



Addis Ababa University School of Graduate Studies
Department of Marketing Management

Determinants of new product success in the Ethiopian
paint factory.

(A Case of Nefas Silk Paint Factory, Addis Ababa Branch, Ethiopia)

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July, 2019

Addis Ababa, Ethiopia

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Advisor: Temesgen B. (PhD)

A Research Project Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirement for the Award of Master of Arts in Marketing Management.

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Statement of Certification

This is to certify that Ermias Demisse has carried out his research work on the topic entitled Determinants of new product success in the Ethiopian paint factory. (A Case of Nefas Silk Paint Factory, Addis Ababa Branch, Ethiopia) is my original work and is suitable for submission for the award of Masters Degree in Marketing Management.

Advisor: Temesgen B. (PhD)

Date: July, 2019.

Statement of Declaration

I hereby declare that Determinants of new product success in the Ethiopian paint factory is fully the work of Ermias Demisse. I have carried out the present study independently with the guidance and support of the research advisor, Dr. Temesgen B. Also any other contributors or sources have either been referenced in the prescribed manner or are listed in the acknowledgements together with the nature and the scope of their contribution. And the study has not been submitted for award of any Degree or Diploma Program in this or any other Institution. It is in partial fulfillment to the requirement of the program Masters Degree in Marketing Management.

Ermias Demisse

Date: July, 2019

Abstract

This study examines the Determinants of new product success in the Ethiopian paint factory with special emphasis of Nifas silk paint factory Addis Ababa, Ethiopia. The existing business setting globally requires companies to develop new product to gain sustainable competitive advantage with continuous innovation. Business managers and marketing academics alike agrees that a fundamental factor of organizations long-term survival is success in new product development. The aim of this study was to provide an overview of determinants of new product success in the Ethiopian paint. This research project describes Determinants of new product success. The findings from the research conducted in this study are based on the data collected through interview and questionnaires. The results of the research provide a valuable insight in Determinants of new product success in the Ethiopian pains factory.

Key Words: - Paint factory, New Product, Success factors, Determinants

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Acronyms

NP.....	New Product
NPD.....	New Product Development
NSPF.....	Nefas Silk Paint Factory
TLM.....	Top Level Management
TMS.....	Top Management Support

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Chapter-One: Introduction

This chapter introduces the reader to the study on determinants of new product success in the Ethiopian chemical industry; Evidence from paints factory. It goes on to look at the statement of problem and objectives of the research, which was conducted. Issues related to hypothesis and significances of the study are the next part of this chapter. The limitation and organization of the study also presented at last.

1.1. Background of the Study

Janowski (2008) stated that, statistics on the exact percentage that fail may be a matter of some debate and the failure percentage may vary a bit by industry. Still, most product innovators and academics would agree that more than half of new products fail to meet their financial goal in the market place. The problem is that winning with new products is not so easy. An estimated 46 percent of the resources that companies allocate to the conception, development and launch of new products go to ventures that do not succeed. They fail in the market place or never even make it to market. Cooper (2006) reflected his thought as, only one out of four development projects succeed commercially and one-third of all new products fail.

The existing business setting globally requires companies to develop new product to gain sustainable competitive advantage with continuous innovation. Business managers and marketing academics alike agrees that a fundamental factor of organizations long-term survival is success in new product development. Crawford (1994) states that, a successful new product does more good for an organization than, anything else that can happen. In a competitive world, what we offer must be better than what someone else offers, at least part of the time.

New product development is a means for a company to gain advantage, secure position, or win a new customer. The more successful and timely an organization can develop new products, the more likely it is that organization will not only survive but also prosper. However, as indicated in the above the failure rate of NPD is somehow raise eyebrow and identifying the factors which contribute to product failure and way outs to reduce failure rate are the most challenging questions to business executives and marketers. Furthermore, Studies indicate that, failure for NPD to improve organizations performance is estimated as high as 80 percent in most industries.

The studies show that approximately 46 percent of new products fail in the technical phase, that is they do not result in a working product, while 35 percent of new products that were technically completed failed after launch due to lack of market acceptance (Louch and Kavadias, 2008). These situations triggered the basic motive to investigate how to minimize the risk of failure. The rationale for the conduct of the study is to find the alternatives how to reduce new product failure by clearly identifying the contributing factors, since reduced failure rate is imperative to enhance firm's performance.

To succeed in competitive market and maintain sustainable competitive advantages over rival firms requires companies to be innovative and launch new products. The most difficult tests for business executives and marketers emerge from the fact that, there is huge investment cost with new product development alongside high failure rate. Since product life cycle are reducing in time, the need for replacement's increases. To prevent the risk of being left without a new product to replace an existing one, companies can face higher costs as a result of the faster product life cycles. Product failure also affects a company reputation, as customers and suppliers become more cautious in their attitude towards the company and their products.

According to a study made by Cooper (2006), companies such as Procter & Gamble, IBM, and Hewlett Packard have improved their new-product failure rates through disciplined marketing process, and succeeded over and over again. A case study was conducted on Nefas Silk Paints Factory (NSPF) that engaged in product development activities and expansion projects as part of its strategic plan and objective.

1.2. Background of Nifas Silk Paint Factory

Nefas Silk Paints Factory (NSPF) was initially established as a private company in 1967 G.C, Mega Paints Factory. Later when Derg came to power, it was nationalized and its name was changed first to Tseday then to Nefas Silk Paints Factory.

Since May 2010 it was privatized and transferred to the visionary Entrepreneur Ato Tedla Yizengaw. After privatization, NSPF has added new product lines and quadrupled its sales and production while keeping the quality.

The company is staffed with highly experienced, tailored to the job and a stable management. NSPF is an ISO Certified Company. It uses quality inputs and employs qualified employees to produce its known quality products. These are few of the reasons why we succeeded for almost half a century.

Nefas Silk Paints Factory produces water based and oil based paints. Each with more than 53 variety of colors regularly. Apart from these two basic types, it also produces quartz, adhesives, antirust, varnishes and other related products. It has an attainable production capacity of 32 million liters of paints per annum and produces more than 1500 types of paints and paint related products. The factory sells all what it produces and due to this it is always profitable and its financial position is sound. It is known for its quality paints in the market.

Nefas Silk Paints has installed the latest Automatic Colorant Dispensing Machine at Mexico Sales, Summit, Jemo and Hawassa Offices. The machine is equipped with the latest paint technology; it produces more than 1250 different colors. You can order and get the color of your choice within 3 minutes. Currently the machine produces Nefas Silk Super (for interior and exterior walls) and Nefas Silk Kokeb (Oil based paint for metallic objects, woods, walls etc.)

NSPF has successfully delivered more than 55 million birr worth of Quartz orders to Addis Ababa Housing Development in 2006 EFY within 6 months. NSPF has opened sales branches in 10 major cities of Ethiopia. These branches serve wholesale customers only. The opening of these distribution centers has greatly increased the market share of the company. They have a plan to open additional branches in Addis Ababa and other major cities throughout Ethiopia and the following are branches around the country Bahir Dar Branch, Gonder Branch, Jimma Branch, Shashemene Branch, Mekelle Branch, Dessie Branch, Debre Markos Branch, Dire Dawa Branch, WolaytaBranch, Nekemt Branch and Hawassa Branch. Nefas Silk Superis washable plastic emulsion wall paint, suitable for interior and exterior walls. Currently we produce more than 50 colors in a standard base and any color per the order of the customer.Nefas Silk Super is available on the following packaging units Gallon, 2 Liter, 3.5 Liter and Drum.Antirust Swimming Pool Paints, LaquerThiner, Flat Coats, Golden Paints and Floor Paints. MICA: Nefas Silk mica paint is weatherproof wall finish that gives protection and beauty up to five years.Mica paint is a thick, consistent and durable paint.Nefas Silk Paints produces GLUE for wood, paper and other services.

1.3. Statement of the problem

New product development brings core competency for the firm and helps to maximize the sales and profit objectives, which will definitely results from first mover advantage. Contrary to the case, there is an imminent treat faced by all companies, which is the success rate record of new products, is very low. Etzel,etal.(2010) explained the situation that, 80 percent of all new products launched to the market was not be commercially successful due to various reasons.

The capital and labor investment made to develop new products is very expensive with the associated high failure rate. However, it is almost impossible for a business firm to stay competitive and survive in the market without offering new products. Nefas Silk Paints Factory continually strives to develop new products and has involved in various development projects to achieve its business objective. Besides this, it shall devise a mechanism to enhance its new product success rate and put its self in the competitive edge by excelling rival firms. Absorbing the business environmental turbulence, which leads to new product failure, is the key task. In the recent literature, we can find several models based on the lessons and recipes for success in the product development process.

Bobrow (1997) provides a list of success factors for new products, including a clear strategic direction, a corporate culture aligned behind new products, a sensible allocation policy of resources and people, and a cross-functional team dedicated to the new product development process. Beside this, Chorda et al (2002) state that top management support, NPD process and analysis of market requirements are key success factor for NPD. In the view of Gonzalez and Palacios (2002) critical success factor are top management supports, nature of market, product quality, supplier and costumer involvement in design process. According to Varela and Benito (2004), management emphasis, experience in NPD, centralization, novelty, NPD process style and technical activities are important factors to achieve successful NPD.

Companies often introduce or reintroduce their products with improved performance along existing attributers (thereafter enhanced features) or new, unique features (thereafter unique features) to compete with dominant brands in the market (Tholke, Hultink, & Robben, 2001). These enhanced and unique features can help firms differentiate their products, though in different ways. For instance, enhanced features enable a new product to claim superiority over competitors on the basis of a common ground.

Hojin Lee, Sangyoon Cha and Heejun Park (2016) demonstrates the effect of technology exploration, including outsourcing R&D, external networking, customer involvement, and inward IP licensing, on product innovation, especially considering the degree of the novelty of the manufactured products. The level of risk in new product development is higher due various NP success factors, as the result companies face difficulty to win with new products; However it is almost impossible to survives without providing NP b/c they are one of the most important tool which can help companies to stay on the business, acquire new customers and market, compute with competitors, increase revenue and so on.

One of the motives to conduct this research study was the huge investment for NPD projects and the level of NP failure rate is not proportional. This research study is very important for paint factors by giving the core success factors to win with new products. Also factories can set a strategic plan in order to reduce financial and non financial loss in order to stay on the business by implementing the final outcomes of this research study. It can also give a clue that paint factories should give more concern to which of the success factors in the development of new products.

1.4. Research questions:

1.4.1. Main research question

This research study answered the question: What are the core success factors that determines in the process of new product development in NSPF?

1.4.2. Sub research questions

- I. Does NSPF conduct a continuous R & D towards market orientation?
- II. Is there a well defined knowledge management process in NSPF?
- III. What is the roll of TLM on their decision making speed and support the NPD process?
- IV. Does the NPD team composition can affect the NPD process?
- V. Does technological advancement affect the success of NPs?
- VI. Is there a structured and well defined NPD process?
- VII. Does product attributes and features can affect the success of NPs?
- VIII. Does the delay on the product launching time can affect the success of NPs?

1.5. Objectives of the study

1.5.1. Main research Objective

The general objective of this study is to sort out the core determinants of new product success factors and enhance the NPD process.

1.5.2. Sub research objectives

The specific objectives of the study are;

- I. To examine if NSPF conduct a continuous R & D towards market orientation?
- II. To examine if NSPF adapt a well defined knowledge management process in NSPF?
- III. To examine the role of TLM in decision making speed and support the NPD process?

- IV. To examine if the NPD team composition can affect the NPD process?
- V. To examine if technological advancement affect the success of NPs?
- VI. To examine if NSPF follow a structured and well defined NPD process?
- VII. To examine if the product attributes and features can affect the success of NPs?
- VIII. To examine if the delay on the product launching time can affect the success of NPs?

1.6. Scope of the study

As indicated in the introductory section of the paper, 80 percent failure rate experienced by most business firms compared to their expensive investment of new product development is unacceptable to remain competitive in the market. This research issue is investigated for the case of NSPF. If the problem is apparent, then a mechanism to enhance the success rate shall be devised to achieve the company's pre-determined business goals and objectives.

The study looks into the NPD process and activities of NSPF to examine NP success performance. The company is selected due to its sufficient experience in the area of new product development and expansion projects. It is believed that the new product development exercise of the firm makes it suitable to undertake a study for the indicated purpose. Due to time and financial constraints the study didn't included NSPFs branches out of Addis Ababa. Since all employees can't be part of NPD projects as the result the sample size may not represent the population but the study was tried to include all employees who have a direct or indirect relationship and experience with regard to NPD projects.

The study is going to depict only NSPF's new product development process and activities. Therefore, by any means the matters to be discussed may not represent the wider industry and business setting.

1.7. Significance of the study

The first beneficial of this study is to the researcher, because at the end of the study I will get my degree masters of Arts in marketing management. Other researchers who are interested to conduct a research study on new product success factors in chemical industry especially in paint factories, they may use my research as a reference and base line.

New products reduced failure rate is imperative, as the costs of product innovation are enormous. Costs for research and development can be so high that a product launch delay or failure could destroy a company, regardless of the product quality. A firm's goodwill can be affected due to product failure.

Customers and suppliers will lose their trust and be reluctant to build successful relationship with firm having a higher failure history. These and other aspects strongly highlight the importance of reducing new product failure.

The study will benefit Nefas Silk Paints Factory to appraise its performance in relation to new product success and failure. It also attempts to identify the core determinants of NP success and recommend ways to implement best practice in the NPD process.

At industry level, the study may serve as a sample experience to direct other similar firms' interest to reduce new product failure and improve their performance.

Finally, the country may use such individual studies in to one pool in order to measure the outcome and to develop the chemical industry in a wider range.

1.8. Limitation of the study

The result of this study should understood having the following limitations in mind.

Due to time and financial constraints, the study population was restricted to those that are located in Addis Ababa. If the study includes those out of Addis Ababa, the conclusion of the study might change.

