

MASTER

An integrated view of strategic variables for launching radical product innovations applying QCA methodology

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**An Integrated View of Strategic Variables for
Launching Radical Product Innovations:**

Applying QCA methodology

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Preface

This thesis marks the end of my Innovation Management Master at the Technical University of Eindhoven. Writing this thesis has proven to be a tough but very valuable learning experience. I expanded my insights on the field of radical product launch and with this expertise I hope to become a valuable addition to society. Writing this thesis did not only add to my knowledge on the research topic, it also enabled me to grow as a human being. Working for such a long time on this specialized topic really brought me face to face with my own strengths and weaknesses, which is a lesson that will be valuable throughout my life.

I hope reading that this research contributes to the field of radical innovation and product launch and also sparks the curiosity and gives new insights to those who read it. I owe gratitude to my supervisors and towards all the professionals that assisted me in obtaining the research data. I want to especially thank my first supervisor E. J. Nijssen. Although I was sometimes very frustrated by our interactions, in the end I realize that he only wanted me to utilize my full potential. Special thanks also go out to my friends and parents for their trust and moral support during this final project. Their positive influence gave me that extra push to persevere when my moral was at an all time low. So thank you all!

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Abstract

In this research some configurations of strategic launch factors are uncovered that lead to radical product launch success. Previous research on this topic was only theoretical and therefore lacked the much needed empirical evidence to make accurate claims. This research aims to change this by creating a model which describes the launch factors and their expected interactions. Some expected factor configurations are drawn from existing scientific NPD literature. The model and its expected configurations are empirically tested using a sample of 23 radical innovations. The data is analysed using qualitative comparative analysis (QCA). The resulting configurations are compared with the expected ones and through careful examination of the differences and similarities, a heuristic of six success configurations is created. These configurations are categorised as “High Technology Start-up”, “First Mover Dominance”, “Probe and Learn”, “Product Flood”, “Long Term High Tech” and “Speed as Advantage”. The first three account for the majority (72 %) of configurations found in the sample with the “High Technology Start-up” configuration as the most occurring configuration of them all. This research thus confirms interactivity between launch decision and multiple roads to success. It provides a basis for some managerial implications and further empirical research on radical product launch success.

Chapter 1: Introduction and Outline of the Literature Study

1.1 Introduction

The global marketplace is in constant motion, new products are introduced and obsolete products disappear in an increasing rate. Innovations play a key role in this ever changing market, because without them most companies are not able to remain competitive for long. In order for a company to maintain its competitive advantage, it must introduce new products to the marketplace and outrun its competition. Innovation is also a key element for the growth of companies as it stimulates more sales in existing markets (mostly through incremental innovations) or creates new markets entirely (mostly through radical innovations). By creating these new markets, a company can substantially increase its consumer base and therefore ensure its growth potential. There is however also a downside to using radical innovations to create new markets, which is that they are very difficult to manage (Burgelman, Christensen & Wheelwright 2004).

One of the most difficult parts of managing a radical innovation (or any innovation) is the market launch phase (Hultink & Robben 1995). This launch phase refers to the final stage of the new product development process in which the product is introduced into the market (DiBenedetto 1999). The company has to deal with volatile market conditions and loses a large part of control it has on the product. When introduced into the market the success of the product stops being measured by internal control variables but instead depends on customer acceptance and the actions of competitors. Failure rates of 30 – 40 % are reported for new products with which the launch phase is a leading cause (Booz, Allen, & Hamilton 1982). Ever since the early work from Cooper & Kleinschmidt (1988) commercialization and failure

to attract customers remain at the top of the list for reasons of product failure, particularly in the case of radical innovations.

Leading authors such as C. Beard, C. Easingwood and E.J. Hultink contributed much to the understanding of suitable launch practices over the last decades. They determined for instance, what the optimal tactical and strategic composition for different product categories. Much of the empirical data gathered in these studies is used as a foundation for later theoretical frameworks on product launch. The launch literature also makes a clear distinction between strategic and tactical launch decisions wherein the former sets the stage for action that is implemented by the latter (Crawford & DiBenedetto 2008). This means that the strategic product launch decisions are the “what, when where and how” of a product launch whereas tactical launch drivers are marketing mix decisions. Some evidence is also found that decisions associated with radical innovations have a strong strategic character (Sundbo 2001).

Earlier research increased the understanding of the average effects that each variable has on product launch success. Little understanding however exists of the joint effects of these variables on success. This may be explained by the dominant reliance of researchers on regression analyses. Because interactivity between decisions is expected to be a characteristic of launch strategy this needs further study (Montaguti, Kuester & Robertson 2002 and Enq & Quaia 2009). Related to this lack of research between variable interactions, is the underexposure of joint launch decisions sets. For example a high profile product with major technical advantage may be sold via exclusive resellers and uses a skimming price strategy. It refers to particular configurations that might exist. Although regression or clustering can deal with interactions new methods such as qualitative comparative analysis (QCA), are better equipped to investigate the interactions of variables and can identify multiple configurations of variables associated with a particular outcome. The QCA method also has the advantage that it can handle small samples which is especially suitable for radical product research. To

express this in percentages, radical innovations account for 20% of the high-tech products and for only 10% in all industries (Cooper 2001).

1.2 Goal of the Research

The goal of this research is to get more insight into the configurations of launch variables that govern the success of radical product innovations. The aim is to extend the knowledge in this field by providing several strategic configurations that each lead to the successful launch of radical new product. This study will focus on the launch stage because although it is very costly, volatile and important for the continuity of the company (Cooper & Kleinschmidt 1988 and Hultink et al. 1995). Despite its great importance, radical product launch is as of yet without any significant empirical research (Montaguti, Kuester & Robertson 2002 and Enq & Quaia 2009). The research will be limited to radical innovations as these have received less attention in the literature so far.

1.3 Research Questions

Which configurations of radical product launch factors are associated with product launch success and do they correspond with the expected configurations?

- A. Which product launch research has been conducted over the last decades and does it indicate a knowledge gap on both radical innovations and launch variable interactions?
- B. Which product radical product launch variables and interactions can be identified from the existing literature and are these variables predominantly strategic in nature?
- C. Which common launch factors can be extracted out of the existing radical product launch variables and in which configurations are they expected to contribute to launch success?
- D. Which successful radical product launch configurations are identified from the data that is retrieved via a questionnaire survey?

1.4 Research Outline

After defining some key constructs (chapter 2) a literature review will be presented. This literature review covers the launch literature of the last two decades and will help to set the stage to answer the researcher questions. Special attention will be given to the strategic nature of the radical product launch variables and to which extent variable interactions between them are expected to play a role in achieving success. By examining the current status quo of the radical product launch literature one can determine if a research gap actually exists and further research is warranted. Once this status quo is determined, the papers on radical product launch are studied more carefully to uncover the variables that lead to success. When commonalities are found between the different variables, they will be bundled into overarching factors that cover the core of those variables. The bundling helps to identify the underlying important success drivers while at the same time reducing the number of items that have to be measured.

The overarching factors are combined to construct a framework which is used to measure the launch success. Different sets of interactions between these overarching factors will be called configurations and are expected to govern launch success. Some of the most likely “success” configurations are determined from the literature, which will later be compared to the research results.

The next step is to create a questionnaire that measures the overarching factors with a Likert scale (for response richness) by interviewing several experts from leading innovative companies. The data that is retrieved is processed by using Qualitative Comparative Analysis (QCA). Before this QCA method can be used the Likert scale data from the questionnaire must be converted into a binary scale because of the binary logic of Boolean algebra on which QCA is based. Once the binary input variables are created, a QCA computer program is used in a crisp (binary) way to determine which interactions and subsequently which variable configurations lead to launch success. These configurations are compared with the expected configurations and a simple launch model or heuristic is created that can help improve launch decisions.

Chapter 2: Important Definitions

2.1 What is a Radical Product Innovation?

Radical innovations involve the development or application of significantly new technologies or ideas into markets that are either nonexistent or require dramatic behavior changes in existing markets (McDermott & O'Connor 2002). In practice this means that an innovation has to offer unprecedented performance features, achieve at least a fivefold performance improvement on familiar features or achieve a minimum cost reduction of 30% (Leifer et al. 2000). A combination of these three characteristics is also possible but at least one is needed to meet the minimum requirements by which an innovation can be called radical.

Radical innovations (“new-to-the world” products) generally create a new line of business for both the firm and the market place (O'Connor and Veryzer 2001). Radical innovations include both technological discoveries as well as new combinations of technologies that are each evolving within their own spectrum. Opposed to radical innovations there are incremental innovations which exploit the potential of an established design by making relatively minor changes to it (Burgelman, Christensen & Wheelwright 2004). Another difference between these innovations is that radical innovations have a stronger strategic character (Sundbo 2001).

2.2 What is Product Launch?

Product launch can be defined as “the commercialization of a new product” (Grant 2008 and Gultinan 1999) which refers to the final phase of the NPD process. This process can be seen in the figure 1 (Crawford & Di Benedetto 2008).

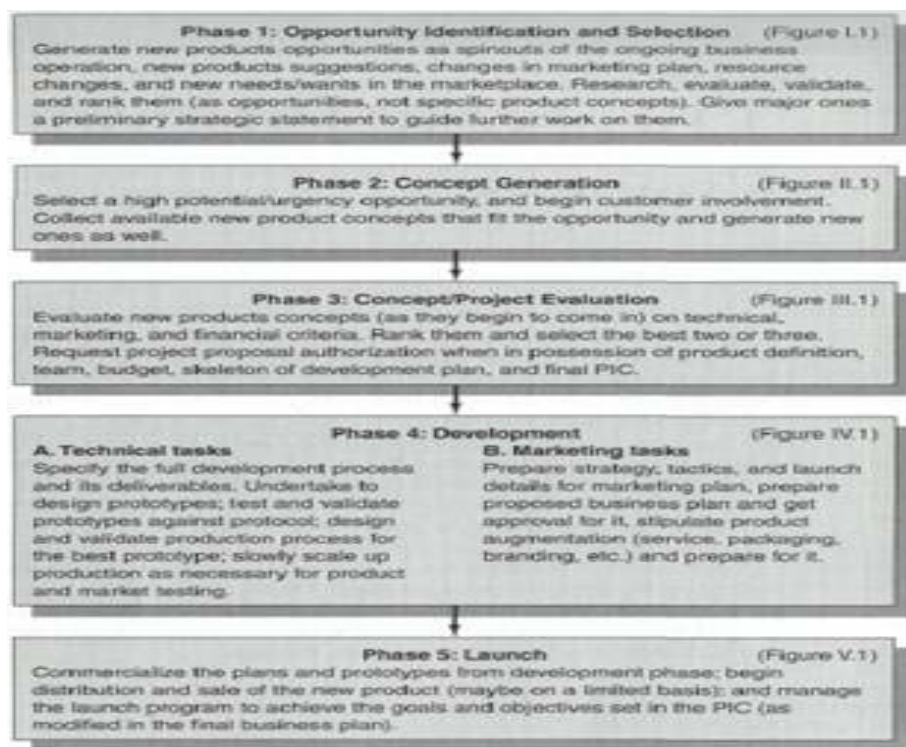


Figure 1 the Basic New Product Process (Crawford & Di Benedetto 2008)

In the launch phase a product is transferred from the internal domain of the company into the external domain of the market. It often has a pressure cooker character in which everything is in a rush and critical (Crawford 1994). Commercial or market success are important because it is the only way to recoup the investments made for the new product. Often commercialization fails, because the product for instance, does not live up to technical or customer standards. However, other issues may also arise, e.g. the communications may fail, unexpected problems arise, supplies become scarce and general confusion may reign (Crawford 1994).

The entire product launch drivers for success can be divided into strategic and tactical variables (Guiltinan 1999, Hultink et al. 2000 and Crawford & Di Benedetto 2008). A strategic variable is usually long term, important, involve significant resource commitment and are not easily reversed (Grant 1998). They are concerned with the “what, where and when” of the launch whereas tactical variables are concerned with “how” to achieve it. In practice, these two types of variables are divided into five sets of decisions which are shown in figure 3 (Crawford & Di Benedetto 2008). These decisions are again divided in two groups, which are “organizational focus” and “product focus”. The former refers to highly strategic decisions which get increasingly difficult to change as the NPD process progresses whereas the latter involve variables that are relatively easier to change during, and at the end of the development process. These “product focus” decisions also include the actual launch phase. In the next section, the five sets of decisions are described in more detail.

