“Product portfolio management for new product development”

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Product portfolio management for new product development

Abstract

The research hypothesis is that by adopting product portfolio management (PPM) best practices during new product development (NPD), companies can increase the success rate of new products. The aim of this article is to provide the reader with a comprehensive insight on the theories, empirical findings and models of PPM during NPD. This article will allow for an in-depth theoretical approach on PPM and demonstrate to managers the importance of adopting PPM as business strategy during decision making regarding future investments. Recent studies reveal that the art of product development has not shown much improvement therefore the success rate of new products introduced into the market is poor. The objective of this article is to investigate whether companies implement roduct portfolio management, a business strategy during decision making processes regarding the development of new products. A survey was conducted on manufacturing companies in the greater Durban area. The results of the research show that although the companies did implement product portfolio management in their NPD projects, more than 40% of NPD projects failed to meet their objectives. This finding indicates that the criteria used by management to select, and prioritize NPD projects was incorrect as it was not completely aligned to business strategy.

Keywords: new product development, product portfolio management, business strategy, management, decision making.
JEL Classification: C10, D21, D22, D24.

Introduction

Cooper (2012, p. 3) states that "Twenty five years of research into why new products succeed, fail and what distinguishes winning businesses and are we any further ahead? Some pundits say no! Today's new product project teams and leaders seem to fall into the same trap as their predecessors did back in the 1970s". The current state of product innovation is that it does not happen as well as it should because critical success factors are absent from the typical new product development project. Buyers have become increasingly demanding and no longer see a contradiction between product innovation and development and falling prices. For example, mobile phone manufacturer, Nokia and Sony Erickson offer superior products every year at similar or below previous prices. "Given that most theories of business eventually become obsolete, the key competency for any organization that wants to survive in the market is the ability to innovate (West, Ford and Ibrahim, 2010, p. 264).

Product portfolio management (PPM) gives organizations the ability to obtain the utmost value from their product portfolios by applying portfolio management principles to the product development process (Planview, 2012). Aberdeen Group (2006, p. 3) states that throughout the new product development (NPD) process, companies should focus on the value being generated for the company. Continued evaluation of the product development project can help companies assess the probability of achieving the expected value from the project and assist in decision making.

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Portfolio management for product innovation has become one of the most important senior management functions as we move into the next century. Extreme global competition and increased technological advancements have resulted in shorter product life cycles. The success and survival of an organization depends largely on their investment decisions. Resources are limited and managers need to ensure that they spend their restructure and development funds on the right projects that will produce a well-balanced, high valued portfolio.

Problem statement. One opportunity for improvement is to address "the product portfolio value gap." The value of executing the right product portfolio and realizing its full potential available is often neglected by companies. As a result inadequately defined portfolios and poor project execution drain value from projects (Aberdeen Group, 2006, p. 3). Cooper (2012, p. 3) states that recent studies reveal that the art of product development has not shown much improvement. The voice of the customer is still missing, solid up front research is not done and that many products enter the development phase lacking clear definition. Moreover, there is major challenge of economic instability. Business executive, Roux (2011, p. 1) stated that FMCG market volumes contract as inflation increases. Competition is fierce as local and multinational competitors and retailers enter the market. The situation becomes critical as leading companies like Unilever are accepting lower margins in exchange for growth. As a result, sensitive consumers push margin downwards (Euromonitor, Nestle', Unilever 2010).

Aims and objectives. *Aim*. The aim of this study was to assess the impact of product portfolio management on new product development projects at manufacturing companies.

Objectives. The objectives of this study are as follows:

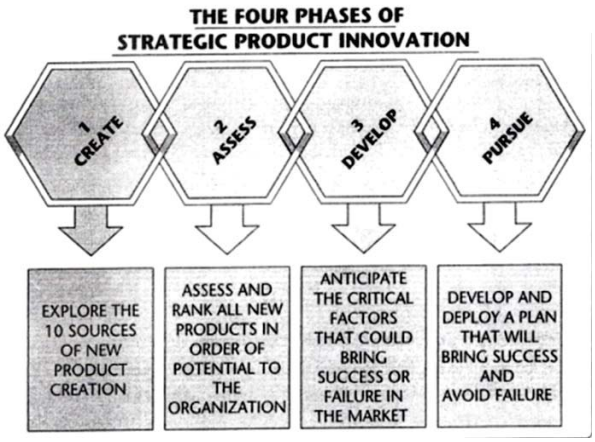
- The objective of this paper is to present a literature review of models, theories, approaches and findings on the relationship between product portfolio management and new product development.
- To assess the success rate of new products introduced into the market; and to discuss relevant statistical trends, historical developments, published opinion of major writers in this field will be presented to provide concrete evidence of the problem being discussed.
- To present empirical findings on the impact of product portfolio management on new product development at manufacturing companies.
- To recommend product portfolio management strategies to analyze potential investments in new product development and choose projects which have the most potential to succeed and add value to the company.

Significance of the study. One opportunity for improvement is to address "the product portfolio value gap". The value of executing the right product portfolio and realizing its full potential available is often neglected by companies. As a result inadequately defined portfolios, and poor project execution drain value from projects (Aberdeen Group, 2006, p. 3). Cooper (2012, p. 3) states that recent studies reveal that the art of product development has not shown much improvement. The voice of the customer is still missing, solid up front research is not done and that many products enter the development phase lacking clear definition. Moreover, there is major challenge of economic instability. Business executive, Roux (2011, p. 1) stated that FMCG market volumes contract as inflation increases. Competition is fierce as local and multinational competitors and retailers enter the market. The situation becomes critical as leading companies like Unilever are accepting lower margins in exchange for growth. As a result, sensitive consumers push margin downwards (Euromonitor, Nestle', Unilever 2010).