The respondents for the study were limited to all marketing management department of NSPF Addis Ababa city branches. However, this may assume to be a severe limitation caused by small sample size and sampling approach /purposive/ while generating the findings of the study.

Therefore, future study should recommend in order to overcome improve this limitation.

1.9. Organization of the Paper

This paper contained five chapters. The first chapter deals with background information, statement of the problem, objective of the study, significance of the study, scope and limitation of the study and organization of the study. The second chapter deals wither view of literature. The third chapter discusses the methodology was be applied to collect and interpret the data. In the fourth chapter, data presentation, analysis, interpretation and summary of major findings discussed. The last chapter contained the conclusion and recommendation parts. Finally reference and appendix (contains interview questions and questionnaire).

Chapter Two: Review of related Literatures

2.1 Theoretical review

2.1.1 The Nature, Concepts and Challenges of (NPD)

The concept of new product is susceptible to various definitions. A definition considered basic describes a new product to cover original products, improved products, modified products and new brands developed through an organization's research and development efforts (Ulrike, 2000: 170; Kotler, 1991: 310). In a similar classification (Petrick and Echols, 2004: 84; Stanton et al., 1994: 101), three distinct categories of new products are identified. These are those that are innovative, satisfying unsatisfied needs; replacement products that are significantly different from the existing one in form, function and benefits provided; imitative products new to the organization but not new to consumers. In the other hand, new products had been described along two dimensions: 'newness to the organization' and 'newness to the markets'. Ranging from low to high on each dimension, six categories have been identified. These categories are: cost reductions; improvements in existing products; repositioned products; additions to existing product lines; new product lines allowing a firm to enter established; markets, new to the world products that create new markets (Ilorri et al, 2000: 334; Pujari et al, 2003: 657).

A new product is a multi-dimensional concept with need-satisfying capabilities not previously experienced by the stakeholders interested in it (Thomas, 1993). According to various authors of product innovation the newness is dependent on the perspective from which the product is viewed.

Crawford (1994) also defined "a new product is one which is new to the firm". This definition means that the newness of a product is unaffected by the fact that other firms are marketing an identical product, or that consumers fail to perceive that the product is new, or that there are only minor changes in packaging or merchandising. According to this definition, an old product marketed under a new brand should be viewed as a new product.

According to Cooper (1993) has defined "Newness" in two senses: New to the Company, in the sense that the firm has never made or sold this type of product before, but other firms might have. New to the market of "innovative": the product is the first of its kind on the market. NPD is the locus of the innovative potential of organizations.

Every organization, regardless of size, profit motive, or industry experiences regular pressures to renew, expand, or modify its product or service offerings (Leenders et al, 2003: 69). The rate of market and technological changes has accelerated in the past decade. Central to competitive success in the present highly turbulent environment is the firm's capability to develop new products (Gonzalez and Palacios, 2002: 261). New products are increasingly cited as the key to corporate success in the market. During the 1970s, new products accounted for 20 % of corporate profits; in the 1980s, they accounted for 33 % of profits (Takeuchi and Nonaka, 1986: 139). In the 1990s, this figure has risen to 50 % (Slater, 1993: 22). A recent study estimates that new products provided over 42 % of company sales in the period 1985–1990, up from 33 % in 1980 (Page, 1993: 275). The number of products introduced by these firms was expected to double (Booz et al, 1982: 43). However, new products continue failing at an alarming rate. The most recent studies show new product success rates at launch of less than 60 %-54.3 % for the UK, 59 % for the US, 59.8 % for Japan and 49 % for Spain (Edgett et al, 1992:7). Recent years have witnessed extensive research into the determinants of new product success; however, these new studies do not appear to have had much of an impact on managerial performance. Therefore, a clear understanding of the factors that drive product success is needed in order to help firms optimize the resources dedicated to the product development process and increase the market demand for a firm's new products.

2.1.2 Innovation Drivers

Thomas (1993) stated that, intense competition, rapid technological change, and shifting patterns of world market opportunities compel firms to continually develop new products and services. Organizations often cling to their past success to reduce their chance of failing. New products are clearly the key to corporate prosperity. They drive corporate revenues, market shares, bottom lines, and even share prices. Cooper (1993) further affirms that, the four innovation drivers are the following:

Technology advances: The world's base of technology and know-how increases at an exponential rate, making possible solutions and products not even dreamed of a decade or so ago. What was science fiction yesterday, for example, hand-held computers or kitchen stovetops that operate by magnetic induction is suddenly a technological reality today.

Changing customer needs: Marketplaces are also in turmoil, with market needs and wants, and customer preferences changing regularly.

The company that seemed omnipotent only a few years ago suddenly falls from favor with the customers.

Shorting product life cycles: One result of the increasing pace of technological change coupled with changing market demands has been shorter product life cycles. Our new product no longer has a life of 5 to 10 years, but within a few years, sometime seven months, it is superseded by a competitive entry, rendering ours obsolete, and necessitating a new product launch by us. Increased world competition: We now have access to foreign markets liken ever before, but at the same time, our domestic market has become someone else's international one. This globalization of markets has created significant opportunities for the product innovator the world product targeted at global markets. It has also intensified competition in every domestic market. Both factors have speed up the pace of product innovation. Solomon (2010) also stated that, product development remains to be crucial to organizations' survival. Companies are always under performance pressure. They strive for market expansion, increased product features, and new product ideas.

2.1.3 Categories of New Products

The Six different types of new products (Winning at new products, Cooper (1993))

- a) New to the world products: These new products are the first of their kind and create an entirely new market. This category represents only 10 percent of all new products.
- b) New product lines: These products, although not new to the marketplace, nonetheless are quite new to particular firm. They allow a company to enter an established market for the first time.
- c) Additions to existing product lines: These are new items to the firm, but fit within an existing product line the firm makes. They may also represent a new product to the marketplace.
- d) Improvements and revisions to existing products: These "not-so-new" products are essentially replacements of existing products in a firm's product line. They offer improved performance or greater perceived value over the "old" product. These "new and improved" products also make up to 26 percent of new product launches.
- e) Repositioning: These are essentially new applications for existing products, and often involve retargeting an old product to a new market segment or for a different application. Repositioning account for about 7 percent of all new products.
- F) Cost reductions: These are the least "new" of all new product categories. They are new products designed to replace existing products in the line, but yield similar benefits and performance at a lower cost.

From a marketing stand point, they are not new products; but from a design and production viewpoint, they could represent significant change to the firm. They represent 11percent of all new product launches.

Table 2-1: Innovativeness of new product launch

Source: Winning at new products, Cooper (1993)

Product Category	Percentage Of Launches	
	Moderate-To-High Technology Industry	All Industry
New to the world	20%	10%
New product lines	38%	20%
Additions to existing	20%	26%
Improvements/Revisions	20%	26%
Cost Reductions	2%	11%
Repositioning	1%	7%

2.1.4 The Challenges of New Product Development

Thomas (1993) has stated that, naturally, numerous prescriptions have been offered to meet the challenges of new product development. Some books advise reducing the cycle time required to develop a new product so as to meet competition more quickly. Others recommend embracing project management, designing a product champion, or forming cross-functional teams. Developing great products is hard. Few companies are highly successful more than of half of the time. These odds present a significant challenge for a product development team. According to Ulrich (2004), some of the characteristics that make product development challenging is: Tradeoffs: One of the most difficult aspects of product development is recognizing, undertaking, and managing such trade-offs in a way that maximizes the success of the product.

Dynamics: Decision making in an environment of constant change is a formidable task. This is because technologies improve, customers preferences evolve, competitors introduce new products, and the macro-economic environment shifts.

Details: Developing a product of even modest complexity may require thousands of decisions.

Time pressure: Any one of these difficulties would be easily manageable by itself given plenty of time, but product development decisions must usually be made quickly and without complete information.

Economics: Developing, producing and marketing a new product require a large investment.

To earn a reasonable return on this investment, the resulting product must be both appealing to customers and relatively inexpensive to produce.

2.2. Specific issues related to New Product Failure

2.2.1 New Product Development risks

Successful new product development allows market expansion, increases profits, and enhances creativity and leadership. But, new products failure rates are considerable, and cost of failure is high (Choi et al., 2005). A business organization's performance often hinges largely on its ability to develop successful products. By introducing new products and re-shaping existing ones, companies create market and growth opportunities (Solomon, 2010). More applied researchers have examined numerous factors that influence the success/ failure rate of new products including (but not limited to) pre-development activities, resource allocation, new idea generation and screening, the presence or absence of team leaders and champions, inter functional coordination, the R&D and marketing interface, marketing and manufacturing interface, prototype design, test marketing activities, and strategic partnering. Mat (2008) further describes that, formal NPD processes increase the success rate of NPD projects in a firm. However, even though the effectiveness of product development processes has been well proven, many firms still do not use a formal NPD process.

According to Brand (1998), there are no magic formulas for successful new product development save a methodical process of trial and error. Most factors that breed success or failure have to do with the organization launching the product rather than the external actors in the market place or the product itself. Bingwen (2010) also states that, Companies must deal particularly with NPD failure, as it is a serious problem to any company, since it can even ruin the business. There is no guarantee that a system will always be successful. System failures can be dramatic and sometimes can cause serious consequences for organizations. Realistically, not all NPD can be successful. Therefore, it is important to examine the reasons for new product failure in order to provide some new ideas, recommendations, and a model for the best practice. Even though vast investments on new product development, many of them face with weak market acceptance and fail (Rezvani, 2009).

2.2.2 High Failure Rates

Thomas (1993) states that, as the risk of failure inherent in every new product situation vary, so too do the returns. Balancing investments, risks, and returns is a major criterion in deciding whether to proceed with a new product project-the crucial go/no go decisions.

Estimate of further sales, costs, investments, market growth, cycle time to develop the new product, and related market response factors contribute to deciding whether to continue with a new product project.

The launching of new product or a new brand has frequently been regarded as a bothersome task. This is because it involves a lot of development work and co-ordination of a wide range of activities. Such as manufacturing, marketing research, packaging, advertising, promotion, and distribution. In spite of careful planning, it is none to certain that evaluating goes on schedule like clockwork and there is all too often a snag, which goes up the works (Davar, 2003).

2.2.3 Organizational challenges of New Product Failure

The most common problem is not being different than existing products. A new product is also likely to fail if it does not deliver on its promise. Further, a product is subject to failure if it is perceived as offering poor value in relation to its price. Other factors that can undermine new products include poor positioning and lack of marketing support. Considering how vital new products are to a company's growth, the large number of new-products introductions, and the high failure rates, products innovation deserves special attention. Firms that are in attentive to their new products may face financial ruin because of the high cost of product failure. Organizations that effectively manage product innovation can expect to reap a variety of benefits, differential advantage, higher sales and profits, and a solid foundation for the future (Etzel et al., 2005). Because so many new products fail, companies are anxious to learn how to improve their odds of new product success. One way is to identify successful new products and find out what they have in common. Another key success factor is a well-defined product concept prior to development, in which the company carefully defines and assesses the target market, the product requirements and the benefits before proceeding. New products that meet market needs more closely than existing products invariably do well. Other success factors included technological and marketing synergy, quality of execution in all stages of NPD process. Kotler et al., (1999) stated that, there are several reasons for new product failure. Although an idea may be good, the market size may have been overestimated.

Perhaps the actual product was not designed as well as it should have been. It may be a 'me too' product which is no better than products that are already established in the marketplace. Or maybe it was incorrectly positioned in the market, priced too high, or advertised and promoted poorly. A high-level executive might push a favorite idea despite poor marketing research findings. Sometimes the costs of product development are higher than budgeted and sometimes competitors fight back harder than expected. According to Cooper et al., (2004), new products fail at a higher rate with only one out of ten product concepts and one in four development projects becoming successful commercially. Yet some business fare better than others do. Thus, the question why these businesses excel in their performance remains to be a question that calls for firms to investigate their NPD activities.

2.3 Empirical review

2.3.1 Study Procedure

A number of studies have examined about the determinants of new product success in many Countries around the world. Most of the studies consider share similar variables like Market orientation, Knowledge management, Decision making speed and support of top-level, managers, NPD team, Technological advancement and NPD process.

If a new product failure is inevitable, the interest area of the study is to explore the experience of Nefas Silk Paint Factory (NSPF) in relation to new product development issues. The task is to identifying the experience gained so far from the new product development exercises and what contributions can be reflected from those new products launched to the market in achieving the company's objectives.

The next step is, if the so called new product failure exists, then identification of the causes and what possible ways are available to combat the risk of failure. After spotting the factors for NP failure, the next task is to compare and contrast common new product failure reasons both on the global markets and those reasons that are specific to NSPF. Then alternative ways of reducing new products failure in relation to the experience of best performing businesses in their new product development processes and workouts is investigated. Those best performing companies share a common trend which is the adoption of a formal NPD process model for product innovation. The model is called "Stage-Gate" process which is developed by Cooper (1993) after conducting a research on selected business firms in United Sates.

Next to this step, the remaining task is to assess the strength and weakness of NSPF’s new product development practice vice versa the best performers’ experience. The evaluation benchmark is based on NPD performance metrics of new products. The study also tries to examine whether a relationship exists between a formal new product development process model and NP failure. Finally after analyzing the outcome of the study, workable and practically feasible recommendations were forwarded at the end of the paper for the case of NSPF.