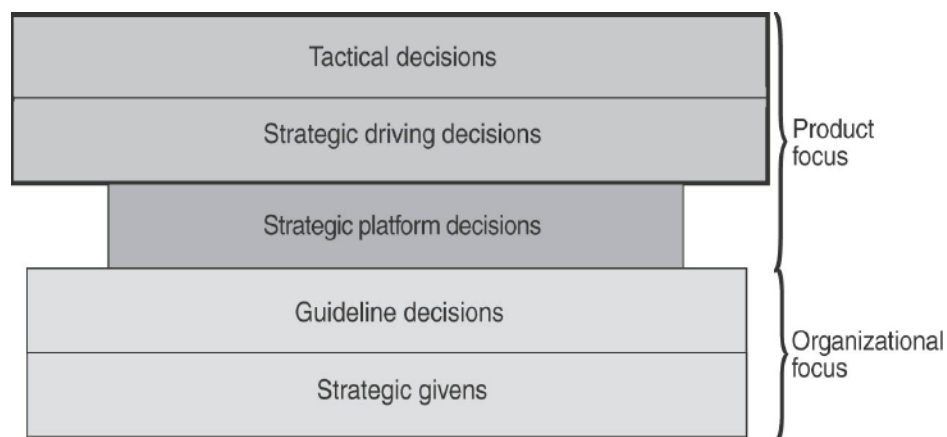


Figure 2 Five Decisions of the Launch Phase (Crawford & Di Benedetto 2008)

The “organizational focus” part can be separated into two types of decisions. The first types of “decisions” are not really decisions in the voluntary sense of the word but are *strategic givens* (Crawford & Di Benedetto 2008). These decisions are the most strategic in nature making them virtually impossible to change. This is the reason why these types of decisions are indicated as givens. The second decisions set are called *guideline decisions* which are made earlier in the development process and won’t be changed once the product

launch starts (Crawford & Di Benedetto 2008). Guideline decisions are set to determine which course a product development process must head and an example could be whether pursue a leadership or follower role in the market and the type of product that is developed.

The “product focus” category covers decisions that are made later on in the product development process and therefore more closely associated with the actual product launch (Crawford & Di Benedetto 2008). These strategic decisions can be divided into *platform strategies* (which set the stage for action) and *driving strategies* (which drive the tactics).

Table 1 shows a quick overview of the difference between these two strategies.

Strategic Platform Decisions	Strategic Driving Decisions
<ul style="list-style-type: none"> • Type of Demand • Performance • Aggressiveness • Competitive Advantage • Product line Replacement • Competitive Relationship • Scope of market entry • Image 	<ul style="list-style-type: none"> • Target Market Decisions • Product Positioning • Creating Unique value • Branding

Table 1 Strategic Platform- and Driving Decisions (Crawford & Di Benedetto 2008)

A tactic is a scheme for a specific action and facilitates the implementation of the product’s strategic plan” (Grant 1998). Tactical decisions include for example, price decisions, the intensity of advertising and minor product modifications. These decisions flow forth from the strategic choices and are relatively easy to change (Casadesus-Masanell & Ricart 2010). Most marketing and business literature expands on these decisions and identifies tactics as the traditional “marketing mix” (Gultinan 1999, Jobber 2002, Hultink et al. 2000 and Crawford & Di Benedetto 2008).

Together with the strategic driving decisions these tactics are used to implement the overall strategic plan. So in short the tactics used in this context are:

- Pricing
- Promotion
- Product
- Place (Distribution)

2.3 Conclusion

This chapter has described the two key definitions that are found in radical product launch. These definitions are important to accurately understand the scope of this research topic. The definition of radical innovation gives some general characteristics and provides guidelines how to identify them in practice. The launch definition describes the processes and decisions associated with the market introduction of a product. These processes are divided into four strategic and one tactical decision types.

Because a characteristic of radical innovations is its strategic nature, one should focus strongly on the four strategic decisions. The “strategic givens” are virtually unchangeable during the entire NPD process and should therefore not be seen as real variables. The “strategic guideline decisions” and “strategic platform decisions” seem to most relevant strategic drivers as they govern the product characteristics and its pre-launch market interaction. The “strategic driving conditions” are also very important because they implement the strategic drivers together with the tactics. When reviewing the product launch literature and uncovering the launch variables, the assumption is made that “strategic guideline decisions” and “strategic platform decisions” are very important success determinants with “strategic driving conditions” and “tactics” ensuring their implementation.

Chapter 3 Literature Review

This chapter gives a detailed overview of the knowledge that currently exists on the topic of product market launch. The goal of this literature review is to form a theoretical basis for this master thesis project in which interactions between strategic launch variables and their influence on market success are investigated. Special attention will therefore go out to literature that covers the launch of radical product innovations and its success factors. An equally important element is the possible existence of interactions between launch variables in the literature. It is important to uncover if these interactions play a role in the launch literature and if they are expected to contribute to radical product launch success. At the end of this literature review it will become clear if these expectations have been correct or not.

The first part of this review is used to answer the first sub question of the primary research question. This question aims to uncover which launch research is conducted over the last two decades if these studies consider launch variable interactions to be important. A historical overview will therefore be provided, which covers the relevant studies on market launch and its progress over the past decades. This progress is illustrated by discussing each decade individually from the mid 80's until the year 2009. At the end of this first part a conclusion will be drawn in which the presence of radical innovation studies and the possible existence of variable interactions are expressed. These conclusions consider if the topic of the master thesis research project is a knowledge gap or a non issue. Once this broad overview is concluded, the papers that specially describe radical product launch will be examined with more scrutiny.

The second part of this literature review gives a more in-depth evaluation of the papers on radical product launch that are identified in the first part of the review. This helps to answer the second sub question of the main research question by determining which radical launch variables and interactions are expected to govern radical product launch success. This evaluation will also focus on the extent to which these variables are strategic, thus adding an additional check if the assumption made at the end of chapter two is correct. If commonalities are found between the launch variables in one or more papers, their core concepts will be extracted and represented as overarching factors. This will clarify which factors are at the core of a successful radical product launch. At the end of this second a conclusions section will summarize the success factors, the extent to which they are strategic and the interactions that are expected.

The search methodology used in this review was to first consult “Elsevier Science Direct” and the “Emerald” search databases using key words as “radical innovation”, “product launch” and “product commercialization”. Secondly, the authors and papers that were found have been used to find other relevant papers using forward (articles referring to these papers) and backwards search (references from the paper also scrutinized and downloaded). After this search 92 scientific articles were found that either covered product launch, radical innovation, commercialization or a mixture of these key words. These articles have then been carefully examined for relevance on the topic of radical product launch. The remaining 16 papers cover this topic to varying extent and will form the basis of the first part of this literature review.

3.1 Generic Product Launch Literature

This paragraph aims to answer sub question A of the main research question. A quick reminder of this question is:

“Which product launch research has been conducted over the last decades and does it indicate a knowledge gap on both radical innovations and launch variable interactions?”

Table 2 helps to answer this question by summarizing the relevant articles identified during the literature search. These articles are classified along several dimensions (see top of table 1) which include:

- Theoretical or Empirical research
- Radical focus of research
- Type of methodology
- Interactions measured

These dimensions help to interpret the type of research and the changes in scope that occur over time. This section gives a review and timeline of the launch literature that was published over the past two decades. The current status quo will be discussed and special attention is given to possible interactions between variables and the how they relate to the research on radical product launch. Additional data of these articles can be found in appendix 1. This data includes the specific launch variables from each article which would be too detailed at this stage to include in the main body of text.

Paper	Scientific Journal in which it is found	Theory or Empiric?	Radical or Generic Focus?	Type of Methodology	Variable Interactions Measured
(1989) C. Easingwood & C. Beard “High Tech Launch Strategies in the UK”	Industrial Marketing Management Volume 18, Issue 2, May 1989, Pages 125-138	Empirical	Generic	Qualitative Interview	none
(1995) E.J. Hultink & J.P.L. Schoormans “How to Launch a High-Tech Product Successfully: An analysis of Marketing Managers’ strategy Choices”	The Journal of High Technology Management Research Vol. 6 No. 2 (1995) 229 – 242	Empirical	Generic	Conjoint measurement	none
(1996) C. Beard and C. Eastingwood “New Product Launch”	Industrial Marketing Management Vol. 25 (1996) 87 – 103	Empirical	Generic	Qualitative Interview	none
(1997) E.J. Hultink et al. “Industrial New Product Launch Strategies and Product Development Performance”	Journal of Product Innovation Management Vol. 14 (1997) 243 – 257	Empirical	Generic	Clustering	yes
(1998) E.J. Hultink et al. “In search of generic launch strategies for new products”	Journal of Research in Marketing Vol. 15 (1998) 269–285	Empirical	Generic	Clustering	yes
(1998) E.J. Hultink and Susan Hart “The world’s path to the better mousetrap: myth or reality? An empirical investigation into the launch strategies of high and low advantage new products.”	European Journal of Innovation Management Vol. 1 No. 3, (1998) 106 – 122	Empirical	Generic	Cronbach’s alpha	none
(1999) E.J. Hultink and H.S.J. Robben “Launch strategy and new product performance: An empirical examination in the Netherlands”	Journal of Product Innovation Management, Vol. 16 (1999) 545 – 556	Empirical	Generic	Multiple regression	none
(1999) C.A. Di Benedetto “Identifying the Key Success Factors in New Product Launch”	Journal of Product Innovation Management Vol. 16 (1999) 530 – 544	Empirical	Generic	t-tests	none
(1999) J.P. Guiltinan “Launch Strategy, Launch Tactics, and Demand Outcomes.”	Journal of Product Innovation Management 16 (1999) 509-529	Theory	Generic	none	mentioned but not measured
(2000) E.J. Hultink et al. “Launch Decisions and New Product Success: An Empirical Comparison of Consumer and Industrial Products”	Journal of Product Innovation Management 17 (2000) 5-23	Empirical	Generic	cross-tabulation (Chi square)	none

(2001) J.M. Thölke, E.J. Hultink and H.S.J Robben “Launching New Product Features: A multiple case examination”	Journal of Product Innovation Management, Vol. 18 (2001) 3 – 14	Empirical	Generic	Qualitative Interview	none
(2002) C. Easingwood and S. Harrington “Launching and re- Launching High Technology Products”	Technovation Vol. 22 (2002) 657–666	Theory	Radical Focus		none
(2002) E. Montaguti , S. Kuester S. & T. S.Robertson “Entry strategy for radical product innovations: A conceptual model and propositional inventory”	International Journal of Research in Marketing Vol. 19 (2002) 21–42	Theory	Radical Focus		mentioned but not measured
(2003) Y. Lee and G.C. O’Connor “New product launch strategy for network effects products”	Journal of the Academy of Marketing Science Vol.31, No. 3,(2003) 241-255,	Theory	Generic		none
(2007) R.J. Calantone and C.A. Di Benedetto “Clustering Product Launches by Price and Launch Strategy”	Journal of Business & Industrial Marketing Vol. 22 (2007) 4 – 19	Empirical	Generic	clustering	yes
(2009) T.Y. Eng and G. Quaia “Strategies for improving new product adoption in uncertain environments: A selective review of the literature”	Industrial Marketing management Vol. 38 (2009) 275 – 282	Theory	Radical Focus		mentioned but not measured

Table 2 Summarization of the Launch Literature of the Last 20 Years

First Launch Studies in the 80’s

Product Launch literature dates back to the 80’s when Robert G. Cooper and his co-workers are the first to systematically describe the launch of new products Product launch at that time was not a research field in itself but a step of the product development process. The importance of the launch phase was becoming more evident at that time especially when the expenditure of the (commercialization) launch phase was uncovered to be 54% of total NPD expenditures (Cooper & Kleinschmidt 1988). Conversely the manpower that was needed was only 22% of the total, indicating that not as much manual work but more likely a good concept is required in this stage of the development.

Beard and Easingwood (1989) refer to the work of Cooper as pioneering in the field of launch research and stress the importance of this phase. In the same paper Cooper is quoted by stating that controllable variables (i.e., prototype testing with customers) had more impact on new product success than did environmental variables (i.e., the nature of the market) and, of all the controllable variables, an effective market launch was the most strongly associated with product success. In this paper four strategies that govern successful product launch are identified which are: *cooperating with other producers, positioning the product in the market, reduce risk of adoption and win market support* (Beard & Easingwood 1989). Of these four strategies the “positioning strategy” was considered as the most important one.

Early Research on Product Launch early in the 90’s

By the early 90’s research conducted by Beard, Easingwood and Hultink who focused more exclusively on the launch phase. The early work of Easingwood et al. in the early 90’s, starts where Cooper had ended and started to empiric studies specifically on product launch strategies. Beard and Easingwood identified four strategies in its early work (Beard and Easingwood 1989) and add four tactics in this decade (Beard and Easingwood 1996) that, if employed consecutively, should lead to a successful product launch. These tactics are: *market preparation, targeting, positioning and attack* also contribute to a successful launch Easingwood (1996). Both the earlier uncovered strategies and these tactics were both empirically determined by means of interviews with a small number of professionals. Additional validation of these variables was achieved by converting them into a questionnaire and testing them on a larger scale. In this early work of Easingwood the tactics and strategies are however separately researched and no distinction was made between incremental and radical products.

Another researcher in the early period of product launch research is E.J. Hultink who conducted a lot of research in the same period as Beard and Easingwood. However, unlike the latter, Hultink included both tactics and strategies simultaneously in his research. The first paper of Hultink (Hultink & Schoormans 1995) predominately uses the launch tactics (4'ps) as drivers for launch success. These drivers were studied by clustering the outcome of a questionnaire that was designed to measure the tactics in companies. Launch strategy in this paper is determined as particular combination of tactics. This view is a bit counterintuitive to the definitions of strategy and tactics, as usually tactics flow from the strategy instead of the other way around.

