic costs associated with conducting transactions in the market versus within organizations. Williamson (1981) argues that transaction costs, such as searching for information, negotiating contracts, and enforcing agreements, influence the choice between market and hierarchical governance. He highlights how transaction costs can explain the existence and design of organizations. (Williamson, O. E. (1981))

2.2.4 Contingency Theory

Contingency theory highlights the absence of a universal approach to organizing and managing businesses. It asserts that the effectiveness of organizational structures and practices is contingent upon a range of internal and external factors. Donaldson (1995) critically examines the abundance of management theories, including contingency theory, and emphasizes the significance of considering the context when designing organizations. In their influential study, Lawrence and Lorsch (1967) investigate how organizations need to differentiate and integrate their activities to effectively respond to environmental demands. They shed light on the necessity of adapting organizational strategies to fit specific contextual circumstances. (Lawrence, P. R., and Lorsch, J. W. (1967), Donaldson, L. (1995))

2.2.5 Game Theory

Game theory examines the strategic interactions that occur among multiple decision-makers. It offers a framework for comprehending how individuals or organizations make choices, considering their expectations regarding the actions of others. The fundamental book "Theory of Games and Economic Behaviour" authored by von Neumann and Morgenstern (1944) establishes the fundamental principles of game theory. In a comprehensive manner, Kreps (1990) provides an extensive survey of game theory and its applications in economic modelling, offering valuable insights into its practical implications. (von Neumann, J., and Morgenstern, O. (1944), Kreps, D. M. (1990))

2.2.6 Systems Theory

According to systems theory, organizations are perceived as intricate systems consisting of interconnected and interdependent components. This perspective accentuates the interactions that occur among these components and acknowledges the influence of the organization's external environment. Understanding the dynamics, feedback loops, and emergent properties of the system is made possible through systems thinking. This approach underscores the importance of adopting holistic and systemic methodologies when tackling issues, making decisions, and initiating organizational transformations.

One notable reference that explores the concepts of systems theory is the work of Senge et al. in their book "The Fifth Discipline: The Art and Practice of the Learning Organization" (1990). They delve into the application of systems thinking in organizational settings, highlighting its relevance to managing complexity and fostering organizational learning. This resource provides valuable insights and practical guidance on implementing systemic approaches within organizations. (Senge, P. M., Kleiner, A., Roberts, C., Ross, R. B., and Smith, B. J. (1990))

Business theories play a crucial role in explaining, analysing, and guiding various aspects of the business world. Business theories provide valuable insights into organizational behaviour, strategy formulation, decision-making processes, and performance management. By understanding and applying these theories, businesses can enhance their competitiveness, adapt to changing environments, and make informed decisions. Continuous research and exploration of these theories contribute to the evolution and refinement of our understanding of business dynamics.

Overall, the comprehensive understanding of these business theories equips managers and scholars with the tools to navigate the complexities of the business world and contribute to organizational success. For this thesis, I will be using the system theory for my analysis. This is because system theory is a valuable tool for understanding, analysing, and managing complex systems in a wide range of disciplines. Its holistic approach and emphasis on interconnectedness make it particularly useful for addressing multifaceted challenges and improving decision-making processes.

Integrating system theories with the Business Model Canvas can lead to a more strategic, adaptable, and sustainable approach to business model design and management. It can enhance the ability to understand complex system dynamics and make informed decisions that drive business success.

2.3 Business model

Alexander Osterwalder and Yves Pigneur introduced the concept of the Business Model Canvas (BMC) in their book "Business Model Generation" published in 2010. In this book, they provide a widely recognized definition of a business model:

"A business model describes the rationale of how an organization creates, delivers, and captures value." - Osterwalder and Yves (2010)

In another book written by Tim Clark in collaboration with Alexander Osterwalder and Yves Pigneur titled "Business Model You" defined Business Model as:

"As the logic by which an enterprise sustains itself financially. Put simply, it's the logic by which an enterprise earns its livelihood." Tim, Osterwalder and Yves (2012)

The definition presented by Alexander Osterwalder and Yves Pigneur essentially outlines the core elements of a business model, emphasising three key components:

I. Value Creation: which focuses on how a business generates value for its customers through the products or services it offers.
II. Value Delivery: which addresses the methods and channels through which the value is delivered to customers.
III. Value Capture: which focus specifically on how the business captures value in terms of revenue and profitability.

The Business Model framework created by Alexander Osterwalder and Yves Pigneur enables organizations to visualize and analyse their business models, identify areas for improvement or innovation, and communicate their strategies more effectively. Osterwalder and Pigneur's approach has had a significant impact on business planning and strategy development, making it easier for entrepreneurs and established companies to understand, adapt, and innovate their business models. (Alexander Osterwalder and Yves Pigneur, 2010)

Most of the turbulence we have in our market today are driven by factors that are beyond our personal control. Some of which are due to recession, demographic changes, high global competition, environmental issues, government regulations and policies and many more. These changes sometimes are also beyond the control of some organization and in most case affect the business models of the organization. This is because they might not be able to change the environment within which they operate, companies will have to change their business models or in some cases create new ones to remain relevant and competitive.

Also, these new business models sometimes disrupt and causes changes which might create new opportunities for some workers and unemployment for others. Many organisations are affected by environmental and economic factors beyond their control, how can they maintain success and satisfaction? They must understand how they operate and identify gaps and then adapt their approach to fit the changing environments. Being able to understand and describe our organization's business model this will help us understand how the organization can succeed, especially in time of economic turbulence.

Employees who care about the success of the organization, understand the organization processes and ways to achieve that success are the most valuable worker and prefer candidates for better positions. Once we understand and knows how a business model applies to where we work and where we fit in within that model, we will be able to use the same way of thinking to define, sharpen, and grow our own career. (Tim, Alexander, and Yves, 2012)

Business model can be thought of as a blueprint describing how an organization operates. Just as an architect prepares blueprints to guide the construction of a building. A business model to guide the creation of any business. As a manager we might as well sketch a business model to help us visualize how an existing organization operates. To do this, we must understand how an existing business model is, and ask ourselves two basic questions:

1. Who are the Customer?
2. What job or solution does the Customers need to have done?

If we can provide answer to the above questions, then does it mean that only profit organizations have business? Since we have said that a business model is a sequence or logic by which an organization sustains itself financially. I believe you will agree with me that the answer is No. This is because every organization has a business model, whether it is for-profit, non-profit, government, or otherwise, organizations need money to carry out its work.

We have shown how Customers and finances are important to sustain businesses. However, business models are more than just finances and Customers. The Business

Model Canvas, which describes how nine components of a business model (Figure 3) fit together, is a useful technique for painting and describing how organizations processes relate and work. (Alexander Osterwalder and Yves Pigneur, 2010)

Understanding how organizations work is not an easy task. Large and complex organizations have lots of units that it is almost difficult to describe without visually depicting the organization processes. Business Model Canvas provides a visual form of simplifying complex organizations processes. Pictures as we know can also help turn unspoken assumptions into explicit information. And explicit information helps us think and communicate more effectively.

The Business Model Canvas, which is a central tool in the book; "Business Model Generation", by Alexander Osterwalder and Yves Pigneur, is a visual framework that allows businesses to map out and analyse the three key aspects of the business model which are the Value Created, Value Delivery and Value Captured. This was further elaborated to consists of nine building blocks that help entrepreneurs and organizations define, analyse, and design their business models in a structured and systematic way.

2.4 The nine building blocks of business model canvas

The nine building blocks of business model (Figure 3) show the relationship between the key activities of business, their functions and how each segment interact with other segments. Integrating system theories with the Business Model Canvas can lead to a more strategic, adaptable, and sustainable approach to business model design and management. It enhances integrating system theories with the Business Model Canvas can lead to a more strategic, adaptable, and sustainable approach to business model design and management. It enhances our ability to understand complex system dynamics and make informed decisions that drive business success. Alexander Osterwalder and Yves Pigneur, (2010)

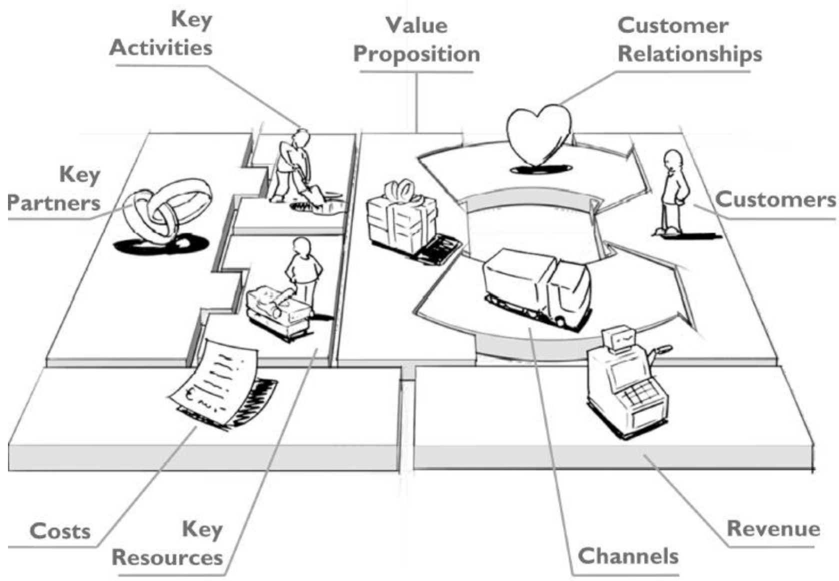

Figure 3: 9 Building Blocks (Tim, C., Alexander, O., and Yves, P. 2012)

2.4.1 Customers

The definitions given by various scholars emphasize the idea that customer segments are groups of customers who share common characteristics, needs, or behaviours, and they are crucial for businesses to tailor their marketing strategies and offerings effectively. The specific definition used may depend on the context and objectives of the business or research. Below are few definitions given by some authors.