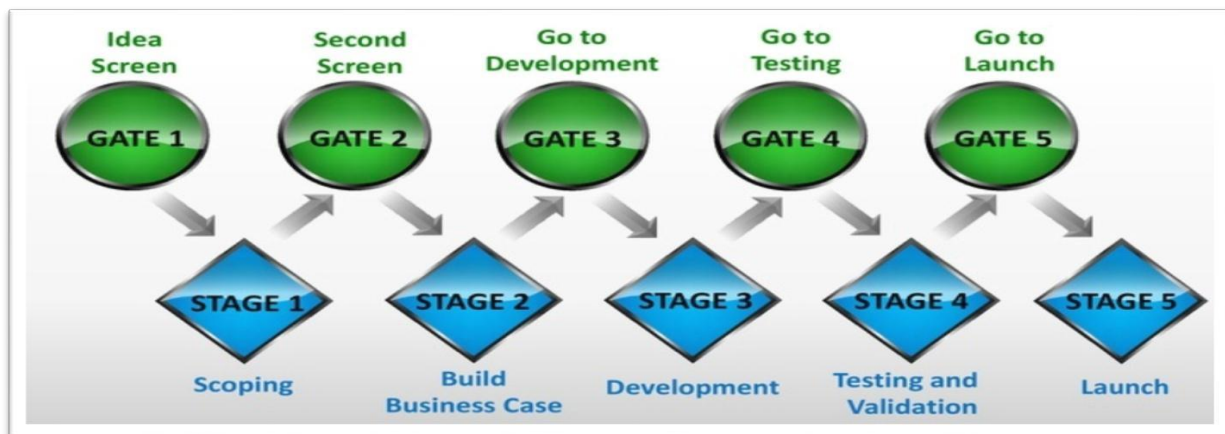
2.3.2 An Overview of the Stage-Gate Process

The stage-gate process is a conceptual and operational model for moving a new product project from idea to launch. It is a blueprint for managing the new product process to improve effectiveness and efficiency. Stage-Gate systems break the innovation process into a predetermined set of stages, each stage consisting of a set of prescribed, multifunctional, and parallel activities. The entrance to each stage is a gate: these gates control the process are serving as the quality control and go/kill check points. This stage-and-gate format leads to the name “Stage-Gate system”. The Stage-Gate model, originally designed by Dr. Robert G. Cooper, is an extremely useful and powerful tool in product development. It splits progress into a series of “Stages” and “Gates” to give a well-organized and structured flow to the project.

Research has shown that businesses that implement the Stage-Gate model are much more likely to have success when marketing their product or service, because they have followed a well-structured procedure which covers all of the bases. If it turns out that a new technology isn’t viable for a profitable product, use of the Stage-Gate model should identify this early, and development can cease.

Illustration 1: - The stage gate model

Source Dr. Robert G Cooper et (2004) stage gate model,



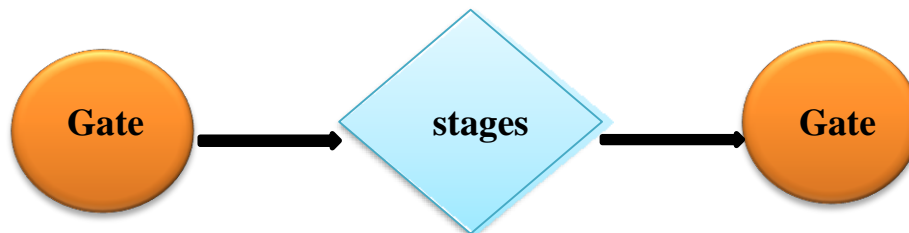
The stage-gate system breaks the new product project in to discrete and identifiable stages. Each stage is designed to gather information needed to progress the project to the next gate or decision point. Each stage is multifunctional: There is no R & D stage or marketing from different functional areas within the firm. These activities are designed to gather information and drive uncertainties down. And each stage costs more than the preceding one.

The Gates: - Preceding each stage is a gate or a go/kill decision point. Gates are predefined and specify a set of “deliverables.”Gates have a common format, with three important elements:

- Deliverables: These are what the project leader and team must deliver to the gate and are the results of actions in the preceding stage. Deliverables become the objectives of the project leader and the team.
- Criteria: These are what the project is judged against in order to make the go/kill and prioritization decisions. These criteria are usually a standard list for each gate, but usually change from gate to gate. They include both financial and qualitative criteria, and are broken down in to required characteristics versus desired characteristics.
- Output: These are the results of a gate, and include a decision (Go/Kill/Hold/Recycle) and a path forward.

Illustration 2:- Structure of the Gates

Source: Winning at new products, Cooper (1993)



Idea: The process is initiated by an idea. Ideation activities include basic research, seed or unfunded projects, and a variety of customer-based and creativity techniques.

Gate 1: Initial Screen Initial screening is the first decision to commit resources to the project: the project is born at this point. If the decision is Go, the project moves into the preliminary investigation stage. Thus, Gate 1 signals a preliminary but tentative commitment to the project.

Gate 1 is a “gentle screen” and amounts to subjecting the project to a handful strategic alignment, project feasibility, magnitude of opportunity and market attractiveness, differential advantage, synergy with the firm’s resources, and fir with company policies.

Financial criteria are typically not part of this first screen. A checklist for the “must meet” criteria and a scoring model for the “should meet” criteria can be used to help focus the discussion and rank projects in this screen.

Stage 1: Preliminary investigation: - This first and inexpensive stage has the objective of determining the project’s technical and marketplace merits. Stage 1 is a quick scoping of the project, often done in less than one calendar month’s elapsed time. A preliminary market assessment is one facet of stage 1 and involves a variety of relatively inexpensive activities: a library search, contacts with key users, focus groups, and even a quick concept test with a handful of potential users. The purpose is to determine market size, market potential and likely market acceptance.

Concurrently a preliminary technical assessment is carried out, involving a quick and preliminary in-house appraisal of the proposed product. The purpose is to assess development and manufacturing routes, technical and manufacturing feasibility, possible times and costs to execute, and possible technical, legal and regulatory risks and road blocks.

Stage 1 is thus provides for the gathering of both market and technical information-at low cost and in a short time-to enable a cursory and first-pass financial analysis as input to gate 2. Because of the limited effort, and depending on the size of the project, Very often stage 1 can be handled by a team of just several people- perhaps from marketing and from a technical group.

Gate 2: Second Screen; - The project is subjected to a second and somewhat more rigorous screen at gate 2.

This gate is essentially a repeat of Gate 1: the project is reevaluated in the light of the new information obtained in stage 1. If the decision is Go at this point, the project moves in to a heavier spending stage.

At Gate 2, the project is again subjected to the original set of “must meet” and “should meet” criteria used at Gate 1. Here additional “should meet” criteria may be considered, dealing with sales force and customer reaction to the proposed product, potential legal, technical, and regulatory “killer variables”-all the result of new data gathered during stage 1. Again, a checklist and scoring model facilitate this gate decision. The financial return is assessed at Gate 2, but only by a quick and simple financial calculation.

Stage 2: Detailed investigation (Build the Business Case) the business case opens the door to product development. Stage 2 is where the business case is constructed: this stage is a detailed investigation stage, which clearly defines the product and verifies the attractiveness of the project prior to be so often weakly handled.

The definition of protocol for the winning new product is a major facet of stage 2. The elements of this definition include target market definition; delineation of the product concept; specification of a product positioning strategy product features, attributes, requirements, and specifications.

Stage 2 sees market and market research studies undertaken to determine the customer's needs, wants, and preferences-that is, to help define the "winning" new product.

Competitive analysis is also a part of this stage. Another market activity is concept testing: a representation of the proposed new product is presented to potential customers, their reactions are gauged, and the likely customer acceptance of the new product is determined. A detailed technical appraisal is focuses on the "do- ability" of the project at stage 2. That is, customer needs and "wish lists" are translated in to a technical and economically feasible solution. This translation might even involve some preliminary design or laboratory work, but it should not be constructed as a full fledged development project. A manufacturing (or operations) appraisal is often a part of building the business case, where issues of manufacturability, costs to manufacture, and investment required are investigated. If appropriate, detailed legal, patent, and regulatory assessment work is undertaken in order to remove risks and to map out the required action. Finally, a detailed financial analysis is conducted as part of the justification facet of the business case. The financial analysis typically involves a discounted cash flow approach, complete with sensitivity analysis to look at possible downside risks.

The result of stage 2 is a business case for the project: the product definition or protocol-a key to success-is agreed to; and a thorough project justification and detailed project plan are developed. Stage 2 involves considerable more effort than stage 1, and requires the inputs from a variety of sources. Stage 2 is best handled by a team consisting of multifunctional members-the core group of the eventual project team.

Gate 3: Decision on the Business Case; - This is the final gate prior to the development stage, the last point at which the project can be killed before entering heavy spending.

Once past Gate 3, financial commitments are substantial. In effect, Gate 3 means “go to a heavy spend.” Gate 3 also yields a “sign off” of the protocol or product definition.

The qualitative side of this evaluation involves review of each of the activities in stage 2, and checking that the activities were undertaken the quality of execution was sound, and the results were positive. Next, Gate 3 subjects the project once again to the set of “must meet” and “should meet” criteria used at Gate 2. Finally, because a heavy spending commitment is the result of a Go decision at Gate 3, the results of the financial analysis are in important part of the screen.

If the decision is Go, Gate 3 sees commitment to the product definition and agreement on the project plan that charts the path forward: the development plan and the preliminary operations and marketing plans are reviewed and approved at this stage. The full project team-an empowered, multifunctional team headed by a leader with authority-is designated.

Stage 3: Development Stage 3 witnesses the implementation of the development plan and the physical development of the product. For lengthy projects, numerous milestones and periodic project reviews are built in to the development plan. Go/Kill decisions are not made here; rather these milestone check points provide for project control and management. Some in-house or lab testing usually occurs in this stage as well.

The “deliverable” at the end of stage 3 is a lab-tested prototype of the product. The emphasis in stage 3 is on technical work. But marketing and manufacturing activities also proceed in parallel. For example, market analysis and customer-feedback work continue concurrently with the technical development, with constant customer opinion sought on the product as it takes shape during development. These activities are back-and forth or iterative, with each development result-for example, rapid prototype, working model, first prototype, etc.-taken to the customer for assessment and feedback. Meanwhile, detailed test plans, market launch plans, and production or operation plans, including production facilities requirements, are developed. An updated financial analysis is prepared, while regulatory, legal, and patent issues are resolved.

Gate 4: Post development Review: - The post development review is a check on the progress and the continued attractiveness of the product and project. Development work is reviewed and checked, ensuring that the work has been completed in a quality fashion, and that the developed product is indeed consistent with the original definition specified at Gate 3.

This gate also revisits the economic question via a revised financial analysis based on new and more accurate data. The test or validation plans for the next stage are approved for immediate implementation, and the detailed marketing and operations plans are reviewed for probable future execution.

Stage 4: Testing and Validation; - This stage tests and validates the entire viability of the project: the product itself, the production process, customer acceptance, and the economics of the project. A number of activities are undertaken at stage 4. In-house product tests: extended lab tests to check on product quality and product performance under controlled or lab conditions. User or field trials of the product: to verify that the product functions under actual use conditions, and also to gauge potential customers' reactions to the product- to establish purchase intent. Trial, limited, or pilot production: to test, debug, and prove the production process, and to determine more precise production costs and throughputs.

Pre-test market, test market, or trial sell: to gauge customer reaction, measure the effectiveness of the launch plan, and determine expected market share and revenues. Revised financial analysis: to check on the continued economic viability of the project, based on new and more accurate revenue and cost data.

Gate 5: Pre-commercialization Business Analysis: - This final gate opens the door to full commercialization-market launch and full production or operation start up. It is the final point at which the project can still be killed. This gate focuses on the quality of the activities at the testing and validation stage and their results. Criteria for passing the gate focus largely on expected financial return and appropriateness of the launch and operations start-up plans. The operations and marketing plans are reviewed and approved for implementation in stage 5.

Stage 5: Full Production and Market Launch: - This final stage involves implementation of both the marketing launch plan and the production or operations plan. Given a well thought out plan of action and backed by appropriate resources, and of course, barring any unforeseen events, it should be clear sailing for the new product. Post-implementation Review: - At some point following commercialization (often 6-18 months), the new product project must be terminated. The team is disbanded, and the product becomes a "regular product" in the firm's product line. This is also the point where the project and product's performance is reviewed.

The latest data on revenues, costs, expenditures, profits, and timing are compared to projections to gauge performance. Finally a post-audit-a critical assessment of the project's strengths and weaknesses, what we can learn from this project, and how we can do the next one better is carried out. This review marks the end of the project. Note that the project team and leader remain responsible for the success of the project through this post-launch period, right up to the point of the post-implementation review.

2.2.3 NPD process stages

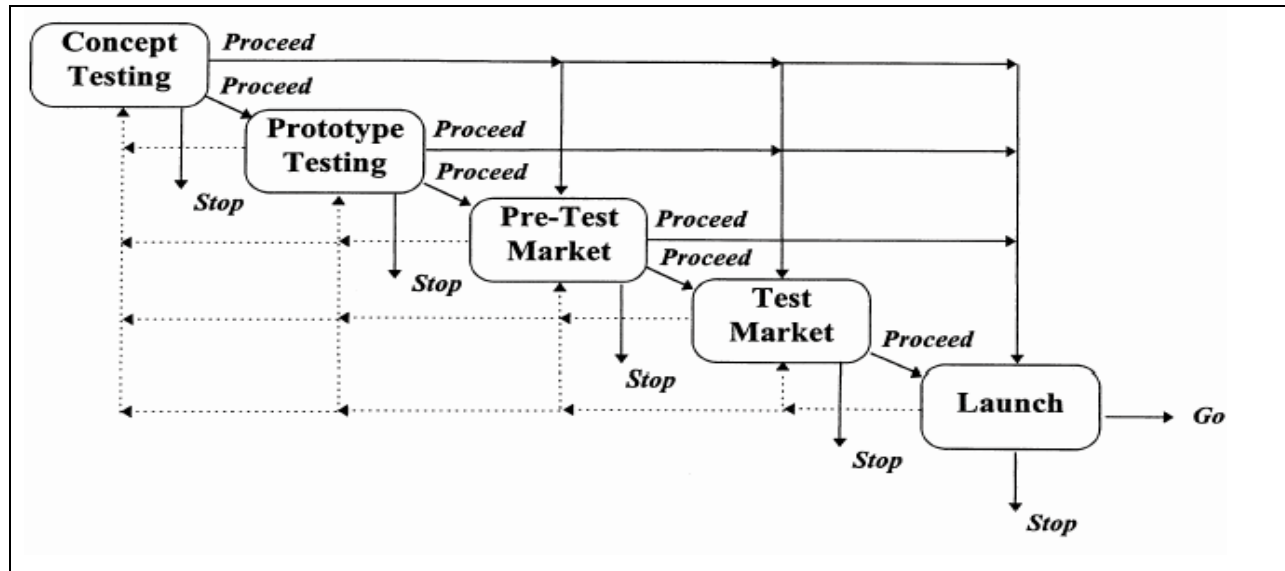
New product evaluation is a dynamic process and generally can be conducted at five major stages including concept testing, prototype testing, pretest market, test market, and launch (Mahajan and Wind,1988: 347; Tzokas et al, 2004: 620) The concept testing stage is concerned with assessing consumers' reactions to a new product concept, identifying important attributes, and determining potential market size.