In the subsequent research (Hultink et al. 1997) a different approach towards strategy was taken. The strategic drivers were identified by reviewing previous launch literature and by interviewing managers responsible for launch decisions. These strategic drivers were subsequently bundled with tactical drivers into a questionnaire with Likert scales and sent to a myriad of different companies. The results gathered from the questionnaire data were clustered into a number of groups that represented different industrial product launch strategies. Through the process of clustering, interactions were measured in this study which focused on the relationship between strategic and tactical factors. As a result several life cycle strategies were uncovered and coupled with the appropriate tactics to implement them. These strategies are called *niche followers*, *niche innovators*, *mass-marketers* and *would be me too*. A broad scope was taken and essentially different life cycle stages and/or different product strategies are identified together with their optimal strategic and tactical drivers. The findings of this paper (Hultink et al. 1997) will prove to be the basis for all future research by Hultink as the future variables all closely resemble them. The paper by Hultink et al. (1998) for instance has a similar construction to that of Hultink et al. (1997) but only differentiates between three strategies instead of four, which are *innovative new products*, *offensive*

improvements and defensive additions. Being similar to the 1997 article by Hultink, also this article uncovers strategies and couples them with appropriate tactics to implement them.

Whereas the first three papers by Hultink et al. had an explorative nature that used clustering to identify generic strategies, later studies have a more comparative nature. One of the papers (Hultink & Hart 1998) compares high advantage with low advantage products through bivariate techniques. A year later a different paper (Hultink & Robben 1999) used regression techniques to identify the best sets of variables to reach market acceptance and product performance. In this paper a sub distinction was made between consumer and industrial products. In a more recent paper (Hultink et al. 2000) the difference between industrial and consumer goods are compared in more detail by cross-tabulation. The last paper (Thölke, Hultink & Robben 2001) mentioned is less significant because it is focused more on features but it is a first sign of more specific launch research.

Hultink contributed significantly to the field of product launch and provided a vast amount of generic studies. Although very relevant in that timeframe, it does lack some depth. Specific research on special product groups such as radical innovation was not conducted. Some data is however uncovered that applies to radical innovations (Hultink et al. 1998) and provides some valuable insights on the role of tactic. The strategic elements are not covered in so much detail and are mostly fixed values instead of variables.

Another author on the subject is DiBenedetto who published an empirical paper (DiBenedetto 1999) on key success launch factors at the end of the 90's. This paper is characterized by its binary approach and by its research depth. The binary nature of this paper stems from the fact that the means of the successful and the means of the unsuccessful cases are compared using a t-test. The other characteristic of this paper is that also drivers as logistics and cross-functional teams are taken into account. This work indicates a more in-

depth approach compared to the earlier work of Hultink and Easingwood which produces a thorough list of success drivers. The research does however have a very limited differentiation between product characteristics such as radical versus incremental innovations.

In the same year Guiltinan published a conceptual paper covering launch strategies and tactics (Guiltinan 1999). This author raises awareness for the fact that literature has a very limited attention for interaction effects regarding the product launch. Additionally a conceptual framework based on earlier empirical studies and data is constructed a conceptual to describe the strategic and mostly tactical success-drivers for different product categories. New-to-the-world (radical) innovations are mentioned explicitly which focuses on stimulating market adoption and diffusion. Methods for doing so are *pre-announcing*, *having a broad assortment*, *using selective distribution* and *information based promotion*. The paper provides a very clear and generic overview of product launch variables known at that time. Because of its generic nature it also inherently lacks depth on the various product categories.

More Specific research from the year 2000 until now

In the most recent scientific work, researchers move away from the generic approach of the 90's towards a more focus approach. Empirical data found in the 90's is used in conceptual papers and describes specific product categories or situations. Examples of this research can also be seen in the table 1 which shows the conceptual papers of Easingwood and Harrington (2002), Montaguti, Kuester & Robertson (2002) and, Lee and O'Connor (2003) and Enq and Quaia (2009). One exception can be noted which is the research by Calentone and Di Benedetto (2007) which empirically describes a more generic scope with focus on interactions between pricing and the rest of the marketing mix. This paper concludes that other marketing mix factors have a strong effect on the success of a skimming pricing strategy. Lee and O'Connor (2003) do focus on a specific product group that has "network

externalities” but this research is still generic because it does not focus and differentiate between incremental and radical product.

Only three articles of the 16 that are shown in table 2 describe radical product innovation specifically. The articles on this subject are those by Easingwood and Harrington (2002), Montaguti, Kuester & Robertson (2002) and Enq and Quaia (2009). The last two mention the importance of interactions between variables for a successful product launch. Both articles state that the interaction between environmental and marketing activities should be measured but give little attention to the interactions between internal processes. One should note that as these papers are conceptual in nature there is only the suggestion of interaction and no actual empirical proof.

Conclusions on Generic Product Launch literature

In this chapter conclusions are drawn from the first part of the literature review which will answer the first sub question of the main research question. Of the 16 articles that were reviewed, only three focus specifically on the launching of radical product innovations. These are the papers written by Easingwood and Harrington (2002), Montaguti, Kuester & Robertson (2002) and Enq and Quaia (2009) which all have a theoretical focus. This means that the concepts that are discussed in these papers are not empirically validated which indicates a knowledge gap on this issue.

A second important topic is the interactions between launch variables and if they are expected to be important for success. There is some empirical research on launch variable interactions which focuses strongly on tactical (marketing mix) components. Hultink et al. (1997 & 1998) investigates the interactions between the strategic launch decisions and tactical launch decisions in which the appropriate tactics (marketing mix) are described for a number of strategies. Calentone and Di Benedetto (2007) focus on the marketing mix by researching the interaction of pricing strategy with the rest of the marketing mix (*product, place and promotion*). Apart from this empirical based literature there is also some theory based literature that study launch variable interactions. These interactions are expected to focus more on strategic components and are first mentioned by Gultinan (1999) who suggest that they should be included in more launch research in the future. Later theoretical research by Montaguti, Kuester & Robertson (2002) and Enq and Quaia (2009) also mention the importance of interactions between launch variables and the lack of empirical evidence that exist in this field. It seems that launch variable interaction is an important aspect in the product launch literature which is studied in some papers. Interactions are expected to play an important role in the successful launch of radical innovations but lacks empirical data to corroborate this.

One can conclude that an empirical knowledge gap exists on both radical product launch variables and the interactions that are expected to govern them. In the next chapter a more in-depth investigation will be made of the papers that cover the launch of radical innovation to get a clear picture of the variables and interactions that contribute to its success.

3.2 Radical Product Launch Literature

This paragraph aims to answer sub question B from the main research question, which is:

“Which product radical product launch variables and interactions can be identified from the existing literature and are these variables predominantly strategic in nature?”

In the previous chapter the necessity of this research is proven by determining that a knowledge gap exists in the prospective research field. The radical product launch literature is only theory based and thus needs empirical validation. Interactions between launch variables are considered to be important for its success. These interactions are however only measured to a limited extent and are limited to the more generic launch studies. Although no empirical data is present, much valuable information can still be extracted from the literature on radical product launch. The expected findings in the current theoretical research on both variables and variable interactions might form a basis for further research. Hence, an in-depth analysis of this literature is next that will uncover these variables and their interactions that influence launch success in this context. Special attention will also go out to the strategic character that these variables might have in order to validate this assumption that was made at the end of chapter 2.

This in-depth analysis will start by examining the paper by Easingwood & Harrington (2002). This paper describes a two-stage launch strategy for high tech products. The first stage is the most interesting because it focuses on launching a high tech product in a new market and targeting innovators. This closely resembles the conditions of a radical product launch and is therefore a valuable source of information. The second part of the paper describes re-launching the product after it has been accepted by the innovators. The lessons learned during the first launch are used to “cross the chasm” with a re-launch. By adjusting

the product for a more mainstream market the re-launch should achieve product diffusion in the early adopter market as well. One should however focus on the launch characteristics of the first stage to gather information about launching radical product. This first stage has several launch drivers, which are displayed in table 3.

Driver	Description
Cooperating/Licensing/Alliances	A common form market preparation to share the new technology with other equipment manufacturers through licensing which focuses on increasing awareness
Provide Pre-Launch Information	The information that is released has to be planned carefully in advance so as to arouse sufficient interest in the new product without giving away too much
Educate the Market	A particular form of provision of pre-release information deserving special mention is an education programme. Education has to be managed and timed carefully otherwise the company sells the vision before it has the product to deliver the vision.
Target Innovative Customers	Identify innovative adopters because they are prepared to buy without seeing the product up and running elsewhere. These early buyers, comprising only a small percentage of the total possible market but potentially having considerable influence.
Target Current Customers	Adoption of a complex technology often only takes place when there is a high degree of trust between buyer and supplier only be developed over time.
Emphasize Technological Superiority	A technologically superior position is the single most important tactic in this early market. The innovation must be carefully positioned to give an exclusive technology- based competitive edge to the early adopter.
Cultivate Winner Image	This strategy involves spending big initially to establish the product as the clear number one.

Table 3 Launch Variables from the Paper: "Launch and Re-launch"(Easingwood & Harrington 2002)

Table 3 shows that these drivers of this scientific article focus primarily on communication of the company with the outside world and not that much with the internal processes themselves. Cooperating/Licensing/Alliances focus on interaction between potential competitors whereas the other drivers focus on interaction with the customer. When focusing on the customer there a distinction between “pre-launch” and “post-launch” education / targeting. The former takes place before the actual launch and can not easily be reversed once executed. The latter is conducted after the launch and covers the marketing mix.

The second paper by Montaguti, Kuester & Robertson (2002) explicitly focuses on radical innovations and more precisely the “take-off” of those innovations. Although closely related to launch, the “take-off” phase is more concerned with the diffusion phase from introduction to growth. In essence it only covers the final stage of the launch cycle. Even though it does not cover the entire launch cycle, it is still a very valuable source of information, due to close relation and the focus on radical innovation. The paper provides a conceptual framework with four areas that influence the take-off of radical new products. These four areas are divided into several drivers which are described in table 4. According to the model that is described by Montaguti, Kuester & Robertson (2002) the *penetration strategy*, *compatibility*, *pre-announcing* and *market alliance* interact with the rest of the variables to achieve success. The exact nature of these interactions however remains unclear because of the theoretical nature of the research.

Driver	Description
Penetration Strategy	An aggressive pricing, promotion and distribution strategy to achieve rapid market acceptance.
Compatibility with Industry Standards	Whether the firm chooses to make its technology compatible with an existing industry standard.
Pre-announcing	An announcement or move that precedes an actual new product introduction.
Marketing Alliances for Distribution	A contractual relationship between the technology provider and an independent entity for the purpose of achieving market access. (distribution)
Network Externalities	The utility that a given user derives from a good depends upon the number of other users who are in the same ‘network’.
Appropriability	The attributes of the innovation that allow the firm to capture profits from innovative activity.
Industry Concentration	Industry concentration reflects the number and the size of the firms operating in an industry.
Level of Incumbency	Extent to which firms participating in a new technology also participated in the previous technology.
Reputation	The extent to which customers perceive new product providers as highly regarded, professional, successful, well-established and stable
Order of Entry	The order of entry of a firm into a new product category.

Table 4 Launch Variables from the Paper: "Entry strategy for radical product innovations: A conceptual model and propositional inventory"(Montaguti, Kuester & Robertson 2002)

The drivers in this table are differentiated into the “entry strategy” variables which are the top four (penetration strategy, compatibility, pre-announcing and market alliances). These variables cover the decisions about the launch itself. These variables have a very strategic character and are determined before the actual launch. The only exception might be the “penetration strategy” which is traditionally more associated with the marketing mix.

The second category of variables is the “Technological Characteristics” and includes the “Network Externalities” and “Appropriability”. These variables are very strategic and will be set during the product development process or maybe during subsequent product improvements.

The third category describes the “Competitive Environment” and includes the “Industry Concentration” and “Level of Incumbency”. These variables are difficult to control by a company as they involve competitive firms who do not tend to listen to the preferences of their competitor. They can however be affected by the speed to which a company enters a market and sets a dominant standard, which brings us to the fourth category.

This fourth category covers the “Firm Specific Factors” one of which is the “Reputation” and the other is the “Order of Entry”. The former is carefully build up over the years and is therefore difficult to change before or during the launch. The latter determines the speed with which the company launches its new product and especially if this is faster then that of the competition. This determines if “first-mover” advantage can be obtained or not.

The third paper (Enq and Quaia 2009) describes the adoption process in highly uncertain environments commonly associated with radical innovations. The uncertainty of the environment lies in the constant changes in technology, customer needs, competition, legislation and political environments. A theoretical framework is constructed to increase the adoption of new products and reduce the uncertainty of a new market. This adoption phase corresponds with the final stage of the product launch and does not cover the whole launch cycle. It does however provide valuable insights because it is heavily based in new product development literature that covers the whole process including the entire launch. The paper provides a conceptual framework with four areas that influence the take-off of radical new products. These four areas are divided into several drivers which are described in table 5. It further states that interactions are expected between the customers and market environment during the company's communication and targeting phases. These interactions probably flow from customer education and learning cycles but this is not entirely clear because of the theoretical nature of the report. Unlike the interactions described by Montaguti, Kuester & Robertson (2002) no explicit assumptions are indicated between the variables in table 5. The paper does however mention that interactions of the different concepts in a unified and synergistic approach are likely to enhance new product adoption.