Evans and Lindsay (2008, p. 12) found that design quality and innovation will be of much significance when dealing with faster rates of change, shorter life cycles and rising consumer sophistication. It has been estimated that almost 80 percent of all new products fail and the strategic problem is that if a product fails, the company tied to this product will also be negatively affected by the failure. The failed brand would tarnish the overall brand reputation, which could be disastrous for the company involved. Tiger Brands is a prominent consumer goods company that has been around for decades and was a significant part of this study. Koornneef (2010, p. 2) recently reported that "People remember them from their granny's old days..." A priority for Tiger Brands is to ensure that their brand reputation is maintained at all times. The success of this study will be of benefit to various stakeholders namely, the shareholders, managers, employees as well as consumers.

1. Literature review

1.1. Definition of terms. *1.1.1. New product development.* New product development (NPD) is a specialized activity to introduce a brand-new product in the market (Akrani, 2012, p. 2). The basic idea or concept of a product development is illustrated in Figure 1.



Source: Robert (2006, p. 119).

Fig. 1. The four phases of strategic product innovation

Figure 1 above is a visual representation of the four step process. Akrani (2012, p. 5) explains how product development takes place. New products can allow companies to change strategic direction, prevent companies from becoming stagnant, improves competition and fills a niche in the market place (Kirkpatrick, 2007, p. 1). Vahaniitty (2012, p. 1) views development as an activity that can be planned in advance and then executed according to the plan.

Robert (2006, p. 134) describes the new product implementation "like milk and cream, the best new product opportunities rise to the top of the list and the balance are discarded or saved for future reworking." New product introductions performance in the market depends on management ability to anticipate the critical factors of success or failure (Robert, 2006, p. 135). Darrel Rhea states (as cited by Kirkpatrick, 2007) "I think that the best products are really for an individual – a clear, real person with real needs, aspirations, goals and values, and the more that products can be conceived and designed to address the needs of real people, the more they are going to resonate with, or execute consumers at the end of the day."

1.1.2. Product portfolio management. Blackblot (2011, p. 1) defines product portfolio as product line in which products are properly diversified and balanced along the timeline and stages of the product life cycle model. According to the Product Development Institute, companies adopt portfolio management to establish a dynamic design process that enables them to revise their new product development projects by evaluating, selecting and prioritizing new projects and strategic resource allocation decision (Augusto, Miguel, 2008, pp. 10-23).

1.2. Product portfolio management best practice. Portfolio management best practice are financial (maximize return), competitive advantage and efficient allocation of resources (Cooper, Edgett and Kleinschmidt, 2012). The four fundamentals of product portfolio management (PPM) are: select and maximize product portfolio, resource and enable pipeline, execute and manage projects and determine and monitor product value, as shown in figure 2 below (Brown, 2010, p. 1). Portfolio management best practice are financial (maximize return), competitive advantage and efficient allocation of resources (Cooper, Edgett and Kleinschmidt, 2012).

Source: Brown (2010, p. 1).

Fig. 2. The four fundamentals of product portfolio management

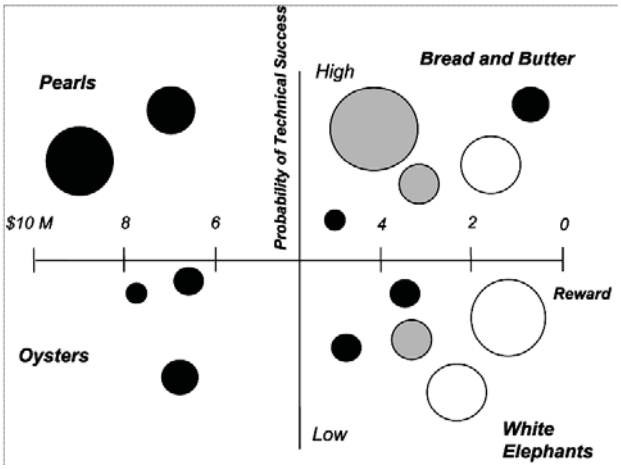
Figure 2 above describes the four fundamentals of PPM.

1.3. New product development best practice. A study on NPD best practice by Kahn, Barczak, Ledwith, Perks and Nicholas (2012, pp. 180-192) reported that best practice would be those new product development practices that promote greater success in developing and launching new product and services. They characterized NPD practice across seven dimensions i.e., strategy, process, research, project climate, company culture, metric and performance measurement and commercialization. The research was conducted on NPD practitioners of three different countries. Their findings were that there was a lack of understanding and implementation of the best practice elements of climate, culture and especially metrics.

Duncan (2012, p. 2) helped companies implement innovation governance. He reported findings on best practices of innovation and product management as follows: focus on business processes, plan implementation phase, avoid complexity, address decision making first, tasks second and launch is when the most important works begin.

It can be concluded from the review above that different organizations view best practice differently. Both Kahn et al. (2012, pp. 180-192) as well as Duncan (2012, p. 2) have made valuable contributions towards benchmarking best practice. However there is no 'one size fits all'.

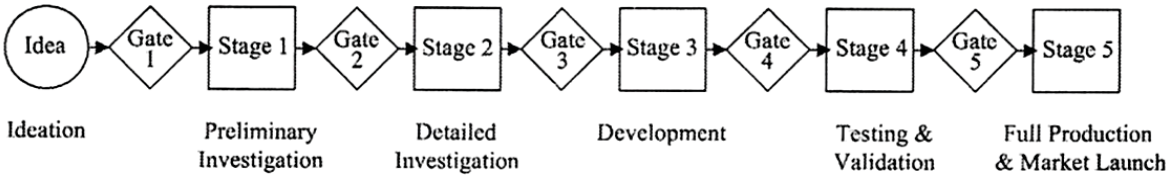
1.4. Best practice models for new product development process and product portfolio management. Figure 3 below is a bubble diagram of a portfolio of new product projects.