In the prototype testing stage, individuals evaluate a prototype of a new product (Varela and Benito, 2004: 2-3). The pre test market stage deals with the simulation of a shopping environment and measures the reactions of potential buyers to a new product. The test market stage is an evaluation with a limited product launch and is the final step before a full-scale commercialization. Finally, the launch stage involves predicting the future sales of a new product by using its early sales data (Lu and Yang, 2004:595). As we can see on the below Figure, one can evaluate a new product by going through the whole process.

This can be an ideal practice; as previous studies suggest that using multiple methods improves forecasting accuracy. However, due to competitive pressures and increasingly shorter product life cycles, companies tend to introduce new products as quickly as possible by skipping several stages of the process. It should be noted that the process runs parallel to the NPD Process and is applicable to both stage gate and concurrent processes; thus, companies can utilize the models either sequentially or concurrently.

Illustration 3: - NPD Process Stages (Ozer, 1999:78)

Source: Cooper and Kleinschmidt (1986) and Maylor (2001)



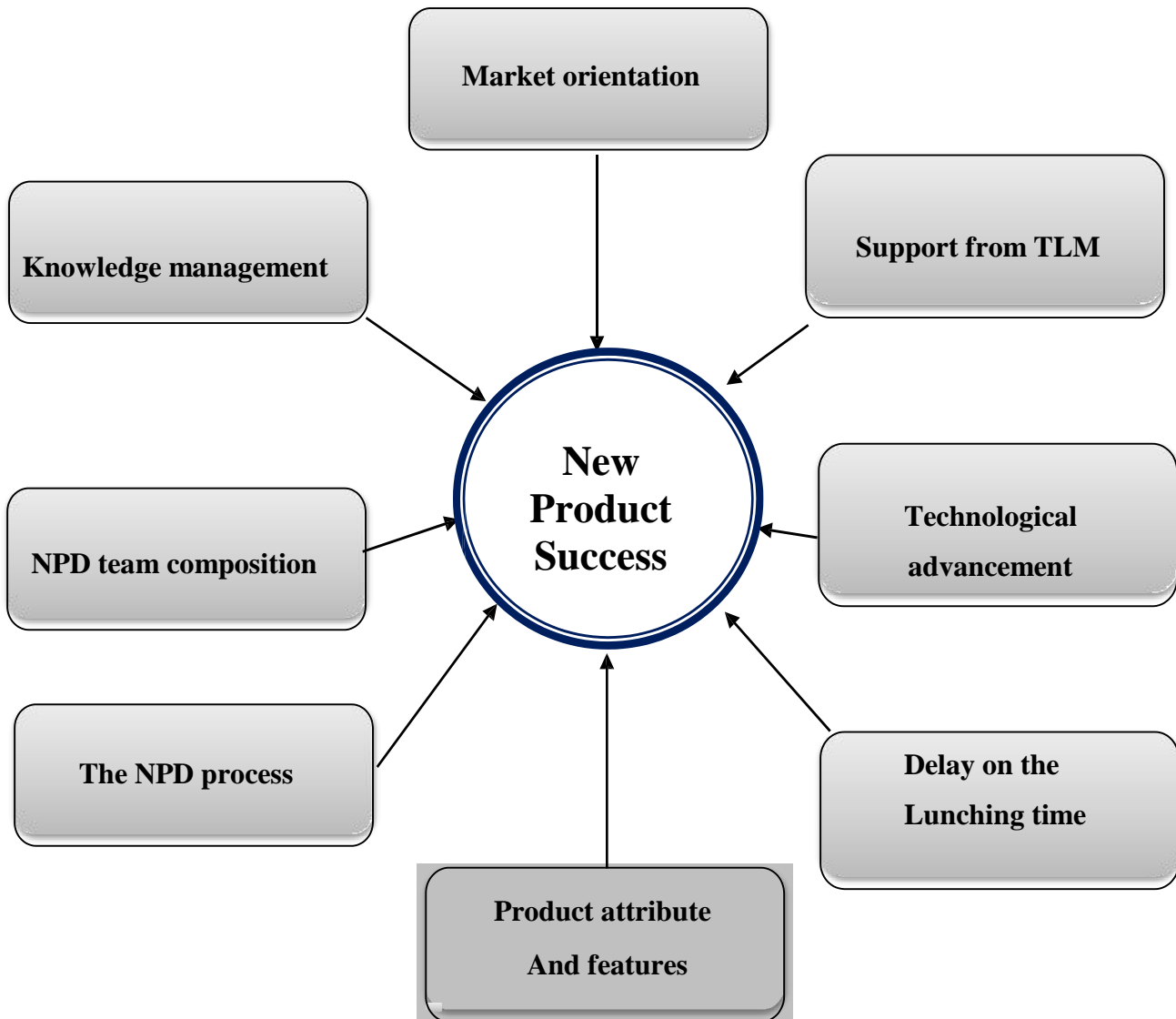
2.2.4 Key Business Performance Metrics

As indicated in the introductory part of the study, benchmarking criteria for best performers employed to see the new product performance of NSPF in comparison to those best performing companies. Cooper et al., (2006) identified best performing companies by setting a performance metrics which is shown below table (2-2). Benchmarking by the use of metrics helps management to differentiate top performers differ from the worst performers.

NSPF's eight-year new product development experience in relation to achievement of the financial objectives of the company was investigated in comparison to the performance metrics. The revenue and profit contribution obtained from the new products are calculated and reflected in summarized manner in chapter six of the finding part of the study.

2.2.5 Conceptual framework

Source: - Developed from Critical Success Factors in New Product Development
(Gonzalez and Palacios, 2002:262)



Except the two independent variables; Delay on the launching time and product attribution all other variable are taken from Gonzalez and Palacios “ Critical Success Factors in New Product Development “. The two independent variables are included in this research survey is due to today’s market completion among different factories to introduce new product to the market and attract customers.

Research Hypotheses

H1: Market orientation towards customers or competitors has a positive impact on the success of NP.

The ability to generate and market creative ideas in new products (NPs) and related marketing programs (MPs) in response to changing market needs is a key to the success of a firm. An accumulating body of research has established that market orientation leads to better performance in organizations (SubinIm & John P. Workman Jr. Article in Journal of Marketing · May 2004)

H2: Knowledge management has a direct relationship with the successes of NP.

Knowledge from many different consultants with wide-ranging learning experience and skills is desirable to construct and create a novel product with added composite character similar to unique novel creations or systems (Schmickl and Kieser, 2008).

According to Gold et al. (2001), organizations must carefully transform its tacit knowledge into explicit knowledge to avoid the loss of efficiencies in production and innovation. This is because socialization often results in implicit learning, which is context-specific, subjective and difficult to express in a more comprehensible manner (Mittendorff et al., 2006; Senoo et al., 2007). Consequently, this can create more challenges in product development as it produces more knowledge barriers between team members and functions that can slow down new product development activities. In general, Knowledge management plays a relatively important role in product development performance. (PohKiat Ng, Gerald Guan Gan Goh, Uchenna Cyril Eze March 2011).

H3: The Decision making speed and top management support (TMS) affect the overall NPD and successes of the NP.

Why do some NPD project teams perform better than others do? One recurrent answer to this question has been quite commonsensical: the success of NPD projects is a function of the support they get from top management (Thamain, 2004; Cooper & Kleinschmidt, 2007; Barczak, Griffin, & Kahn, 2009; Chen, Damanpour & Reilly, 2010).

Although previous studies have provided empirical support for this hypothesis, they have, rather surprisingly, ignored another important question that the hypothesis raises: why do some NPD projects get more support than others do? The relative lack of attention paid to this question may be due to the predominance of what we refer to as the “rational approach to NPD”, in which TMS is a project “input” that top managers have to modulate according to a project’s strategic value. However, some studies have reported a different reality (Dougherty & Hardy, 1996; McLoughlin, Koch, & Dickson, 2001) by suggesting that TMS is something the project leader has to win in the face of both intense internal competition and bounded rationality in the process of allocating attention and organizational resources.

H4: There is a positive relationship b/n the composition of members in the NPD team with the successes of NP.

Knowledge from many different consultants with wide-ranging learning experience and skills is desirable to construct and create a novel product with added composite character similar to unique novel creations or systems (Schmickl and Kieser, 2008).

NPD teams are frequently used to integrate employees from several company departments and give opportunities for simplification and parallel processing. Many empirical studies have found that this practice increases a project innovation and NPD success rate (Sanchez and Perez, 2003: 140; Atahuene and Evangelista, 2000: 1275; Bonner et al, 2002: 233; Jassawalla and Sashittal, 1998: 237). H5: Technological advancement in paint factories affects the successes of NP.

Innovation in the management of a business is essentially concerned with product improvements, the development of new ones and the development or improvement in production processes. This suggests that technological innovation is very central to new product development, whether it is viewed as resulting from demand-pull or technology push. In fact, the Central Advisory Council on Science and Technology equates NPD to innovation and describes it as “the technical, industrial and commercial steps which lead to the marketing of new manufactured products”. The ultimate purpose of all new product development activities is to meet consumer needs. One of the means of achieving this is by the exploitation of new technology that may develop hand-in-hand with the needs (Ilori et al, 2000: 337). Booz, Allen and Hamilton, Inc. (1982) also report that one of the leading stimuli to new products in all industries is technological advances, implying that rapid technological development promotes new product introductions.

H6: The NPD process has an effect on the successes NP.

Cooper and Kleinschmidt (1986) and Maylor (2001) found that proficiency or skill in NPD phases was correlated to new product success. New product evaluation is a dynamic process and generally can be conducted at five major stages including concept testing, prototype testing, pretest market, test market, and launch (Mahajan and Wind, 1988: 347; Tzokas et al, 2004: 620). As previous studies, suggest that using multiple methods improves forecasting accuracy. However, due to competitive pressures and increasingly shorter product life cycles, companies tend to introduce new products as quickly as possible by skipping several stages of the process. It should be noted that the process runs parallel to the NPD process and is applicable to both stage gate and concurrent processes; thus, companies can utilize the models either sequentially or concurrently.

H7: A Product attributes and features have a direct relationship in determining the successes of NP.

When product attribute goals are inconsistent with more product attribute goals (new information), whether consumer can create elaboration, as well as strengthen brand attitude. The empirical results show that new information extent has the main effect, need for cognitive has main effect, interaction effect of new information degree and need for cognitive. Implicitly it provided more attribute information that help to stimulate the elaboration of the consumer on the product. In addition, consumer's prior knowledge has main effect on elaboration extent, and new information and prior knowledge has interaction effect. Before consumers purchase products, they may have their default product attribute requirements. For example, when they want to buy a digital camera, they will consider how much the pixel is, and these are the original attribute target. Actually when we read the product packaging, or browse the Web Information, we may see a variety of attribute information, and related statements of description. At this point, when the messages exceed the attribute target, it affects the consumer's perceptions towards the product and increases their elaboration. One school believed when faced with inconsistent information, all information set would be elaborated and customers would process more with consistent information (Maheswaran & Chaiken, 1991).

H8: The Delay on the lunching time of the NP affect it success in market.

The product development cycle is typically kicked off by identifying market opportunities, defining user requirements, differentiating features and estimating the addressable market.

Likewise, the product development timeline and target launch date are identified early in the project definition process. However, the impact of timing on revenue and profit is an often overlooked, but essential, variable to success in the market. Time-to-market is a vital economic success factor that is often underappreciated. Delays that creep into a project because of a lack of resources, technical difficulties or limited capacity significantly affect time to break-even, peak product revenue as well as length of product life cycle. Considering that hitting a market window of opportunity can easily make the difference between gaining first-mover advantage versus launching a me-too product in a competitive market, the cost of launch delay should be a key metric for decision-making. Unfortunately, CoD is still not widely used. Don Reinertsen, author of the book “The Principles of Product Development Flow,” reports that “approximately 85 percent of product managers do not know the Cost of Delay” and that intuition of CoD is poor heightening the need to quantify CoD in order to make better decisions around prioritization¹. (Andreasson, I. (2011, April 11) Integer Cost of Delay (CoD) Calculator) When Things Go Wrong, Don’t Rely on Committed Consumers: Effects of Delayed Product Launches on Brand Trust*Steffen Herm Consumers understand product preannouncements as credible promises to bring innovations to market at a given time. However, a majority of preannounced products are introduced with some delay.

In this vast geographic market, managers of global companies have to coordinate myriad factors, such as globally distributed development teams and production sites; count-less product approval or certification rules which are not harmonized and complex global distribution systems (Calantone and Griffith, 2007).

Many things can go wrong, deadlines can be missed, and eventually the launch of a new product has to be postponed globally or at least in some regions. In fact, a majority of preannounced products are introduced with some delay (Bayus, Jain, and Rao, 2001; Wu, Balasubramanian, and Mahajan, 2004).

Chapter Three: Research Methodology

This Chapter highlights the type of the research methodology; methods of data gathering together with the justifications for choosing one against the other. It also described on how these methods implemented in the objective to find answers to the purpose of the project. Issues related to reliability and validity within the proposed methods is puts in place briefly.