"A market segment consists of a group of customers who share a similar set of needs and wants." -Philip Kotler and Kevin Lane Keller (2015)

"Market segments are not predefined by firms, but rather emerge from firms' offerings and consumers' behaviours." -Robert F. Lusch and Stephen L. Vargo (2006)

"Customer segmentation is the process of dividing a market into distinct subsets of customers based on distinct characteristics, needs, preferences, or behaviours." -Daniel Port, Gareth Price, and Leigh Wharton (2013)

"Customer segments are groups of customers with a shared set of needs that require a unique marketing mix." - Michael Treacy and Fred Wiersema (1993)

The Customer Segments Building Block as enumerated by Osterwalder and Yves, establishes the distinct groups of individuals or organizations that a company aims to reach and serve. Customers are the lifeblood of any business model, as a business cannot sustain itself over the long term without profitable customer relationships. To better cater to the needs of customers, a company may categorize them into specific segments based on shared needs, behaviours, or other defining attributes. A business model can define one or multiple Customer Segments, but it necessitates a deliberate choice regarding which segments to serve and which to overlook. Once this choice is made, the business model can be meticulously crafted with a deep understanding of the specific requirements of each customer group.

Customer groups are considered separate segments if:

I. Their distinct needs warrant a tailored offering.
II. They are reached through different distribution channels.
III. They necessitate different types of customer relationships.
IV. They exhibit substantially different profitability characteristics.
V. They are willing to pay for different aspects of the offering.

There exist various types of Customer Segments, including:

Mass Market

Business models that target mass markets do not differentiate between various Customer Segments. Value Propositions, Distribution Channels, and Customer Relationships are all geared toward a single, large customer group with broadly similar needs and issues. This type of business model is commonly observed in the consumer electronics sector.

Niche Market

Business models focused on niche markets cater to specific and specialized Customer Segments. Value Propositions, Distribution Channels, and Customer Relationships are all tailored to the precise requirements of a niche market. This model is frequently found in supplier-buyer relationships. For instance, many car part manufacturers heavily rely on purchases from major automobile manufacturers.

Segmented

Some business models distinguish between market segments with slightly differing needs and issues. For instance, the retail division of a bank like Credit Suisse may differentiate between a large group of customers, each having assets of up to U.S. $100,000, and a smaller group of affluent clients, each with a net worth exceeding U.S. $500,000. Both segments share similar but varying needs and issues. This differentiation impacts other elements of Credit Suisse's business model, such as the Value Proposition, Distribution Channels, Customer Relationships, and Revenue streams. Another example is Micro Precision Systems, which specializes in providing outsourced micromechanical design and manufacturing solutions. It serves three distinct Customer Segments—the watch industry, the medical industry, and the industrial automation sector—and offers each slightly different Value Propositions.

Diversified

Organizations with a diversified customer business model serve two unrelated Customer Segments with significantly different needs and issues. For instance, in 2006, Amazon.com diversified its retail business by offering "cloud computing" services, including online storage space and on-demand server usage. This move marked the inclusion of an entirely different Customer Segment—Web companies—with a completely distinct Value Proposition. The strategic reasoning behind this diversification lies in Amazon.com's robust IT infrastructure, which can be shared by both its retail sales operations and the new cloud computing service unit.

Multi-sided Platforms (or Multi-sided Markets)

Some organizations serve two or more interdependent Customer Segments. For example, a credit card company requires a substantial base of credit card holders and a large base of merchants that accept these credit cards. Similarly, a company offering a free newspaper relies on a broad readership to attract advertisers. Conversely, it also needs advertisers to finance production and distribution. Both segments are essential to the success of the business model.

Customers are the main reason why an organization exist. No organization can survive without a customer. Every organization we have serves one or more distinct customer groups. Organizations that serve other organizations are classified as business-to-business (B2B) organizations. Organizations that serve consumers are classified as business-to-consumer (B2C) organizations. Some organizations serve both paying and non-paying customers. Majority of Facebook users, for example, pays Facebook nothing for the services it rendered, however, without hundreds of millions of non-paying customers (users), Facebook might have nothing to sell to advertisers or market researchers. We must understand the importance of customers to our processes. Some customers may be non-paying customers and may also be essential for our business model to success. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.2 Value Proposition

The concept of a value proposition is essential, and it is common in marketing and business, and various authors have provided their own definitions and insights into what a value proposition entails. Here are several definitions of a value proposition by different authors.

"A value proposition is the set of benefits or values a company promises to deliver to customers to satisfy their needs." - Philip Kotler and Kevin Lane Keller (2015)

"A value proposition is a job, problem, or need that customers are trying to get done, and the product or service that helps them do it." -Clayton Christensen, Taddy Hall, Karen Dillon, and David S. Duncan (2016)

“A value proposition is the way a company creates value for its customers. It includes the product or service benefits, customer experiences, and price-to-value relationship." -Alexander Osterwalder and Yves Pigneur (2014)

"A value proposition is a clear, concise statement that articulates how your product or service benefits your target customer, how it solves their problem, and why it is distinctly better than alternative solutions." - Clifton, R., & Mastron, M. L (2007)

"A value proposition is a high-level positioning statement that explains how a product or service solves a customer's needs better than any available alternative." Geoffrey Moore (1999)

The Value Propositions Building Block defines the assortment of products and services that generate value for a particular Customer Segment. A Value Proposition serves as the rationale behind why customers choose one company over another. It addresses a customer's problem or fulfils their needs. Each Value Proposition is a tailored combination of products and/or services that meets the specific requirements of a particular Customer Segment. In essence, a Value Proposition is an amalgamation of benefits that a company offers to its customers. Some Value Propositions may be pioneering, introducing a new or disruptive offering, while others may resemble existing market offerings but come with additional features and attributes.

A Value Proposition generates value for a Customer Segment through a unique mix of elements that cater to the segment's needs. This value can be both quantitative (e.g., price, service speed) and qualitative (e.g., design, customer experience). Elements from the following list, though not exhaustive, contribute to customer value creation:

Newness

Certain Value Propositions address entirely new sets of needs that the customers had not recognized previously, often driven by technological advancements. For example, the advent of cell phones created an entirely new industry around mobile telecommunication.

Performance

Historically, enhancing the performance of a product or service has been a common approach to creating value. However, improvements in performance have limitations, as seen in the PC sector where faster PCs and better graphics failed to drive corresponding customer demand.

Customization

Tailoring products and services to meet the specific needs of individual customers or Customer Segments adds value. Mass customization and customer co-creation have gained importance, allowing for customized products and services while benefiting from economies of scale.

"Getting the job done"

Value can be created simply by helping customers accomplish specific tasks or jobs. For instance, Rolls-Royce provides and services jet engines for airlines, allowing them to focus on running their operations.

Design

Superior design can make a product stand out, particularly in industries like fashion and consumer electronics.

Brand/Status

Customers may find value in using and displaying a specific brand, whether it signifies wealth or being "in."

Price

Offering similar value at a lower price caters to price-sensitive Customer Segments, although it has broader implications for the business model.

Cost Reduction

Assisting customers in reducing costs, such as offering hosted CRM applications, can be a valuable approach.

Risk Reduction

Customers value reducing the risks associated with their purchases. For example, service guarantees can reduce post-purchase risks.

Accessibility

Making products and services accessible to customers who previously lacked access can create value. This often results from business model innovation or new technologies.

Convenience/Usability

Enhancing convenience or usability can create significant value, as seen with the iPod and iTunes, which simplified music searching, buying, downloading, and listening.

In essence, the Value Proposition is the essence of what a business offers to its customers. It encompasses how the company addresses customer needs and problems and sets the foundation for customer acquisition and retention. The ability to provide exceptional Value to our customers is the key reason why they prefer one organization over another. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.3 Channels

The concept of "channels" as known in business and marketing refers to the various methods and pathways through which a company delivers its products or services to customers. Different authors and experts have provided their own definitions and insights into channels. Here are some of the definitions of channels by various authors.

"Channels are sets of interdependent organizations involved in the process of making a product or service available for use or consumption." - Philip Kotler and Kevin Lane Keller (2015)

"Channels encompass the intermediaries and other partners that a company uses to access and influence target customers." - Bernard J. Jaworski and Ajay K. Kohli (1993)

"Channels are the pathways and intermediaries used to get products and services to customers. They include distribution, sales, and marketing channels." Jagdish Sheth and Rajendra Sisodia (2015)

"Channels encompass the different means and intermediaries used by a company to reach its target customers and deliver value." - Julian Birkinshaw and Ken Mark (2007)

The Channels Building Block outlines how a company engages with and connects to its Customer Segments for the purpose of delivering a Value Proposition. It encompasses the various channels through which communication, distribution, and sales activities take place, serving as the interface between the company and its customers. These channels are touch points where customers interact with the company and play a vital role in shaping the overall customer experience. Channels fulfil multiple functions, including:

I. Raising awareness among customers regarding the products and services offered by the company.
II. Assisting customers in evaluating the Value Proposition provided by the company.
III. Enabling customers to make specific purchases of products and services.
IV. Conveying the Value Proposition to customers.
V. Providing post-purchase customer support.

Channels consist of five distinct phases (Table 1), and each channel can cover one or more of these phases. There are distinctions between direct Channels and indirect ones, as well as between owned Channels and partner Channels. Selecting the appropriate blend of Channels to align with how customers prefer to be reached is pivotal in bringing a Value Proposition to the market. An organization can opt to reach its customers through its proprietary Channels, through partner-driven Channels, or through a combination of both.

Owned Channels may be direct, such as an in-house sales team or a company website, or they may be indirect, such as retail outlets owned or operated by the organization. Partner Channels are of the indirect variety and encompass a range of possibilities, including wholesale distribution, retail partnerships, or partner-managed websites.

