

CRITICAL SUCCESS FACTORS AND CHALLENGES
FOR PRODUCT DEVELOPMENT: A CASE STUDY
APPROACH

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(HONOURS)

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DEVELOPMENT: A CASE STUDY APPROACH

BY

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(1) This undergraduate FYP is the end result of my own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

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DEDICATION

This research paper is dedicated to my parents, who have been a consistent source of encouragement and support throughout my graduate school and life problems. I am grateful to them for allowing me to be a part of your lives. They have always loved me unconditionally and have encouraged me to work hard for the things I want to achieve through their wonderful example. Finally, I'd want to express my gratitude for their financial support in helping me complete my studies, and I hope they are pleased and proud of me.

TABLE OF CONTENTS

Copyright Page.....	ii
Declaration.....	iii
Acknowledgement	iv
Dedication.....	v
Table of Contents.....	vi
List of Tables	viii
List of Figures.....	ix
List of Appendices	x
Preface.....	xi
Abstract.....	xii
CHAPTER 1: INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Research Background.....	1
1.2 Problem Statement	1
1.3 Research Objectives	4
1.4 Research Questions	4
1.5 Significance of Study	5
CHAPTER 2: LITERATURE REVIEW.....	6
2.0 Introduction.....	6
2.1 Factors Review.....	7
2.1.1 Top Management Commitment.....	7
2.1.2 User/Customer Involvement (i.e Market Research)	8
2.1.3 Involvement of Cross-Functional Team	9

2.1.4 Project Management Capability.....	9
2.1.5 Focusing on Innovation and Out-of-the-box Idea.....	10
2.2 Challenges Review.....	11
2.2.1 Internal Challenges	11
2.2.2 External Challenges	15
CHAPTER 3: RESEARCH METHODOLOGY	18
3.1 Research Design.....	18
3.1.1 Exploratory Design	18
3.1.2 Case Study	18
3.2 Data Collection Method.....	19
3.3 Proposed Data Analysis Tool.....	20
3.4 Case Study	21
CHAPTER 4: ORGANIZATIONAL BACKGROUND	25
4.1 Background of Protenga	25
4.2 Protenga Businesses.....	25
CHAPTER 4: DATA ANALYSIS	27
5.1 Analysis of Findings	27
5.1.1 Primary Data	27
5.1.2 Secondary Data	31
5.1.3 Proposed Framework	32
CHAPTER 6: DISCUSSION AND CONCLUSION	33
6.1 Discussions of Major Findings	33
6.2 Implication of Study	34
6.3 Limitations of Study	35
6.4 Recommendations for Future Research.....	36

LIST OF TABLES

	Pages
Table 5.1: Distribution of critical success factors across relevant research papers	30

LIST OF FIGURES

	Pages
Figure 5.1: Proposed model of the factors and challenges for product development	31

LIST OF APPENDICES

	Pages
Interview Questions	46-47

PREFACE

During my internship which started on June 2021, I was amused and interested in what my internship company is doing. They are a company which provides solution to global crisis such as food scarcity and waste management by making use of insect, a species which are easily neglected by many of us. I was intrigued by the idea of making insect work for you.

As insect-based product are widely and more usually used in animal feed, this product development is also another idea that triggers my interest in finding out what are the successful contributing factor. In this enhancing market, the number of new products being developed and introduced into existing market are beyond imagine.

This paper introduced a new approach in solving the world crisis and at the same time provides a reference to firms who are or have the plan on developing new and innovative products.

ABSTRACT

Project failures in new product development (NPD) are common, and they usually happen near the conclusion of the development process or later in the commercialization stage. The market is always hungry for new products and services as technology and consumer purchasing power improve. Projects for new product development (NPD) frequently fail, either at the end of development or later in the commercial stage. The root causes of failure are frequently linked back to NPD's early phases, sometimes known as the front end. The goal is to look into the important success criteria for product development, as well as predicted problems, and to provide a resource for product development companies. What variables contribute to a successful product development? Identifying these characteristics can save you money in the long run. When comparing the two sets of data, three things stand out: cross-functional collaboration, the implementation of a structured NPD process, and a focus on innovation and out-of-the-box thinking. This research has mostly focused on the corporate aspects that influence the success of new product development. It discussed what companies can do internally, but it didn't say much about what they can do with external elements to improve their success rate. It is suggested that you concentrate on external elements and problems when developing a product. It's crucial to emphasise that, depending on their business nature, product kind, top management strategies, and culture, different firms require a distinct combination of CSFs. Furthermore, it is feasible to discover that some CSFs are more important at certain stages of the NPD process.

CHAPTER 1: INTRODUCTION

1.0 Introduction

1.1 Research Background

Managing new product development (NPD), for the most part, is an exercise in sorting out who wins and who loses in a game of cat and mouse. In order to guarantee that resources are allocated properly throughout each development endeavour, key go/no-go decisions must be taken at the project level on a regular basis. Comparing companies to one another is useful at the corporate level for finding the critical success factors (CSFs) that distinguish the most successful organisations from their competitors.

In many cases, project failures in new product development (NPD) occur either nearing the end of a development process or later in the commercialization stage. The fundamental causes of failure are typically traced back to the very beginning of the NPD process, which is referred to as the "front end." Prior research has also discovered that handling the front end of new product development, where complete product specifications are developed, has a significant impact on the success of a product.

1.2 Problem Statement

As technology and consumer purchasing power enhance, the market is always thirsty for new products and services. New product development (NPD) projects typically fail, either at the conclusion of development or later in the commercial stage. The fundamental causes of failure are commonly traced back to NPD's initial stages, sometimes called the front end.

Product failure refers to a product's inability to establish a strong presence and maintain it in the market, which may be the result of poor performance or poor marketing (Bhasin, 2021). Failure of a product refers to the state or circumstance of not fulfilling the intended objective or expectations of the intended audience. This can be interpreted as a product failure. Product failures occur when a new product fails to generate sufficient revenues following its launch, resulting in its eventual downfall. When a product does not replenish its costs and marketing expenses, it is considered a tremendous failure. Typically, a product's failure occurs during its utilisation period.

But why does product development typically fail? First is the lack of customer focus. The market demand reflects the need of customers. The best precaution method is to provide consumers with something they want and need. Any product that does not meet a specific customer need fails to displace more established brands. Customers must be aware of the benefits of the new product. Failure is almost often the result of a lack of effective communication methods supporting the launch of a new product. If a product performs a new function, performs an old function in novel ways, or has a price and performance edge over competing items, it is likely to be seen as unique. In one way or another, it should stand out. Companies that are really good at focusing on their customers have strategies and processes in place to capture various types of customer requirements and translate them into robust requirement specifications that every new product development team member can understand and use to verify the final design.

The second is poor marketing planning. To give knowledge of product benefits and competitive distinction, proper positioning and messaging are required. Products can fail if the marketing plan is ineffective in bringing potential buyers through the various stages of the purchase cycle. The Product Marketing Manager establishes goals for each step and employs the most effective strategies for increasing awareness, interest, evaluation, and purchase commitment. However, products can fail if the

marketing plan is inadequate, the marketing budget is insufficient, or the marketing programme execution is wrong.