3.1 Research approach

When starting up research it is important to choose a proper approach in which to collect data. Kothari (2005) stated that the qualitative and quantitative methods are means for collecting data. Qualitative approach of research is concerned with subjective assessment of attitudes, opinions and behavior. Quantitative research is the systematic and scientific investigation of quantitative properties and phenomena and their relationships (Kothari, 2005). It involves studies that make use of statistical analyses, theories and hypothesis to obtain their endings (Marczyk& et al., 2005). Hence, it involves surveys and experiments used to test hypothesis with a view to infer from the particular to the general.

Based on this, researcher has chosen to use both qualitative (in-depth interview) and quantitative research methods (questionnaires) in this study. Because, it enables to get a deeper understanding about the determinants of success factors in the process of NPD.

Qualitative approach involves studies that do not attempt to quantify their results through statistical summary or analysis. He also mentions that qualitative studies typically involve interviews and observations without formal measurement.

3.2 Design of the Study

The study was conducted to evaluate the new product development process and determinants of new product success factors in NSPF.

A descriptive or diagnostic type of a research design was used; probability sampling or random sampling was applied to select representatives of the total population. The study is a combination of quantitative and qualitative research type involves non-probability purposive sampling techniques of data collection.

Data collection were through questionnaires for employees who have past experience in the development on new products and interview for managers, supervisors, key staff who have direct association with new product development activities, and other relevant personnel.

Secondary data was also collected from company records such as, annual financial reports, company brochures, annual performance review reports, project completion reports and company website.

3.3 Population and Sampling

In this research study employees of NSPF is the total population. Due to the nature the research topic and the number of total population census was used to collect data through questionnaires and managers/supervisors was included in the Interview part. They were selected based on their relevance and experience with the subject matter. Especially those having direct involvement to the overall new product development activity of the firm was selected.

3.4 Data Collection Instrument

The intended data collected through both primary and secondary data collection instrument.

3.4.1 Primary Data

3.4.1.1 Interview

An open-ended interview questions used and Interview questions applied to gather information about the Determinants of new product success and challenges faced in the overall NP process. An open-ended interview questions was asked to guide the questions order and specific mode of asking. As much as possible a cross-functional team may be included on the interview.

3.4.1.2 Questionnaires

The questionnaire have two parts the Demographic questions part and a five LIKERT scale questions to gather information about the relationship of new product success and the eight independent variables.

3.4.2 Secondary Data

In this research survey, the following secondary dates were included: - company brochures, annual performance review reports, and company website.

3.6 Data Analysis Techniques

The raw data collected was converted to meaningful information in accordance with

corresponding measurement of benchmarking metrics of new product performance results. The criteria extracted from Cooper et al., (2006) performance metrics to evaluate NPD results as compared to top business performers. The NPD process of NSPF investigated to see how well it is structured and executed in a controlled manner as compared to successful firms that adopt stage-gate model for product innovation introduced by Cooper (1993). The purpose and objective of the study explained in details in order to create a feeling of security and confident in the mind of respondents.

The collected data was manipulated in to the SPSS statistical data processor and interpret with the help statistical description tools including standard deviation, frequency, average, minimum, maximum and median (descriptive statistics). To conduct this, the researcher supported by statistical tools IBM SPSS statistics software. The proposed hypothesis tested statistically with correlation test to arrive at the conclusion and recommendations.

The qualitative information which gathered by interview were analyzed by describing the responses of the respondents and it kept as a supportive for the data collected through questionnaire and secondary data.

3.7 Validity Test

Validity is the translation from concept to operationalization accurately representing the underlying concept. It answers the question does your variables measure what you think in abstract concepts. Correlation test was used to check the validity of variables. Correlations are the measure of the linear relationship between two variables.

Table2. Correlation and level of Sig. for each independent variables

Source: SPSS correlation analysis result

R.No.	Independent Variables	Correlation (r) values	Significant at
1	Market orientation	0.629	0.000
2	Knowledge management	0.739	0.000
3	Support from Top-level management	0.756	0.000
4	NPD team composition	0.594	0.000
5	Technological advancement	0.542	0.002
6	The NPD process	0.500	0.004
7	Product attributes and features	0.481	0.006
8	Delay on the lunching time	0.777	0.000

A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong relationship between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship (Fikre et al, 2009:78). -1: perfectly negative linear relationship, 0: no relationship and +1: perfectly positive linear relationship.

As described by Andy (2006) the correlation coefficient is a commonly used measure of the size of an effect: The strength of variables was assessing by these general guidelines: -

0.3 < |r| < 0.5 ... Weak Correlation 0.5 < |r| < 0.7 ... Moderate Correlation
 |r| > or = 0.7 ... Strong Correlation

Table 3 summary of correlation analysis results

Roll	Independent Variable	Level and sign of correlation	Dependent variable
1	Market orientation	Moderate Positive	New Product Success
2	Knowledge mgt	Strong Positive	
3	Support from Top-level mgt	Strong Positive	
4	NPD team composition	Moderate Positive	
5	Technological advancement	Moderate Positive	
6	The NPD process	Moderate Positive	
7	Product attributes and features	Weak Positive	
8	Delay on the lunching time	Strong Positive	

As shows on the above summary of correlation analysis results, Knowledge management, Support from Top-level management and Delay on the lunching time has a strong correlation with the successes of new products. Market orientation, NPD team composition, Technological advancement and The NPD process have a moderate correlation with the success of new products. Only Product attributes and features have weak correlation with the successes of new products. This correlation analysis result shows that I have used valid variable which can express the obstruct idea in relation with new product success.

3.8 Reliability Test

Reliability means "repeatability" or "consistency". A measure was considered reliable if it would give us the same result repeatedly. As stated by "Hair et al., (2007) reliability indicates the extents to w/c a variables or set of variables is consistent in what it is intended to measure"(cited by Siddiqi; 2011:20). Reliability analysis used to measure the consistency of a questionnaire.

There are different methods of reliability test, for this study was Cronbach's alpha. Cronbach's alpha is the most common measure of reliability. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered a measure of scale reliability. There are different methods of reliability test, for this study Cronbach's alpha is considered to be suitable. Cronbach's alpha is the most common measure of reliability in order to measure the consistency of a questionnaire. For this study the Alpha coefficient for the overall scale calculated as a reliability indicator is 0.95. The individual Alpha coefficients for the scales were presented on the table below.

Table1. The individual Alpha coefficients of independent variables

Source: SPSS reliability analysis result

R.No.	Independent Variables	Cronbach's Alpha
1	Market orientation	0.876
2	Knowledge management	0.964
3	Support from Top-level management	0.962
4	NPD team composition	0.937
5	Technological advancement	0.920
6	The NPD process	0.919
7	Product attributes and features	0.939
8	Delay on the lunching time	0.912
	Total	7.429
	Cumulative	0.929

As described by Andy (2006) if the values of Cronbach's alpha are around 0.8 we can conclude that we have used a consistence questionnaire. The alpha values in this study are greater than 0.8 therefore the questionnaire is reliable. In addition, the Alpha coefficient for the overall alpha value is 0.93.

3.9 Ethical Considerations

Product development is an area that could contain sensitive company information. For this reason, face-to-face interviews were used to show credibility and building of confidence with participants. Some Circumstances such as busy and high peak office task hours was avoided so that respondents can give answer to the questions in a relaxed manner. It seems that respondents were giving accurate.

Chapter Four: Data Presentation and Analysis

Based on the data collected through questionnaires, interview and relevant documents reviewed the following result had been obtained.

4.1. Demographic data presentation and analysis

Based on the data collect through questioner the following discussion shows summary of respondents demographic data, out of the total 71% of the respondents are male, 67.7% are less than 36 years age, 68% of the respondents are degree holders and 5% are master holder the rest hold diploma, 61.5% of the total respondent get 6001ETB monthly salary, only 25.9% has less than 2 years working experience, 61.3% are married and when people engaged in marriage they become more responsible and committed for their each & every activities. Only 22.73% of the total respondents are master holders and all are males aged of greater than 36. The respondents are more concentrated on the age range from 26 – 35 years old and they are degree holder. This indicates NSPF has younger working force. The monthly salary increment is based on employees working experience and level of education. Finally, we can conclude that NSPF has a consistent employees profile with regard to working experience, educational level and monthly salary. However, the roll and participation of female employees has a gap b/c only 29% are females.

4.2. Market Orientation

Table 4.1 How They Respond To Changes In The Market Places

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	6.5	6.5	6.5
Neutral	9	29.0	29.0	35.5
Valid Agree	13	41.9	41.9	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

As show on the above table 4.1 more than 64% of the respondent agreed that responding for any changes on the marketing environment is important to acquire customers' needs and want. And this helps the factory to focus and delivers what customers need at the current market environment.

Table 4.2 The Link B/N Market Orientation & NP Activity

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	12.9	12.9	12.9
Neutral	4	12.9	12.9	25.8
Valid Agree	16	51.6	51.6	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

More than 74% of respondent were agreed that factories should conduct a survey on market orientation side by side with the new product development process.

Table 4.3 Customers & Suppliers Involvement

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	6.5	6.5	6.5
Neutral	6	19.4	19.4	25.8
Valid Agree	16	51.6	51.6	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

Only 6% of the respondent were disagreed that the involvement of customers and suppliers on the NPD process is not important. But most of the respondents are agreed on their participation on the NPD process.

In general, 55.9% of the respondents agreed on that NSPF's orientation towards customers or competitors are likely to influence how they respond to changes in the market place and the link between market orientation and new product activity is based on considerable research in marketing that has focused on the consequences of market orientation. The involvement of customers and suppliers in the NPD process as early as possible leads the company to get great potential benefits. Before all activities of NPD process, a market survey is conducted by R & D department of NSPF collaborating with other department like marketing in order to know what is look like the direction of the market.

4.3. Knowledge Management

Table 4.4 Clearly Defined Knowledge Management Process.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	3	9.7	9.7	9.7
Neutral	9	29.0	29.0	38.7
Valid Agree	10	32.3	32.3	71.0
Strongly Agree	9	29.0	29.0	100.0
Total	31	100.0	100.0	

Most of the respondents were believed that a clearly defined knowledge management process was designed in the factory in order to facilitate the NPD process.

Table 4.5 Clear Flow & Easy Access Of Knowledge b/n Knowledge Supplier & Demander.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	3.2	3.2	3.2
Disagree	3	9.7	9.7	12.9
Neutral	8	25.8	25.8	38.7
Valid Agree	9	29.0	29.0	67.7
Strongly Agree	10	32.3	32.3	100.0
Total	31	100.0	100.0	

As the above table 4.5 indicates more than 61% of the respondents were agreed that there is a Clear Flow and Easy Access of Knowledge b/n Knowledge Supplier & Knowledge Demander.

Table 4.6 Integration b/n Internal & External Knowledge Management System.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	12.9	12.9	12.9
Neutral	7	22.6	22.6	35.5
Valid Agree	10	32.3	32.3	67.7
Strongly Agree	10	32.3	32.3	100.0
Total	31	100.0	100.0	

According to the data collected the result of NSPF in relation to Knowledge Management; 54.9% of the respondents believes that NSPF has a clearly defined processes or methods used to search important knowledge, clear flow and easy access of knowledge between the knowledge supplier & knowledge demander in the development of new products also there is an Integration b/n internal and external knowledge management system.

4.4. Support from Top Level Management

Table 4.7 TLM Support & Commitment On NPD Process.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Neutral	10	32.3	32.3	38.7
Valid Agree	12	38.7	38.7	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

More than 60% of the respondents agreed that TLM are committed to provide organizational support, generates enthusiasm, provides a clear vision of the product concept and assures sufficient allocation of various resources.

Table 4.8 TLM & On time Decisions Making

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Neutral	12	38.7	38.7	45.2
Valid Agree	9	29.0	29.0	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

According to respondents on the above Table 4.8, almost 39% of them were neutral neither agree nor disagree on TLMs on time decisions making. This show there is inconsistency of decisions making from TLMs.

Cumulatively, 80% of the respondents said that Top level management personals are committed to provide organizational support for change, generates enthusiasm, provides a clear vision of the product concept and assures sufficient allocation of various resources. Also they open-minded, supportive, and professional also give a direct order and timely based decisions in order to speed up the NPD process. And this is the most important determinate for new product success by enhancing its development process. On time decision making increases the success of the NP or decrees the risk that can cause NP failure. But the inconsistent decision making may lead for delay the NP launching time.

4.5. NPD Teams Composition

Table 4.9 NPD Teams Composition

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	3.2	3.2	3.2
Disagree	5	16.1	16.1	19.4
Neutral	7	22.6	22.6	41.9
Agree	10	32.3	32.3	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Based on respondents, members in the NPD team are NPD teams are from different department having different skills, knowledge and experience.

Table 4.10 NPD Team Members Selection

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	3.2	3.2	3.2
Disagree	5	16.1	16.1	19.4
Neutral	7	22.6	22.6	41.9
Agree	9	29.0	29.0	71.0
Strongly Agree	9	29.0	29.0	100.0
Total	31	100.0	100.0	

Members in the NPD teams are selected according to their job performance and experience on NPD process related knowledge. And around 58% of the respondent agreed on this.

Table 4.11 NPD Teams Participate, Integrate Employees & Give Opportunities For Simplification And Parallel.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	9.7	9.7	9.7
Disagree	4	12.9	12.9	22.6
Neutral	6	19.4	19.4	41.9
Agree	11	35.5	35.5	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

According to respondents, the NPD teams frequently participate and integrate employees from several company departments and give opportunities for simplification and parallel.

Table 4.12 NPD Teams & Company Employees job Motivation And Synergy

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	9.7	9.7	9.7
Disagree	5	16.1	16.1	25.8
Neutral	6	19.4	19.4	45.2
Agree	10	32.3	32.3	77.4
Strongly Agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

55% of respondent were agreed NPD team members and company employees has a great job Motivation and synergy.