Source: Cooper (1997, p. 24) as cited by (Cooper, Edgett and Kleinschmidt, 2012).

Fig. 3. Bubble diagram in a new product development portfolio

Figure 3 represents a bubble diagram of NPD projects. The size of each bubble shows the annual resources spent on each company division and the shading is the product line. This explains the different amount invested by the company in the different product lines. Scarce resources are spread across the product line of a company.



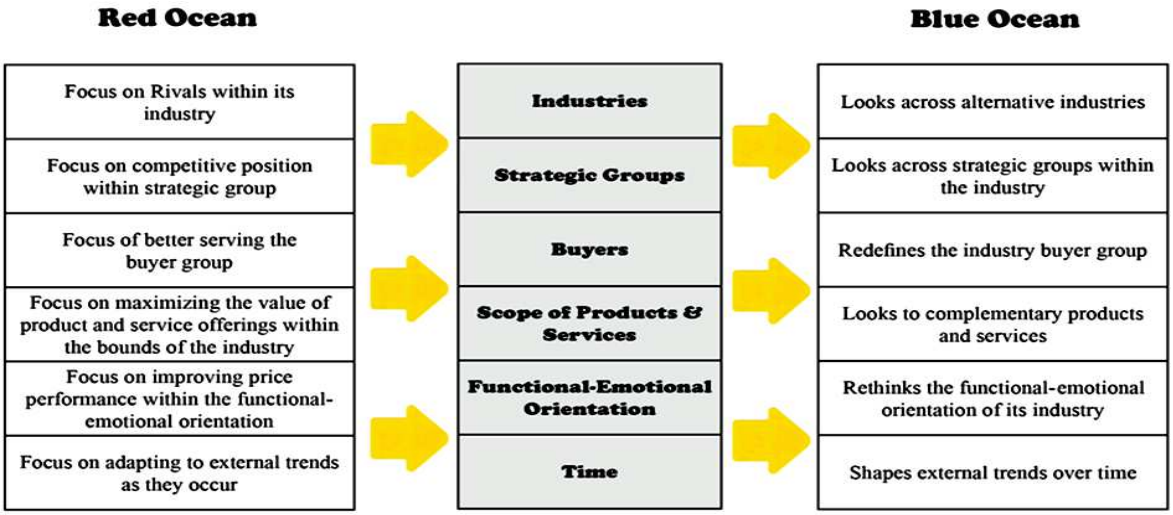
Source: Cooper (1993) as cited by (Cooper, 2011).

Fig. 4. A generic stage gate process for new product development

Figure 4 is the stage gate process for NPD. The best practices for product development should be supported by the implementation of this approach (Cooper, 2011) to ensure that new products introduced have a greater opportunity to succeed in the market as they were developed using the 'stage gate process' in NPD.

1.5. Empirical findings, models/theories/ approaches on product portfolio management and new product development. Empirical research findings by Cooper, Edgett and Kleinschmidt (2007, pp. 1-2) were that there are three key factors in developing new product, a high quality new product process, a clear and well communicated new product strategy for the business and adequate resources for new products. Hill (2009, p. 132) states that through the interaction of scientific research demand conditions and competitive conditions stimulate ideas for new products. He also found that rate of new product development is greater in countries where more money is spent on basic and applied research and development, demand is strong, consumers are affluent and competitions intense. Contrary to Hill, a totally new approach by Pitta (2012, pp. 35-46) based on recent research on transforming the nature and scope of new product development. This is reflected in model 1 below.

Model 1: The introduction of 'Blue Oceans-Red Oceans Strategy' is a perspective that offers the hope of escaping destructive competitive market space for a new environment with more opportunities.



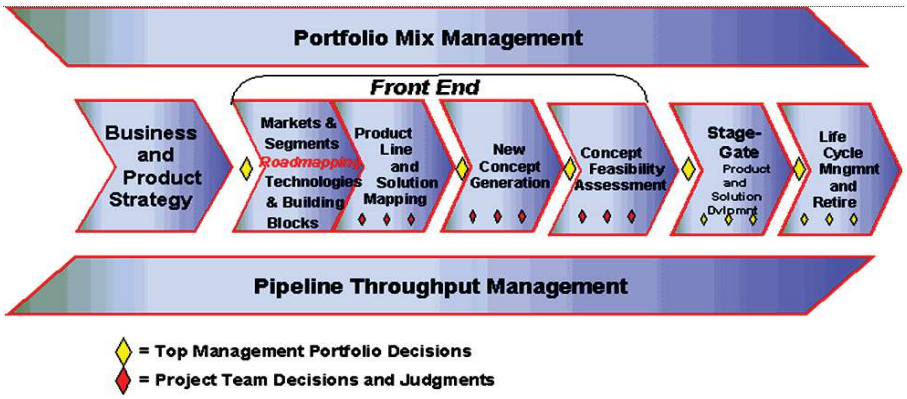
Source: Kim and Mauborgne (2007), as cited by Pitta (2012, p. 40).

Fig. 5. Six paths frameworks

Figure 5 indicates the blue ocean strategy tool to create market space. The finding of this research was that companies were able to gain greater competitive advantage by competing in uncluttered market and increase their chances of successful new products developments (Pitta, 2012, p. 41)

The findings of Cooper (2012, p. 9) are somewhat different from Hill (2009, p. 132). Cooper focuses more on NPD processes whereas Hill views market research as the driving force of NPD. A contradicting view point to Cooper (2012, p. 9) which indicated that excellence in NPD process is the primary driver of NPD success. Nicholas (2011, pp. 227-251) disagrees with Cooper. He conducted a research to identify the gap between what researchers and practitioners understand to be NPD best practice. He found that strategy is the most important best practice for NPD. Recent research by Aberdeen Group adds new dimension to the NPD process. Model 2 below highlights best practices in NPD processes, cross functional project teams that have total support from top management in striving to achieve "speed to market".