Thirdly, there is a lack of timing. Market success is defined in large part by the company's ability to deploy the product at the pinnacle of consumer needs. It is vital to anticipate and seize market opportunities before your competitors do. While being first to market is not always ideal, a prolonged waiting time or an untimely launch may indicate that the customer demand exhibited during the market testing phase has declined by the time the product is released during the commercialization phase. It is undeniable that time is one of the attributes leading to the top quality of a product; however, most companies launch whatever they have in hand along the journey so they do not fall behind. This is also one of the reasons why we often see the same product but with a different version with only slight improvements.

The fourth is product deficiency. The most common reason for new product failure is technical product flaws. Engineers and product technocrats are capable of over-engineering the best laboratory products. This is advantageous in terms of technological supremacy over competitors. An 'over-engineered' product, on the other hand, costs a lot to the company and, ultimately, to the customers, giving competitors an advantage over the company in question. Technical flaws must be addressed, but this should not come at a high expense. Customer expectations for product quality and dependability are rising. In light of this, the cost of poor dependability or performance can typically outweigh any sales advantages from a new product launch. The negative impact of poor quality on a product's brand or company can be devastating.

1.3 Research Objectives

After assessing the problems mentioned, the research objectives are developed as the follows:

1. To investigate the critical success factors for product development.
2. To investigate the anticipated challenges in product development.
3. To provide a reference for companies who are doing product development

1.4 Research Questions

What are the factors leading toward a successful product development? Identifying these factors can help avoid costly damages. When the team is brainstorming ideas, it may not conduct enough market research, resulting in advances that do not match client wants. The team must ensure that the company can transform the idea into a final product with available technology and production resources throughout the technical evaluation stages.

At the company level, how can each department integrate to push the project towards triumph? The definition of success at the company level may differ from the definition of success at the project level. In most project success/failure studies, project success is measured using a variety of indicators, such as new product profitability and market share gained. At the firm level, however, performance may be measured in multiple ways, such as the percentage of current sales accounted for by new goods. At various points of the product development process, a product development strategy may fail to achieve its intended benefits.

What are the challenges to be faced from both internal and external perspectives? Product development success necessitates a set of skills and abilities. As a result, product development teams are comprised of individuals with a diverse variety of experiences, personalities, and perspectives who are brought together for the sake of

success. To do so, they must be motivated and work together as a team to raise the energy levels of everyone involved in the product creation process. Being successful in the market is merely the beginning; maintaining market competition is considerably more difficult. Making decisions in this type of situation is a difficult task.

1.5 Significance of Study

This study will benefit firms from all perspectives regardless of what product plan they have. Companies that use the derived of this approach can progress effectively throughout the product development plan, and can also benefit from knowing the expected challenges when introducing a new product into an existing market beforehand. As customers' tastes change/evolve as technology advances, the barrier and challenges of the new product to enter an existing market grow with along. Thus, firms that apply the result of this study when doing product development in any industry can avoid mistakes and therefore be more time and cost-effective. This research uncovers the critical areas which contribute to successful product development.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Projects for new product development (NPD) often results in failing, either at the end of the development process or later when introduced to the market. NPD is a process that starts with brainstorming sessions, proposal screening, and risk assessments and ends with new product manufacturing, commercialization, and pricing. Additionally, prior research has revealed that handling the front end of new product development, where detailed product specifications are established has a substantial impact on the performance of the product. Obscure or imprecise descriptions might result in increased development expenses and/or failure during the process' later stages. Front-end activities are successful if they result in a thorough product definition and subsequent product design. A trustworthy or empirically tested product definition is unambiguous, clear, consistent, and has been subjected to a commercial and feasibility examination. Product conceptions are visual representations of the development process's objectives. They are at the foundation of sound product descriptions.

Product conceptions are visual representations of the development process's goals, and they are at the foundation of solid product specifications. A no-go judgment is based on two key factors. To begin, if decision-makers predict that the proposed product is unlikely to succeed commercially, the idea is cancelled. Second, even if a proposal has some commercial potential, it is abandoned if it is incompatible with the company's present business strategy. Even if an idea does not correspond with the existing business of a focal firm, it can nevertheless be effectively commercialized outside of that organization. Recognizing that all new products have an inherent risk of failure, businesses should make every effort to avoid this outcome. The reputation and direct sales of an organization are greatly influenced by the success of a freshly released product. Apple's excellent market image, for example, is largely due to its

business acumen in releasing revolutionized telecommunications equipment that meets client wants. Their success is largely due to their creative ideas, thorough market research, and timely market entry.

2.1 Factors Review

2.1.1 Top Management Commitment

A top manager is a title given to a senior management member at the top of an organization (“Top Manager,” n.d.). They are the managers who are in charge of making organization-wide decisions and developing plans and goals that influence the entire organization. They are located at or near the top of the organizational structure. As mentioned previously, the decision-makers are the one who gives a green or red light when a proposal is presented. This is the very first stage of product development which is to get approval from the top management. If top management is closely involved in the early stages of NPD, the impetus behind new product ideas is higher. Senior management has the ability to offer resources and clarify project goals. For instance, senior managers must act as process supporters in approving, allocating, and directing the flow of the process, (Dwivedi et al., 2021). Individual actions that cross-functional boundaries can be coordinated by management.

The importance is highlighted in a paper by Sun et al. (2004) where they investigated the Hong Kong toy sector. CSFs were examined concerning the four stages of the NPD process, and significant success factors were divided into four groups according to their implementation and significance. During phase I of the process of developing a new toy, it was observed that top management support and capital backing were two amongst the most frequently employed CSFs (Sun et al., 2004). In the product's development phase II, senior management commitment is still among the most widely adopted CSFs.

2.1.2 User/Customer Involvement (i.e Market Research)

The importance of client interaction in the early stages of NPD is debatable. Some observers say, for example, that customers rarely offer corporations substantial or diversified information (Granovetter 1982; Krackhardt 1992). However, producing the incorrect product is one of the primary causes of NPD failure (Dwivedi et al., 2021). Paying close attention to the market's new requirements can give businesses the 'first-mover' advantage, which translates to high product success rates in the face of low competition. Teams who do not integrate client feedback into their product development efforts will likely fail. Before beginning product creation, companies should investigate client expectations and requirements.

Before you take any huge steps in business, make sure there's a market for what you're selling. There are no sales if there are no customers. Market research is a method for collecting data and information about your target audience in a methodical manner (Shah, 2020). It aids in determining the viability of your product or service before launching it into the market. It also offers you a sense of what's hot in the business and what drives consumers to convert and buy. As a result, you can plan your product or service's roadmap.