In general, only 25% of the respondents are disagreed on NPD teams' composition, which means member in NPD teams are not from different department having different skills, knowledge and experience. But the majority was agreed that they are selected from different departments which have a direct or indirect relationship with NPD and they are chosen among others with according to their job performance (KPIs) and experience on NPD process & related knowledge.

NPD teams frequently participate, integrate employees from several company departments, and give opportunities for simplification and parallel regarding to NPD process. In addition, members in the NPD team and company employees have a great job Motivation & synergy.

4.6. Technological Advancement

Table 4.13 Technological Advancements Affect The Success Of New Products

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Disagree	3	9.7	9.7	16.1
Neutral	8	25.8	25.8	41.9
Agree	10	32.3	32.3	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

As show on the above table 4.13 almost 58% of the respondents were agreed that technological advancements really affect new products success. This will also lead for shutdown the entire factory and to be out of the market.

Table 4.14 The Need For NPD Is Due To Rapid Technological Dev't

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Disagree	2	6.5	6.5	12.9
Neutral	5	16.1	16.1	29.0
Agree	16	51.6	51.6	80.6
Strongly Agree	6	19.4	19.4	100.0
Total	31	100.0	100.0	

Around 71% of respondents were agreed that, most of the time the need for NPD is due to a great competition among competitors which resulted from rapid technological advancements in the marketing environment. So that, to cope up with the current marketing environment factories must advance their existing technologies in order to introduce new product to the market.

Table 4.15 Meeting Consumer Needs By Exploitation Of New Technology

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	9.7	9.7	9.7
Disagree	1	3.2	3.2	12.9
Neutral	3	9.7	9.7	22.6
Agree	16	51.6	51.6	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Most of the respondents were agreed that come up with new and advanced technologies can help the factory to satisfy customer current needs and want.

Having the above three sub discussions on technological advancement we can generalized it as follows, 70.9% of the respondents are agreed that technological Advancements affect the success of new products of NSPF and most of the time the need for NPD is due to rapid technological development and competition among competitors. Now a day the ultimate purpose of NPD activities in NSPF is to meet consumer needs and achieving this is by the exploitation of new technology.

4.7. The NPD Process

Table 4.16 Follow A Clear NPD Process Stages.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Disagree	2	6.5	6.5	12.9
Neutral	9	29.0	29.0	41.9
Agree	10	32.3	32.3	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Around 58% of the respondents believe NSPF follow a clear NPD process stages. And this will lead for consistent NPD process.

Table 4.17 Assessing Consumers' Reactions To A New Product Concept

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	3.2	3.2	3.2
Disagree	3	9.7	9.7	12.9
Neutral	7	22.6	22.6	35.5
Agree	12	38.7	38.7	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Around 65% of respondents were agreed that the factory assess consumers' reactions to a new product concept, identifying important product attributes, and determining potential market size.

Table 4.18 Concern On Idea Generation & Come Up With Miracle New Products Idea

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	3.2	3.2	3.2
Disagree	3	9.7	9.7	12.9
Neutral	6	19.4	19.4	32.3
Agree	13	41.9	41.9	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Most of respondents believe that NSPF gives more concern on idea generation in order to come up with miracle new products idea that can build its capability and competitiveness in the market.

Table 4.19 Evaluation Of Prototype Before Full Commercialization To The Market.

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	6.5	6.5	6.5
Disagree	4	12.9	12.9	19.4
Neutral	5	16.1	16.1	35.5
Valid Agree	12	38.7	38.7	74.2
Strongly Agree	8	25.8	25.8	100.0
Total	31	100.0	100.0	

Almost 65% of respondents agreed that when new products passed all the necessary stages finally a prototype of it will be first evaluated before full commercialization to the market.

Cumulatively, 65.4% agreed that NSPF follow a clear NPD process stages and it assess consumers' reactions to a new product concept, identifying important product attributes, and determining potential market size also NSPF gives more concern on idea generation in order to come up with miracle new products idea that can build its capability and competitiveness in the market. Finally, after all NPD process is done a prototype of the NPs is evaluated through a pilot test on a specific market area or group before full commercialization to the whole market. This result indicates that consistency of NPD processes can determine the successes of NP.

4.8. Product Attributes and Features

Table 4.20 Durability Of Products

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	3.2	3.2	3.2
Neutral	6	19.4	19.4	22.6
Valid Agree	11	35.5	35.5	58.1
Strongly Agree	13	41.9	41.9	100.0
Total	31	100.0	100.0	

77% of respondents were agreed that NSPF products are more durable than competitors' products.

Table 4.21 Excellent Flow And Coverage

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	3.2	3.2	3.2
Neutral	5	16.1	16.1	19.4
Valid Agree	10	32.3	32.3	51.6
Strongly Agree	15	48.4	48.4	100.0
Total	31	100.0	100.0	

More than 80% of respondents were agreed that NSPF products have excellent flow and Coverage.

Table 4.22 Superior Adhesion

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	3	9.7	9.7	9.7
Neutral	9	29.0	29.0	38.7
Valid Agree	9	29.0	29.0	67.7
Strongly Agree	10	32.3	32.3	100.0
Total	31	100.0	100.0	

61% of respondents were agreed that NSPF products are Superior Adhesion.

Table 4.23 Good Hiding Power

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	6.5	6.5	6.5
Neutral	7	22.6	22.6	29.0
Valid Agree	10	32.3	32.3	61.3
Strongly Agree	12	38.7	38.7	100.0
Total	31	100.0	100.0	

Most of respondents were agreed that NSPF products have Good Hiding Power.

Table 4.24 Availability In Different Locations

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	3.2	3.2	3.2
Neutral	5	16.1	16.1	19.4
Valid Agree	14	45.2	45.2	64.5
Strongly Agree	11	35.5	35.5	100.0
Total	31	100.0	100.0	

More than 80% of respondents were agreed that, NSPF products are available in different locations.

Table 4.25 Availability In Different Packaging Units

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	6.5	6.5	6.5
Neutral	4	12.9	12.9	19.4
Valid Agree	8	25.8	25.8	45.2
Strongly Agree	17	54.8	54.8	100.0
Total	31	100.0	100.0	

80% of respondents were agreed that NSPF products are available In Different Packaging units.

Table 4.26 Linking Values With Product Attributes

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	1	3.2	3.2	3.2
Neutral	4	12.9	12.9	16.1
Valid Agree	10	32.3	32.3	48.4
Strongly Agree	16	51.6	51.6	100.0
Total	31	100.0	100.0	

More than 80% of respondents agreed that NSPF Links Values to Product Attributes.

Table 4.27 Distinct Product Attributes And Features

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	2	6.5	6.5	6.5
Neutral	5	16.1	16.1	22.6
Valid Agree	13	41.9	41.9	64.5
Strongly Agree	11	35.5	35.5	100.0
Total	31	100.0	100.0	

More than 76% of respondents were agreed that NSPF has a distinct product attributes and features in order to enable customer to distinguish with other competitors products.

Generally, most of respondents are agrees that NSPF products are more durable than competitors' products, has excellent flow & Coverage, Superior Adhesion, has Good Hiding Power, available In Different locations and Packaging Units. As 85.45% of respondents are agreed that NSPF Links Values to Product Attributes and has distinct product attributes & features in order to enable customer to distinguish with other competitors products.

As we can see from the above results obtained from the respondents NSPF has specific Product Attributes & Features and this makes the products to be chosen by customers and to have longer product life cycle in the market.

4.9. Delay on Product Launching Time / New Product Speed

Table 4.28 Current Business Environment & Delay In Launching Time of NP

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	12.9	12.9	12.9
Neutral	6	19.4	19.4	32.3
Valid Agree	7	22.6	22.6	54.8
Strongly Agree	14	45.2	45.2	100.0
Total	31	100.0	100.0	

Out of the total 68% of respondents were agreed that the current business environments enforce NSPF to develop and launch new products quickly and on time due to the competitive environment.

Table 4.29 Delay In Launching Time & NP Failure

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	12.9	12.9	12.9
Neutral	9	29.0	29.0	41.9
Agree	7	22.6	22.6	64.5
Strongly Agree	11	35.5	35.5	100.0
Total	31	100.0	100.0	

Around 57% of respondents were agreed that delay in launching time of the new products will lead to fail in the market.

Table 4.30 Speeding-Up The Process Of NPD

Source: SPSS descriptive analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	4	12.9	12.9	12.9
Neutral	8	25.8	25.8	38.7
Agree	6	19.4	19.4	58.1
Strongly Agree	13	41.9	41.9	100.0
Total	31	100.0	100.0	

Around 61% of respondents were agreed that speeding-up the process of NPD should a top priority concern next to quality.

According to the majority of the respondents we can understand that the current business environments enforce NSPF to develop and launch new products quickly and on time due to the competitive environment. Also the respondents are agreed that there is a direct proportional relationship between delay of NP launching time and NP success as “the more delay in launching time of the new products the more to fail with the new products.” So that speeding up the process of NPD remains a top priority concern in NSPF next to product quality.

4.10. Discussions on the Interview part

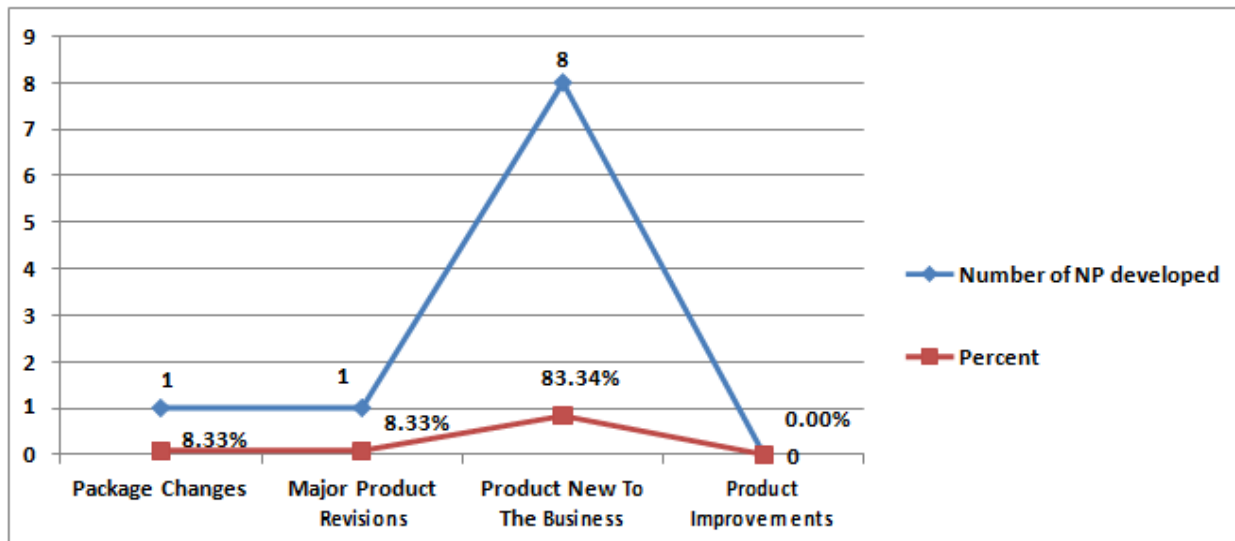
Table 4.31 Types of New Products Developed

Source: - From NSPF cumulative project feasibility studies of the past five years

R.No.	Types of NPD	Number of NP developed	Percentage
1	Package Changes	1	8.33%
2	Major Product Revisions	1	8.33%
3	Product New To The Business	10	83.34%
4	Product Improvements	NIL	0%
	TOTAL	12	100%

On the past five consecutive years, NSPF gives more concern on new product development projects in addition to mass production and distribution. In addition, on average at least two new product was introduced to the market every year which means ten new products. Out of the total new product introduced in the past five years two of them were failed but the majority of the new product were successfully commercialized.

Illustration 4:-Types and number of New Products Developed



Stucco and Glue is the two failed new product after they launched to the market due to the effect of similar imported products.

Stucco or render is a material made of aggregates, a binder, and water. Stucco is applied wet and hardens to a very dense solid. It is used as a decorative coating for walls and ceilings, and as a sculptural and Automotive.

Stucco may be used to cover less visually appealing construction materials, such as metal, concrete, cinder block, or clay brick and adobe.

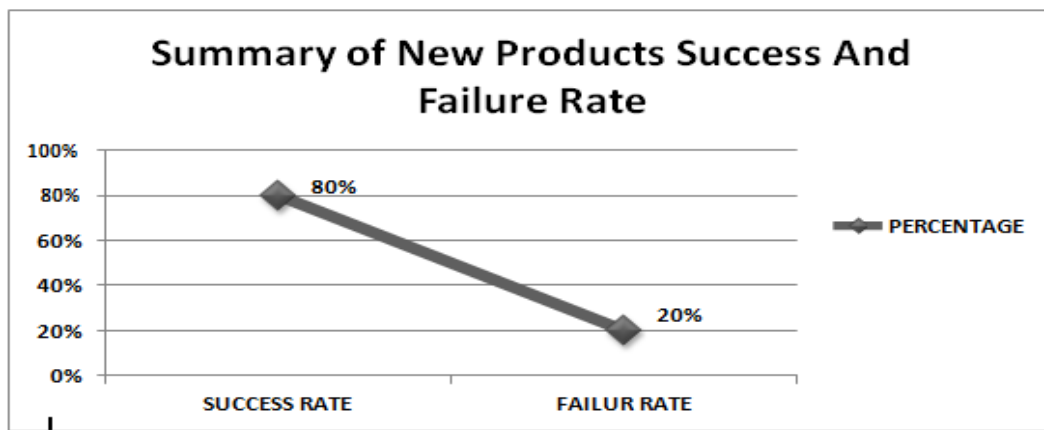
Less competitive point of difference and due to unexpected reaction from competitors was the two most factors which lead to fail the above new products. NSPF is engaged in an industry where similar products are competing in the market. The point of difference is insignificant which resulted in decrease in market share so that final the total production cost become higher than the product become out of the market or failed.