Partner Channels typically yield lower profit margins, but they facilitate an organization's expansion and allow it to leverage the strengths of its partners. In contrast, owned Channels, particularly direct ones, offer higher profit margins but may entail significant setup and operational costs. The key lies in striking the right balance among various Channel types, integrating them in a manner that enhances the customer experience, and optimizing revenue generation. (Alexander Osterwalder and Yves Pigneur, 2010)

Channel Types			Channel Phases				
Own	Direct	*Sales force*	**1. Awareness** How do we raise awareness about our company's products and services?	**2. Evaluation** How do we help customers evaluate our organization's Value Proposition?	**3. Purchase** How do we allow customers to purchase specific products and services?	**4. Delivery** How do we deliver a Value Proposition to customers?	**5. After sales** How do we provide post-purchase customer support?
		Web sales					
	Indirect	*Own stores*					
Partner		*Partner stores*					
		Wholesaler					

Table 1: Channel Phases (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.4 Customer Relationships

Customer relationships, a key component in the Business Model Canvas, and in simple terms refer to the types of interactions and connections a company establishes and maintains with its customers. Different authors and experts have provided their own definitions and insights into customer relationships. Here are several definitions of customer relationships by various authors.

"Customer relationships encompass the strategies and tactics used by a company to establish and maintain relationships with its customers." Philip Kotler and Kevin Lane Keller (2015)

Definition: "Customer relationships describe the types of relationships a company establishes with specific customer segments." - Alexander Osterwalder and Yves Pigneur (2014)

"Customer relationships are the connections a company forms with customers, including personalization, one-to-one interactions, and relationship-building." Don Peppers and Martha Rogers (2016)

"Customer relationships refer to the approaches and methods that a company uses to interact with and engage its customers to build and maintain loyalty." Dawn Iacobucci (2013)

"Customer relationships involve the efforts made by a company to understand, serve, and retain customers by establishing trust and delivering value." Jagdish N. Sheth and Atul Parvatiyar (1995)

The Customer Relationships Building Block pertains to the various types of connections a company forges with specific Customer Segments. It is crucial for a company to define the nature of the relationship it intends to establish with each Customer Segment, and these relationships can span the spectrum from personal to automated. The motivations driving these Customer Relationships include:

I. Customer acquisition: Establishing relationships to attract new customers.
II. Customer retention: Maintaining connections with existing customers to keep them engaged.
III. Boosting sales (upselling): Using relationships to increase sales through additional offerings.

In the earlier stages, for instance, mobile network operators focused on Customer Relationships geared toward aggressive customer acquisition, often involving free mobile phones. As the market became saturated, operators shifted their focus toward customer retention and augmenting the average revenue generated per customer. The type of Customer Relationships prescribed by a company's business model profoundly influences the overall customer experience.

Various categories of Customer Relationships can coexist within a company's interactions with a specific Customer Segment:

Personal assistance

This relationship is built on human interaction, where customers can engage with live customer representatives for assistance during the sales process or post-purchase. Such interactions may occur in-person at the point of sale, through call centres, via email, or other means.

Dedicated Personal Assistance

This relationship involves assigning a dedicated customer representative exclusively to an individual client. It is the most intimate and deep-seated form of a relationship, typically evolving over a prolonged period. In private banking services, for instance, high net worth individuals are served by dedicated bankers. Similar relationships can be found in other businesses in the form of key account managers responsible for maintaining personal relationships with significant customers.

Self-service

In this type of relationship, the company does not engage directly with customers. Instead, it equips customers with the necessary tools and resources to help themselves.

Automated services

This relationship blends a more sophisticated form of customer self-service with automated processes. For instance, personalized online profiles grant customers access to customized services. Automated services can recognize individual customers and their characteristics, offering information related to orders or transactions. At their zenith, automated services can mimic a personal relationship, such as offering book or movie recommendations.

Communities

Companies are increasingly harnessing user communities to engage more deeply with customers and prospects while facilitating connections among community members. Many companies maintain online communities that enable users to exchange knowledge and help one another solve problems. Communities also empower companies to gain better insights into their customers. For example, pharmaceutical giant GlaxoSmithKline initiated a private online community when launching alli, a prescription-free weight-loss product, to gain a deeper understanding of the challenges faced by overweight adults and manage customer expectations more effectively.

Co-creation

Companies are transcending the conventional customer-vendor relationship to collaboratively generate value with their customers. Examples include Amazon.com inviting customers to write reviews to create value for other book enthusiasts or soliciting customers to contribute to the design of innovative products. Platforms like YouTube.com involve customers in content creation for public consumption.

In summary, the Customer Relationships Building Block underscores the importance of defining and implementing the most suitable types of relationships with Customer Segments to enhance customer acquisition, retention, and sales. These relationships, whether personal, self-service, or community-driven, play a pivotal role in shaping the customer experience. Organizations should also clarify the primary purpose of having customer relationship. Is it for the purpose of acquire new customers, to retain existing customers, or derive more revenue from existing customers? This purpose might change over time depending on how fast the product or services matured in the market. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.5 Revenue

Revenue is a common fundamental concept in accounting and business, representing the income generated by a company from its primary and core operations. While the definition of revenue is relatively consistent, various authors and experts have provided nuanced explanations.

The Revenue Streams Building Block represents the income a company derives from each Customer Segment (with costs deducted to determine earnings). If customers are the lifeblood of a business model, then Revenue Streams serve as its circulatory system. A critical question for any company is: for what value are each Customer Segment truly willing to part with their money? Successfully addressing this question empowers the firm to establish one or more Revenue Streams from each Customer Segment. These Revenue Streams may feature diverse pricing mechanisms, including fixed list prices, negotiation, auctions, market-driven pricing, volume-based pricing, or yield management.

A business model can encompass two primary types of Revenue Streams:

I. Transaction revenues: Arising from one-time payments made by customers.
II. Recurring revenues: Arising from ongoing payments in exchange for delivering a Value Proposition to customers or providing post-purchase customer support.

Several methods exist for generating Revenue Streams:

Asset sale

This involves selling ownership rights to a physical product. For instance, Amazon.com sells books, music, and consumer electronics online, while Fiat sells automobiles for buyers to use, resell, or dispose of.

Usage fee

Revenue stems from offering a particular service, and customers pay more as they use the service more extensively. Telecom operators may charge customers based on the number of minutes they spend on the phone, and hotels charge based on the number of nights rooms are occupied. Package delivery services charge customers for transporting parcels.

Subscription fees

This Revenue Stream results from selling continuous access to a service. For instance, gyms sell monthly or yearly subscriptions granting members access to their exercise facilities. Online computer games like World of Warcraft offer users access to the game for a monthly subscription fee. Nokia's Comes with Music service provides users with a music library for a subscription fee.

Lending/Renting/Leasing

Here, revenue is generated by temporarily granting individuals the exclusive right to use a specific asset for a defined period in exchange for a fee. This model allows for recurring revenues for the lender, while renters or lessees benefit from incurring expenses for a limited time instead of bearing the full costs of ownership. An example is Zipcar.com, which enables customers to rent cars by the hour in North American cities, leading many to choose renting over car ownership.

Licensing

Revenue arises from granting customers permission to use protected intellectual property in exchange for licensing fees. Licensing permits rights holders to generate income from their property without manufacturing a product or commercializing a service. It is common in media and technology sectors, where copyright or patent holders sell usage licenses to third parties.

Brokerage fees

This Revenue Stream emerges from intermediation services performed on behalf of multiple parties. Credit card providers, for instance, earn revenues by taking a percentage of each sales transaction between credit card merchants and customers. Brokers and real estate agents receive a commission each time they successfully connect a buyer and seller.

Advertising

Revenue is generated from fees for advertising specific products, services, or brands. Traditionally, the media industry and event organizers heavily relied on advertising revenues. In recent years, other sectors, such as software and services, have increasingly turned to advertising as a revenue source. Organizations must figure out the value that the customers are truly and willingly likely to pay for, and the accepted means of payment the customers prefer. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.6 Key Resources

"Key resources" is one of the components in the Business Model Canvas, it represent the critical assets, infrastructure, and elements that is required by a company to create and deliver value to its customers. Various authors and experts have provided their own definitions and insights into what key resources entail. Here are several definitions of key resources by various authors.

"Key resources are the crucial assets, knowledge, and infrastructure required for a business to create, deliver, and capture value." David Bland and Alex Osterwalder (2019)

"Key resources are the assets, skills, and competencies that a company relies on to support its value proposition and deliver its products or services." Johanna Gibson and Margaret de Lattre (2009)

"Key resources include the physical and intellectual assets that a company deploys to create and deliver value. They encompass both internal and external resources." Henry Chesbrough (2003)

"Key resources are the critical assets and capabilities that underpin a company's competitive advantage and value creation." Michael L. Tushman and Charles A. O'Reilly (1997)

The Key Resources Building Block outlines the essential assets needed to enable a business model to function effectively. Every business model relies on a set of critical Key Resources that facilitate the creation and delivery of a Value Proposition, enable market access, sustain relationships with Customer Segments, and drive revenue generation. The specific Key Resources required varies depending on the nature of the business model. For instance, a microchip manufacturer depends on capital-intensive production facilities, while a microchip designer focuses more on human resources. Key Resources can fall into various categories, encompassing physical, financial, intellectual, or human assets. These resources may be either owned or leased by the company or obtained from strategic partners.

Key Resources can be classified into the following categories:

Physical

This category encompasses tangible assets, including manufacturing facilities, buildings, vehicles, machinery, systems, point-of-sales systems, and distribution networks. For instance, retailers like Wal-Mart and Amazon.com heavily rely on physical resources, which are often capital-intensive. Wal-Mart maintains a vast global network of stores and associated logistics infrastructure, while Amazon.com boasts an extensive IT, warehouse, and logistics infrastructure.

Intellectual

Intellectual resources include intangible assets such as brands, proprietary knowledge, patents, copyrights, partnerships, and customer databases, which are increasingly vital components of robust business models. Intellectual resources can be challenging to develop but, when successfully established, offer substantial value. Companies like Nike and Sony in the consumer goods sector heavily depend on their brand as a Key Resource. Meanwhile, software giants like Microsoft and SAP rely on software and related intellectual property that has evolved over many years. Qualcomm, a designer and supplier of chipsets for broadband mobile devices, has constructed its business model around patented microchip designs that yield substantial licensing fees.

Human

Every business relies on human resources, but certain business models place particular emphasis on people. For instance, knowledge-intensive and creative industries prominently feature human resources. Companies like Novartis, a pharmaceutical firm, heavily depend on human resources, with their business model founded on the expertise of a large cadre of experienced scientists and a skilled sales force.