In their study on Apple's new product development action, Tariq et al. (2011) describe the company's secret weapon in ensuring the success of its iPod and iPhone gadgets. It all starts with a creative environment and a commitment to economically viable innovation. The scheme product would then be evaluated by users and external research to determine whether it would garner consumer approval., noting that it should match into customers' ongoing usage patterns. In other sense, technology should progressively improve people's daily life without imposing too much change too quickly. By utilising a flexible manufacturing technique, the company was able to capitalise on the 'first-mover advantage' of releasing unique, unmatched things (Tariq et al., 2011).

2.1.3 Involvement of Cross-Functional Team

Front-end success has been characterized as requiring cross-functional collaboration (Florén et al., 2017). One possible explanation is that cross-functional collaboration facilitates thorough analysis and reduces front-end volatility. Another possibility is that concept selection is usually conducted in meetings including representatives from various departments in the company (Verworn 2006). In such gatherings, cross-functional collaboration facilitates concept assessment. Several scholars have looked into different sorts of cross-functional collaboration. The R&D and marketing interaction, according to Kohn (2006), is the most likely instance of cooperative interdependence during the early stages of NPD. These two regions are in charge of product definition and concept, which are then distributed to the rest of the company's activities and departments. Process and manufacturing design should collaborate early in the process of new product development to ensure that suggested items can be manufactured (Bacon et al. 1994; Verganti 1997).

Suwant toporn et al. (2010) found that the strength of NDP processes in the food business is largely dependent on customer involvement, exchange of information with internal and external stakeholders, and the importance of having a well-defined NPD process strategy and operational thinking, following a study of organisation groups working in mid sized Thai food companies.

2.1.4 Project Management Capability

The project manager is accountable for the project's progress through its different stages, one of which is the beginning stage, which is divided into several goals to be achieved. A project manager seeks assistance, makes resource requests, and handles technological and organizational challenges. At successful firms, project managers are responsible for all of these responsibilities, according to Khurana and Rosenthal (1997). Project managers are also responsible for defining goals, prioritizing work, and providing leadership on the front end (Kim and Wilemon 2002). Product

definitions are influenced by project managers, (Koufteros et al. 2002; Rauniar et al. 2008).

Although no comprehensive study of the features of good front-end project management has yet been conducted, existing research indicates that front-end activities can vary substantially in terms of sequencing, amount of similarity, and duration of the relative time period (Nobelius and Trygg 2002; Reinertsen 1999). This necessitates the need for front-end project managers to possess a wide range of skills.

2.1.5 Focusing on Innovation and Out-of-the-box Idea

According to Cengiz et al. (2005), technological advancements enable the development of novel products. However, as a result of this evolution, it is difficult to generate fresh ideas for the organisation. Nonetheless, capitalising on recent technological advancements is critical to the successful production of a noble product (Lester, 1998). Not only should ideas disrupt established paradigms, but product representations of these concepts must really bring value to customers in order to sell (Lester, 1998).

Prior to producing an unique product description, a team gathers market needs from a range of sources (Kalyanaram and Krishnan 1997). (Backman et al. 2007). Finally, a prototype concept idea is designed, allowing companies to assess whether extra work is required. If the choice is made to proceed, the first product concept enables the development phase's activities to be prioritised (Khurana and Rosenthal 1997; Kohn 2006). A drawing, a diagram, a prototype, or a mock-up can all be used to show an early concept for a product (Dickinson and Wilby 1997). In fact, the approach is frequently explained exclusively in text, outlining its primary traits and client benefits (Parish and Moore 1996).

2.2 Challenges Review

2.2.1 Internal Challenges

2.2.1.1 Complexity of Teams' Project

Organizations form teams when a single individual or a group of individuals working sequentially cannot adequately complete tasks in a timely manner. To develop new products, teams must navigate an unfamiliar environment fraught with high levels of uncertainty, which serve as crucial drivers of group's efficiency, (Bhuiyan, Gerwin, and Thomson, 2004; Eisenhardt and Tabrizi, 1995; MacCormack and Verganti, 2003). On the other hand, when ambiguity and uncertainty are significant, team performance may deteriorate. According to MacCormack and Verganti (2003), the contributing factor of ambiguity is twofold: the platform and the market. The first refers to the degree of ambiguity present during the project's design process, whilst the latter refers to the level of uncertainty created by ambiguity over the product's client desires.

Weick (1993) advocated regular discussions and courteous engagement, along with other things, to combat individuals' tendency to withdraw from teamwork under stressful conditions. Establishing acceptable communication styles inside authorised teams, on the other hand, can be difficult. Numerous interpersonal factors, not least of which are those pertaining to diversity, lead to the next issue.

2.2.1.2 Communicating across Functions

While team cross-functionality can produce a range of beneficial outcomes when implemented according to the procedures mentioned in the preceding section, existing research indicates that achieving those outcomes is not simple. Functional variety, according to two distinct assessments of the literature, has a harmful effect on team performance in general, but especially during times of crisis and upheaval (Bettenhausen, 1991; Williams and O'Reilly, 1998). Apart from impairing team effectiveness, complexity has been linked to increased levels of discontent, attrition, sick absence, commitment, and workplace stress (Schippers et al., 2003). Their

emphasis on team culture is very appropriate. Prior work by the current authors and others established the crucial importance of personal and social environment (Argyris and Schon, 1978; Edmondson, 1999, 2003; Nembhard and Edmondson, 2006).

Meaningful demographic contrasts, elicit judgements about an individual's perceived significance, aptitude, and potential to effectively respond to the job (Berger, Rosenholtz, and Zelditch, 1980). When these perspectives are wrong or out of control, they obstruct cross-functional learning and collaboration. Due to judgement errors, systems of influence and deference emerge within the team, limiting the supply of job knowledge (Bunderson, 2003). Less honoured team members—who are more likely to experience decreased psychological safety (Nembhard and Edmondson, 2006), decreased self-efficacy, and a diminished sense of importance to the team and its task (Berger et al., 1985)—become less engaged in team tasks (Kahn, 1990; Nembhard and Edmondson, 2006), and thus engage in less teamlearning behaviour (Edmondson, 1996, 1999, 2003; Edmondson et al., 2001). They withhold vital information.

2.2.1.3 Temporary Team Membership

Teams are project-based in a wide variety of fields, including research and new product development. When a project or field of inquiry presents itself, organization members are chosen based on their unique capacity to assist to the endeavour. Certain members of the team will work on a project until it is completed and then move on to the next one that requires their specialised skillset; others will work on the project for a shorter period of time. Individuals may collaborate on several projects with different people depending on the organisational objectives. This adaptable structure enables projects to be staffed by the most qualified professionals. At the same time, the team's transient character might be troublesome; members must get to know one another before they can operate well as a team (Goodman and Leyden, 1991).