The other factor was Poor demand for products after launch due to other similar imported products actual market demand was lower than anticipated due to imported products.

$$\text{Success Rate} = \frac{\text{Number of Successful NP}}{\text{Total Number of NP}} = \frac{8}{10} = 0.8 \times 100\% = 80\%$$

$$\text{Failure Rate} = \frac{\text{Number of Failed NP}}{\text{Total Number of NP}} = \frac{2}{10} = 0.2 \times 100\% = 20\%$$

Illustration 5: Summary of New Products Success and Failure Rate



According to the data on new products introduced on the past five consecutive years the success and failure rate for new products is 80% and 20% respectively.

NSPF conducts a market and buyer behavior study before go through the process of new product development that why majority of introduced products become successful so that market orientation is one of the determinate for NP success. In addition, NSPF conducts a survey on competitor's performance in order to overcome unexpected reactions. For instance there was a well-known product package designed for 5 le only with pink color and most of the customers demand it but few months later the demand decreased and NSPF conduct a survey and get similar package with red color produced by Rodas paint plc. So that to overcome such problems NSPF pick out Del paints, Mega paints and Kadisco paint factories as major competitors.

NSPF believe its new product development effort opens up new market and has enabled it to enter new product categories, areas or product types for example paints used for car or vehicles puts NSPF in automotive category.

NSPF uses new technologies while developing of new products and expansion of the existing machines from 2000 to 5000 machines. Moreover, additional factory is under construction at Akaki Kaliti sub city around Gelan to increase its production capacity and development of NP.

NSPF follow similar and clear flow of NPD process starting from idea generation up to commercialization. New products will be first tested (pilot test) in a specific geographical area or group of customer and then if it is accepted the new product will fully commercialize to the market. NSPF undertake a pilot test for its NP is to reduce the risk if the new product is not successful and the company can manage the situation and sustain its goodwill in the market.

Having the concept of Cooper's stage-gate NPD model and according to situation above we can conclude that NSPF is successful in NPD and it is logical to think that the success rate of new products was increased as the result of defined new product development process.

And it is clear that what NPD process a company should consider when developing a new product to reduce the risk of NP success.

Members in NPD are committed on their job descriptions and the successes of new products; also they are focused on doing NPD activities and not spread over to many projects or too much other works. NSPF hire experts from India in order to get experience and consultancy on NPD. There is also a separate team which is fully committed on doing research and development activities.

Top-level managements are supportive and make necessary decisions on time on each NPD process and level. In addition, these enhance the all over NPD process.

Almost all Raw materials are the same for the production of paint and paint related materials; so that in some season like New Year (the demand for white color may become higher than before) or if there is a special order or in other cases NSPF faces shortage of raw materials. In this case, raw material shifted from the NPD to the existing products and this lead to delay the launching time of the NP.

The fulfillment of almost all necessary resources like skilled personals, raw materials, sufficient working area, and budget plays the major role in the development of new products and it affect or enhance its success.

4.11. Results of regression analysis

Table 4.32 regression analysis results b/n market orientation and NP success

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.666 ^a	.443	.424	.61693

a. Predictors: (Constant), mean of market orientation

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.779	1	8.779	23.067	.000 ^b
	Residual	11.038	29	.381		
	Total	19.817	30			

a. Dependent Variable: Mean NP Success

b. Predictors: (Constant), mean of market orientation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.312	.561		2.338	.026
	Mean of market orientation	.686	.143	.666	4.803	.000

a. Dependent Variable: Mean of NP Success

As it can be seen from the above table 4.32, market orientation is statistically significant at 1 percent significant level, These result is consistent with the findings of Chorda et al (2002) and Gonzalez and Palacios (2002), which means market orientation has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32 R-squared value for the regression model was 0.44. This indicates that market orientation in this study explain about 44 percent of the success factors in the development of new products.

F-statistics (23.07) which is used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.33 regression analysis results b/n knowledge management and NP success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.796 ^a	.633	.620	.50085

a. Predictors: (Constant), mean_ Knowledge management

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.542	1	12.542	49.997	.000 ^b
	Residual	7.275	29	.251		
	Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean_ Knowledge management

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.519	.356		4.264	.000
	mean_ Knowledge management	.640	.091	.796	7.071	.000

a. Dependent Variable: Mean of NP Success

As show on the above table 4.33, knowledge management is statistically significant at 1 percent significant level, these result is consistent with the findings of Chorda et al (2002) and Gonzalez and Palacios (2002), which means market orientation has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.33 R-squared value for the regression model was 0.63. This indicates that knowledge management in this study explain about 63 percent of the success factors in the development of new products.

F-statistics (49.99) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.34 regression analysis results b/n TLM decision making speed & support and new product success

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.595 ^a	.354	.332	.66419

a. Predictors: (Constant), mean TLM Support

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	7.024	1	7.024	15.921	.000 ^b
1 Residual	12.793	29	.441		
Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean_ TLM Support

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.234	.448		4.990	.000
1	mean_ TLM Support	.466	.117	.595	3.990	.000

a. Dependent Variable: Mean of NP Success

As show on the above table 4.34, TLM decision making speed & support is statistically significant at 1 percent significant level, these result is consistent with the findings of Varela and Benito (2004), Chorda et al (2002) and Gonzalez and Palacios (2002), which means market orientation has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.34 R-squared value for the regression model was 0.35. This indicates that TLM decision making speed & support in this study explain about 35 percent of the success factors in the development of new products.

F-statistics (15.92) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.35 regression analysis results b/n NPD team and new product success

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546 ^a	.298	.274	.69265

a. Predictors: (Constant), mean NPD TEAM

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	5.903	1	5.903	12.305	.001 ^b
1 Residual	13.913	29	.480		
Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean NPD TEAM

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.548	.420		6.068	.000
	Mean NPD TEAM	.397	.113	.546	3.508	.001

a. Dependent Variable: Mean of NP Success

Table 4.35 indicates that, NPD team is statistically significant at 1 percent significant level, these result is consistent with the findings of Bobrow (1997), Tholke, Hultink, & Robben, 2001, which means market orientation has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32

R-squared value for the regression model was 0.30. This indicates that NPD team in this study explain about 30 percent of the success factors in the development of new products.

F-statistics (12.31) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.36 regression analysis results b/n technological advancement and new product success

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.476 ^a	.226	.200	.72705

a. Predictors: (Constant), mean_ Technological Advancement

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.487	1	4.487	8.489	.007 ^b
	Residual	15.330	29	.529		
	Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean_ Technological Advancement

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.597	.484		5.366	.000
	mean_ Technological Advancement	.366	.126	.476	2.914	.007

a. Dependent Variable: Mean of NP Success

As show on the above table 4.36, technological advancement is statistically significant at 1 percent significant level, these result is consistent with the findings of Hojin Lee, Sangyoon Cha and Heejun Park (2016). This means technological advancement has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32 R-squared value for the regression model was 0.23. This indicates that technological advancement in this study explains about 23 percent of the success factors in the development of new products.

F-statistics (8.49) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.37 regression analysis results b/n NPD process and new product success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.491 ^a	.241	.215	.72014

a. Predictors: (Constant), mean NPD Process

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.777	1	4.777	9.212	.005 ^b
	Residual	15.039	29	.519		
	Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean NPD Process

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.479	.503		4.927	.000
	Mean NPD Process	.399	.131	.491	3.035	.005

a. Dependent Variable: Mean of NP Success

Table 4.37 shows that, NPD process is statistically significant at 1 percent significant level, these result is consistent with the findings of Varela and Benito (2004), Dr. Robert G Cooper et (2004) and Chorda et al (2002). This means NPD process has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32 R-squared value for the regression model was 0.24. This indicates that NPD process in this study explains about 24 percent of the success factors in the development of new products.

F-statistics (9.21) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.38 regression analysis results b/n product attributes & features and new product success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.590 ^a	.348	.325	.66763

a. Predictors: (Constant), mean_ Product Attributes & Features

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.891	1	6.891	15.460	.000 ^b
	Residual	12.926	29	.446		
	Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean_ Product Attributes & Features

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.307	.684		1.911	.066
1 mean_ Product Attributes & Features	.640	.163	.590	3.932	.000

a. Dependent Variable: Mean of NP Success

As it can be seen from the above table 4.38, product attributes & features is statistically significant at 1 percent significant level, These result is consistent with the findings of Chorda et al (2002) and Gonzalez and Palacios (2002), which means market orientation has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32 R-squared value for the regression model was 0.35. This indicates that product attributes & features in this study explain about 35 percent of the success factors in the development of new products.

F-statistics (15.46) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.39 regression analysis results b/n delay on the lunching time and new product success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.735 ^a	.540	.524	.56058

a. Predictors: (Constant), mean_ Delay on the lunching time

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	10.704	1	10.704	34.061	.000 ^b
Residual	9.113	29	.314		
Total	19.817	30			

a. Dependent Variable: Mean of NP Success

b. Predictors: (Constant), mean_ Delay on the lunching time

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.642	.409		4.016	.000
mean_ Delay on the lunching time	.593	.102	.735	5.836	.000

a. Dependent Variable: Mean of NP Success

According to table 4.39, delay on the lunching time of new products is statistically significant at 1 percent significant level, These result is consistent with the findings of Chorda et al (2002) and Gonzalez and Palacios (2002), which means delay on the lunching time of new products has a great contribution for new products success.

R-squared is measured the goodness of fit of the independent variables in explaining the success of new products. As clearly described in Table 4.32 R-squared value for the regression model was 0.54. This indicates that delay on the lunching time of new products in this study explain about 54 percent of the success factors in the development of new products.

F-statistics (34.06) which is the used to measure the overall test of significance of the model was presented, and null hypothesis can be clearly rejected since the p-value is 0.000 which is sufficiently low, the model is well fitted at 1 percent level of significance.

Table 4.40 Regression analysis b/n the overall independent variables and new product success

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.878 ^a	.771	.688	.45407

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.281	8	1.910	9.264	.000 ^b
	Residual	4.536	22	.206		
	Total	19.817	30			

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.207	.676		.307	.762
Mean Market orientation	.185	.196	.179	.945	.355
Mean Knowledge management	.251	.191	.311	1.313	.203
Mean TLM support	.139	.110	.177	1.260	.221
Mean NPD TEAM	.020	.119	.027	.165	.870
Mean Technological advancement	.142	.112	.184	1.263	.220
Mean NPD Process	.161	.128	.199	1.259	.221
Mean Product attributes	.173	.183	.160	.949	.353
Mean Delay on lunching time	.219	.127	.271	1.721	.099

The summary of the regression results are show on above table 4. The result shows that about 77.1% of new product success is explained by eight new product success factors ($R^2=0.771$) which is significant at the 0.01 level. As show on the above table 4.33 the coefficients Alpha for each success factors and the constant value are given. Having this we can to formulate a formula based on the regression assumption.

$$Z = ax + by + \dots + C$$

$$Z = ar + bs + ct + du + ev + fw + gx + hy + C$$

$$Z = 0.185r + 0.251s + 0.139t + 0.020u + 0.142v + 0.161w + 0.173x + 0.219y + 207$$

Where: - a, b, c, d, e, f and g are Coefficients for respective independent variables.

: - r, s, t, u, v, w, x and y are the determinants of new product success/ independent variables/

r :- Market orientation

s :- Knowledge management

t :- Support from Top-level management

u :- NPD team composition

v :- Technological advancement

w :- The NPD process

x :- Product attributes and features

y :- Delay on the lunching time

Z: - New Product Success ... It is the dependent variable.

C: - constant

4.11.1 Test for Multicollinearity Statistics

Table 4.34 Multicollinearity Statistics analysis result

Source: SPSS regression analysis

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.207	.676		.307	.762		
Market orientation	.185	.196	.179	.945	.355	.289	3.463
Knowledge management	.251	.191	.311	1.313	.203	.285	3.404
Support from TLM	.139	.110	.177	1.260	.221	.527	1.897
1 NPD team composition	.020	.119	.027	.165	.870	.391	2.555
Technological advancement	.142	.112	.184	1.263	.220	.488	2.048
The NPD process	-.161	.128	-.199	-1.259	.221	.418	2.394
Product attributes & features	.173	.183	.160	.949	.353	.367	2.724
Delay on the lunching time	.219	.127	.271	1.721	.099	.418	2.392

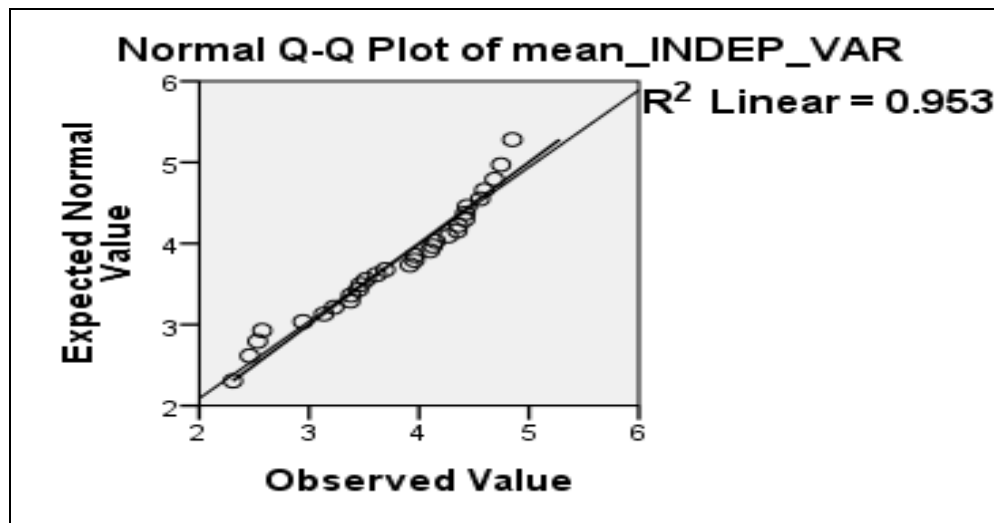
Dependent Variable: Mean of NP Success

Variance Inflation Factor (VIF) for all independent variables is less than 5, so that we can conclude that there is no a multicollinearity problem that made the variables to be insignificant. This avoids the problems in identifying which independent variable contributes to the variance explained in the dependent variable, as well as technical issues in calculating a multiple regression model.