Financial

Some business models necessitate financial resources or financial guarantees, including cash, lines of credit, or a stock option pool for recruiting key personnel. Ericsson, a telecom equipment manufacturer, provides an example of financial resource utilization within a business model. Ericsson might choose to secure funds from banks and capital markets, allocating a portion of the proceeds to offer vendor financing to equipment customers, ensuring that orders are placed with Ericsson rather than competitors.

There are four ways of categorising key resources (Figure 16) which are: Human, Physical, Intellectual and Financial. Depending on the organization, some business models depend specifically more on one resources to the other. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.7 Key Activities

"Key activities" is also one of the components in the Business Model Canvas, representing the critical operations and important processes that a company must perform to create and deliver value to its customers. Various authors and experts have provided their own definitions and insights into what key activities entail. Here are several definitions of key activities by different authors.

"Key activities are the vital processes and operations that a business needs to perform to create, deliver, and capture value." David Bland and Alex Osterwalder (2019)

"Key activities are the fundamental tasks and processes that a company executes in order to fulfil its value proposition and achieve its goals." Jan B. King (2012)

"Key activities are the critical business processes that enable a company to execute its strategy and deliver value to customers." M. Reza Vaghefi and Dianne W. Cothran (2000)

"Key activities represent the essential tasks and processes that drive a company's ability to meet customer needs and create value." Linda Gorchels (2017)

The Key Activities Building Block outlines the critical tasks a company must perform to ensure the functionality of its business model. Every business model necessitates a set of Key Activities, which represent the most pivotal actions a company must undertake to operate effectively. These activities are essential for creating and delivering a Value Proposition, reaching target markets, nurturing Customer Relationships, and generating revenue. Like Key Resources, the specific Key Activities required may differ depending on the type of business model. For instance, a software company like Microsoft focuses on Key Activities related to software development, while a PC manufacturer like Dell emphasizes Key Activities in supply chain management. In contrast, a consultancy firm like McKinsey engages in Key Activities centred on problem-solving.

Key Activities can be classified into the following categories:

Production

These activities pertain to the design, creation, and delivery of products in significant quantities and/or of superior quality. Production activities are central to the business models of manufacturing firms, where the focus is on efficiently producing goods at scale.

Problem-solving

Key Activities in this category revolve around devising novel solutions to address individual customer problems. Service-oriented organizations like consultancies and hospitals often emphasize problem-solving activities. Their business models require actions such as knowledge management and continuous training to provide tailored solutions.

Platform/network

Business models that rely on a platform as a Key Resource are characterized by Key Activities related to managing the platform or network. These platforms can take various forms, including networks, matchmaking platforms, software, and brands. For instance, eBay's business model hinges on the continuous development and maintenance of its platform, the eBay.com website. Visa's business model involves Key Activities related to managing its Visa credit card transaction platform, catering to merchants, customers, and banks. In the context of Microsoft's business model, Key Activities include overseeing the interface between other vendors' software and its Windows operating system platform. These activities encompass platform management, service provision, and platform promotion. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.8 Key Partners

"Key partners" is also one of the components in the Business Model Canvas, representing the external organizations, individuals, or entities that a company collaborates and partner with to create and deliver values in various forms. Various authors and experts have provided their own definitions and insights into what key partners entail. Here are several definitions of key partners by different authors.

"Key partners are external entities or organizations that provide resources, expertise, or capabilities that are essential for a business to operate and deliver value." David Bland and Alex Osterwalder (2019)

"Key partners are external entities that contribute resources, capabilities, or expertise to support a business in creating and delivering value to customers." Linda Gorchels (2017)

"Key partners are the companies or entities that help a business to access the resources, capabilities, and expertise it needs to succeed in the market." Mark W. Johnson, Clayton Christensen, and Henning Kagermann (2008)

"Key partners are organizations that participate in a collaborative network, sharing assets, skills, and competencies to create and deliver value." Don Tapscott and Anthony D. Williams (2006)

The Key Partnerships Building Block (Figure 18) elucidates the interconnected web of suppliers and collaborators essential for the effective functioning of the business model. Companies engage in partnerships for diverse motives, with partnerships increasingly forming the bedrock of numerous business models. These alliances are forged to optimize business models, mitigate risk, or secure essential resources. Four distinct types of partnerships can be discerned:

Strategic Alliances between Non-Competitors

These partnerships involve collaborative endeavours between companies that are not direct competitors, aiming to leverage each other's strengths to mutual benefit.

Coopetition: Strategic Partnerships between Competitors

In some instances, even competitors opt for strategic alliances, where they cooperate in specific areas while concurrently competing in others. This approach helps mitigate risks and pool resources for common goals.

Joint Ventures to Develop New Businesses

Companies may enter joint ventures to create entirely new business entities or ventures. Such partnerships enable them to combine expertise and resources to explore new opportunities.

Buyer-Supplier Relationships to Assure Reliable Supplies

Buyer-supplier relationships are forged to guarantee a consistent and reliable supply of critical resources or components. This is particularly crucial for companies reliant on a steady stream of inputs.

These partnerships are typically guided by three primary motivations:

Optimization and Economy of Scale

Partnerships often aim to streamline resource allocation and activities, recognizing that it is impractical for a company to own all resources or undertake every task internally. Such collaborations, geared toward cost reduction, often involve outsourcing or the shared use of infrastructure to attain economies of scale.

Reduction of Risk and Uncertainty

In competitive landscapes marked by uncertainty, partnerships serve as a risk mitigation strategy. Competitors may choose to form strategic alliances in certain areas while simultaneously competing in others. For instance, Blu-ray technology was jointly developed by a consortium of leading consumer electronics, personal computer, and media manufacturers. These companies cooperated to introduce Blu-ray to the market, yet each continued to compete by selling their own Blu-ray products.

Acquisition of Particular Resources and Activities

Few companies possess all the resources or perform all the activities outlined in their business models. To enhance their capabilities, businesses often turn to external partners to provide necessary resources or execute specific tasks. These partnerships may be driven by a need to gain access to knowledge, licenses, or a broader customer base. For instance, a mobile phone manufacturer might license an operating system for its handsets rather than developing one in-house, while an insurance company could opt to rely on independent brokers to sell its policies rather than establishing an in-house sales force.

It would be practically impossible for an organization to own every resource or perform every activity by itself. Some activities require expensive and huge equipment or exceptional expertise that are financially demanding to acquire or to maintain, therefore outsourcing is not a bad idea for some organization. (Alexander Osterwalder and Yves Pigneur, 2010)

2.4.9 Costs

"Costs" in every establishments and in business, cost refer to the expenses incurred by a company or an organization in the process of producing and delivering its products or services. Various authors and experts in accounting, finance, and business have provided definitions and insights into what costs represent (Alexander Osterwalder and Yves Pigneur, 2010)

Cost and business processes provide information to fulfil various needs such as measuring profits, valuing inventory, making decisions, measuring performance, and influencing people's behaviour (Drury, 2009). Among different methods of cost classification, behaviour-based cost classification is crucial for decision-making, illustrating how costs and revenues change with varying levels of activity (Horngren et al., 2016). In business literature, terms like 'variable,' 'fixed,' and 'semi-fixed' are used to denote how costs respond to changes in activity (Drury, 2009; Horngren et al., 2016; Langfield-Smith et al., 2012).

In the short run, costs are categorized as variable, fixed, or semi-fixed (Drury, 2009; Kinney & Raiborn, 2012). However, over a longer period, costs tend to adjust to significant changes in activity. According to economics, while some costs may remain fixed in the short run, in the long run, all costs become variable (Hansen et al., 2009). The length of the short-run period depends on management discretion to some extent (Novák &

Popesko, 2014). Yet, different perspectives exist regarding the nature of long- and short-run cost behaviour patterns, mainly concerning the activities and resources required to perform an activity (Hansen et al., 2009). Despite a general understanding, organizations may categorize the same cost item differently (Oberholzer & Ziemerink, 2004; Langfield-Smith et al., 2012).

Several factors influence the choice of cost classification method in practice, including accounting and managerial policies, selected cost drivers, timeframes, cost objects, and activity ranges (Oberholzer & Ziemerink, 2004; Horngren et al., 2016). For example, a cost item may be variable concerning one cost object but fixed concerning another. Additionally, variable, and fixed cost behaviours apply to linear cost functions only within a relevant range, with changes outside this range causing costs to become nonlinear.

Traditionally, cost behaviour classification involved identifying a single activity level, contrasting with the detailed analysis of costs in activity-based costing (Langfield-Smith et al., 2012). In activity-based costing, costs depend on whether an activity is unit level, batch level, product level, or facility sustaining (Horngren et al., 2016). This activity-based approach improves understanding of cost behaviour and enhances cost prediction accuracy in various industries (Langfield-Smith et al., 2012).

Regardless of the method used, these classifications are vital for determining operating leverage, break-even points, profit planning and control, and decision-making (Horngren et al., 2016). Operating leverage, for instance, highlights the risk-return trade-off related to a firm's cost structure, emphasizing the extent to which fixed costs drive more than proportionate increases in operating profit (Weston & Brigham, 2008). Such implications of cost structure underscore its significance in managerial decision-making processes.

The Cost Structure component encapsulates all the expenditures associated with the operation of a business model. It delineates the primary costs incurred when working within a specific business model. The creation and delivery of value, the nurturing of

Customer Relationships, and the generation of revenue all come with their respective costs. These costs can be reasonably calculated after defining Key Resources, Key Activities, and Key Partnerships. It is noteworthy that while cost minimization is a universal aim in every business model, some business models place greater emphasis on cost efficiency. For instance, so-called "no-frills" airlines have constructed their business models with a relentless focus on maintaining a low-cost structure.

Naturally, cost reduction is a priority in all business models, but the significance of achieving a low-cost structure varies among them. Therefore, it is constructive to differentiate between two overarching categories of business model Cost Structures: cost-driven and value-driven, with many business models occupying a position between these two extremes.