Consistent team participation, according to research, increases instructional and intrateam interaction (Moreland, Argote, and Krishnan, 1998). Individuals who function in teams for an extended period of time, up to three years (Katz, 1982),

become more efficient, most likely because teammates develop "transactive memory" (Moreland and Myaskovsky, 2000). Longevity is crucial for cross-functional collaborations in particular. Pelled et al. (1999) discovered that social tenure had a moderating effect on the link between diversity and conflict, with conflict being smaller in varied teams with a longer team duration. Schippers et al. (2003) discovered that group longevity modifies the connection of diversity on organizational performance in a more recent study. As a result, firms tend to be forced to make a trade-off when utilising short, project-based teams. On the other side, they enable the application of the greatest level of knowledge to every project. On the other aspect, the frequency and duration of these proposal teams preclude the development of familiarity and understanding that comes with team longevity.

2.2.1.4 Fluid Team Boundaries

One reason for categorising a group of individuals as a "functional team" is to ensure that the group is "anchored," which means that each member's role is explicitly expressed and acknowledged (Hackman, 1990). Individuals who work in constrained teams are more likely to have comparable time allocations than members of ad hoc teams. This enclosure generates a sense of shared identity, cohesiveness, and purpose, all of which contribute to the urge for cooperative behaviour (Ellemers, Spears, and Doosje, 1997; Hinds and Mortensen, 2005; Tyler and Blader, 2001)

Two issues arise with NPD teams. To begin, the advantage of cohesion has restrictions. Members can become so self-absorbed that they lose sight of the outer world and their own connections, so compromising team effectiveness. Both of the environmental (Ancona, Bresman, and Kaeufer, 2002; Ancona, 1990; Ancona and Caldwell, 1992) and border (Allen, 1984; Gresov, 1989; Tushman, 1977, 1979) perspectives assert that external contact with individuals outside the team makes a significant contribution to team performance. Allen (1984) established that, whereas correlation was used to determine communication has no effect on team performance, interteam communication does.

Second, NPD teams rarely operate within defined, exact parameters and adhere to consistent time restrictions. Typically, NPDs are composed of a core set of members who are fully responsible for group performance and depend on others to fill temporary team positions. As Edmondson (1999) illustrates, an NPD team may include core members from advertising, product engineering, and manufacturing, as well as part-time members with finance or legal expertise. Emphasizing on full squad participation for activities that are organically smaller than core duties is inefficient, which is why only few NPD teams embody the "real team" notion, hence raising the coordination barrier in favour of more efficient resource utilisation.

2.2.1.5 Organizational Structure

Numerous organizations fail to develop structures that support the success of teams (Hackman, 2002). Certain organisational structures, such as individual-based awards and department-based sharing of benefits, work against teamwork. Numerous team failures are attributed to inconsistency in task–reward structures, according to researchers (Robbins and Finley, 1995). To maximise performance and productivity, the interrelation of incentives should match the complexity of tasks, (Wageman and Baker, 1997). Individuals or departments' contributions to the final product are barely distinguishable in the ideal form of teamwork, and As a result, all individuals should get equal credit for their team's play. This does not stop the team's "star" members from receiving further individual recognition (Sarin and Mahajan, 2001). To foster cooperation, however, organisational rewards must be pervasive, acknowledged, and appreciated, such that the message communicated to team members is coherent (Lee et al., 2004).

Regardless of the fact that value interdependence has a favourable influence on team performance, many firms set performance evaluation and rewards on an individual basis (Wageman and Baker, 1997). This may encourage team members to prioritise individual achievement and credit over collective goals, particularly when they conflict. Dougherty (1992) described a new product development team in which an

engineer was responsible for utilising cutting-edge technological innovation and a marketer was responsible for establishing connections with clients in order to identify their desires for the new product. While these foci were consistent with the values and incentives of their functional divisions, they impeded team accomplishment. Thus, the challenge with cooperation is that it operates inside an environment that promotes personal achievement but strives for collective success.

2.2.2 External Challenges

2.2.2.1 Price-income Levels

The size of their markets justifies international firms' spending in research and development, which result in numerous new product/service developments. When these firms attempt to introduce these new products/services in poor nations, they frequently retain the majority of the products'/services' attributes, resulting in costs that are relatively costly for the majority of developing country consumers. In the majority of developing countries, only roughly 5-10% of households are categorised as middle class (Chandra & Neelankavil, 2008). Except for China and India, the middle class markets are typically modest. A high price may imply that the product is too advanced for the customer's needs. As a result, it may drive potential consumers to seek out more relevant alternatives.

2.2.2.2 Technological-developmental Issues

Generally, developing countries lack a strong technology foundation and trained scientists. Due to a lack of funding, many countries have very few research universities, which contributes to the shortage of highly trained scientific experts (Chandra & Neelankavil, 2008). Technology is the catalyst for innovation. When a technical base is lacking, including trained researchers and funding, new product developments struggle. It is difficult for multinational corporations to justify

investing in human and financial capital just for the purpose of developing products for underdeveloped countries. As a result, these corporations tend to concentrate their efforts on developing products/services for developed countries with markets capable of supporting these breakthroughs, and frequently overlook developing markets.

Oftentimes, technological flaws in the product are the fundamental reason for its failure. Designers and product technologists are capable of overengineering even the most sophisticated laboratory instruments. This benefits the company's technical advantage over competitors. However, a 'over-engineered' product is costly for the company and ultimately for the customer, since competitors gain an edge over the 'over-engineered' product. While technical deficiencies must be remedied, the cost of doing so should not be unacceptably high.

2.2.2.3 Capital Constraints

Financial capital is sparse in the majority of developing countries, and what is available is frequently targeted for economic development rather than for products and services. International corporations derive the majority of their revenues from large industrialised markets, making it harder to justify investing in research in capital-scarce developing countries. International executives in developing nations frequently have constrained budgets for research and development as a result of the high cost and shortage of capital. As a result, these leaders concentrate the majority of their efforts to cost reduction in areas like as manufacturing, shipping, marketing, and customer service (Sull et al., 2004).

Innovative organisations face financial barriers to innovation investment due to the presence of externalities, informational asymmetries, and issues of appropriability with the return on R&D expenditure.

As a result, innovative enterprises face high R&D investment expenses, which results in underinvestment in innovation activities. These issues might result in a cost differential between external and internal costs, resulting in R&D underinvestment or

liquidity limitations. Certain innovative ventures may be halted, postponed, or abandoned due to a lack of financial means.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

Along with literature research, the study contains a case study and in-depth interviews with product/service/project design executives who have been instrumental in the success of their firms' products, services, and projects. One of the targeted organisations to be invited to participate in the interview is a Malaysia-based company with extensive experience in launching new products and services into established markets

3.1.1 Exploratory Design

An exploratory design is utilised when there are little or no past research to reference on or depend on in order to anticipate a result. The focus is on gaining insights and knowledge in anticipation for additional study or at the pre-investigation stage of research difficulties. Exploratory designs are typically used to obtain a better understanding of how to proceed with a study or determine the most effective way for gathering information about a subject.

3.1.2 Case Study

In contrast to a comprehensive statistical survey or a complete comparative inquiry, a case study is an in-depth investigation of a single research issue. It is typically used to distil a great amount of knowledge into a single or a few conveniently studied examples. Additionally, case study research is beneficial for determining the applicability of a certain conceptual framework to real-world happenings. When minimal information about an issue or phenomenon is accessible, this is a useful design.