Model 2: New product development process.



Source: The Adept group Ltd (2012, p. 1).

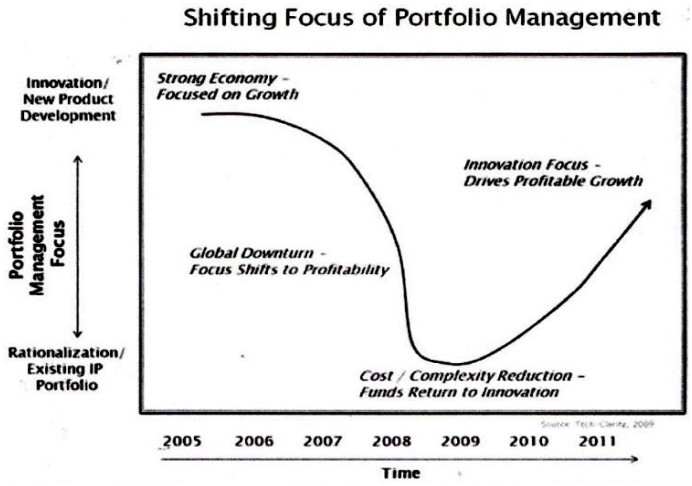
Fig. 6. Best practices in NPD processes. "Speed to market"

Figure 6 explains the key to competitive advantage is based on two factors: strategic impact and efficient use of resources (New product development process components, 2012, pp. 1-2).

He argues that the survey conducted indicated that 75% of all companies view collaboration and project management are very important to the process (Aberdeen Group, 2006, p. 3).

The Product Development Management Association states that the best way to manage one's NPD projects and product portfolios is as process driven hierarchies and stresses the importance of active involvement by top management in defining portfolio strategy (Schmidt, Sarangee and Montoya, 2009, pp. 520-535).

Product portfolio management (PPM) in the past was focused primary on fast moving consumer goods (Brown, 2010, pp. 3-8). Research conducted by Brown (2010, pp. 3-8) on how PPM can be more closely tied to engineering projects. He looked at closing the gap between product planning and the design and development. He talks about "exnovation" which is a practice by organizations to adjusting their portfolio by getting rid of poor performance projects and adding a different set of products to increase the profitability of the company (Brown, 2010, pp. 3-8). Figure 7 depicts the process of the "product portfolio shift".



Source: Jim Brown (2010, p. 3).

Fig. 7. Product portfolio shift

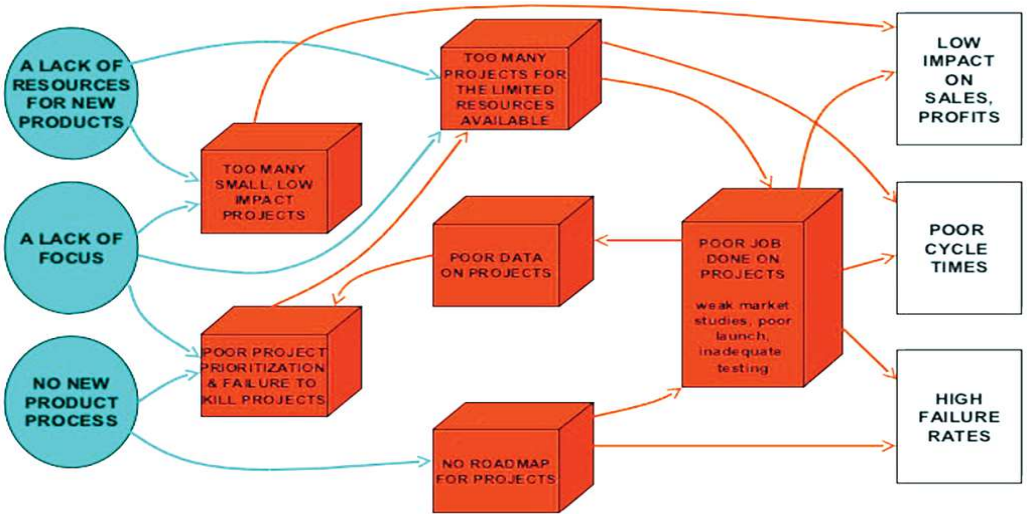
Figure 7 indicates the process of shifting the focus of portfolio management.

Research findings on the reasons behind the poor performance of new product development are due to product portfolio management being disengaged from the company's vision. An article on value innovation portfolio management (2006, p. 1) suggested that a customer centric portfolio management is what managers should strive for. Similarly a survey was conducted on 64 senior project managers to assess their views on PPM.

The findings were that the biggest challenge was the lack of executive support (CBP survey of project portfolio management practices, 2010, p. 1). These finding are an agreement with the Aberdeen Group and also the Product Development Management Association.

However, Cooper (2012, p. 9) argues that the reason for companies not achieving success in due to poor NPD processes. Model 3 below reflects the challenges faced by organizations in NPD processes.