Driver	Description
Speed to Market	Speed to which a product can be transferred into the market to start the diffusion process.
Timing of Product Launch	This high level of uncertainty adds to the difficulty of determining the timing of product introduction.
Targeting Customer Initiators	Rate of adoption and thus new product adoption success depends mainly on innovators and early adopters
Product meets Customer Needs	Customer education can be considered important for new product development in uncertain environments as firms would need to communicate the benefits of a new product
Create Customer Demand	Customer education has been suggested for improving new product success through pre-introducing new products to customers
Achieve Customer Satisfaction	Continuous learning suggested for improving new product success
Customer Input and Feedback	Communication within the organization and with customers reduces uncertainties, and increases speed of response to changing market conditions.
Product Technical Sophistication	Product orientation based on technology sophistication and innovation has been shown to be relevant in the early stages of new product development rather than customer orientation.
Technology Based Competencies by Learning	Continuous learning to market orientation would strengthen the product design and technical competencies of firms operating in uncertain environments
Discontinuous Innovations	An important aspect of continuous learning is the need to challenge conventional technology and to understand a particular product.
Exploit Competencies	Learning has become increasingly important in organizations as they upgrade competencies and adapt to changing environments
Flexible Systems	Internal organizational systems should be flexible to be able to rapidly respond to technical feedback from the market
Product User Interface	Collaboration with customers at the early stage of product reduces customer anxiety and prepare customers to adopt changes in a new product by educating customers through a close product–customer interface

Table 5 Launch Variables from the Paper: "Strategies for Improving New Product Adoption in Uncertain Environments: A Selective Review of the Literature" (Enq and Quaia 2009)

The paper proposes a framework that uses two key constructs “continuous learning” and “customer commitment” that add to successful new product performance. Variables shown in table 4 contribute to those two key constructs as can be seen in the descriptions. This paper has a strong focus on the actual product and its development.

A lot of attention is given to process variables such as “Speed to market”, “Technology based competencies” and “flexible systems” and also product variables such as “Product Technical Sophistication”, “Discontinuous Innovations” and “Product User Interface” are included. These variables have a strong strategic characters as they occur considerable time before the launch and require a lot of resource and time commitment. The communication with the customers has a strong iterative character in which there is not only education but also market learning involved. These communication variables also have a strategic character because customer involvement begins early on, and is an integral part of the product development process..

Conclusions on Radical Product Launch Literature

The first conclusion that can be drawn from this second part of the literature review is, that the number of studies researching launch of radical new products are extremely limited and without any specific empirical background. Secondly, a total of 30 variables have been identified in the literature that positively influences a product launch. These variables have a predominant strategic character that is difficult to change and which occurs way before the actual launch. Examples of these strategic variables are “technology based competences” and “speed to market” to name only two. Although there are 30 variables in total, some commonalities exist between them making it possible to shorten the list and get a better picture of the core concepts that are expected to govern radical launch success.

Pre-launch information is one of these commonalties and is mentioned both explicitly and implicitly by all three papers. The difference between explicit and implicit in this case is that the former has “pre-launch information” or “pre-announcing” in its name whereas the latter has a different variable name but shares the description. So for example the explicit variables for “pre-launch information” are: “Provide Pre-launch Information” (Easingwood & Harrington 2002) and “Pre-announcing” (Montaguti, Kuester & Robertson 2002) whereas the implicit variables are: “Educate the Market” (Easingwood & Harrington 2002), “Product meets customer needs” and “Create customer demand” (Enq and Quaia 2009). Although terminology is not completely aligned also concepts as “market feedback”, “speed to market”, and “dominant product standards” seem to be important. These three themes are also play an important role throughout the literature in the same explicit and implicit way as with “pre-launch information”.

Market feedback is only mentioned by Enq and Quaia (2009) and is one of the pillars of its theoretical framework together with “pre-launch information” and other market education. These two factors are suspected to strongly interact and iteratively reduce uncertainty. It is mentioned explicitly in the variable “Customer input and feedback” and is implicitly mentioned in the variables “Technologically Based Competencies by Learning”, “Exploit competencies”, “Product-user interface” and “Achieve customer satisfaction”.

Speed to market is a common theme in the papers of both Montaguti, Kuester & Robertson (2002) and Enq and Quaia (2009). The former maintains a more implicit description calling it the “order of entry” whereas the latter has the more explicit variables “Speed to Market” and “Timing of the product”. The common factor however is the speed by which a product can be placed on the market. Montaguti, Kuester & Robertson (2002) point out that being the first on the market has a strong effect on a company’s ability to set a dominant product standard.

Dominant product standard is an important concept that is implicitly mentioned in the papers by Montaguti, Kuester & Robertson (2002) in which “dominant product standard” is captured by the variables “Network Externalities” and “Compatibility (with existing industry standards)”. Two variables are ways to indicate the importance of having or being in unison with the dominant product standard in the market although the terminology is not accurately aligned.

The four overarching strategic variables discussed until now cover more than half (16) of the variables found in the three radical papers. The remaining half can be divided into a residual group of strategic variables and a group of tactical variables (Marketing Mix). The tactical variables are a mix of targeting, pricing, distribution and branding variables which are:

- Cooperating/Licensing/Alliances (Easingwood & Harrington 2002)
- Target Innovative adopters (Easingwood & Harrington 2002)
- Target current customers (Easingwood & Harrington 2002)
- Emphasize technological superiority (Easingwood & Harrington 2002)
- Cultivate a winner Image (Easingwood & Harrington 2002)
- Penetration strategy (Montaguti, Kuester & Robertson 2002)
- Marketing Alliances for Distribution (Montaguti, Kuester & Robertson 2002)
- Reputation (Montaguti, Kuester & Robertson 2002)
- Targeting customer initiators (Enq and Quaia 2009)

These seven tactical variables cover 30% (9/30) of the total number of variables, which indicates that radical innovations are governed primarily by strategic variables. The tactical variables primarily cover the targeting aspect of the marketing mix indicating the importance of market education. This education is believed to interact with “market feedback” as described by Enq and Quaia (2009). Also penetration strategies and market alliances interact with various strategic variables such as “speed to market” and “product standards” (Montaguti, Kuester & Robertson 2002). The interaction between tactical and strategic elements in product launch has also been proven by Hultink et al. (1997 and 1998) as is discussed in the generic literature review.

The residual strategic variables can be divided into competitive environmental variables and product specific variables. These variables are:

- Appropriability (Montaguti, Kuester & Robertson 2002)
- Industry Concentration (Montaguti, Kuester & Robertson 2002)
- Level of Incumbency (Montaguti, Kuester & Robertson 2002)
- Product Technical Sophistication (Enq and Quaia 2009)
- Discontinuous Innovations (Enq and Quaia 2009)
- Flexible Systems (Enq and Quaia 2009)

The competitive environment variables “Industry concentration”, “Level of incumbency” and are very strategic variables that are difficult to change. These involve outside forces where the company has little direct control over. The remaining variables cover the product and its production. These variables cover the product specifics and the flexibility of its production but no clear common factor can yet be found in the descriptions.

During the description of the overarching variable groups, some specific interactions have already been mentioned. One of them is for instance the interaction between “pre-launch information” and “market feedback” (Enq and Quaia 2009) but one can also think of the interaction between “speed to market” and “dominant product standard” (Montaguti, Kuester & Robertson 2002). Of the three papers on radical innovations both Montaguti, Kuester & Robertson (2002) and Enq & Quaia (2009) indicate the existence of interactions between variables. Whereas the former only indicates a moderating between the variables, the latter mentions that a unified and synergistic approach to interactions of all the different concepts is

likely to enhance new product adoption. Both papers agree on the existence of interactions but slightly vary on the extent in which they exist.

In conclusion there are 30 variables that govern the successful launch of a radical product innovation. These variables can be divided into six strategic factors and one tactical (marketing mix) factor. The variables classes are:

- Dominant product standard
- Speed to market
- Pre-launch information
- Market feedback
- Competitive environment
- Remaining undefined product related variables
- Marketing Mix

The first four are common overarching variables that are found throughout the different papers. The fifth variable class of “Competitive environment” is only mentioned in the Montaguti, Kuester & Robertson (2002) paper and these variables are very difficult to change because they involve the actions of ones competitors. The sixth variable class is a summation of product related variables. It includes the way a product is manufactured as well as the inherent benefits of the product. Although these variables do share the commonality of a product focus, there is no clear overarching variable identified. The final variable class is the marketing mix that describes the traditional 4 p’s of marketing. This class has a strong focus on educating the market through targeting but also pays attention to pricing and distribution. Montaguti, Kuester & Robertson (2002) and Enq & Quaia (2009) both indicate that

interactions exist between variables but the degree is not agreed upon. It might be sensible to adopt the widest scope of interactions proposed by the latter to ensure a thorough approach.

3.3 General Conclusions on the Launch Literature

The research topic of product launch originated approximately two decades ago and made a lot of progress in this time. Launch was first systematically studied as a stage at the end of the NPD process by Cooper in the mid to late 80's. The importance of the launch phase is emphasized in this early work and thereby paves the way for further research.

In the 90's Hultink and Easingwood extended on this early work by studying the launch phase more exclusively instead of as a important element of the NPD process. This time was characterized by generic explorative empirical studies. These studies uncovered several strategic and tactical drivers for launch success. The generic nature of these studies focused on what the optimal tactical and strategic composition was for different types of product categories including radical innovations. Hultink et al. describe some interactions in their 1997 and 1998 papers but these interactions are only measured between the strategic and tactical variables. At the end of the 90's Guiltinan stresses the limited consideration of interactions in the launch literature and gathers empirical data from past studies to construct a theoretical framework largely based on tactical launch drivers. This research marks the end of the 90's research period as well as the bulk of the empirical research conducted in this field.

From the millennium until recently, most of the launch research is theoretical in nature. These papers focus more on specified product categories instead of the generic research of the 90's. Lee and O'Connor (2003), for instance wrote about the specific launch conditions needed for launching network products. Calentone and Di Benedetto (2007) conducted specific research of the interactions between pricing and the other marketing mix variables for a product launch. Easingwood & Harrington (2002), Montaguti, Kuester &

Robertson (2002) and Enq & Quaia (2009) specialize on radical product launch although from somewhat different perspectives.

Montaguti, Kuester & Robertson (2002) and Enq & Quaia (2009) focus on the post launch phase of the radical product launch in which customer adoption is sought. This differs in some respects from Easingwood & Harrington (2002) who investigates a two stage method of launch and re-launch to eventually reach the mass market. Each individual paper does not entirely cover the launch cycle, but this can be solved by merging them together. One should however note that these papers are conceptual and have no empirical evidence that was collected solely on radical innovations.

The lack of empirical evidence helps to answer the question if researching radical product launch is a non-issue or a gap in the literature. One can assume that the lack of empirical research on radical innovation is an indication of a knowledge gap. This is corroborated by Enq and Quaia (2009) who state that their conceptual paper needs empirical investigation and validation. An equally important area of this knowledge gap is the absence interactions measured in the context of radical product launch. Although these interactions are mentioned to be important by Montaguti, Kuester & Robertson (2002) and Enq & Quaia (2009), they also lack specific empirical evidence. It is therefore highly probable that the research topic is relevant because it covers a gap in the current literature.

The three papers that cover radical product innovation (Easingwood & Harrington 2002, Montaguti, Kuester & Robertson 2002 and Enq & Quaia 2009) identified in total 30 variables that describe the launch of radical products. These variables have some commonalities which allow them to be bundled in overarching factors. Based on the most occurring key words a total of 7 factors have been created. These factors are predominately strategic in nature with only 30 % of tactical (marketing mix) variables. One of the strategic

factors covers product characteristics and is not as clearly defined as the others. The variables that make up this factor need some closer scrutiny to find out if an overarching commonality does exist.

In conclusion one might state that a lot of progress has been made in the field of product launch over the last two decades. Many insights have been gathered but as this research topic steadily matures also a lot of gaps can still be found. The launch of radical product innovations is one of these gaps. It seems that this area has as strong strategic character and that interactions between the different variables are important. The exact mechanisms between these strategic variables and their interactions are as of yet unclear because they are only described by theory. Much can therefore be learned empirically researching radical product launch variables and their interactions.

Chapter 4 Creating the Research Model

In this chapter research question C is answered by creating a conceptual model which provides an integrated view on the launch decisions that affect radical product launch success. The common launch factors that were determined at the end of chapter 3 will form the basis for this model. These factors are divided into the five launch decisions from Crawford and DiBenedetto (2008) to determine which variables to include in the model and in what way. Once the model is created, three successful radical product launch strategies from the literature will be examined to identify which configurations are likely to be expected.