3.2 Data Collection Method

Primary data will be collected via interview. The interview provides a more specific and accurate answer to the research question specifically on how the firm has implemented the actions mentioned in various studies. The 24 interview questions circulate around the process and challenges faced throughout the product development process.

The gatekeeper of this interview is me myself. I gained this connection because I did my internship with this company and has worked under the CEO of this company. I contacted him prior preparation of this research to ask if he is willing to facilitate my research and fortunately, he happily agreed. This will be a single case study because this is one of the very few leading insect-based company in Malaysia that is known internationally. The business which they are doing is providing an alternative and solution towards food crisis and excessive waste. The problem will be further explain in part 3.4 Case Study.

The interview will be conducted with a successful insect company named Protenga which is founded in Singapore and is currently operating in their pilot facility located in Malaysia. They started off this business in 2018 and are now internationally well-known. Protenga is one of the very few leading insect-based companies in Malaysia. The participant of this interview is the Company's Executive Officer (CEO) and also the founder of Protenga, Leo Wein. The CEO himself is the key informant of the company and hence, only one participant is invited. The interview is conducted online due to Covid-19 safety measures. A total of 24 questions will be sent to the CEO mailbox. The goal of the interview is to know how the company has overcome the challenges faced during the start-up and how they introduced such innovative products to the market.

Secondary data such as research papers, articles, and news will be collected via Google and Google Scholar. A comparison of prior research with the keywords

including “Critical Success Factors” and “ New Product Development” will be carried out.

3.3 Proposed Data Analysis Tool

The interview content will be analysed by using the thematic content analysis method. The process of this analysis involves the following steps, sourced from (Unstick Me, 2016):

1. Getting familiar with the data (reading and re-reading).
2. Coding (labelling) the whole text.
3. Searching for themes with broader patterns of meaning.
4. Reviewing themes to make sure they fit the data.
5. Defining and naming themes.
6. The write-up (creating a coherent narrative that includes quotes from the interviewees).

There will be a checkbox in each column of the secondary data, and the data will be tabulated. During the research process, each area will be titled after the source of the research paper, and the record will be a list of the aspects that were mentioned in the publications. As a result of using the checkboxes, we will be able to determine which variables were most frequently mentioned as being important in the success of new product development.

3.4 Case Study

Crop production growth has slowed in many parts of the world as a result of lower investments in agricultural research, irrigation, and rural infrastructure, as well as increased water scarcity. Climate change, as well as the illness and mortality associated with the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), offer new threats to food security. Climate change may result in more severe rainfall episodes between protracted dry periods in warmer or tropical areas, as well as diminished or more variable water resources for irrigation. Pests and disease on crops and livestock, as well as soil erosion and desertification, may be encouraged by such conditions. Increased development on marginal lands may increase the danger of environmental damage in these places.

Population explosion happens when there is an increased birth rate while the mortality rate decreases. In simple words, people live to a very old age while numbers of newborns are skyrocketing on the other hand. The demand for food is increasing but the supply could not follow. It is no doubt that Malaysia is among the countries that will be facing issues with food scarcity too. Livestock production is a critical component of developing countries' agricultural economies, with contributions ranging from direct food production to multipurpose uses such as skins, fibre, fertilizer, and fuel, as well as capital accumulation. Furthermore, livestock is intrinsically related to the social and cultural life of millions of resource-poor farmers, for whom animal ownership ensures varied degrees of long-term farming and economic stability. The common animal feed used is corn, oats, soybean, barley, wheat, and peanut. Approximately 20% of the feed consumed for livestock farming is in direct competition with human meals (Azain, 2017). The conflict of either to feed the livestock or humans will soon arise. In the aquaculture industry, fishmeal and fish oil are the two main ingredients in fish food for the desired nutritional value. Fishmeal is often created from ground-up waste and forage fish (*NPR Cookie Consent and Choices*, 2017). These are the species of fish, according to studies, that may be

more valuable to humans if consumed directly rather than diverted to aquaculture and other uses.

Poor waste management contributes to climate change and air pollution, as well as having a direct impact on a wide range of ecosystems and species. Despite recycling and reuse, landfills and burning are the last resort one should go when doing waste management. Landfills, which are seen as the last option in the waste hierarchy, emit methane, a potent greenhouse gas connected to climate change. Microorganisms in landfills produce methane from biodegradable waste such as food, paper, and garden waste. Landfills may contaminate soil and water depending on how they are constructed (*Waste: A Problem or a Resource?*, n.d.). Contaminated soil impacts agricultural activities. To this point, it is obvious that waste management should be addressed critically, and quickly. In certain places of the world, the burning of enormous, open piles of rubbish emits dangerous quantities of carbon dioxide, a greenhouse gas that is warming our planet. According to researchers, nearly 40% of the world's rubbish is burned in this manner, creating significant threats to both our environment and the people who live near these burning sites (Earth Day Network, 2021). The result of global warming is glaciers have receded, ice on rivers and lakes has broken up earlier, plant and animal ranges have altered, and trees have begun to bloom earlier (Jackson, n.d.). The problems faced are linked to one another; hence, the chain will not break if either problem is not resolved.

An environmentally friendly and sustainable solution is needed imperatively. One of the potential solutions suggested by many experts to food insecurity and excessive waste is insects. Insects could be a game-changer in the fight against hunger and the goal of achieving zero hunger.

Insects can aid in the fight against hunger and food poverty. They are an excellent source of nutrients, such as protein, and food when the production of key African food crops, such as maize, is hampered by changing climates, droughts, or insect pest damage (Ngumbi, 2018). It is possible to generate edible insects with less environmental impact than animals. Insect meals can be used to substitute scarce

fishmeal as a feed element, especially in the rapidly expanding aquaculture industry (Huis, 2015). They have a sufficient amount and quality of protein, as well as a high content of unsaturated fatty acids and minerals such as iron and zinc.

Insects include high-quality protein and nutrients that are comparable to those found in meat and fish (Food and Agriculture Organization of the United Nations, n.d.). Because most bug species are high in fatty acids, they are especially helpful as a nutritional supplement for malnourished youngsters (comparable with fish). Fiber and micronutrients such as copper, iron, magnesium, manganese, phosphorus, selenium, and zinc are also abundant. Insects have a low chance of transmitting zoonotic diseases, such as H1N1 (bird flu) and bovine spongiform encephalopathy (BSE) more known as mad cow disease.

In order to promote insects as food and feed, they must be farmed. In tropical nations, this is done on a modest scale, but for the utilization of insects as feed, massive automated industrial facilities are required. Agriculture and livestock are key contributors to global warming. Insects produce significantly fewer greenhouse gases than agriculture: one-tenth the methane and one-third the nitrous oxide. Pathogen contamination causes food safety issues, necessitating hygienic farming. According to research by Nkegbe (2018), the contributing factor to contaminated final goods from insect farming are the rearing substrates. What is fed to the insect determines if the goods produced are safe to consume. Contaminants that should be avoided are heavy metals, manure, and chemical contaminants.