Model 3:



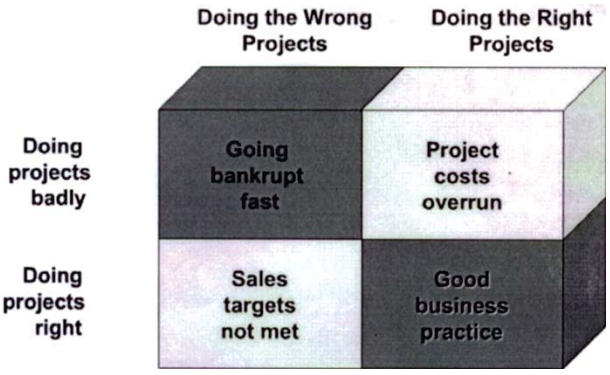
Source: Iainsanders (2009, p. 3).

Fig. 8. Challenges faced by organizations in new product development process

Figure 8 above is a visual representation of how the problems encountered by organizations in the new products development process feed each other. He suggested that intensive market research and re-engineering the entire NPD process is the solution.

A study conducted by Cooper, Edgett and Kleinschmidt (2012, p. 3) states that there are two ways for a business to succeed at new products, i.e., doing projects right and doing the right projects. Model 4 below represents the best practices for PPM is doing the right projects the right way.

Model 4. Product portfolio management.



Source: Iainsanders (2009, p. 4).

Fig. 9. Representation of best practice for PPM is doing the right projects the right way

Figure 9 above indicates the impact of decision making in product portfolio management.

The empirical evidence supports the critical role of senior management in PPM. Results from a study, examining the consequences of poor portfolio management practices found that the portfolio bubble diagram as most suitable for achieving a balance of projects (Cooper, Edgett and Kleinschmidt, 2007, p. 19). According to modern portfolio theory, a company can reduce the risk of their investments by creating a diversified portfolio so that some investments may produce strong returns during poor economic climate (Hanford, 2007, p. 1). Kirkpatrick (2007, p. 7) is in disagreement with Cooper in that he feels that market research is important at every stage of development. He feels that the company goes beyond the product created.

A further study was conducted in a manufacturing industry where portfolio management was introduced as a new organization practices. Augusto, Miguel (2008, pp. 10-23) found that PPM helped raise the profile of new product development system and can be effective if it is aligned with company strategy. However future research is needed to develop a framework for better integration between the PPM process and NPD process.

A critical analysis of the various literature reviews and empirical evidence reveal that top management involvement and support, consumers, resource allocation are all essential ingredients to successful product portfolio management which will increase the success rate of new product development process and lead to improved organizational performance.

1.6. Benefits of product portfolio management in NPD. In today's competitive markets, effective product portfolio management is critical for manufacturers that offer a diversified range of products

that will satisfy the needs of one's customers (Sadeghi, 2010, p. 1). A firm cannot create loyal customers without first creating satisfied customers (Evans and Lindsay, 2009, p. 155). Product portfolio management gives organizations the ability to obtain the utmost value from their product portfolios by applying portfolio management principles to the product development process (Planview, 2012). Aberdeen Group (2006, p. 3) states that throughout the new product development process, companies should focus on the value being generated for the company. Continued evaluation of the product development project can help companies assess the probability of achieving the expected value from the project and assist in decision making.

2. Research methodology

The study was a quantitative cross-sectional study on manufacturing companies in the greater Durban area. The primary research instrument of this study was a questionnaire. A non-probability sample technique was used in the study. A sample of 40 respondents was used to collect data. In this study, descriptive statistics in the form of pie chart, table and graphs was used to describe the data and inferential statistics using software SPSS version 20 to analyze the data collected. However, the findings represented in this article are based on descriptive statistics as some of the questions asked in the questionnaire were subjective in nature.

3. Findings

3.1. New product development projects. Figure 10 relates to new product development projects.

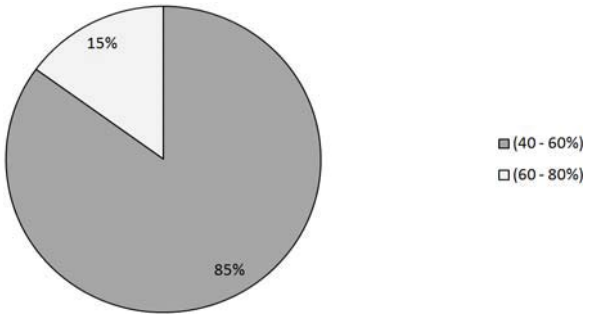


Fig. 10. Percentage of new product development (NPD) projects succeeded in meeting objectives

Figure 10 relates to data response to question 2 in the questionnaire which sought to identify the company's NPD projects success rate. The results of the survey illustrate the performance of the company's new product development projects. The majority of the respondents (85%) indicated that only 40-60% of new products development by the company actually succeeded in meeting their objectives and a small proportion (15%) of the respondents indicated that 60-80% of their projects were successful in meeting its objectives. These results indicate that almost 40% of new products developed do not achieve the desired result. Although the companies do engage in product portfolio management in NPD process, with a substantive percentage of NPD failures, it would be safe to assume that there must be a flaw in the product portfolio management technique implemented by the companies.

This finding is consistent with the beliefs expressed by Aberdeen Group (2006, p. 4) that average companies meet launch dates revenue targets on as little as 40% of their projects, and are, therefore, not realising the potential of their product portfolios. Research indicates that a strong product portfolio management strategy will maximize potential value and, given the relatively poor performance in new product development by many companies, there is definitely room for improvement. It was found by Hill (2009, p. 132) during a study conducted that on average 59% of new products are successful. He also concluded that the rate of new product development is greater in countries where more money is spent on basic and applied research and development, demand is strong, consumers are affluent and competition intense.

The researcher's findings are in agreement with previous literature in that almost 40% of new products developed are unsuccessful in meeting their objectives. Product failures are costly in terms of direct cost and opportunity cost. Empirical evidence indicates that new product effects or poor performance of new products can be directly or indirectly traced to ineffective portfolio management (Cooper, Edgett, and Kleinschmidt, 2007, p. 5).