4.1 Identifying the Launch Factors

At the end of chapter 2 some conclusions were drawn on the characteristic of radical launch decisions. An assumption was made that radical innovations are more strategic nature, which was confirmed by the literature review in the conclusions of paragraph 3.2. Strategic variables should therefore have a very prominent role in the list of key variables that make up the research model. The five product launch decisions will be used to determine which variables are most strategic and how they fit into the research model.

The first of these decisions are the “strategic givens” which remain virtually unchangeable during the entire NPD process and should be excluded from the list of variables that influenced to achieve success. The “strategic guideline decisions” and “strategic platform decisions” are the most strategic decisions that are made during the NPD process. While the former describes the product and process characteristics, the latter is more concerned with the early market interactions. These decisions are expected to play a very prominent part in the research model. The “strategic driving conditions” and “tactics” are used to implement the other strategic decisions are also important yet less prominent in the model.

strategic givens	strategic guideline decisions	strategic platform decisions	strategic driving conditions & tactics
<p><u>Competitive environment</u></p> <ul style="list-style-type: none"> • Industry concentration (Montaguti, Kuester & Robertson 2002) • Level of incumbency (Montaguti, Kuester & Robertson 2002) 	<p><u>Dominant Product Standard</u></p> <ul style="list-style-type: none"> • Compatibility with Industry Standards (Montaguti, Kuester & Robertson 2002) • Network Externalities (Montaguti, Kuester & Robertson 2002) <p><u>Speed to Market</u></p> <ul style="list-style-type: none"> • Order of entry (Montaguti, Kuester & Robertson 2002) • Speed to market (Enq and Quaia 2009) • Timing of Product launch (Enq and Quaia 2009) <p><u>Remaining Product Related Variables</u></p> <ul style="list-style-type: none"> • Appropriability (Montaguti, Kuester & Robertson 2002) • Product technical sophistication (Enq and Quaia 2009) • Discontinuous innovations (Enq and Quaia 2009) • Flexible systems (Enq and Quaia 2009) 	<p><u>Pre-launch information</u></p> <ul style="list-style-type: none"> • Provide Pre-Launch Information (Easingwood & Harrington 2002) • Educate the Market (Easingwood & Harrington 2002) • Pre-announcing (Montaguti, Kuester & Robertson 2002) • Product meets customer needs (Enq and Quaia 2009) • Create customer demand (Enq and Quaia 2009) <p><u>Market feedback</u></p> <ul style="list-style-type: none"> • Customer input and feedback (Enq and Quaia 2009) • Technology based competencies by learning (Enq and Quaia 2009) • Exploit competencies (Enq and Quaia 2009) • Product user interface (Enq and Quaia 2009) • Achieve customer satisfaction (Enq and Quaia 2009) 	<p><u>Marketing Mix</u></p> <ul style="list-style-type: none"> • Target Innovative adopters (Easingwood & Harrington 2002) • Target current customers (Easingwood & Harrington 2002) • Emphasize technological superiority (Easingwood & Harrington 2002) • Cultivate a winner Image (Easingwood & Harrington 2002) • Cooperating/Licensing/Alliances (Easingwood & Harrington 2002) • Penetration strategy (Montaguti, Kuester & Robertson 2002) • Marketing Alliances for Distribution (Montaguti, Kuester & Robertson 2002) • Reputation (Montaguti, Kuester & Robertson 2002) • Targeting customer initiators (Enq and Quaia 2009)

Table 6 The radical product launch variables categorized by the five launch decisions from Crawford & DiBenedetto (2008)

Table 6 shows the radical launch variables in the clusters that were identified in paragraph 3.2 categorized into the five launch decisions. The “strategic driving conditions” and “tactics” are contracted into one category because of their strong similarities and less prominent role in this research (due to their tactical nature). This table shows two launch variables that are considered “strategic givens”, which will therefore be excluded from the final launch model. As expected, most of the variables are categorized in either the “strategic guideline decisions” or the “strategic platform decisions” columns. The clusters that were found in paragraph 3.2 remain consistent in the current categorization since none of their individual variables can be found in other decision type columns.

With the exclusion of the “strategic givens” a total of six variable clusters remain. Most clusters that were identified in paragraph 3.2 are represented by an overarching variable found in the literature radical product launch literature. There is however one exception which is the “Remaining Product Related Variables” cluster. Although the clustering variable can not be readily identified from the literature discussed in paragraph 3.2, the launch variable “Flexible Systems” does indicate an overarching variable. The flexibility concept is also used by Huchzermeier and Loch (2001) who state that a radically new project has high performance and requirement uncertainty and therefore needs a lot of flexibility to effectively react on contingencies. Yi, Yuan & Zelong (2009) formalizes this finding with an “Operational Coordination Flexibility” variable which is defined as:

“A firm’s mobility to apply existing resources into a new field, and to coordinate this transformation process with low cost and little time, as well as investment in fostering new capabilities in order to adapt swiftly to an uncertain environment.”

When a company scores positive on this variable it can easily adapt to time-varying product demands (Chang 2007) that are associated with a radical product, which increases the product advantage. That is why “Operational Coordination Flexibility” can be considered a suitably factor in which to cluster the “Remaining Product Related Variables”.

Variables found in the Literature	Launch Factor
<ul style="list-style-type: none"> • Compatibility with Industry Standards (Montaguti, Kuester & Robertson 2002) • Network Externalities (Montaguti, Kuester & Robertson 2002) 	1. Dominant Product Standard
<ul style="list-style-type: none"> • Order of entry (Montaguti, Kuester & Robertson 2002) • Speed to market (Enq and Quaia 2009) • Timing of Product launch (Enq and Quaia 2009) 	2. Speed to Market
<ul style="list-style-type: none"> • Provide Pre-Launch Information (Easingwood & Harrington 2002) • Educate the Market (Easingwood & Harrington 2002) • Pre-announcing (Montaguti, Kuester & Robertson 2002) • Product meets customer needs (Enq and Quaia 2009) • Create customer demand (Enq and Quaia 2009) 	3. Pre Launch Information
<ul style="list-style-type: none"> • Customer input and feedback (Enq and Quaia 2009) • Technology based Competencies by Learning (Enq and Quaia 2009) • Exploit Competencies (Enq and Quaia 2009) • Product user interface (Enq and Quaia 2009) • Achieve customer satisfaction (Enq and Quaia 2009) 	4. Market Feedback
<ul style="list-style-type: none"> • Appropriability (Montaguti, Kuester & Robertson 2002) • Product technical sophistication (Enq and Quaia 2009) • Discontinuous innovations (Enq and Quaia 2009) • Flexible systems (Enq and Quaia 2009) 	5. Operational Coordination Flexibility
<ul style="list-style-type: none"> • Target Innovative adopters (Easingwood & Harrington 2002) • Target current customers (Easingwood & Harrington 2002) • Emphasize technological superiority (Easingwood & Harrington 2002) • Cultivate a winner Image (Easingwood & Harrington 2002) • Cooperating/Licensing/ Alliances (Easingwood & Harrington 2002) • Penetration strategy (Montaguti, Kuester & Robertson 2002) • Marketing Alliances for Distribution (Montaguti, Kuester & Robertson 2002) • Reputation (Montaguti, Kuester & Robertson 2002) • Targeting customer initiators (Enq and Quaia 2009) 	6. Marketing Mix

Table 7 Radical Product Launch Variables that Govern Market Success Categorized into Six Overarching Factors

Table 7 shows the final categorization of the launch variables that were uncovered in paragraph 3.2. Because of the predominate strategic character that is associated with radical product launch, the choice is made not to separate the marketing mix variables into their four elements (product, place, price, promotion) but to describe them with one factor. The clustering of the rest of the variables is described in paragraph 3.2 and shall not be repeated in this section.

4.2 Creating the Model

Figure 5 shows the model that is developed from the launch variables in table 7. On the left hand side it shows the set of strategic launch categories identified in the previous paragraph, based on the launch literature specific to launch of radical innovations.

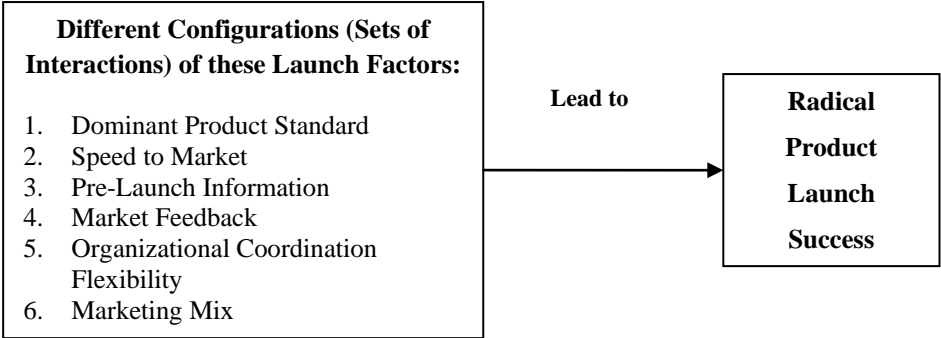


Figure 3 Graphical Representation of the Radical Product Launch Model

This model expects that the launch factors have a joint effect on the product launch. These interactions have been defined in the paper by Enq and Quaia (2009) which expected that unified and synergistic interactions amongst the different factors enhance new product adoption. Montaguti, Kuester & Robertson (2002) also describe variable interactions although in a more limited fashion in which the strategic variables only interact with the tactical variables. Both papers however lack empirical evidence to validate their expectations on the possible interactions. That is why the unified and synergetic approach of Enq and Quaia (2009) is used as it imposes the least restrictions on potential outcomes.

4.3 Expected Configurations

The model in figure 3 states that different configuration of the launch factors lead to product success. In order represent these configurations in a more comprehensibly, the schematic in figure 4 is created. A binary method will be used to indicate if a launch factor contributes or is detrimental to success. This method is chosen because a multifaceted scale will likely be too complicated for the exploratory study that follows in the next chapter. So each factor cell can either display a “1” when it contributes, a “0” when it is detrimental or nothing at all when the factor is not relevant. The last option is added because the theoretically determined launch factors may not be relevant in all cases.

	Dominant Product Standard	Speed to Market	Pre-Launch Information	Market Feedback	Operational Coordination Flexibility	Marketing Mix
Expected Configurations						

Figure 4 Schematic for representing the Launch Configurations

Some strategies are found in the existing scientific literature that describes successful product launch and which seem closely associated with radical product launch.

Expected Configuration 1 - Probe and Learn - The “probe and learn” approach is a strategy coined by Lynn Morone and Paulson (1996) which greatly resembles the “Launch and Re-Launch” theory of Easingwood & Harrington (2002). The former lacks the variable depth of the latter and was therefore not included in the literature review. It does however capture the essence of the strategy more clearly and is therefore used to describe the expected factor loads of this configuration. “Probe and Learn” focuses on an iterative learning process that starts by launching early versions of the product. The effect of the first version is closely monitored and feedback is retrieved to improve the initial product offering. This process is repeated iteratively to continuously improve the product’s offering to the market thus creating the dominant product standard. In order to facilitate the “probe and learn” process a company needs good interactions with the market therefore it communicates information on the initial product offering and its improvements to enhance the feedback. The company also has to have the flexibility in house to respond to the data it retrieves from the market, otherwise the feedback loop would be ineffective. The underlined words indicate key factors that determine the success of this strategy which are summarized in schematic in figure 5.

	Dominant Product Standard	Speed to Market	Pre-Launch Information	Market Feedback	Operational Coordination Flexibility	Alignment of Tactics with Strategy
Probe and Learn	1		1	1	1	1

Figure 5 Configuration of the “Probe and Learn” Strategy (Lynn Morone and Paulson 1996)

Expected Configuration 2 - First Mover Advantage – This configuration is based on the first mover advantage described by Byers, Dorf & Nelson (2011) and Grant (1998). These advantages are described as:

- Innovation protection through property rights or lead time advantage.
- Importance of complementary resources
- Establishing the technical standards

The first mover company should gain a foothold through establishing dominant standards by being the fastest company to launch into a new market. To prevent competitors from sabotaging this advantage, one should be very careful not to give pre-launch information. Instead of warning the competition one can better have a good marketing mix to achieve quick post-launch awareness which facilitates product diffusion. When product and market are both completely new, high performance and requirement uncertainty exists which needs a high flexibility to react on contingencies (Huchzermeier and Loch 2001). This strategy is can be very advantageous since a successful pioneering firm catches an average market share of approximately 40% compared to the follower, who catches only 25 % (Crawford 1994). The underlined words indicate key factors that determine the success of this strategy which are summarized in schematic in figure 6.

	Dominant Product Standard	Speed to Market	Pre-Launch Information	Market Feedback	Operational Coordination Flexibility	Alignment of Tactics with Strategy
First Mover Advantage	1	1	0		1	1

Figure 6 Configuration of the “First Mover Advantage (Grant 1998)

Expected Configuration 3 – Highly Innovative Technology - When an innovation is very novel and has a low compatibility towards the market yet a high advantage (Guiltinan 1999) a company should pre-announce to educate the market as soon as possible. This course of action is especially suitable in the case of a strong patent protection. The danger of competitive reaction is negatively correlated with the level of radicalism of a product (Debruyne et al. 2002) which reduces the risk of pre-announcing. As the technological aspects are already covered through dominant product standards, in this case it is important to increase the chance of adoption. This can be achieved by having a marketing based iterative feedback loop. Such iteration allows a company to continually adjust marketing efforts to adequately bring across the advantages pre- and post launch. The underlined words indicate key factors that determine the success of this strategy which are summarized in schematic in figure 6.