Cost-driven

Business models are driven by the overarching goal of cost minimization. They relentlessly seek to cultivate and uphold the most streamlined Cost Structure conceivable. They achieve this by offering low-cost Value Propositions, harnessing extensive automation, and often engaging in widespread outsourcing. Examples of cost-driven business models include no-frills airlines such as Southwest, easyJet, and Ryanair. The characteristics of Cost Structures can be summarized as follows:

Fixed costs

Fixed cost are expenses that remain constant, irrespective of the volume of goods or services produced. Common examples include salaries, rent, and the maintenance of physical manufacturing facilities. Some businesses, particularly those in the manufacturing sector, are characterized by a substantial proportion of fixed costs.

Variable costs

Variable cost fluctuates in direct proportion to the quantity of goods or services produced. Certain businesses, such as music festivals, are notable for having a significant proportion of variable costs.

Economies of scale

Economies of scale are cost advantages that a business enjoys as its production output expands. Larger companies, for instance, can secure lower bulk purchase rates. This, in conjunction with other factors, leads to a decline in the average cost per unit as production levels increase.

Economies of scope

Economies of scope denote cost advantages linked to a broad range of business operations. In larger enterprises, the same marketing activities or Distribution Channels may support multiple products, enabling cost savings through shared resources and activities.

The characteristics of Cost Structures can be summarized as follows:

Value-driven

Business models, on the other hand, are characterized by a focus on value creation rather than a rigid cost-centric approach. They frequently emphasize premium Value Propositions and a high degree of personalized service. Business models in the luxury sector, such as luxury hotels known for their opulent amenities and exclusive services, typically exemplify the value-driven category.

Acquiring key resources, performing key activities, and having and dealing with key partnerships all are a function of costs. Cash is needed to create and deliver value, maintain customer relationships, and generate revenue. Costs can be calculated when key resources, key activities, and key partners are all specified and defined. For overall effectiveness of any business model, it is of utmost importance that such business model should be scalable.

In this thesis, the use of these nine blocks will be employed to analyse Owppin Limited. As it will help give an overview of the organization and its processes. It will also help picture the relationships and interactions within the organization as we have described above. It will be used to focus on exploring the business idea of Owppin and using the business model canvas as outline in Business Model Generation to showcase its current situation and help identifies its problem and also use it to proffer solution to this problem (excess spillage generation) it is facing presently and help present opportunity for improvement as well.

3. Owppin Operational Systems and Organisational Structure

Owppin Limited falls under the category of Fast-Moving Consumer Goods (FMCG) and specializes in toothpick production, which is clearly its primary business idea. This concept likely originated from the necessity to offer a hygienic solution for removing leftover or stuck food particles from teeth, as indicated by Owppin Limited's mission statement on its website. Many African cuisines are sticky and tend to adhere between teeth, traditionally addressed using broomsticks made from dried palm tree leaves. However, this method lacks hygiene as these broomsticks can be made from any fallen palm leaves and are not readily available. Therefore, the production of toothpicks in convenient packs aims to address this issue.

In the food industry, where the need for food is constant, various factors such as government regulations, cultural disparities, and technological advancements have minimal impact. The toothpick market in Nigeria and other African countries is significant due to the large population and widespread use of toothpicks, especially since dental floss is not as commonly used. This demand presents substantial market potential for locally produced toothpicks, aligning with the Nigerian government's initiatives to reduce imports and promote domestically manufactured goods for both local consumption and export.

Market research reports from Foraminifera Marker Research (2018) and Verified Market Report (2023) indicate that the toothpick business is sustainable and poised for expansion. Toothpicks are widely used in households, restaurants, hotels, bars, gatherings, and other occasions, ensuring a steady demand. Additionally, Nigeria boasts readily available raw materials for toothpick production, with bamboo being preferred over wood due to its strength and environmental considerations. Although some production equipment may need to be imported from manufacturers predominantly located in China and India, the overall feasibility and growth potential of the toothpick industry remain promising.

3.1 Owppin Organizational Structure

Any organisation comprising of more than one person needs a form of organisational structure. For instance, organisational charts display the chain of commands within an organisation and show task allocations, coordination, and supervision, all focused on a single goal. Owppin organizational chart (Tabe 2) is not any different. General theory (as explained in 2.2.6) offers an alternative to the conventional hierarchical structure of a company.

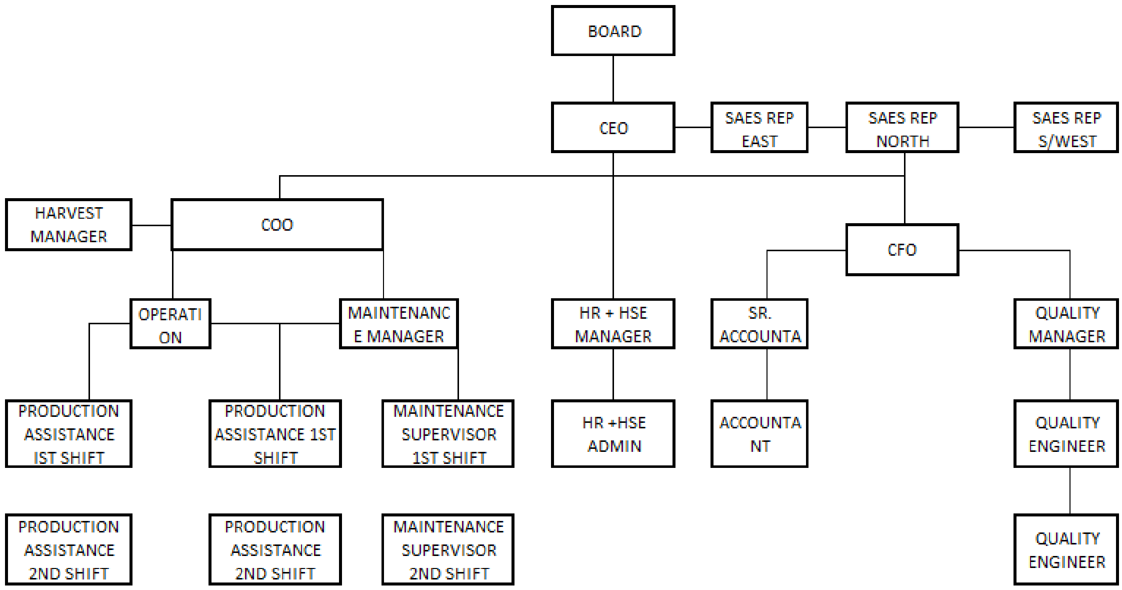

Table 2: Owppin Organizational structure (From internal memo)

A system can be understood as a grouping of elements that interact, relate, or depend on one another, forming a complex entity. Systems theory, an interdisciplinary framework, seeks to illuminate the intricacies present in entities such as businesses, where various functions are interconnected and coordinated within a network to ensure ongoing operation. This theory is applicable to examining or describing any collection of components, whether natural or human-made, collaborating to achieve a specific outcome, ranging from individual organisms to entire societies. Essentially, systems theory offers a comprehensive examination of systems, aiming to uncover principles that apply across different types of systems at various hierarchical levels. Although the term lacks a precisely defined meaning, it is commonly regarded as a management approach.

Systems theory emerged in the 1940s, with roots in the work of biologist Ludwig von Bertalanffy and further development by Ross Ashby. Bertalanffy highlighted the notion that actual systems behave like living organisms, dynamically responding to external influences, and adjusting over time. In contrast to conventional methodologies concentrating on isolated components, systems theory underscores the interconnectedness that unifies them into a unified entity. It encompasses crucial components such as the system's interface with its environment, inputs, outputs, processes, states, hierarchical structures, goal orientation, and information flow.

A core characteristic common to all systems is that comprehending one component provides insights into other interconnected elements. As articulated by Kuhn, the significance of a "piece of information" correlates directly with the extent of deducible information derived from it (A. Kuhn, 1974)

According to systems theory, organizational structure is characterized as the "established arrangement of connections among the components of the organization" (French, Kast, and Rosenzweig, 1985, p. 348). Highlighting the importance of relationship dynamics and role configurations, systems theory has become a cornerstone in the examination of organizational behaviour. In response to the shortcomings of conventional closed-system frameworks, businesses have progressively embraced systems theory, resulting in improved organizational models and behaviour analyses. Over the past century, influential figures in organizational management have advocated for the integration of systems theory.

In recent years, systems theory has been increasingly applied to more specialized aspects of organizational behaviour. For example, Gilad Chen and Ruth Kanfer, in their work "Toward a Systems Theory of Motivated Behaviour in Work Teams," published in Research in Organizational Behaviour, shed light on the contextual influences of team dynamics on individual behaviour and the diverse traits present within teams, which are often overlooked by current motivational theories. In today's rapidly evolving environment, organizations must adapt to avoid becoming obsolete. Leaders play a pivotal role in this adaptation process by continuously assessing and enhancing the organizational structure. Implementing a performance appraisal system focused on development, free from intimidation, proves to be an effective mechanism for organizational learning.

3.2 Owppin Business Process

Owppin operations involve buying of bamboo farm, harvesting the bamboo on the purchased farmland, and transporting the harvested bamboo from the farmland to the factory for processing. Production process starts from sawing the bamboo (Figure 4) to size precisely four feet as the average length of bamboo from farm is around twenty feet (This is an agreed length suitable for transport Owppin has). After sawing the bamboo to size, the bamboo are sorted as the diameter of the bamboo varies. The bamboo are sorted according to its size. Then it will be ready for di-setting or splitting (Figure 5). The di-setter are of different sizes, the sizes are selected based on the diameter of the bamboo.

Figure 4: Sawing or cutting of Bamboo (https://www.youtube.com/watch?v=-r9-oz03-g0).

From the di-setting section, it is them moved to splicing section. In the splicing section (Figure 6), the di-set bamboo is then split into two depending on the thickness of the bamboo. However, the knots are also removed during the splicing and the desired thickness required for shaping is between 5mm to 7mm. Occasionally, a split bamboo can still be moved back for further splicing. Then the bamboo is moved to the shaping machine (Figure 7) where it is shaped into a long round stick.

Figure 5: Bamboo splitting or di-setting (https://www.youtube.com/watch?v=-r9-oz03-g0).

Figure 6: Splicing or slicing of bamboo sticks (https://www.youtube.com/watch?v=-r9-oz03-g0).