3.2. Product portfolio management. Table 1 is an evaluation of the company's current product portfolio performance.

Table 1. Evaluation of the companies' current product portfolio performance.

Product portfolio challenges	Respondents level of agreement	Frequency (*n*)	Percentage (%) of respondents
3.1. The company has experienced diminishing portfolio relevance and brand erosion due to reduced consumer spending and lack of disposable income.	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	30 30 0 0 0	50 50 0 0 0
3.2. Too many resources engaged in maintaining the company's existing product range.	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	3 54 3 0 0	5 90 5 0 0

Table 1 (cont.). Evaluation of the companies' current product portfolio performance.

Product portfolio challenges	Respondents level of agreement	Frequency (*n*)	Percentage (%) of respondents
3.3. Absence of major revenue generates and kinds of projects that will yield significant technical, marketing and financial breakthrough	1. Strongly agree	15	25
	2. Agree	36	60
	3. Neutral	9	15
	4. Disagree	0	0
	5. Strongly disagree	0	0

The analysis detailed in Table 2 sought to identify the companies' product portfolio performance indicates the respondent's level of agreement of the company's current product portfolio status. The results to statement 3.1. indicate that the respondents are in complete agreement that their company is experiencing diminishing portfolio relevance during the current economic climate and this will result in loss of competitive advantage. The majority of the respondents (95%) also feel that too many resources are engaged in maintaining the company's existing product range (statement 3.2.), thereby reflecting inefficient scarce resource allocation.

The data to statement 3.3. indicates that 25% of respondents strongly agree and 60% are in agreement that there is absence of major revenue generators and kinds of projects that will yield significant technical, marketing and financial breakthrough in the company's product portfolio. It can be perceived that the reason for this is poor selection and execution processes and the inability to properly value opportunities. Based on the analysis of these findings, it can be concluded that the company has experienced poor product portfolio management performance.

This finding can be supported by Hill (2009, p. 137) that new product success is twice as likely in organizations that are "top" product portfolio management performers than in "poor" product portfolio management performers. According to the product development institute, companies adopt portfolio management to establish a dynamic design process that enables them to revise their new product development projects by evaluating, selecting and prioritizing new projects and strategic resource allocation decision (Augusto and Miguel, 2008, pp. 10-23). New products can allow companies to change strategic direction, prevent companies from becoming stagnant, improve competition and fill a niche in the market place (Kirkpatrick, 2007, p. 1).

Had the companies' product portfolio been well balanced with projects to yield major breakthroughs, it would not be experiencing diminishing product portfolio relevance and loss of market share. Literature shows that companies can reduce the risk of their investments by creating a diversified portfolio so that some investments may produce strong returns during poor economic climate (Hanford, 2007, p. 1).

3.3. New product development projects. Figure 11 (response to question 4) illustrates the criteria implemented by the company to evaluate, select and prioritize the new product development projects.

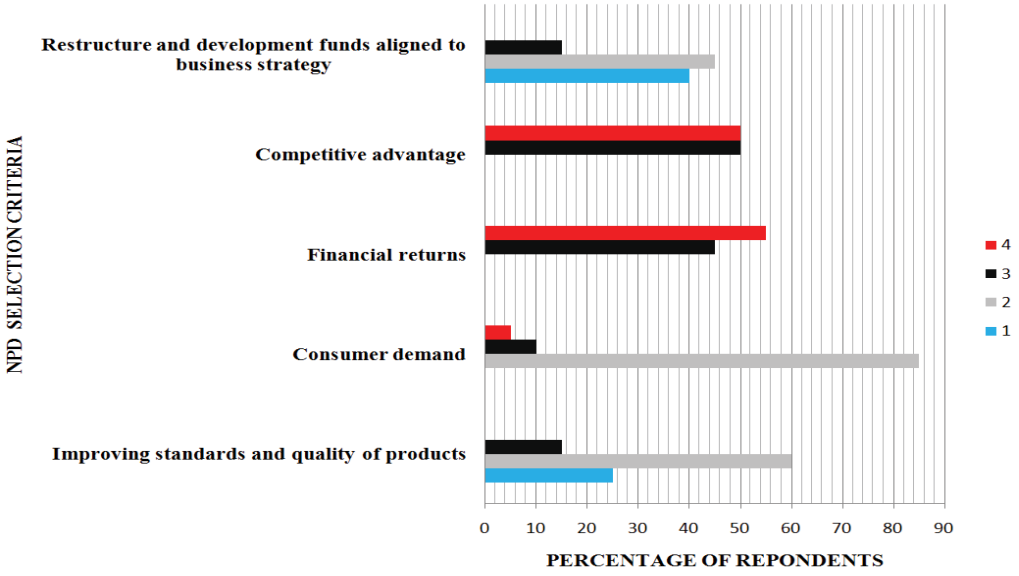


Fig. 11. Criteria for evaluation, selection and prioritization of projects

Figure 11 aimed to identify the criteria implemented by the companies to evaluate and select new product development projects by examining the respondent's perception on the importance of each of the five criteria stated. Keys for ranking importance are as follows: 5 – critically important, 4

– very important, 3 – quite important, 2 – somewhat important and 1 – not important. The literature review concurred that the two critical success factors for new product development in a business are doing projects right, and doing the right projects (Cooper, Edgett and Kleinschmidt, 2012, p. 3).

The research examined five criteria used by their companies to rank and select which new product development projects to pursue and found that all five reasons were evaluated as being important by the respondents. However, detailed analysis revealed that 55% of the respondents expressed the view that financial returns were critically important while 45% of the respondents indicate them to be very important. This was very closely followed by competitive advantage as the second most important criterion implemented by an equal number of respondents (50%) indicating that they strongly agree and agree. Restructure and development funds aligned to business strategy was found to be the least important criteria used to select NPD projects with 40% of the respondents indicating it to be quite important and only a small proportion (15%) of the respondents felt that it was a very important criteria.