	Dominant Product Standard	Speed to Market	Pre-Launch Information	Market Feedback	Operational Coordination Flexibility	Alignment of Tactics with Strategy
Highly Innovative Technology	1		1	1		1

Figure 7 Configuration of the "Highly Innovative Technology " (Guiltinan 1999)

4.4 Conclusions on the Creation of the Model

This paragraph aims to answer research sub question C which is:

“Which common launch factors can be extracted out of the existing radical product launch variables and in which configurations are they expected to contribute to launch success?”

This question is answered by creating a conceptual model that provides an integrated view on radical product launch decisions that affect success. The launch factors identified in chapter 3 are clustered into six launch factors and subsequently used to construct this model. The expected unified and synergetic factor interactions are also included into the model. These interactions are expected to be found in certain configurations that govern radical product launch success. By creating a simple schematic, the most likely “success” configurations are described which will be compared to the empirical findings in chapter 6.

Chapter 5 Research Methodology

5.1 Sample

The target number of cases was 26, which is determined from the QCA validity table shown in appendix 3. Half of the cases must be positive and the other half negative for the validity to apply. The objective was therefore to collect both successful and unsuccessful product launches. Because a commercial listing of all new introductions does not exist, cases were obtained using two approaches. The first approach was to use existing contacts from the researcher personal professional network and social media to contact managers that were involved in the launch of a radical product innovation. Secondly a snowballing approach was used in which the already contacted managers were asked to refer to an acquainted manager that launched a different radical innovation.

This snowballing process was repeated until in total data on 23 cases were collected which include 14 successful and 9 unsuccessful launches. Although short of the target of 26 we decided to perform the QCA analyses with this data at hand. In itself the variation in products and between success and less successful cases seems adequate. Further, please note that overall the number of radical (i.e. new-to-the world) products is small, e.g, estimated at 10% of all new products in an industries (Cooper 2001). All the cases that have been examined scored high on radicalness. This was determined with a two stage process in which the respondents were first asked if the product was new to the market and new to the company.

When the product scored positively on these two factors a second control question was asked in which the minimum requirements to call an innovation radical were covered. These requirements need an innovation to either offer unprecedented performance features or achieve at least a fivefold performance improvement on familiar features or achieve a minimum cost reduction of 30% (Leifer et al. 2000). A combination of any of these three indications is even better of course. Only when a product scores positive on these two stages, will it be added to the sample.

5.2 Respondents

The target sample consists of 23 respondents gathered from 7 of which some demographics are shown in the table 8. Out of privacy concerns, the specific product names as well as the names of the respondents are not included in this table. But one can be sure that they all fall into the radical innovation category. The demographics indicate a mix of 65 % multinationals and 35% small ventures enhancing the diversity of the research. The products that have been reviewed were found to 65% B2B and 35% B2C. A further examination shows them to be 22 % software based and 78 % hardware based. The respondents all belong to the mid- to higher management and have been involved in most of the NPD process and certainly in the launch phase.

No.	Company	Country	Employee Size	Multi-national	Function Participant	Launch Year
1	Philips N.V.	The Netherlands	123 800	Yes	Consultant innovation process improvement *	2007
2	Philips N.V.	The Netherlands	123 800	Yes	Consultant innovation process improvement *	2004
3	Philips N.V.	The Netherlands	123 800	Yes	Director Process Office Consumer lifestyle *	2005
4	Philips N.V.	The Netherlands	123 800	Yes	Director Process Office Consumer lifestyle *	1995
5	Philips N.V.	The Netherlands	123 800	Yes	Sr. Director Product Creation Process *	2008
6	Philips N.V.	The Netherlands	123 800	Yes	Sr. Director Marketing Outdoor and Industry	2006
7	Philips N.V.	The Netherlands	123 800	Yes	Manager Early supplier involvement in innovation	2007
8	Philips N.V.	The Netherlands	123 800	Yes	Manager Early supplier involvement in innovation	2006
9	Philips N.V.	The Netherlands	123 800	Yes	Software Manager	2000
10	Philips N.V.	The Netherlands	123 800	Yes	Software Manager	2000
11	Philips N.V.	The Netherlands	123 800	Yes	Product Marketing Manager	2004
12	CIAT Group	France	2 300	Yes	Strategic Development Director	2005
13	CIAT Group	France	2 300	Yes	Strategic Development Director	2007
14	TomTom	The Netherlands	3 090	Yes	Project Leader & SW Development Manager	2009
15	Agilent Technologies Inc.	U.S.A	18 750	Yes	R&D Manager/Program Manager	2002
16	Prime Technologies Ventures	The Netherlands	11	Yes	General Partner	2000
17	Prime Technologies Ventures	The Netherlands	11	Yes	General Partner	2000
18	Technostarter	The Netherlands	4	No	Managing Director	2008
19	Technostarter	The Netherlands	4	No	Managing Director	2010
20	Technostarter	The Netherlands	4	No	Managing Director	2002
21	Corporate Finance Group	The Netherlands	3	No	General Director	2006
22	Corporate Finance Group	The Netherlands	3	No	General Director	2005
23	Corporate Finance Group	The Netherlands	3	No	General Director	2005

* These participants have been asked to validate the questionnaire

Table 8 Demographics of the Questionnaire Respondents

Due to the large variety in both companies and products it is possible to find more that configurations than the three that are expected and described in chapter 4. Especially small start-up companies might develop a unique strategy that applies to their unique circumstances but that does not apply to the mass market of the large multinationals. On the one hand this could add to the richness of this study and uncover new generic configurations that lead to successful radical product launches. On the other hand this large variety might be detrimental to the QCA method of analysis. In a sample with a lot of variety, the chances increase that all the configurations that are found are unique (Marx 2006) in which no contradictions are found so no conclusion can be drawn.

5.3 Questionnaire

The questionnaire centers on the 6 launch factors that were identified in chapter 4. Each launch factor was measured using multiple items drawn from the similar literature to facilitate comparison between this study and other investigations. Because these factors are clusters of earlier theoretical based variables, it is necessary to use empirical research papers to determine proper measurement constructs can be used. These empirical papers were selected on the basis of their research topic which had to match that of the launch factor. This makes it possible to identify suitable measurement constructs for each launch factor. Special attention went out to select only those measurement metrics are strongly rooted in the radical innovation context. Where necessary some of the measurement constructs have been adapted to suit this research topic but close attention was always paid to keep the core concept intact. The measurement metrics that were used in this research can be found in table 9.

Factors	Measurement Construct
1. Dominant Product Standard	<ul style="list-style-type: none"> • Does your company play a leading role in the development of a dominant product standard? • Is the effect your company has on the development of a dominant product standard is high? <p>Source: Yooa, Lyytinen & Yang 2005</p>
2. Speed to Market	<ul style="list-style-type: none"> • Is the approximate time for design and development of a new product at the optimal level in your company?" • Was the product completed in less time than is considered normal for similar projects? • Was the product was launched on or ahead of the original schedule developed at initial project go-ahead? <p>Source: Akgün & Lynn (2002) and Afonso et. al. (2008)</p>
3. Pre Launch Information	<ul style="list-style-type: none"> • Does the company give functionality and technology information to media before the launch? • Does the company give pre-launch demonstrations of the product? • Does the company create awareness of the product technology before the launch? <p>Source: Beard and Easingwood (1996)</p>
4. Market Feedback	<ul style="list-style-type: none"> • Are market launches (e.g. in test markets) for the new product chosen on the basis of how much the company can learn from potential customers? • Are insights gained in early market experiments used to redirect the innovation project? <p>Source: O'Connor, Ravichandran & Robeson (2008)</p>
5. Operational Coordination Flexibility	<ul style="list-style-type: none"> • Is the time of changeover to a different product is short on main production line? • The cost of changeover to a different product is small on main production line? <p>Source: Yi, Yuan & Zelong (2009)</p>

<p>6. Alignment Tactics (4 p's of Marketing Mix) with Strategy</p>	<p>Product Tactics Defined:</p> <ul style="list-style-type: none"> • Are brand extensions used to market the new product by sub-branding under a family umbrella? • Is compatibility achieved between the new product and existing products. • Are there plans to launch broader product assortment of the new product in the future to cover customer preferences and budgets. <p>Pricing Tactics Defined:</p> <p>Is <u>skimming pricing</u> tactic used when the product uniqueness is high (e.g. with patent protection) and an early ROI is desired?</p> <p style="text-align: center;">----OR----</p> <p>Is a penetration pricing tactic used when the new product has network externalities and economies of scale must quickly be reached and when dealing with an existing market?</p> <p>Promotion Tactics Defined:</p> <ul style="list-style-type: none"> • Does the company invest more in promotion for this product compared to the competition? • Does the company employ a heavy sales force to push the new product to prospective customers? • Is a niche market targeted when products uniqueness is high (e.g. with patent protection). <p style="text-align: center;">--OR--</p> <p>Is the mass market targeted when it involves a network product and economies of scale must quickly be reached one should</p> <p>Distribution Tactics Defined:</p> <ul style="list-style-type: none"> • Does the company invest more in distribution for this product compared to the competition? • Is exclusive distribution used? • Are current distribution channels used?. <p>Sources: Beard & Easingwood (1996), Hultink et al. (1997), Hultink & Hart (1998), DiBenedetto (1999), Hultink & Robben (1999), Gultinan (1999), Easingwood & Harrington (2002) and Lee & O'Connor (2003)</p>
<p>7. Product Success</p>	<ul style="list-style-type: none"> • Is the customer satisfaction rating is high for the launched product? • Is the customer acceptance rating is high for the launched product? • Are the profit goals met for the launched product? • Are the IRR (Internal Rate of Return) or ROI (Return On Investment) above the rate expected for the launched product? • Does the launched product have a high competitive advantage compared to the competition? <p>Source: Griffin & Page (1996)</p>

Table 9 The Measurement Metrics that Describe the Radical Product Launch Factors

The validity of the constructs was confirmed via discussions with three professionals who judged if they measured the launch factor that they were intended to measure. These professionals all had extensive experience in both the NPD process as the product launch and were interviewed independently and without knowledge of the judgment of the others. All three of them confirmed this list of constructs to be valid to measure the respective launch factors. These professionals were later also used as respondents for the questionnaire and they are indicated in table 8 by an asterisk.

For each of the constructs described in table 9 a 4-point Likert scale was used to judge the overall presence of the launch factors in the launch process. By not including a mid-point the basic assumption for recoding was 1-2=0 and 3-4 =1. These metrics were subsequently converted into a questionnaire format, which can be found in appendix 2.

5.4 Results from the Questionnaire

Table 10 shows the raw data collected from the questionnaires.

Case	Dominant 1	Dominant 2	Speed 1	Speed 2	Speed 3	Pre-launch 1	Pre-launch 2	Pre-launch 5	Learning 1	Learning 2	Flexibility 1	Flexibility 2	Tactics 1	Tactics 2	Tactics 3	Tactics 4	Tactics 5	Success 1	Success 2	Success 3	Success 4	Success 5	
1	2	3	3	2	3	3	4	3	2	3	4	3	3	3	3	1	3	3	4	4	3	4	4
2	1	1	2	2	2	2	3	1	3	3	4	3	3	3	2	2	2	4	2	3	2	2	1
3	4	4	3	2	1	4	4	4	1	1	4	3	4	3	3	4	3	4	4	2	2	2	4
4	3	3	1	1	1	2	3	3	2	2	1	2	4	3	4	3	3	3	3	2	1	2	2
5	4	1	3	3	4	3	3	3	3	3	4	3	4	2	3	2	2	4	1	1	1	1	3
6	4	3	2	2	2	4	4	4	4	4	1	2	4	3	2	3	3	4	3	4	4	4	4
7	4	4	2	2	2	4	4	4	4	4	1	1	4	2	3	4	4	4	4	2	2	2	4
8	4	4	2	2	2	3	4	3	3		3	4	4	4	2	2	4	4	4	4	4	4	4
9	3	4	3	3	2	4	4	4	2	2	4	4	4	2	4	3	1	2	1	1	1	1	1
10	4	4	3	3	3	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4
11	4	4	2		2	4	4	4	4	3	3	3	4	4	4	4	4	4	4	4	3	4	4
12	3	1	2	2	2	2	3	3	4	2	1	3	3	3	3	3	3	2	1	1	1	4	4
13	3	3	2	3	4	2	3	4	3	4	2	2	4	4	4	3	4	4	3	4	4	4	4
14	4	4	3	4	1	4	4	2	1	1	4	3	4	4	4	2	3	4	4	3	4	4	3
15	4	4	2	2	1	4	4	4	3	4	3	3	4	4	4	4	4	4	4	3	3	4	4
16	4	4	4	4	3	2	3	4	2	4	4	4	4	4	3	2	3	4	3	3	3	4	4
17	3	1	1	3	3	4	3	4	3	2	2	1	4	4	3	2	3	4	4	2	1	2	2
18	2	2	4	3	3	3	3	4	4	3	4	4	3	3	2	3	3	3	3	3	3	3	2
19	4	4	2	3	2	3	4	4	4	4	3	2	4	3	2	4	3	3	3	4	3	3	3
20	3	4	1	2	1	1	3	2	3	3	2	2	2	4	3	2	2	3	3	1	1	1	3
21	2	2	1	1	1	3	3	2	1	1	1	1	3	2	1	1	2	4	2	1	1	2	2
22	4	4	2	2	2	4	4	4	4	4	1	1	4	4	3	2	2	4	2	3	4	4	4
23	4	4	3	4	3	4	4	4	4		4	4	4	4	4	2	4	4	4	4	4	4	4

Table 10 Raw Data that from the 23 Cases

This data set is however not yet suitable to be processed by the QCA software because each launch factor still described by the 4-point Likert scores. The following 4 step procedure was used to derive reliable measurement data that are suitable for analyses.