Figure 7: Shaping or round stick of bamboo stick (https://www.youtube.com/watch?v=-r9-oz03-g0).

The long round stick is then move to the quality section where it is soaked into a solution (Dye) to remove harmful organism and dark colour sections that may be present in the sticks. The sticks are removed from the solution and placed in oven for drying. After drying, it is then moved to the polishing section (Figure 8) where it polish to bring out the golden colour such as those we see on most toothpick, which is the desired colour.

Figure 8: Polishing of Bamboo sticks (https://www.youtube.com/watch?v=-r9-oz03-g0)

The long round stick is then moved to the cutting section (Figure 9) where it is cut to the desired size, the size of the normal toothpick we used to see around. Then it is moved to the sharpening section to give it the sharp tip on both end and on one end depending on the type of product we want and on the type of sharpening machine. The other end are grooved to form a pattern to beautify the stick if only one of its end is sharpen. The sharpened sticks are then collected and moved to the dispenser for filling. After filling it is capped, packed, and sealed for warehousing. Then shipped to the market.

Figure 9: Cutting the round stick bamboo (https://www.youtube.com/watch?v=-r9-oz03-g0)

A business process refers to an action or series of actions devised to accomplish a specific organizational objective. These procedures are frequently represented visually through flowcharts, depicting a sequence of actions punctuated by decision points, or presented via a Process Matrix outlining activities along with relevant rules derived from process data. In today's swiftly evolving business environment, modern organizations must embrace agility. Systems theory has played a crucial role in fostering the necessary agility within organizations. Nevertheless, for a business to truly embody agility, its business processes must also demonstrate adaptability. While the significance of systems theory in shaping business processes has been acknowledged, there currently exists no equivalent framework for the software components at the organizational level.

Owppin operation processes as shown above indicate how waste is generated in the process. Resolving this waste issue is the main concern of this thesis work. This waste is not peculiar to Owppin alone as it was gathered from other toothpick manufacturers using similar material and equipment. Majority of the organization running similar business have accepted this waste and have also seen this waste as normal, hence they have accepted it as desirable in the process. Owppin behaviour appears to be in support of this opinion that it is difficult to overcome this waste challenges and does not uphold Owppin mission statement as stated on her website. This waste constitutes a major environmental hazard and hence, there is need to think outside the box to find a solution to this menace.

3.3 Owppin Operational Model Using Canvas

It is natural and normal if the waste generated from the process is perceived as a problem, as it is obviously the obvious. However, it will never be fair if only the obvious is considered, hence the need to consider the whole process as a system. This will give an opportunity to consider the operations, equipment, management, and the people. For better analysis and easy decision making, the combination of the system theory with business model canvas will surely be a good consideration. Below is Owppin business model using business model canvas of (Table 3), it shows the key areas of its operations briefly comprising of the nine pillars as discussed in chapter 2. Consideration is given to the interrelationship between these nine pillars so as not to leave any stone on turn in the quest to ascertain the root causes of this waste generation.

Business Model Canvas				
Key Partners	**Key Activities**	**Value Propositions**	**Customer Relationships**	**Customer Segments**
Original Equipment Manufacturer (OEM) Contractors	Farm purchasing Harvesting of bamboo Transporting of harvested bamboo Sawing of bamboo Di-setting of bamboo Splicing of Bamboo Shaping of bamboo Dying of bamboo Cutting to size Polishing Sharpening Packing Warehousing	Golden stick toothpick	Personal Self-service Single Transaction	Business to Business (B2B)
	Key Resources		**Channels**	
	Equipment Human Tools Vehicles		Logistics Physical Delivery In-person In-store	

Cost Structure	**Revenue Streams**
Cost of Equipment Suppliers Power Fuel Labour Rent	Sales and Invoice One-time customer payment

Table 3: Owppin business model using canvas.

3.3.1 Key partners

Owppin key partners are presently the Original Equipment Manufacturer (OEM) and some local parts vendors. The OEM help in relation to equipment information which includes and not limited to how the equipment is to be used (Operating procedure). The technical information regarding the equipment settings and parameters. Maintenance and repair procedures as well as after sales support. The local vendors help in the supply of parts. Owppin owns this equipment and has committed lot of financial resources in acquiring the equipment.

3.3.2 Key activities

Owppin has several activities that are tied to only one objective which is to produce toothpick. The process of producing toothpick are categorized into three activities:

Farm Activities

The farm activities which start from farmland acquisition (Bamboo), harvesting of the farmland, transporting the harvested material from the farmland. Labour required for the processes as well as the equipment needed to carry out these various task.

Factory Activities

Factory activities which involve the process earlier discussed in 3.1, to recap, it involves Sawing of bamboo, Di-setting of bamboo, Splicing of Bamboo, shaping of bamboo, dying of bamboo, cutting to size, polishing, sharpening, packing, and warehousing.

Administrative activities

The administrative activities involves the human resources management (HRM) activities, sales and order management activities, part procurement activities and safety management activities.

3.3.3 Key Resources

Like most organization, Owppin key resources is not different, it predominately includes equipment, human, tools, and finance. Bulk of the weight of the organization depend on her human and financial resources.

3.3.4 Value Proposition

Owppin value proposition is basically toothpick. Owppin is presently the biggest local producer of toothpick, and Owppin has been enjoying this advantage for a while now. Some other producers are coming up as the Nigeria government is continually implementing policies to reduce her importation of some goods that can be produced locally, and toothpick is one of them.

3.3.5 Customer Relation

Owppin as an organisation is presently having lots of customers scattered all over the country, however, Owppin is really lacking in keeping an official relationship with her customer. There will be need to do more in this aspect. Presently, Owppin basically depend on demand and supply relationship. There will be need to develop a well committed relationship with her customer.

3.3.6 Customer Segment

Owppin generally practice a business to business (B2B) type of customer. It is basically based on purchase order.

3.3.7 Channel

Owppin channel system is very simple and open as it involves using logistics vendors to deliver to customers, physical delivery to some other customer depending on their location, as well as In-person or In-store. Meaning the customer can come directly to the factory to pick up their goods.

3.3.8 Cost Structure

Owppin organizational cost comes from the Cost of Equipment purchase and maintenance, part supplies, power consumption, fuel articulated vehicles and cars, labour wage, rent as well as raw materials used for her process. There is also a secondary cost that come because of the waste generated by the process. This comes from waste disposal as well as environmental fines.

3.3.9 Revenue Stream

Owppin practices only one time payment, where customer pays for the product and the product is delivered to the customer via the channels explained above.

3.4 Owppin Major Challenge

Owppin has stockpile waste over the years and it has become like a mountain. Waste generation through the process is a major concern to Owppin as an organization. It is not only about the environmental impact it has on the environment but also it is causing the organization on necessary financial burden (Owppin does not give permission to make this public). Owppin is not in the good book of the environmental agency as it struggles every year to meet the environmental standard as required by the agency.

In relation to the waste generated by the process, three pillars from the model were pencilled down as a probable area that could directly be the cause (Table 4) of this waste. The key Partners (Equipment experts) and the Key activities (Operation) and key resources (People). Three questions came up during the brainstorming and questioning section and

discussion to determine the root cause of the problem:

1. Is it equipment problem or
2. Is it operation problem or

3. Maintenance problem

Several questions were put to the original equipment manufacturer (OEM), the feedback was that the process involve cutting, di-setting, scrapping, and sharpening, this will generate different spillages and waste and it is desire during the process. In terms of the operation, the standard operating procedure were review several times to see if there is something missing in the way the equipment is operated, nothing seems to be out of place within the operating procedure.

Regarding maintenance, some gaps were identified as also pointed out by the OEM, the blades used in cutting, di-setting, scrapping, and sharpening were agreed to be checked and adjusted to specification. The maintenance team are also of the opinion that if the blades were not sharp enough, the spillage and waste generated might become more than usual. This assumption cannot be verified as there was no measurement carried out to ascertain this. However, physically looking at the waste seems to agree with the assumption. The not so sharp enough blades sometimes cause damage to the bamboo, instead of cutting or sharpening the bamboo, it tends to destroy the bamboo instead. Moreso, the moisture content in the bamboo varies as it was observed that the wetness in the bamboo differs between regions where the bamboo were harvested. The higher the moisture content, the faster the blade sharpness reduces (this was an observation made in an attempt to find out if blade sharpness has any effect on the volume of waste generated).

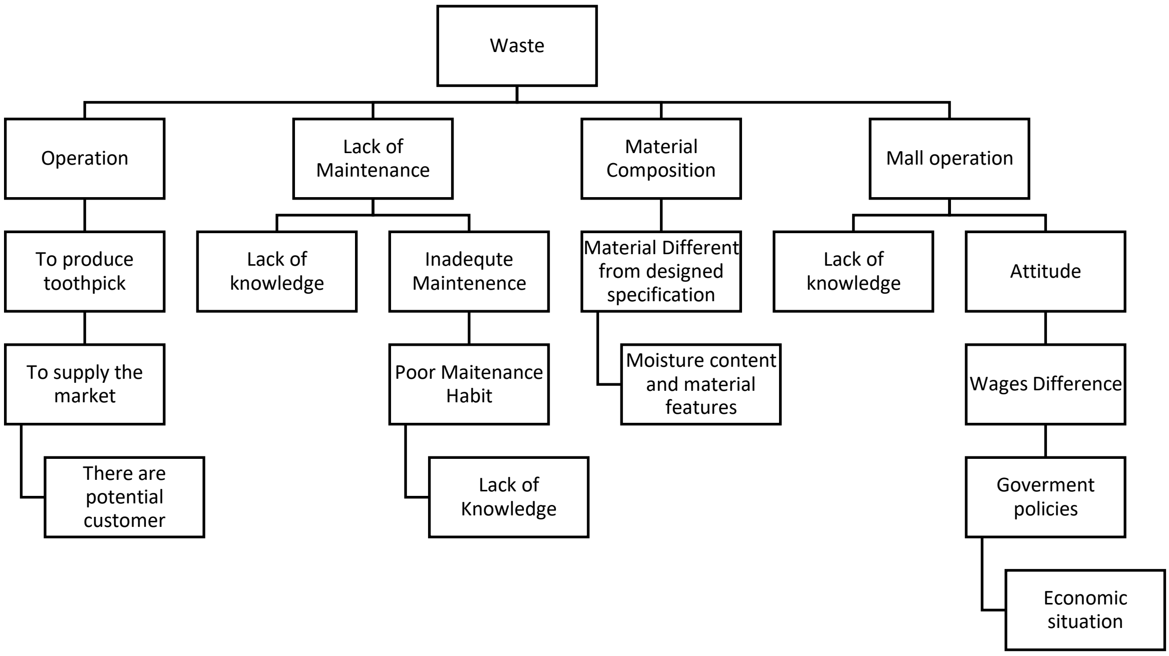

Table 4: Root cause analysis

During the root cause (Table 4) analysis session, some action plans were agreed on, to replace the dull blades and observe to see if the waste generated reduces or remain the same. There was little or no changes in the waste generated as the amount of waste was not that significant. Leaving us with one option to live with the waste or to find a way to manage the waste. The latter is obviously the way to go, which is the aim of this thesis. The solution in mind is to look for a way to engineer the waste to help reduce the environmental hazard it constitutes and reduce or eliminate the environmental fines levied on the organization by environmental agency.