The ISO 9000 certification process does place more emphasis on the need for companies' to improve the quality of products and processes. Hence it has been given relevant importance as is evident from the survey completed. Based on these findings, the criteria used to select NPD projects by the company could perhaps be attributed to the NPD success rate being merely 40-60%. This finding indicates poor product portfolio management techniques in NPD projects.

During a study in a manufacturing industry, it was reported that product portfolio management raised the profile of new product development system and was found to be most effective if it is aligned with company strategy (Augusto and Miguel, 2008, p. 10-23). Top 20% of businesses indicated their portfolio management method in use was to ensure that restructure and development spending and projects undertaken are consistent with their business strategy (New problems, new solutions making portfolio management more effective, 2000, p. 2).

It is evident from Kirkpatrick (2007, p. 1) that the company goes beyond the product created. He believes that for NPD projects to succeed the product must be conceived and designed to address the needs of real people. Therefore, consumer demand is critical to NPD success. Since consumer demand is not seen as significantly important, based on the results of the study, this could be another reason for poor success rate of NPD projects in the company.

In practice, financial methods have been reported to dominate portfolio management. Almost 77.3% of businesses use this approach to rate, rank order and ultimately select projects. Although this method is popular, it is not effective. Financial tools yield an imbalanced portfolio of lower value projects and projects that lack strategic alignment. However strategic methods produce a strategically aligned and balanced portfolio (Killen, Hunt, and Kleinschmidt, 2008, p. 32).

It is clear from the findings that methods used to select and prioritize new product development projects need to be re-evaluated in order to improve NPD success rates and create a high value, balanced portfolio. Product portfolio management performance measures correlate strongly with new product success rates (Killen, Hunt and Kleinschmidt, 2008, p. 34). The product portfolio management method currently implemented by the company seems to be ineffective in producing the desired outcome. As a result of these findings, improved methods of product portfolio management and NPD benchmark for best practices will be made available to the company.

Conclusions from literature review

Evaluation of the literature review suggests that new products can allow companies to change strategic direction, prevent companies from becoming stagnant, improves competition and fills a niche in the market place. New product development is seen as a four step process: create, assess, develop and pursue. For almost 20 years researchers have focused on determining principles and tools to increase the efficiency of new product development (NPD) processes. However, the success rate of new products in the market still remains low. It is described like milk and cream, where the best new products opportunities rise to the top of the list whilst the balances are discarded.

New product introductions performance in the market depends on management ability to anticipate the critical factors of success or failure. Research has shown that different organizations view NPD best practice differently. NPD best practice has been characterized across seven dimensions, i.e., strategy, process, research, project climate, company culture, metric and performance measurement and commercialization.

Others view best products to be consumer oriented and that products should be conceived and designed to address the needs of real people. A significant relationship exists between NPD and product portfolio management. NPD poor performance has been directly or indirectly attributed to poor product portfolio management.

Portfolio management best practices maximize return, competitive advantage and efficient allocation of resources. If NDP projects have failed to achieve their objectives, it does indicate a flaw in the product portfolio management process implemented by the organization.

Management ability to identify the best projects that align with business strategy in order to efficiently allocate scarce resources is critical to an organization's success and NPD performance. The bubble diagram (Figure 3) has been identified as an effective tool for resource allocation. NPD success depends largely on two things: doing projects right and doing the right projects. Market research and testing should be conducted at every stage of the development of the project in order to make go/kill decisions. If projects that are unlikely to succeed can be identified earlier in the development phase before further investments, it could save the company from incurring huge losses due to poor project selection.

The findings indicate that lack of executive support and insufficient upfront information for decision making are some of the biggest challenges faced by organizations.

It has been established from the literature review that some of the top performers in NDP choose projects that are aligned with company strategy rather than placing too much emphasis on financial returns. Based on the evidence from the study, it can be concluded that an organization's performance can be improved by achieving a well-balanced, high value diversified portfolio. Top management involvement and support, consumers, efficient resource allocations are all essential ingredients to successful product portfolio management which will, in turn, improve NDP performance in organizations.

Conclusions from empirical findings

New product development projects. Respondents indicated that the companies do engage in the product portfolio management processes in new product development projects. It has been established from the results obtained in this study that over 40% of the company's NPD projects do not achieve their objectives. Poor performance of new products can be directly traced to ineffective portfolio management. Thus, the poor performance of NPD projects indicates a flaw in the product portfolio management process implemented by the company.

Product portfolio management. As demonstrated by Table 1 in section three, the majority of the respondents felt that too much of the company's resources are engaged in maintaining their existing product range. Thus, it appears that there is inefficient scarce resource allocation. Research into the company's current product portfolio reveals the absence of major revenue generating projects that will yield significant technical, marketing and financial breakthrough. The response rate of 85%, are in agreement with the above statement. This finding, again, highlights the fact that the inability to properly value opportunities and select the right projects can be attributed to poorly managed portfolios. New product success is twice as likely in organizations that are 'top' product portfolio management performers. It is interesting to note that all respondents indicated that the company is experiencing diminishing portfolio relevance and loss of market share during the current economic climate.

A well balanced, diversified portfolio can reduce the risk of losses so that some investments may produce strong returns during poor economic climate and improves competition in the market place. The result of the study reflects poor product portfolio management.