1. Check inter-correlations of construct items using non parametric correlation test
2. Aggregate the constructs into a single score per launch factor
3. Formulate a decision rule to come up with binary scores.
4. Perform a visual validity check on the resulting data table.

Checking for inter-correlations is necessary because there are several constructs that describe one launch factor. When this is the case there is always the risk that these constructs describe different factors which decreases the validity of the research. This is the reason why a correlation test must first decide if the constructs that were used in the questionnaire only measure their respective factor.

A proper correlation test can only be administered after the existing data is tested for normality. A good way to do this is a visual analysis of the frequency distributions of the data samples per question per variable. These distributions are shown in appendix 4. Most data do not show a regular bell-shape distribution (associated with normality) but instead show a large skewness. This indicates the data is probably non-normally distributed which is corroborated by the large skewness and kurtosis in the first table of appendix 4.

The non-normality means that correlations need to be tested using non-parametric statistics. For the non-parametric correlation the 'Spearman' and the 'Kendall's tau' options are both possibilities. In this research, the 'Kendall's tau' is deemed more appropriate as it is more suitable when one has a small data set. Appendix 5 shows the non-parametric correlations between the questions per variable. The constructs that significantly correlate

measure the same factor. In case of multiple correlations, the constructs were examined by the researcher to determine if the most appropriate constructs to measure the factor based on the theory that is available.

The correlation tables in appendix 5 demonstrate that most of the factors are accurately described by their constructs. These constructs all correlate significantly with the exceptions:

- **Marketing Mix**
- **Product Success**

The “Marketing Mix” constructs a difference of correlation exists and a choice must be made between the “distributions” or between “pricing” & “promotion” constructs. Papers by Hultink (1995, 1998 and 2000) and Guiltinan (1999) put great emphasis on pricing and promotion. This theory suggest that if a firm employs proper pricing together with a good promotion strategy it has a higher likelihood to achieve marketing success than if it focused solely on distribution.

The constructs used to describe alignment of tactics are found in questionnaire questions: 2, 3 & 5

The constructs that describe the “Product Success” factor all seem to correlate with the exception of the “customer satisfaction” construct. Because this construct is not a better indicator for radical product success compared to the rest of the constructs (Griffin & Page 1996) therefore the choice is made for the richer selection of constructs.

The constructs used to describe market education are found in questionnaire questions: 2, 3, 4 & 5

The constructs that did not correlate have been removed from the data set, which leaves a homogenous sample. It was subsequently necessary to aggregate these constructs into a single score per factor to enable QCA analysis. This means that the individual Likert is Likert scale data must be converted into a binary, which is shown by table 13. The aggregation process is in fact simply adding the Likert scores together to create a single cumulative score for each launch factor.

Case	Dominant 1	Dominant 2	Cumulative Score	Dominant QCA Crisp	Speed 1	Speed 2	Speed 3	Cumulative Score	Speed QCA Crisp	Prelaunch 1	Prelaunch 2	Prelaunch 3	Cumulative Score	Prelaunch QCA Crisp	Feedback 1	Feedback 2	Cumulative Score	Feedback QCA Crisp	Flexibility 1	Flexibility 2	Cumulative Score	Flexibility QCA Crisp	Marketing Mix 2	Marketing Mix 3	Marketing Mix 5	Cumulative Score	Marketing Mix QCA Crisp	Success 2	Success 3	Success 4	Success 5	Cumulative Score	Success QCA Crisp
1	2	3	5	0	3	2	3	8	1	3	4	3	10	0	2	3	5	0	4	3	7	1	3	3	3	9	0	4	4	3	4	15	1
2	1	1	2	0	2	2	2	6	0	2	3	1	6	0	3	3	6	1	4	3	7	1	3	2	2	7	0	2	3	2	1	8	0
3	4	4	8	1	3	2	1	6	0	4	4	4	12	1	1	1	2	0	4	3	7	1	3	3	3	9	0	4	2	2	4	12	1
4	3	3	6	0	1	1	1	3	0	2	3	3	8	0	2	2	4	0	1	2	3	0	3	4	3	10	1	3	2	1	2	8	0
5	4	1	5	0	3	3	4	10	1	3	3	3	9	0	3	3	6	1	4	3	7	1	2	3	2	7	0	1	1	1	3	6	0
6	4	3	7	1	2	2	2	6	0	4	4	4	12	1	4	4	8	1	1	2	3	0	3	2	3	8	0	3	4	4	4	15	1
7	4	4	8	1	2	2	2	6	0	4	4	4	12	1	4	4	8	1	1	1	2	0	2	3	4	9	0	2	2	2	4	12	1
8	4	4	8	1	2	2	2	6	0	3	4	3	10	0	3	3	3	3	4	7	1	4	2	4	10	1	4	4	4	4	16	1	
9	3	4	7	1	3	3	2	8	1	4	4	4	12	1	2	2	4	0	4	4	8	1	2	4	1	7	0	1	1	1	1	4	0
10	4	4	8	1	3	3	3	9	1	4	4	4	12	1	3	3	6	1	4	4	8	1	4	4	4	12	1	4	4	4	4	16	1
11	4	4	8	1	2	2	4	4	4	4	4	4	12	1	4	4	8	1	3	3	6	1	4	4	4	12	1	4	4	3	4	15	1
12	3	1	4	0	2	2	2	6	0	2	3	3	8	0	3	4	7	1	2	1	3	0	3	3	3	9	0	2	1	1	4	8	0
13	3	3	6	0	2	3	4	9	1	2	3	4	9	0	3	4	7	1	2	2	4	0	4	4	4	12	1	3	4	4	4	15	1
14	4	4	8	1	3	4	1	8	1	4	4	2	10	0	1	1	2	0	4	3	7	1	4	4	3	11	1	4	3	4	3	14	1
15	4	4	8	1	2	2	1	5	0	4	4	4	12	1	4	3	7	1	4	3	7	1	4	4	4	12	1	4	3	3	4	14	1
16	4	4	8	1	4	4	3	11	1	2	3	4	9	0	2	4	6	1	4	4	8	1	4	3	3	10	1	3	3	3	4	13	1
17	3	1	4	0	1	3	3	7	1	4	3	4	11	1	3	2	5	0	2	1	3	0	4	3	3	10	1	4	2	1	2	9	0
18	2	2	4	0	4	3	3	10	1	3	3	4	10	0	4	3	7	1	4	4	8	1	3	2	3	8	0	3	3	3	2	11	0
19	4	4	8	1	2	3	2	7	1	3	4	4	11	1	4	4	8	1	3	2	5	0	3	2	3	8	0	3	4	3	3	13	1
20	3	4	7	1	1	2	1	4	0	1	3	2	6	0	3	3	6	1	2	2	4	0	4	3	2	9	0	3	1	1	3	8	0
21	2	2	4	0	1	1	1	3	0	3	3	2	8	0	1	1	2	0	1	1	2	0	2	1	2	5	0	2	1	1	2	6	0
22	4	4	8	1	2	2	2	6	0	4	4	4	12	1	4	4	8	1	1	1	2	0	4	3	2	9	0	2	3	4	4	13	1
23	4	4	8	1	3	4	3	10	1	4	4	4	12	1	4	4	4	4	4	8	1	4	4	4	12	1	4	4	4	4	16	1	
mean			6,5		mean			6,9		mean			10		mean		5,6		mean		5,5		mean			9,3			mean			12	

Table 11 Likert Scale Data from the Questionnaires Converted to Binary Data for QCA Analysis

The next step is to formulate a decision rule by which the cumulative scores of each variable can be converted into binary scores. First the mean score of all the cumulative scores for a launch factor are calculated as can be seen in the bottom row of table 13. Next the cumulative scores are compared with the mean of their factor. Those who exceed this mean

will be given the digit 1 whereas the others are given the digit 0. The rationale behind this is twofold and starts with the reasoning that these constructs all describe the same variable so they can be added to each other to form one score for the factor they describe. Secondly by using the mean of the cumulative construct scores instead of first determining the mean each individual construct is that the former greatly reduces the chance of ambiguous results. For example when one calculates the mean of each individual cluster and it turns out to be 2.5 it is difficult to interpret if it is supposed to be a 1 or a 0. This problem is virtually eliminated by using a cumulative construct mean as can be seen in table 13. Some cells that display the binary scores for the launch factors remain empty due to missing data. The assumption in the research model is that all factors interact to form a solution which means that one factor can not be left out because of missing data. Cases 8, 11 and 23 are therefore excluded.

5.5 The QCA Method of Analysis

QCA stands for Qualitative Comparative Analysis and is based on the binary logic of Boolean algebra. The Boolean analysis produces explanations for every different piece of data equally and can be used to address complex empirical phenomena especially where different conditions combine in different ways to produce a similar outcome (Romme 1995). The QCA method is also suitable when using a small sample size, because it draws from a maximum number of comparisons that can be made across the cases that are analyzed. It is therefore an ideal tool to determine unified and synergetic interactions and the configurations they form to achieve success. The limited number of possible combinations from the initial set of independent variables results in the possibility to keep the sample size low, which is desirable for the low response rate in this study. To facilitate the QCA analysis, fs/QCA software is used that was created by professor Ragin from the university of Arizona in the USA pioneered the QCA analysis.

Chapter 6 Results from the Crisp QCA Analyses

In this chapter research question D and the main research question is answered.

The first part will show the QCA analyzes of the questionnaire data and the empirical launch factor configuration it produces. In the second part these empirically found configurations are compared with the expected ones from chapter 4. The first part starts by generating a QCA truth table must be generated from the binary launch data in table 13 of the previous chapter.

A truth table will initially show all possible configuration options which are ($2^6 =$) 64 in this case. However, not all of these configurations are found in the questionnaire data sample.

The configurations that are found in the data set are labeled as relevant and maintained while the non-existent configurations are removed. This process is called the “coding” of the truth table which can be seen in table 14.

Dom Prod Std	Spd to Mkt	Pre-Launch ...	Mkt Feedback	Flexibility	Mkt Mix	number	Success	raw consist. ▾	PRI consist.	product
1	0	1	1	0	0	3	1	1.000000	1.000000	1.000000
1	1	1	1	1	1	1	1	1.000000	1.000000	1.000000
1	1	1	1	0	0	1	1	1.000000	1.000000	1.000000
0	1	0	0	1	0	1	1	1.000000	1.000000	1.000000
1	1	0	1	1	1	1	1	1.000000	1.000000	1.000000
1	1	0	0	1	1	1	1	1.000000	1.000000	1.000000
1	0	1	1	1	1	1	1	1.000000	1.000000	1.000000
0	1	0	1	0	1	1	1	1.000000	1.000000	1.000000
1	0	1	0	1	0	1	1	1.000000	1.000000	1.000000
0	0	0	0	0	1	1	0	0.000000	0.000000	0.000000
1	0	0	1	0	0	1	0	0.000000	0.000000	0.000000
0	1	1	0	0	1	1	0	0.000000	0.000000	0.000000
0	0	0	1	1	0	1	0	0.000000	0.000000	0.000000
0	0	0	1	0	0	1	0	0.000000	0.000000	0.000000
1	1	1	0	1	0	1	0	0.000000	0.000000	0.000000
0	0	0	0	0	0	1	0	0.000000	0.000000	0.000000
0	1	0	1	1	0	2	0	0.000000	0.000000	0.000000

Table 12 Coded Truth Table Displaying Factor Configurations from Questionnaire Data

Table 14 shows the variable configurations (horizontal lines) that are present in the data set. The most prevalent type is the configuration at the top of the list (n =3) and the second configuration from the bottom (n = 2). It indicates a successful launch with a positive value “1” for “Dom Prod Std”, “Pre-Launch” and “Mkt Feedback” that indicate launch success. The other frequent occurring configuration has positive values (1’s) for “Spd to Mkt”, “Mkt Feedback” and “Flexibility” which indicates an unsuccessful launch.