Growing edible insects on organic waste by-products can help with waste disposal. Over the previous ten years, the quantity of food waste generated in Singapore has increased by around 20%. Singapore produced 744 million kg of food waste in 2019, which is the equivalent of 51,000 double-decker buses (Peeris, 2021). Only 18% of food waste is recycled, with the remainder being burnt. Insects are natural decomposers who feed for most of their lives. They only feed when they're larvae, and they can eat up to two times their body weight every day. Black Soldier Fly

(BSF) for instance; food waste isn't the only thing the flies get rid of. They can be used to make higher-value items such as feed and fertilizer.

Legislation, in particular, lags behind advancements and must be rectified immediately. However, processed animal proteins (PAPs) generated from insects have been approved for use in pig and poultry feed, aquaculture, pets, and other "non-food producing animals" by the European Union (Ellis, 2021). What are the actions that governments from other countries can take to better promote the idea of insect protein as an alternative protein in the animal feed industry? Although there is no direct evidence of how government policies can affect the demand for a certain product; however hypothetically, it can give consumers a boost in confidence to try out something new.

CHAPTER 4: ORGANIZATIONAL BACKGROUND

4.1 Background of Protenga

Protenga is an insect-based company established in year 2016 founded in Singapore. They are now operating in a pilot facility located in Johor, Malaysia. In Protenga, they Breed, farm, harvest, and produce product from **Black Soldier Fly (BSF)**.

From the interview with Protenga, it is known that the company is providing a solution to the environmental crisis which is faced globally. According to Leo, Protenga's founder and CEO, "Protenga is an insect technology and insect-based nutrition company. We build technology-enabled insect farming systems to enable a more circular nutrient system. And we use our technology to produce sustainable protein for animal feed as well as pet food for dogs and cats." The founder made use of the insect's life cycle to work for humans which is very innovative and creative. He introduced during the interview that insects, and particularly the Black Soldier Fly (BSF), have a dual function in nature - on the one hand, they are primary recyclers, breaking down organic material at the end of life; on the other, they are at the bottom of the food chain and the beginning of life for other animals. This forms part of the circularity of the natural food system. The founder saw an opportunity to create technology that would make this natural process accessible for the human food system and leverage it to enable sustainable & high-quality feed and food products.

4.2 Protenga Businesses

Protenga now offers three core products: fertilizer, protein, and oil. All these three products are extracted from the BSF farmed by the company itself throughout different life cycles and processes. The products offered can be used in various sectors such as agriculture, livestock, and aquaculture. Protenga has disclosed that its pricing is specific and varies with customer order details. Differing from each case, they are benchmarked against products such as fish meal (RM 4-6k), fish oil (RM 4-6k) and composted poultry manure (RM 400-800).

Protenga is a farming, manufacturing and marketing/distribution business. We cover the whole value chain from primary resource production to supply of finished products. With their newest offering, YumGrubs, they are following a B2C / D2C approach in marketing a fast-moving consumer goods (FMCG) product directly to consumers. They are using digital marketing, e-commerce and content/social marketing to develop customers. For their B2B products, they follow traditional marketing practices. A lot of it is through building up personal relationships with the customers.

CHAPTER 4: DATA ANALYSIS

5.1 Analysis of Findings

5.1.1 Primary Data

By using the thematic analysis, a total of 13 theme is first chosen. After reading through the interview and fitting in the scenario into the themes, they are only 5 themes left.

5.1.1.1 Factors Analysis

5.1.1.1.1 Out-of-the-box Idea

When ask “What opportunity did you see that inspired you to start a business with insects?”, the CEO answered “The opportunity I saw was to create technology that would make this natural process accessible for the human food system and leverage it to enable sustainable and high-quality feed and food products.” Technological advancements open up new product opportunities for NPD. Utilizing cutting-edge technology is critical for the effective production of a great product. The CEO agrees and believes that the company is providing a solution to world crises such as food scarcity and excessive waste, “Yes, absolutely. We create circular economy solutions for the food system.”.

5.1.1.1.2 Placement of Structured NPD Process

Management's responsibility to the venture team is to develop the NPD structure, guidelines, and standards. This performance planning enables team members to understand the roles of them and how to properly navigate the NDP process. Protenga has conducted rigorous and structured R&D across biology, entomology, engineering, technology and of course the business development since 2016. The CEO said

“There's been a lot of basic and applied research behind our production system since 2016.”. NPD methods should emphasise quality throughout the deployment phase. Additionally, processes must be adaptable in terms of combining phases, conducting them concurrently, or omitting them after careful thought.

5.1.1.1.3 Involvement of Cross-functional Teams

When ask about the management style, the CEO said at Protenga, they have formulated leadership principles:

- Making Insects Work for You
- Making It Happen Embracing Independence
- Freedom and Responsibility
- Putting Purpose first, Ego third

Derived from this they have a supportive, inclusive and outcome-driven team culture. “We hold each other accountable and are direct and frank in our communication.”, said the CEO. Cross-sectional venture teams appear to work independently because they exhibit a blend of entrepreneurial characteristics that complement one another and enhance the performance and results of the process. Diverse perspectives foster innovation through cross-sectional collaborations.

5.1.1.2 Challenges Analysis

5.1.1.2.1 Internal Challenges

Internal challenges are the constraints and barriers factors within the individual, (*What Is Internal Challenges | IGI Global*, n.d.). In this case, it will be the challenged faced by the company internally. When asked about the challenges faced now that are to be improved in the future, the CEO answered “We are in a competitive position

overall. Being in Malaysia, we still face market access challenges, e.g. to the EU, which we need to address together with the authorities. We are still in development & improvement stage, so our production volumes still need to scale up by an order of magnitude to reach full potential.”

As a start-up company, limited resources are definitely one of the biggest obstacles in scaling up the production. Not just from the monetary point of view, but in term of company unaccountable assets such as employee’s skills and human resources as well.

5.1.1.2.2 External Challenges

External challenges is define as the outside constraints that may affect the entrepreneurial readiness, (*What Is External Challenges | IGI Global, n.d.*). Some of the examples are political, technological, and economic factors.

When asked about the difficulties faced during the process of exporting, the CEO said that the different rules and regulation mandated by different countries are challenging. What applies in this country might not apply in the other. It is important to dig into the legislation mandated by the importing country to ensure the smooth process.

Knowing that Protenga are producing products which are consumable, what are the license obtained by the company? “There’s Malaysian manufacturing license, production license for each product, sales licence, local business license. We have obtained all these licenses as well as several free sale certificates for export.”, said the CEO.