Criteria for evaluating, selecting and prioritizing projects. The general observations deduced from analyzing of data are that all five criteria stated in the questionnaire were evaluated as being important by the respondents. However, detailed analysis revealed that financial returns were given the highest rating in terms of importance, very closely followed by competitive advantage. Notably, restructure and development funds aligned to business strategy and consumer demand were given a lower rating in terms of importance when evaluating and selecting NPD projects.

This finding could be a contributing factor to the lower rate of NPD success in the company. Literature supports the fact that top 20% of businesses ensures that restructure and development spending and projects undertaken are consistent with their business strategy when selecting NPD projects for their portfolio. Although over 75% of businesses use financial returns to rate and rank NPD projects, it is not the most effective method. Research has shown that financial tools yield an imbalanced portfolio of lower value projects that lack strategic alignment.

Product portfolio management performance measures, correlate strongly with new product success rates. Based on the results of the study, it is safe to assume that the product of portfolio management process currently implemented by the company fails to achieve the desired results. Therefore, it is imperative that the company re-evaluates the process used to select and prioritize new product development projects in order to create a high value, balanced portfolio.

Recommendations

In light of the ongoing challenges faced by management: inability to properly value product opportunity and align resources to appropriate projects for their portfolios in order to achieve success in NPD projects, and based on the literature accumulated, as well as the results of the empirical study, benchmarks for NPD best practice as well as product portfolio management best practice are proposed. Product portfolio management techniques are recommended to address the concerns of diminishing product portfolio relevance and loss of competitive advantage of the company in this study.

NPD best practice. Although research suggests that there is "no one size fits all" for NPD best practice, it would be in the best interest of the organization to adopt the benchmarks for NPD best practices that have been adopted by leading organizations in order to achieve success in their NPD projects.

The most recent studies by Barczak and Kahn (2012, p. 2) identified NPD practice across seven dimensions: strategy; research; commercialization; process; project climate; company culture; metrics; and performance measurement. All seven dimensions are important. However, strategy is the most important. It is critically important that restructure and development funding be spent on projects that align to business strategy when prioritizing projects. The second most important best practice is that the consumer must be an integral part of the NPD process and market research should be conducted at every step in the NPD process. Cross function teams should be involved in NPD decision making.

Implementing the best practice framework. The company can assess their NPD practices by conducting a detailed audit to identify gaps between their current practice and best practice. Thereafter, the company could develop action plans to close the gaps. It is important to note that customization of the NPD best practices would be required in order to properly implement the practice into the respective company context. The NPD framework and audit presents an opportunity for the company to improve NPD success rate.

Product portfolio management best practices. Research findings suggest a portfolio that contains a balance of project's types and risk level and the number of projects are limited to ensure that resources are not spread too thinly to enable adequate new product introductions is of best value to a company (Killen, Hunt and Kleinschmidt, 2008, p. 5). Product portfolio management aims to ensure a strategically aligned, high value well balanced portfolio. Project alignment with firm strategy is a strong discrimination between high performing and low performing firms. Over emphasizing the financial returns criteria is linked with poor performance. Therefore, the company in the study, which indicates financial return as the most important criteria for selecting and prioritizing NPD efforts, needs to improve on the PPM method implemented. A firm's portfolio is evaluated in three broad dimensions: value maximization; balance; and strategic direction.

Product portfolio management performance measure's strongly correlated with new product success rates. Strategic methods and portfolio maps have the strongest positive influence on portfolio performance. Financial methods, however, do not lead to higher value projects in the portfolio and companies' also under value opportunities in new product developments, resulting in poor performance. The company should use the business strategy method in the product portfolio management process for resource allocation as it correlates positively with strategic objectives, enables the business to enter new markets, balancing the portfolio with high value projects as well bringing new technologies into the business.

Top actions pursued for revenue growth by organizations seeking to maximize the value of the current and future product portfolio are as follows:

- increase fit of products to customer market needs;
- increase value of new products chosen; and
- bring products to the market faster and increase the number of new products introduced.

Improve product portfolio relevance and competitive advantage. New strategic thinking for NPD projects.

When too much focus is placed on current customers, they tend to dominate one's product development process (Robert, 2006, pp. 121-123). In order to achieve competitive supremacy and create new revenue streams, it is critically important to concentrate a company's product innovation resources on 'new-to-the-market' products. This will allow one to change the game.

To breed supremacy over one's competitions one should not worship at the alter of the 'cash cow'– and do away with always protecting the 'cash cow' mentality.

By investing all resources in trying to maintain the company's current business, it may lose profitable future opportunities. Points to remember:

- Mature markets are a myth. All a company needs are mature executives who can make

markets grow, creating new to the market products can benefit the company and breed supremacy by:

- A period of exclusively – one's product being the only one. Product differentiation is the key.
- During this period, one can obtain premium prices.

Another strategy to consider is the 'blue ocean strategy – value innovation' (Pitta and Pitta, 2012, p. 38). Such a strategy prompts competitors to look across the industry boundaries to new opportunities, instead of employing NPD in the old competitive space. The aim is to create new demand from non-customers and new revenue streams. It is all about breaking away from the familiar cluttered space. Incorporating the blue ocean strategy into NPD process could yield the possibility of increasing the success of product introduction and an organization's overall performance. This can provide a measure of sustainable competitive advantage.

Conclusion

The study confirmed that product portfolio management performance strongly correlates with the new product success rates. Hence, by improving product portfolio management methods, the company can improve NPD performance.

The general observations deduced from the analysis of the data are that the NPD projects success rates were poor. This poor performance is directly attributed to the product portfolio management methods implemented by the company to select, evaluate and prioritize NPD projects. A large number of respondents indicated that their company is experiencing diminishing product portfolio relevance and loss of competitive advantage.

An audit was suggested to assess the company's current practices against best practices, identify gaps and make improvements on how to improve diminishing product portfolio and regain competitive advantage.

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