4.11.2 Normal Q-Q Plot test

Illustration 6:- Quantile - Quantile Plot

Source: - SPSS Descriptive analysis result

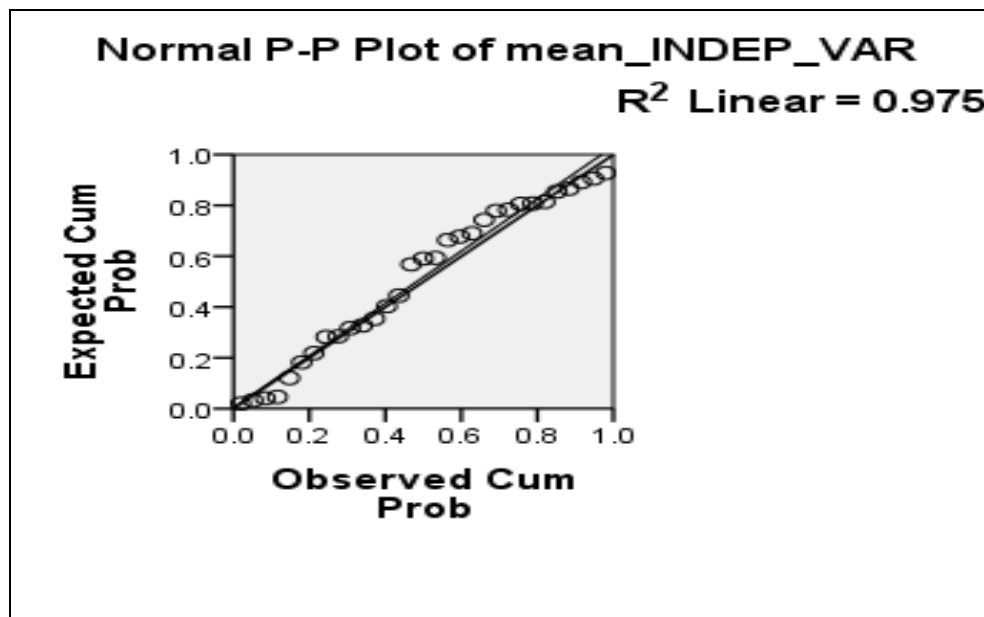


A Q-Q plot is a scatter plot created by plotting two sets of quantiles against one another. If both sets of quantiles came from the same distribution we should see the points forming a line that's roughly straight. The Q-Q plot is approximately a straight line, so we conclude that the dataset is close to normally distributed.

4.11.3 Normal P-P Plot test

Illustration 5:- Normal probability Plot

Source: - SPSS Descriptive analysis result



The normal plot is approximately a straight line, so we can conclude that the dataset is close to normally distributed.

Chapter Five: Summary, Conclusion and Recommendation

Based on the findings of the study, summary of major findings are discussed as shown below then the conclusions drawn as to how NSPF can enhance its new product development performance and reduce new products failure. The conclusion part presented by answering the research questions that indicated in the introductory part of the study.

5.1 Summary of major findings

According to the findings on the determinants of new product success, the following are major findings.

The involvement of customers and suppliers in the NPD process as early as possible leads the company to get great potential benefits. In addition to this conducting a continuous R & D programs help to acquire new inputs which may lead the new products to be successful.

A clearly defined processes or methods used to search important knowledge, clear flow and easy access of knowledge between the knowledge supplier & knowledge demander is very important and it is important to enhance the new product development process. On time decision-making increases the success of the new products or reduces the risk that can cause new product failure. If top level management gives decisions on time bases, the NPD process goes smoothly as per the schedules. Companies must encourage employees especially NPD team member since if they are not satisfied on their working environment the NP may face problem due to insufficient job motivation. Also they must be selected in accordance with their experience and KPI otherwise it affects the NP success due to low competency.

According to the finding obtained from previous chapter, less competitive point of difference and due to unexpected reaction from competitors was the two most factors which lead to fail new products. NSPF is engaged in an industry where similar products are competing in the market. The point of difference is insignificant which resulted in decrease in market share so finally the total production cost become higher than the product become out of the market or failed. Poor demand for products after launch due to other similar imported products actual market demand was lower than anticipated due to imported products and this highly affect the success of new products.

Most of the raw material used by the firm are more or less similar to produce its existing products and new products; as the result in the case of special orders or pick season effects for example new year's; people will demand for white paints so that NSPF forced to increase its white paint production capacity by reducing the raw material from New product development project finally this lead to delay the scheduled time for NPD process.

One of the step in NPD process is testing, a pilot test in a specific geographical area or group of customers will be under taken then if it is accepted the new product will be fully commercialized to the whole market.

5.2 Conclusion

According to results shown on the study finding, NSPF follows similar and clear flow of NPD process starting from idea generation up to commercialization this lead for consistent NPD process and this is one of the determinant of new product success in paint factory.

The presence of NPD process is important for knowledge/idea sharing, to use different resources properly, to be on time, to identify the stage which is the most deterrents for NP success and it also create smooth NP flat form for other new projects.

NSPF gives more concern on new product development projects in addition to mass production and distribution. In addition, on average at least two new product was introduced to the market every year. Out of the ten product introduced in the past five years Stucco and Glue were failed while the majority of the new product were successfully commercialized. The two NPs were failed after they launched to the market due to the effect of similar imported products. Generally, NSPF has problems in Automotives product category. NSPF has 80% and 20% of NP success and failure rate in the past 5 consecutive years respectively. According to the number of new products introduced to the market and the above success/failure rate, we can conclude that NSPF has a very good new products success rate history.

As indicated in the finding part of the study, various deterrents had enhanced new product success in case of NSPF. Market orientation, Knowledge Management, Support from Top, Level Management, NPD Teams Composition, Technological Advancement, The NPD Process, Product Attributes and Features, Delay on Product Launching Time, less competitive point of difference in its product offering, and poor demand for products after launch due to imported similar products.

5.2 Recommendation

Based on the study findings and the conclusion, the following recommendations are given focusing particularly on the weak areas that require further improvements. The recommendations if implemented are believed to enhance the NPD process and finally to increase the success rate greater than 80%.

NSPF should give more focus on the below issues:-

Market orientation: further survey on market, competitors and on customers should be conducted in order to determine market size, competitive situation, customer needs, wants, and preferences.

NSPF should plan the raw materials separately for both for the existing products and for new product.

It is well known; that new product success can never be guaranteed so that; there should be plan B or a contingency plan for the unexpected reactions of potential competitors.

NSPF gives more concern to come up with new products on paints used for construction but still it has a big gap on other sectors for example paints and related material which are used for Automobile decoration. In today's market environment there is high demand for automotive paint and related products. In the past five years NSPF try to introduce stucco, which is used as a decorative coating for walls and ceilings. So that NSPF will become more successful if it comes up with automotive new products.

NSPF should have a contingency plan for reducing raw materials shortage due to unexpected product demand on peak seasons, holidays, New years, special orders and so on...

NSPF should plan the raw materials separately for both for the existing products and for new product. NSPF should give more concern on continuous R & D and follow up on the marketing environment b/c it is very important to compare and contrast the current status and what we are anticipated.

NSPF should identify its potential competitors in order to conduct a survey on competitor's performance. And this will help NSPF to overcome unexpected competitor reactions on the marketing environment.

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Appendix I

Addis Ababa University School of Commerce

Department of Marketing Management

My name is ERMIAS DEMISSE, Marketing Management graduating student from Addis Ababa University School of Commerce.

Dear respondents; this questionnaire is meant to collect information about determinants of new product successes factory in Nefasilk paint factory (NSPF).

The information obtained will be used to complete a study in partial fulfillment of the requirements for Master's Degree in Marketing Management.

The information you would provide me is highly essential for successful completion of the study. Please answer all items objectively. The research assures you that information provided will be kept confidential and be used only for an academic purpose.

Note: please encircle the number that reflects your level of agreement with the given statement.

Demographic questions

1. Age range:

(1) 20 – 25Years (2) 26 - 30 Years (3) 31 - 35 Years (4) 36 – 40 Years (5) >41 Years

2. Gender: (1) Male (2) Female

3. Educational level:

(1) Below high school (2) High school completed (3) Diploma
(4) Degree (5) Master (6) PhD

4. Monthly salary:

(1) <4,000 (2) 4,001-5,000 (3) 5,001-6,000 (4) 6,001-7,000 (5) >7,000

5. Marital status: (1) Married (2) Single (3) Divorced (4) Widowed

6. Working experience in NSPF:

(1) <1 Year (2) 1-2 years (3) 2-3 years (4) 3-4 years (5) > 4 years

S/ N	DIMENSIONS	Scale Of Measurement				
		1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
New product successes						
1	NSPF's sales and revenue is increasing due the roll of New Products developed.	1	2	3	4	5
2	New customers become willing and joining to purchase NSPF's products due to the roll of new products.	1	2	3	4	5
3	New products help NSPF's to compete on new product category.	1	2	3	4	5
4	The development of new products enhanced the competitive advantages.	1	2	3	4	5
5	The development of new products leads to use new technologies that increase the total production.	1	2	3	4	5
Market Orientation						
6	NSPF's orientation towards customers or competitors is likely to influence how they respond to changes in the market place.	1	2	3	4	5
7	The link between market orientation and new product activity is based on considerable research in marketing that has focused on the consequences of market orientation.	1	2	3	4	5
8	If customers and suppliers are involved in the NPD process as early as possible; a company can be achieved a great potential benefits.	1	2	3	4	5
Knowledge management						

9	There is a group of clearly defined processes or methods used to search important knowledge among d/t knowledge management operations.	1	2	3	4	5
10	There is clear flow and easy access of knowledge between the knowledge supplier and knowledge demander in the development of new products.	1	2	3	4	5
11	There is an Integration b/n internal and external knowledge management system.	1	2	3	4	5
Support from top level management						
12	Top-level management is committed to provide organizational support for change, generates enthusiasm, provides a clear vision of the product concept and assures sufficient allocation of various resources.	1	2	3	4	5
13	Top-level managements are open-minded, supportive, and professional also give a direct order and timely based decisions in order to speed up the NPD process.	1	2	3	4	5
NPD teams composition						
14	NPD teams are composed from different department having different skills, knowledge and experience.	1	2	3	4	5
15	Members in the NPD teams are selected according to their job performance and experience on NPD process related knowledge.	1	2	3	4	5
16	NPD teams frequently participate, integrate employees from several company departments and give opportunities for simplification and parallel.	1	2	3	4	5
17	NPD team members and company employees has a great job Motivation and synergy.	1	2	3	4	5
Technological Advancement						

18	Technological Advancements affect the success of New products of NSPF.	1	2	3	4	5
19	Most of the time the need for NPD is due to rapid technological development and competition among competitors.	1	2	3	4	5
20	The ultimate purpose of NPD activities is to meet consumer needs and achieving this is by the exploitation of new technology.	1	2	3	4	5

The NPD Process

21	NSPF follow a clear NPD process stages.	1	2	3	4	5
22	NSPF, assess consumers' reactions to a new product concept, identifying important product attributes, and determining potential market size.	1	2	3	4	5
23	NSPF gives more concern on idea generation in order to come up with miracle new products idea that can build its capability and competitiveness in the market.	1	2	3	4	5
24	A prototype of the new product is evaluated before full commercialization to the market.	1	2	3	4	5

Product attributes and features

25	NSPF products are More durable than competitors' products.	1	2	3	4	5
26	NSPF products have Excellent flow and Coverage.	1	2	3	4	5
27	NSPF products are Superior Adhesion.	1	2	3	4	5
28	NSPF products has Good Hiding Power.	1	2	3	4	5
29	NSPF products are available In Different locations.	1	2	3	4	5
30	NSPF products are available In Different Packaging Units.	1	2	3	4	5

31	NSPF Links Values to Product Attributes.	1	2	3	4	5
32	NSPF has a distinct product attributes and features in order to enable customer to distinguish with other competitors products.	1	2	3	4	5
Delay On Product Launching Time/ new product speed						
33	The current business environments enforce NSPF to develop and launch new products quickly and on time due to the competitive environment.	1	2	3	4	5
34	The more delay in launching time of the new products the more to fail with the new products.	1	2	3	4	5
35	In NSPF, speeding-up the process of NPD remains a top priority concern next to quality.	1	2	3	4	5

I THANK YOU FOR YOUR COOPERATION!

Appendix II

Interview Questions

1. Does your company spend more on new product development than before 5 years ago? (Reason?)
2. How many new products do you introduce to market every year?
3. How many of the NP was failed in the past 5 years? In which stage? (During development or after launched to market)
4. Could you give me some examples of failed products in the past 5 years?
5. What are the reasons of new product failure?
6. Is there a practice of conducting market and buyer-behavior study?
7. Are new products defined based on market research?
8. Does NSPF believe its new product development effort opens up new market and has enabled it to enter new product categories, areas or product types?
9. Does NSPF currently uses new technologies in the dev't of NP or uses the existing technologies?
10. Do you follow any particular process of new product development process?
11. What aspects of the product dev't need improving? What specific recommendations do you have for making the company's new product process more effective?
12. Is the members in the NPD team focused (not spread over to many projects and not doing too much other works)?
13. Does the NPD team members' commitment to new product development activities and process?
14. Does NSPF have any other problems during the NPD process? (Internal or External) Do you have major competitors who are making similar products?
15. Is there unexpected reaction from competitors that affects the NP successes? Do you think your company has any weaknesses related to NPD? If possible, how do you think to overcome them?
16. What is the current performance of your company regarding new product introductions compare to others?(Bad, Satisfactory, Good, Very Good Or Excellent)
17. Do you have the necessary resources to do NPD projects properly (e.g., time, money, skilled people availability skilled people availability)

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