When asked about their opinion towards Malaysians and the governments’ attitude regarding food scarcity and excessive waste, and the actionst they would like to suggest to the government, the CEO replied “I’m not in a position to judge whether they take it seriously. I do see there are some initiatives and policies developed / in place or under development, which is great! For example the government agency BioEconomy Corp is promoting the agtech and biotech field in Malaysia. But we are certainly also looking for more adoption of those initiatives in meaningful and impactful ways. For example, mandatory food waste segregation would be an

excellent step towards sustainability of the food system, but we are still far away from that in Malaysia.”

It is clear that food scarcity and excessive waste is a global risk and Malaysia should take the issue seriously before it is too late. In Europe, the government has already approved the insect proteins to be used in pig and poultry production, (Torgalkar et al., 2021). However in Malaysia, there are no rules in regard of allowing the use of such processed protein in any industry yet. In a article by Lee, 2021 in regards of insect for human consumption, one of the respondent said that if they are to produce something for human consumption, they will just be following the food safety and food standard protocols. Establishing a food-grade production facility for insect protein can be prohibitively expensive, and certification compliance is a significant hurdle. Due to lower demand and significant investment, the majority of insect growers continue to produce for animal feed and fertilizer. To create insects fit for human consumption, one must seriously consider food safety control, as the insect cannot be fed food waste and non-contaminated food surplus must be handled with prudence.

5.1.2 Secondary Data

Table 5.1: Distribution of critical success factors across relevant research papers

	(Cooper & Kleinschmidt, 1995)	(Dwivedi et al., 2021b)	(Floren et al., 2017b)	(Cooper & Kleinschmidt, 1996)	(Lester, 1998)	Total
Top Management Commitment	√	√	√	√	√	5
Presence of Clear Goals & Milestone Measurement		√	√	√	√	4
Involvement of Cross-Functional Teams	√	√	√	√		4
Talented Team Members with Relevant Experience to NPD Process & Activities	√	√		√	√	4
Clear Product Concept	√	√	√		√	4
Establishment of An Entrepreneurial Culture	√	√	√			3
User/Customer Involvement (i.e., Market Research)		√	√			2
Alignment of NPD Process Activities with Strategy		√	√			2
Availability of Financial Requirements		√		√		2
Placement of Structured NPD Process		√				1
Effective Communication Amongst Team Members & With Management		√				1
Focusing on Innovation & Out-Of-The-Box Ideas		√				1
NDP Process Speed		√				1

Source: Developed for research

The table shows the comparison of the most discussed critical success factors for product development. Five research papers were chosen randomly but with two criteria, the title must include the keyword “Critical Success Factors” and “Product Development”. A total of thirteen factors are listed.

Table 5.1 shows the distribution of critical success factors (CSFs) across relevant research papers. The factors are listed in a pattern from the most discussed to the least discussed factors.

The most discussed factor is the top management commitment during the new product development (NPD) process. With a total of five research papers being studied, it is discussed in all five of the studied papers. This shows how vital it is for the top management to participate in the NPD process to provide their professional point of view either toward the product or the market.

The second most frequently discussed factor is the presence of specific goals and milestones, the participation of cross-functional teams, the presence of talented team

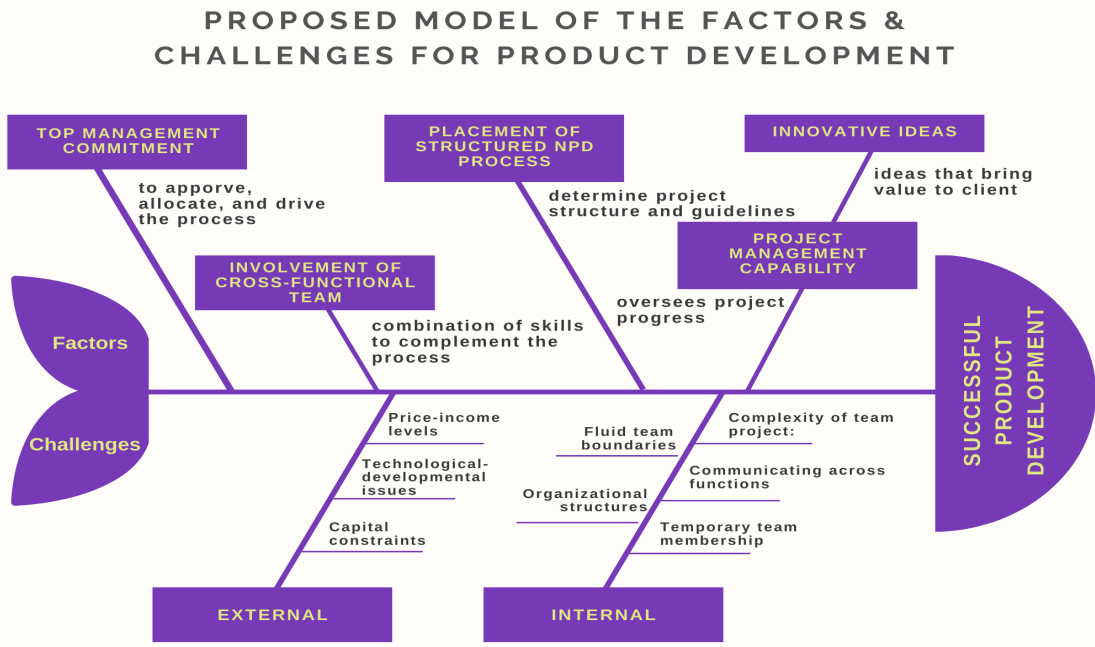
members with relevant experience in the NPD process and activities, and finally, the presence of a clearly defined product concept. Four articles have made reference to these factors.

Three out of five papers have mentioned these factors in their papers, establishment of an entrepreneurial culture. User and customer involvement, alignment of NPD process activities with strategy, and availability of financial report have each been mentioned twice among the five studied papers.

Finally, the establishment of a structured NPD process, efficient communication between group members and the organization, an emphasis on innovation and out-of-the-box ideas, and the pace of the NPD process were all cited once in the papers reviewed.

5.1.3 Proposed Framework

Figure 5.1: Proposed model of the factors and challenges for product development



Source: Developed for research

CHAPTER 6: DISCUSSION AND CONCLUSION

6.1 Discussions of Major Findings

In the comparison of the two collected data, there are three factors that are constantly mentioned.

- Involvement of Cross-Functional Teams
- Placement of Structured NPD Process
- Focusing on Innovation & Out-Of-The-Box Ideas

The first factor, the involvement of cross-functional teams has a high frequency of discussion in the relevant research papers and is also mentioned in the interview with Protenga. Because each team member boasts a unique combination of innovation capability that work synergistically to improve the process's quality and effectiveness, venture team members from various departments work as an organisation on their own. Cross-sectional teams promote innovation because of their variety.

The second factor, placement of structured NPD process has only been mentioned once in the studied papers but it has been put into action by Protenga. Management's duties to the venture team include establishing the framework, standards, and parameters for the NPD process. As a result of this activity, team members are better able to comprehend what is expected of them and how to approach the NDP process in the first place.