4. Proposed Solution and Business Improvement Model

The solution in mind as stated at the end of chapter three was to engineer a solution for the waste generation. The term engineering the solution came from health and safety analysis of hierarchy of control. This was due to that fact that the waste was creating an environmental hazard and as such, should be treated as one. The concept of the hierarchy of control originated in the field of occupational health and safety. It is a framework that guides the selection and implementation of control measures to protect workers from workplace hazards. The idea is to prioritize control measures based on their effectiveness, with an emphasis on eliminating or minimizing hazards at the source.

The concept of the hierarchy of control (https://www.mdpi.com/1660-4601/19/5/2731) holds significant prominence in occupational safety literature and standards, having been extensively utilized and cited. Its roots can be traced to the contributions of early safety and health professionals, with biologist and systems theorist Ludwig von Bertalanffy being among the influential figures associated with its evolution. Although Bertalanffy is not directly attributed to originating the hierarchy of control, his pioneering work in systems theory, which underscores the interdependence of elements within a system, played a pivotal role in shaping systematic approaches to safety management.

The hierarchy of control refers to a systematic approach utilized in the management and prioritization of workplace hazards. It provides a structured framework for selecting the most effective measures to either eliminate or mitigate risks to an acceptable level. Typically structured into multiple levels, each representing a different control approach, they are arranged in order of preference:

Elimination: The most effective control measure is to eliminate the hazard entirely. This involves removing the hazard from the workplace or the process. If the hazard doesn't exist, there is no risk.

Substitution: If elimination is not feasible, substitution involves replacing the hazardous substance, equipment, or process with a less hazardous one. For example, replacing a toxic chemical with a non-toxic one.

Engineering Controls: These controls are physical changes to the workplace or equipment to reduce or eliminate the hazard. Examples include installing machine guards, ventilation systems, or noise barriers.

Administrative Controls: This level involves changing the way people work or the way they are scheduled to minimize exposure to hazards. Examples include job rotation, training programs, or work procedures.

Personal Protective Equipment (PPE): PPE is the last line of defence and involves providing workers with protective gear. This includes items such as gloves, safety glasses, respirators, etc. PPE should only be relied upon when other controls are not feasible.

The individual stages of the hierarchy of control outlined previously have been systematized and developed over time, thanks to the contributions of diverse experts in the field of occupational safety. Ross Ashby, a cyberneticist, alongside other safety specialists, have contributed significantly to shaping and enhancing these principles.

The proposed improvement to the business model after analysing the business processes. Some considerations were made with the understanding and some degree of certainty that if the business model improvement is implemented as indicated below (Table 5), it will help resolve the waste issue drastically, save the company unnecessary financial loses and it will be beneficial to the business in totality. The below table shows the new business model as well as the areas of improvement.

Business Model Canvas				
Key Partners	**Key Activities**	**Value Propositions**	**Customer Relationships**	**Customer Segments**
Original Equipment Manufacturer (OEM) **Contractors**	**Farming purchasing** **Harvesting of bamboo** Sawing of bamboo Di-setting of bamboo Splicing of Bamboo Shaping of bamboo Dying of bamboo Cutting to size Polishing Sharpening Packing **Pulp and Die** **Pressing** **Creeping** **Cutting** **Warehousing**	Golden stick toothpick **Toilet tissues** **paper Napkin**	Personal Self-service Single Transaction **Automated subscription**	Business to Customer (B2C) **Business to Business (B2B)**
	Key Resources		**Channels**	
	Equipment Human Resources Tools Vehicles		Logistics Physical Delivery In-person In-store The Internet (social media, blogs, e-mail, etc.) Traditional media (television, radio, newspapers, etc.)	
Cost Structure			**Revenue Streams**	
Cost of Equipment Suppliers Power Fuel Labour Rent			Sales and Invoice Purchase order. Online payment One-time customer payment	

Possible Increase Possible Addition Possible Outsource

Table 5: proposed improvements business model

4.1 Consideration for improvement

The waste generated during our operation is much, and it is in different forms. The waste ranges from off-cuts from a bamboo pole, under-size after splitting, broken long sticks and dust form from sawing and shaping. Also, waste is generated during sharpening process as well. Every year we always strive to reduce this waste, on average we could only achieve 50% utilization of the raw material on average. 40% if not 50% of the waste material can be reuse for other purpose that will yield a lot of money.

Since this waste has been a menace to Owppin and Owppin is seeking ways to eradicate this waste, to help resolve this issue, it will be of great benefit for Owppin if Owppin could diversify and increase her value proposition. To do this Owppin have to integrate another section to the existing business sections, to produce valued items such as toilet tissue or paper napkin if not both. This will require new equipment of course, and there will be little or no need for extra human resources as the resources Owppin used in the farm can be converted to operate these new machines after acquiring the equipment and proper training.

There are basically four factors that needed to be considered to achieve this plan. This I believe is typical for any new establishment. The four factors are:

Space

Presently, space is not an issue as far as Owppin is concern. The present location where Owppin is situated can still accommodate four times the size of the building Owppin has. Due to the space available, I personally believe is the reason Owppin was stockpiling her waste as it has lots of space left unutilized.

Equipment

The equipment needed for paper napkin production typically depends on the scale of production, or the type of napkins being manufactured (e.g., size, design, quality), and the production process employed. However, here is a general list of equipment commonly used in paper napkin production:

Pulp Preparation Equipment

Pulping machines: To break down raw materials (usually wood pulp or recycled paper) into a pulp mixture.

Refiners: To further refine the pulp and remove impurities.

Paper Machine

Fourdrinier machine or similar: To form the paper web by depositing the pulp mixture onto a continuous wire mesh.

Press section: To remove excess water from the paper web.

Dryer section: To dry the paper web using heated cylinders or other drying methods.

Converting Equipment

Napkin folding machine: To fold the paper into the desired napkin size and shape. There are various types of folding machines available, including single-fold, multi-fold, and interfold machines.

Embossing rollers: To add texture or patterns to the napkins.

Cutting equipment: To cut the folded paper into individual napkins.

Printing equipment (optional): For printing designs, logos, or patterns onto the napkins.

Packaging Equipment

Packaging machine: To package the napkins into bundles or packs. This may involve wrapping the napkins in plastic film or paper sleeves and sealing them.

Carton sealing machine: To seal cardboard boxes containing the packaged napkins.

Palletizing equipment: To stack and organize finished products onto pallets for storage or shipping.

Auxiliary Equipment

Compressors: To provide compressed air for various pneumatic systems within the production line.

Boiler: To provide steam for drying the paper web and other heating processes.

Water treatment system: To treat and recycle water used in the papermaking process.

Capital Investment

The capital investment typically encompass the subsequent expenditures:

Machinery expenditure: This stands as the primary cost element in your tissue paper manufacturing venture. The expense associated with machinery hinges on factors like the type, capacity, and quality of the machines employed. Various machine options are available for tissue paper manufacturing, including:

Automatic tissue paper making machine: This advanced machine operates at high speed and efficiency, facilitating the production of large quantities of tissue paper within a short timeframe. It accommodates diverse types of tissue paper, such as toilet paper, facial tissue, napkins, and paper towels. Additionally, it is capable of performing functions such as embossing, perforating, cutting, and packaging. The cost of an automatic tissue paper making machine can range from $26,000 - $80,000 and upwards. (https://www.made-in-china.com/products-search/hot-china-products/Paper_Napkin_Machine_Price.html)

Semi-automatic tissue paper making machine: Conversely, this machine operates at lower speed and efficiency, resulting in the production of smaller quantities of tissue paper over an extended period. It is limited to producing a single type of tissue paper at a time, such as toilet paper or facial tissue. Moreover, manual intervention is required for functions such as embossing, perforating, cutting, and packaging. The cost of a semi-automatic tissue paper making machine typically falls between $11,000 - $25,000 (https://www.made-in-china.com/products-search/hot-china-products/Paper_Napkin_Machine_Price.html)

Manual tissue paper making machine: This basic machine operates at very low speed and efficiency, yielding minimal quantities of tissue paper over prolonged durations. Similar to the semi-automatic variant, it is restricted to producing only one type of tissue paper, such as toilet paper or facial tissue. Furthermore, manual labour is necessary for all functions, including embossing, perforating, cutting, and packaging. The cost of a manual tissue paper making machine generally ranges around $5,000 - $11,000 (https://www.made-in-china.com/products-search/hot-china-products/Paper_Napkin_Machine_Price.html)

Labour

The quantity and variety of labour required depend on the production scale and the type of machinery utilized. Generally, labour is necessary for various functions within a napkin manufacturing facility:

Machine Operation

These workers are tasked with operating and overseeing the tissue paper making machine and auxiliary equipment. Their responsibilities include feeding raw materials into the machine, adjusting settings, inspecting output quality, and troubleshooting any issues. They should possess fundamental technical skills and knowledge of machinery maintenance.