The third factor focuses on innovation and out-of-the-box ideas. Taking use of the most recent technological advancements is critical to the successful development of a noble product. Not only should ideas establish new paradigms, but product representations of these concepts must also add true value to clients in order to sell.

6.2 Implication of Study

Firms that want to introduce a new product to the market should pay attention to the highlighted factors. For instance, top management commitment during the NPD process, involvement of cross-functional teams, placement of structured NPD process, and focus on innovation and out-of-the-box ideas.

Top management should provide insights and have a great sensitivity towards new market trends and opportunities. In the world of business, seizing the opportunity means having a competitive advantage already because consumers will see you first before any other company introduce similar products. It is vital to acquire customer loyalty to ensure competitiveness in the market. It is also the top management's responsibility to clearly set the key performance indicator and milestones to keep track of the progress. This can also aid the management to have an overview of what are the places that can be improved.

All departments and employees should have the same goal which is to launch a product that can meet the consumer's demand and needs. At certain times, conflicts may occur and employees could be carried away by the different objectives that they have. For instance, the finance department will want to keep the cost to the lowest as possible while the research department might need a large sum to purchase machinery or to invest in research and development. Although the ultimate goal is to introduce a new product; however, the daily goals of each department differ. It is important for each department or team to support each other when the other is in need.

As the technology improves and enhance, consumers' demand for new product elevates too. Critical problems require critical solutions. As consumer purchase power increase, they are thirsty for products that can catch their eye. They desire something that is new and not seen, at the same time brings value to them. If possible, at an affordable price. It is not easy for firms to develop a new product that is innovative and at the same time cost-effective. Hence, companies should encourage their

employees to always look at problems from a different angle to promote their ability of them to provide innovative solutions which can contribute to business value.

6.3 Limitations of Study

It is insufficient to identify the attributes of CSFs for the NPD process by the occurrence of their prevalence in the literature in order to illustrate their importance in the process' efficacy. This can be demonstrated only by real-world instances from various industries, proving the CSF's true capacity for global victory.

The failure of new products can be explained in a variety of ways. Some of the explanations are related to issues with NPD's front-end activity. Results of studies may be inadequately processed, (Khurana and Rosenthal 1997), judgments may be made haphazardly (Montoya-Weiss and O'Driscoll 2000), and/or competing organisational pressures may produce unmanageable complexity and ambiguity (Chang et al. 2007). This article assists managers and their teams in identifying the variables that lead to the effectiveness of front-end operations in NPD by discussing these problem areas.

This study has mainly focused on the factors that affect the success of new product development on a corporate level. It contributed to what firms can do internally but has mentioned little about what firms can do with the external factors to increase the success rate.

Considering the limitations in the literature on the success of NPD front-ends, it becomes prudent to go deeper into this area. This endeavour demands an in-depth knowledge of the front end. When, where, and how does the front end begin? What is it reminiscent of? What occurs at the conclusion, and how does it occur? For example, Khurana and Rosenthal (1997, 1998), who do not directly investigate the creative act of idea production, define the beginning of the front end as the time at which firms detect an opportunity in a semi-formal fashion (Khurana and Rosenthal 1997, p. 106). This remark implies that when a company recognises a business opportunity, the idea, which may have originated with a single person, must be shared with the rest of the

company. Outside sources of ideas (e.g., from consumers, suppliers, etc.) fall to the front end, according to the statement. Given the fact that this perspective is critical, our model does not incorporate it; alternatively, it concentrates on the management of the business.

As in methodology, there is only one respondent who is also the key informant of the company. However, it will be more inclusive and conclusive if more respondents are invited to participate in the interview such as the head of departments to get more detailed and specific answers. There are also limited resources to be reviewed in terms of the challenges faced both internally and externally for product development. Lastly, the research covers the factors and challenges in product development as an overall. In real life, there are a variety of sectors in business and they are each unique on their own. The research is not specific enough on what certain industry can do to elevate their chances in the triumph of product development and unfortunately, there is no research paper that can ensure that following the steps stated can guarantee the success.

6.4 Recommendations for Future Research

This study has highlighted on critical success factors and challenges for product development at the corporate level. It is insufficient to only know what to do internally. The external factors which affect the success or failure of product development are equally important. Furthermore, the case study has focused on one particular sector. There are a huge variety of sectors in the business world with different variables that can affect the outcome of new product development.

The connection connecting fundamental success determinants and project-specific success variables is not sufficiently addressed. Idea refinement may evolve creatively in organisations with a creative culture, notably in the development of fundamentally novel goods, without early client involvement/active environmental monitoring. It's

unclear how the conceptual framework's success characteristics connect to such activities, or how iterations play out as a result of such actions.

It is recommended to focus on external factors and challenges towards product development. It is critical to highlight those different businesses require a unique combination of CSFs based on their business nature, product type, top management strategies, and culture. Additionally, it is possible to determine that some CSFs have increased importance during a particular stage of the NPD process. In fact, the domains of CSFs appear to overlap, with the presence of one assuming the presence of another indirectly. In reality, ensuring that critical-to-phase CSFs are implemented throughout the lengthy NPD process considerably improves the project's likelihood of succeeding.

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APPENDICES

Interview Questions:

1. Can you introduce us to what Protenga is doing or offering?
2. What opportunity did you see that inspired you to start a business with insects?
3. What are the products or services Protenga is offering? And at what price?
4. Will you say that Protenga is offering a solution to world crises such as food scarcity and excessive waste?
5. Can you share with us what are the preparations that Protenga has done before launching its product? (R&D, product development, manufacturing, marketing, sales)
6. As this is a new product to the animal feed industry, what are the challenges that Protenga has faced when introducing it?
7. How did Protenga overcome the challenges?
8. As consumers are getting more particular and concerned about what they are consuming, do you think they will decline to take meat that is reared from insect protein? Why?
9. Some consumers find it difficult to accept the idea of consuming meat reared from insect protein assuming it is 'not clean, how will you deal with this problem?
10. Since the product offered are consumable, what are the license or certificates that Protenga has now acquired?
11. Is it hard to export such products as different country has different rules and regulations to comply with?
12. Can you share with us what is the farming process of the Black Soldier Fly (BSF)?
13. What does Protenga feed the BSF with? Why?
14. How does Protenga maintain the quality of the product?
15. There are other insect protein manufacturers worldwide too, how do you compete with them?
16. What differentiates Protenga from its competitors?
17. What is the weakness you see in Protenga now that will have to be improved in the future?

18. Who are Protenga's targeted customers and how do you approach them?
19. Livestock farmers often have their own feeding formula to maintain a certain quality, how do you convince them in trying out your product?
20. What is the main purpose of Protenga to be active on social media other than sharing about the event Protenga is participating in?
21. To be able to launch such an innovative product, I'm curious about how Protenga manages its employees. Can you share with us your management style?
22. Is Protenga focusing on retails or manufacturing? Why?
23. What are the actions taken when there are excess stocks in the warehouse?
24. Do you think Malaysians and the government are taking food scarcity and excessive waste seriously already? Any actions you would like to suggest to the government?