Quality Control

Employees are responsible for testing and evaluating the quality and performance of the tissue paper using testing apparatus. Their role involves ensuring that the tissue paper meets the quality standards and specifications required by the market. They should possess basic analytical skills and an understanding of quality parameters.

Packaging

These workers are engaged in packaging the tissue paper into plastic bags or boxes using packaging equipment. Their duties include ensuring that the packaging is tidy, secure, and visually appealing. They should possess basic manual skills and knowledge of packaging materials.

Administration

These individuals oversee and supervise the overall operations of the factory. Their responsibilities encompass planning, organizing, coordinating, and controlling all facets of the business. They should possess fundamental managerial skills and knowledge of business administration. (https://www.yuanhuapaper.com/how-to-start-a-tissue-paper-manufacturing-business/)

In a country like Nigeria, where Owppin is situated, labour is not a problem. Labour is relatively cheap and readily available. However, Owppin already has people functioning in this departments, an addition might be needed, and I am quite sure it will not be a problem.

Proposed Decision

Based on the above consideration, considering the equipment, labour and financial commitment, a semiautomatic equipment would be ideal for Owppin to consider if

Owppin wishes to own the production process. It is not financially too demanding, and I want to believe it can be upgraded to a fully automated process in the future. If the need arises. Should Owppin wishes to seek an Investor to build the production line in her premises, then I would suggest the fully automated production equipment as it would be cheaper and easier for Owppin to manage.

If Owppin can implement the option of owning her own paper napkin production line, there will also be the need to widen the scope of her customer relations, customer segment, sales, and channels. However, Owppin cost structure will also increase as a result of this, likewise many other sectors like key partners, key resources, and activities. This will be surely compensated for from the sales of the new value proposition as the organization will not require only few extra raw material as the waste will almost be enough for the processes. Owppin can also purchase wood waste from her neighbours who are into sawmills at a very small price as it is also a waste to the mill industry.

Revenue Consideration

Presently, Owppin runs a three – shift system, each shift requires 900 poles of bamboo tree. Each pole is cut to 20 feet as Owppin has limitation in transporting poles longer than 20 feet. The weight in tons has never been measure but however, an estimate will be that it is likely be between 15tons to 20tons on average. This assumption was derived from the fact that Owppin has a 20 tons truck which is used to convey the 20 feet poles from the farm to the factory, The truck always struggles sometimes to get to the factory and lots of frequent breakdown every day. This is one on the reason I suggest that the farm should be given to a third part.

With the above tonnage assumption, it will be easier to estimate the waste tonnage and possible other advantages that could be derived by implementing suggested improvement.

> A shift needed 300 poles of bamboo tree, if the 300 weighs 10 tons, then, it will mean that (10 x 3) will be needed in a day. This will give on average 30 tons of material. It was also stated that Owppin utilization factor was 50% on a very good day. Meaning 15 tons of waste is generated daily.

Also, the 300 poles produces on average 150 cartons (sometimes 170 or 175) of toothpick. Each carton contains 15 packs, each pack contains 12 small plastic bottles, and each bottle contains at most 100-toothpick stick of 65mm and 1.2mm in diameter. A carton is sold for 500 Naira (€0.32).

Now, in a day, Owppin produces (150 x 3), which is equivalent to 450 cartons.
A carton is 800, then the 450 carton will be (800 x 450) = 360,000
In a month, Owppin will have revenue of 360,000 x 25 = 9,000,000.

Cost Considerations

Presently Owppin has 35 operators for her farm and factory operation. Owppin also has 2 maintenance supervisor, 2 production supervisor and a quality supervisor this total 5 supervisors. Owppin also has 6 senior managers.

Now, in a day (35 x 3) operator are needed which amount to 105.
An operator is paid 25,000 monthly, this will amount to 2,625,000.
The supervisor are paid 40,000 monthly, amounting to 200,000 monthly.
The senior managers salaries varies, on average of 250,000 monthly.
This (250,000 x 6) will amount to 1,500,000 monthly.
Power and Fuel amount to 800,000 monthly
Miscellaneous cost 200,000 monthly
Total Fix cost will be:

2,625,000 + 200,000 + 1,500,000 + 800,000 + 200,000 = 5,325,000

Profit = 9,000,000 – 5,325, 000 = 3,675,000
This is around $8,000 in equivalent.

Toilet tissues paper and paper napkins are essential material needed in homes, hotel, restaurant, bars, and many other places as its application cannot be fully utilized. This is the reason why the organization need to improve the customer segment to include business to business (B2B) by leveraging on her customers in the hotels and restaurants and strike a deal with them for Owppin to be their sole supplier of both toothpick and toilet tissues papers and paper napkins at reasonable price.

The semiautomated paper napkin can produce on average 400 – 500 pieces per minute. In an hour it will amount to (400 x 60) = 24,000 pieces per hour. In a shift it will amount to (24,000 x 8) = 192,000 pieces per shift. A pack contains 100 pieces, this means that in a shift, it will produce (192,000 / 100) = 1,920 pack. A box contain 24 pack, this mean it will produced 80 cartons per shift.(https://dljori.en.made-in-china.com/product/FwKaDZOTkRpi/China-Napkin-Tissue-Paper-Folding-Machine-Connect-Semi-Automatic-Packing-Machine.html)

Therefore, there is a possibility of producing (80 x 3) = 240 cartons per day. A carton cost 8,000 Naira (https://www.jumia.com.ng/generic-10-pack-multi-purpose-softwave-white-serviette-paper-253540200.html),

in a day, it can generate (1500 x 240) = 360,000. In a month, it will amount to (360,000 x 25) = 9,000,000. This revenue is almost the same when it is compared to toothpick. The number of operator needed to operate a semiautomated paper napkin is an operator and 2 assistance. Meaning a maximum of 3 is needed to operate a single machine. This is far less than the operating personnel in Owppin farm per shift. Owppin has 10 operator in the farm per shift.

Owppin can increase her channels as well, by creating a platform for her customer to be able to book her products online and place order while Owppin ensure that the customer have its product on time and make the payment system also to be flexible to accommodate several other customers. Owppin should create an avenue for online payment as well.

The procurement of bamboo farm and harvesting are not a major activity of Owppin business, to outsource such operation will be of great advantage to the organization. This is because Owppin always spend above her budget every year, this is due to the fact that Nigeria weather is not predictable, and bamboo grows in a swamp area, navigating through it is always challenging and extremely difficult. Owppin incur more expenses both in equipment and extra labour in the farm due to frequent machinery breakdown. The raw material is critical to Owppin operation; however, I believe this can be handled better by a third party as farming and harvesting of bamboo tree is their sole business. If

Owppin could do this, Owppin would have transferred all the risks involve in the farming operation as well.

4.2 Competitive Arena

In the business context, the term "competitive arena" refers to the dynamic marketplace where companies engage in activities to attract customers, secure market share, and achieve profitability (Arenas of Competition - MBA Boost). This arena is shaped by a multitude of factors, including competitors, customers, suppliers, substitutes, regulations, technology, and economic trends.

Recognizing the intricacies of the competitive arena is essential for businesses seeking to formulate successful strategies and sustain growth. This entails thorough examinations of competitors' strengths and weaknesses, pinpointing opportunities, and threats within the market, distinguishing their offerings, and continuously adapting to market changes. Additionally, companies must evaluate their own strengths, weaknesses, and resources relative to competitors in order to strategically position themselves for success within this competitive landscape.

Owppin presently has toothpick has her only product and it sell within the Nigeria market. In a bid in resolving Owppin waste generation problem, the creation of new products as proposed in this thesis, will help create a competitive advantage to Owppin business as a whole (Table 6). This can help put Owppin in a global view and attract investors to partner with Owppin and help her grow and compete in the global market.

Products	Toothpick	Toilet Tissue paper	Paper Napkin	Composite Board	Pulp and Paper
Geography	Nigeria	Africa	Europe	America	Asia
Customer Segment	Hotels	Restaurants and Bars	Home	Offices	Retailers
Profit Level	Low	Medium	High		

Table 6: Competitive arena

5. Summary

Owppin, as an organization, is grappling with significant waste generation during its processes, leading to both environmental concerns and financial burdens. The company has faced challenges in meeting environmental standards set by the agency. A thorough analysis identified three potential areas contributing to the waste: equipment, operations, and maintenance. Questions were raised regarding whether the issue lay with the equipment, operational procedures, or maintenance practices.

Feedback from the original equipment manufacturer (OEM) highlighted the nature of the process involving cutting, di-setting, scrapping, and sharpening, which inherently generated waste. While operational procedures seemed to be in order, maintenance gaps were identified, particularly concerning blade sharpness and potential damage to bamboo due to moisture content variations. Root cause analysis led to an action plan involving the replacement of dull blades, but the impact on waste reduction was minimal. Consequently, the focus shifted to finding ways to manage the waste and engineer a solution to reduce environmental hazards and associated fines.

The proposed solution aligns with the hierarchy of control, a framework used in occupational health and safety. The strategy involves prioritizing control measures to eliminate or minimize hazards. In this context, engineering controls were considered to modify the process and reduce waste generation.

The proposed business improvement model aims to address the waste issue effectively. The model involves steps such as elimination, substitution, and engineering controls to reshape the business processes. There are other products that could be made from bamboo waste, it ranges from bamboo floor tiles, bamboo fabrics, bamboo chopping board, bamboo pillows, sheet, towels, bamboo cotton buds and many more. The cost estimate used is an estimation of the current economic situation in Nigeria. There could be changes in the future as the economic situation is not stable at the moment. The hope is that implementing this improved business model will not only alleviate the waste problem but also result in substantial financial savings and overall benefits for the company.

Effort should be made in relation to the cost calculations used in this thesis, like the saying goes, “the only constant thing is change”. The situation might not be the same always, there should be more analysis in relation to the calculations in this thesis. Should there be need for anyone to make use any part of this thesis, a note of caution will be that care should be taken as one of the option calculations (in this case paper napkin) presented, were made with rough estimation and present economic situation. Inflation and other factors affecting price and cost determination should be considered.

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