The truth table in table 14 must now be simplified by cross referencing the configurations to The factors in this table that have no sign are indifferent to the outcome.

Configuration	Dominant Product Standard	Speed to Market	Pre-launch Information	Market Feedback	Operational Coordination Flexibility	Marketing Mix	Raw Coverage (%)
A	1		1	1	0	0	36
B	1	1	0		1	1	18
C	1		1	1	1	1	18
D	0	1	0	0	1	0	9
E	1	0	1	0	1	0	9
F	0	1	0	1	0	1	9

Table 13 Schematic that shows the Launch Configurations that govern Radical Product Launch Success

Table 15 shows a simplified account of the launch factor configurations that are found in the data sample. A more detailed version can be found in Appendix 6. This table answers sub research question D by showing the successful radical product launch configurations are identified from the sample data. The raw coverage shows the frequency in which a configuration is found in the sample size. Configurations A, B and C cover almost three quarters of the total solution of which A is the most occurring variable. The configurations of D, E and F occur less frequently in the data set that has been found through the questionnaires.

6.1 Comparison Outcomes with Expected Outcome

In table 14 the expected configurations (see chapter 4) are presented together with the results, i.e. empirical profiles from table 13. The expected configurations closely match the empirical configurations A, B and C but do not account for D, E and F. A more detailed

Real and Expected Configurations	Dominant Product Standard	Speed to Market	Pre-launch Information	Market Feedback	Operational Coordination Flexibility	Marketing Mix	Raw Coverage (%)
A	1		1	1	0	0	36
Highly Innovative Technology	1		1	1		1	
B	1	1	0		1	1	18
First Mover Advantage	1	1	0		1	1	
C	1		1	1	1	1	18
Probe and Learn	1		1	1	1	1	
D	0	1	0	0	1	0	9
E	1	0	1	0	1	0	9
F	0	1	0	1	0	1	9

Table 14 Comparison between Expected Configurations and Configurations Found in the Data

Configuration A has the highest coverage percentage therefore it is the most frequently used to describe a successful radical product launch. This configuration greatly resembles configuration “Highly Innovative Technology” which was expected in chapter 4. Some discrepancies are however found in factors for “operational coordination flexibility” and “Marketing Mix”. The former was expected to stay neutral but must be absent in this configuration. The latter “Marketing Mix” was expected to be positive but turns out to be negative.

Empirical configuration B accounts for approximately 20% of the sample and corresponds with the expected “First Mover Advantage”. The same can also be said for empirical configuration C which also accounts for approximately 20% which in turn corresponds to the “Probe and Learn” expected configuration

Empirical configurations D, E and F represent the smallest sample coverage and were not expected in chapter 4. These configurations could indicate launch strategies that are not rooted significantly in current NPD, launch or marketing literature. These configurations do have a low coverage what might indicate a somewhat weak validity.

The discrepancies between the empirical configurations and the expected configurations will be discussed in the next paragraph to determine the probable realistic situation. This discussion will use literature references and field examples to make an accurate assessment of the situation.

6.2 Discussion of the Results compared with the Expectations

Possible explanations for the deviations between the empirical configurations and the expected configurations are described in this paragraph. A start is made by analyzing the difference between empirical configuration A and the expected “Highly Innovative Technology” configuration. This could very well indicate that the company is a high-tech venture. This venture can be either a start-up or a spin-off from a multinational. Configuration A can be explained with the characteristics of a venture. The absence of marketing mix for instance, can be attributed to the relatively small scale and funding associated with start ups and ventures. The company might therefore lack the resources to start a full marketing campaign. A venture usually focuses on one product and therefore does not require a lot of operational flexibility to incorporate major changes in the production process after the launch. These high-tech ventures generally have a strong technological focus (Carayannis et al. 1998)

and enjoy some form of technology protection i.e. ways to control the technical standard. Therefore the factor of “dominant product standard” should be positive in this configuration, what it luckily is. Because of the technology push factor in this scenario, one might also have some low compatibility with prospective consumers (Guiltinan 1999). Low compatibility results in slow adoption because the product is so unfamiliar to the customer. This problem is solved by lead-user involvement during the development stage (O’Connor 1998). The involvement of lead-users in this configuration is revealed by the combination of “Pre-Launch Information” and “Market Feedback”. The former shows the information that is delivered to the lead-user before the launch and the latter describes the process of retrieving the information. As no other market interaction is shown in this configuration the concept of involving lead users in the development seems very plausible. Because lead-users are involved in the development process, probably enough awareness is created pre-launch with these important potential customers. The company can subsequently count on mouth-to-mouth advertising through a positive net promoter score (NPS) for further awareness. These lead-users can become product champions as well as part of the development crew. This ensures that a very innovative high tech product can be successfully launched by a “suspected” venture company with scarce resources.

Configuration D describes a success arrangement of factors that have no interaction with the market and does not strive to create a dominant standard. It conversely focuses on the internal process factors “speed to market” and “operational coordination flexibility”. These processes indicate the speed with which an idea is converted into a product and how fast the production can switch to another product.

This course of action can be explained by the strategy that Rubbermaid employed. This company did not use focus groups and test markets, but instead launched with a very large amount of new products. With this large product assortment, one does not have to

explicitly target certain customer groups or has to create one dominant standard; one just targets the entire market by force with a differentiated product assortment. The importance of a large product assortment for radical new products has been described by for instance Guiltinan (1999).

Configuration E and F seem to be each others opposite. Configuration E describes a scenario in which a dominant standard is present and where the production process is flexible and where one pre-announces the market for the product. That the product is pre-announced probably indicates a low expected competitor reaction therefore the product is probably very radical (Debruyne et al. 2002). When a product is very radical and groundbreaking it could be the result of a long development process such as the 10 years it took General Electric to create the CT scanner which has a low time to market. The technology push approach in these types of innovations can mean that the “novel find” is proudly announced during the development but pays little attention the marketing and the feedback after the launch. This configuration probably a radical concept is used as a basis of which many different product variations launched. To create market awareness for these products are pre-announced.

Configuration F has the opposite approach which does not create a “dominant product standard” has no flexibility to change the product once it is in production and does not pre-announce the innovative product. It focuses on being a “first mover” by a positive speed to market, having a good marketing feedback through the “experimental market learning” and a good “alignment with tactics”. So probably a company that uses this configuration develops and launches a product as quickly as possible and subsequently uses iterative marketing processes to explore the market and target the right customers.

Chapter 7 Conclusions and Suggestions

7.1 Conclusions and general discussion of results

The goal of this research was to get more insight into the configurations of launch variables that govern the success of radical product innovations. The aim was to extend the knowledge in this field by providing several strategic configurations that each lead to the successful launch of radical new product. This study focused on the launch stage because although it is very costly, volatile and important for the continuity of the company.

The main research question was separated into four sub questions which were:

Which configurations of radical product launch factors are associated with product launch success and do they correspond with the expected configurations?

- A. Which product launch research has been conducted over the last decades and does it indicate a knowledge gap on both radical innovations and launch variable interactions?
- B. Which product radical product launch variables and interactions can be identified from the existing literature and are these variables predominantly strategic in nature?
- C. Which common launch factors can be extracted out of the existing radical product launch variables and in which configurations are they expected to contribute to launch success?
- D. Which successful radical product launch configurations are identified from the data that is retrieved via a questionnaire survey?

Sub question A was answered by reviewing the launch data that was published over the last two decades. It concluded that an empirical knowledge gap exists on both radical product launch variables and the interactions that are expected to govern them.

Sub question B was answered by further scrutinizing the research papers that focused on radical product launch. The three papers that cover radical product launch identified a total of 30 variables that govern launch success. These variables had some commonalities which allow them to be clustered into overarching factors. Based on the most occurring key words a total of 7 factors have been created. These factors are predominately strategic in nature with only 30 % of tactical (marketing mix) variables.

Sub question C was answered by creating a conceptual model that provided an integrated view on radical product launch decisions that affect success. The launch factors identified in chapter 3 were clustered into six launch factors and subsequently used to construct this model. The expected interactions were also included in the model. These interactions are expected to be found in certain configurations that govern radical product launch success. A simple schematic was created in which the most likely “success” configurations were described.

Sub question D was answered by gathering sample data from 23 radical products by means of a questionnaire and converting them into binary scores to facilitate QCA analysis. The resulting success configurations were subsequently compared to the earlier expected configuration. This comparison answers the main research question and the configurations that lead to radical product launch success is displayed in figure 8.

Configurations	Dominant Product Standard	Speed to Market	Pre-launch Information	Market Feedback	Operational Coordination Flexibility	Marketing Mix
A. Highly Technology Start-up	1		1	1	0	0
B. First Mover Dominance	1	1	0		1	1
C. Probe and Learn	1		1	1	1	1
D. Product Flood	0	1	0	0	1	0
E. Long Term High Tech	1	0	1	0	1	0
F. Speed as Advantage	0	1	0	1	0	1

Figure 8 Heuristic of Launch Configurations that Lead to Radical Product Launch Success.

With Configurations B and C had the empirical scores were the same as expected scores. Configuration B is based on the first mover advantage in which a company gains a foothold in the market by establishing dominant product standards with fast product launch into a new market. To prevent competitors from sabotaging this advantage, one should be very careful not to give pre-launch information. A good marketing mix is used to achieve quick post-launch awareness which facilitates product diffusion. High flexibility is needed to react on contingencies and reinforce the dominant product standard. This strategy is can be very advantageous since a successful pioneering firm might conquer an average market share of approximately 40% compared only 25 % of the follower.

The “probe and learn” configuration C is a strategy that focuses on an iterative learning process that starts with launching early versions of the product. The effect of the first version is closely monitored and feedback is retrieved to improve the initial product offering. This process is repeated iteratively to continuously improve the product’s offering to the market thus creating the dominant product standard. In order to facilitate the “probe and

learn” process a company needs good interactions with the market therefore it communicates information on the initial product offering and its improvements to enhance the feedback. The company also has to have the flexibility in house to respond to the data it retrieves from the market, otherwise the feedback loop would be ineffective.

Some discrepancies were found between the empirical configurations and the expected configurations A, D, E and F. Configuration A was found to vary on the “Operational Coordination Flexibility” and “Marketing Mix” factors whereas empirical configurations D, E and F were not expected at all. After closer examination of empirical configuration A (based on theory and field examples) it was concluded that it was probably associated with start up companies. These companies lack the financial means to be flexible and orchestrate a large marketing campaign. They instead rely on the patent strength or uniqueness of their innovation together with early customer involvement to achieve success.

Configuration D only focuses on the processes that govern the speed with which an idea is converted into a product and how fast the production can switch to another product. This course of action can be explained by the strategy that Rubbermaid employed. This company did not use focus groups and test markets, but instead launched a very large amount of new products. With this large product assortment, it catered to all product demands without marketing.

Configuration E describes a strategy in which a very radical and groundbreaking innovation is used. These types of innovation can have a long development process such as the 10 years it took General Electric to create the CT scanner. The technology push approach in these types of innovations can mean that the “novel find” is proudly announced during the development but pays little attention the marketing and the feedback after the launch. This

configuration probably a radical concept is used as a basis of which many different product variations launched. To create market awareness for these products are pre-announced.

Configuration F indicates a strategy that focuses on being a “first mover” using a “speed to market”, “having a good marketing feedback” and a good alignment with “Marketing Mix”. So probably a company that uses this configuration develops and launches a product as quickly as possible and subsequently uses iterative marketing processes to explore the market and target the right customers.

7.2 Limitations

There are some limitations to this research, the first of which is a question of validity. The sample size of the answered questionnaires is a bit to having a validity of approximately 90%. The relatively large variability of 16 configurations in a set of 20 possible configurations might ask to the richness but is not beneficial for the validity as the chance of uniqueness is high. This means that the configurations with a high variety coverage percentage are most likely valid configurations whereas those with low percentages are questionable. The timeframe of this research together with the relatively infrequent occurrence of radical innovations made it difficult to achieve a higher number of cases. Future research might be able to investigate more cases and possibly validate the configurations with lower coverage and even uncover more configurations.

Another point of discussion is the lack of causality in the QCA method. It represents the initial factors in a certain configuration in which these factors interact with each other. The basis of this interaction is however not uncovered. It could be that they all have to occur from the start of the launching process, but they can also be a causal result. A “dominant product standard” can for instance be the result of “speed to market” through “first mover advantage” but it could also be present because of patent protection therefore is already

present before or during “speed to market” plays a role. This lack of causality makes it difficult to determine the actual dynamics of these factors. Although the interpretations of the uncovered configurations are rooted in academic research, they are still speculations of the researcher in question and warrant additional confirmation.

7.3 Managerial implications

This research produced an empirically based schematic which describes the configurations of strategic launch factors that make lead to product success. It manages to incorporate six totally different success strategies in one comprehensive heuristic. Apart from the three well known “High Tech Start ups”, “Probe and Learn” and “First Mover Dominance” strategy additional strategies are added. It seems that company without strong marketing skills can be successful as long as it has a flexible and fast production and development process can be successful. It also displays a strategy that describes long term innovation projects and it shows that one does not have to establish the dominant product design as long as a fast development process and good pre- and post launch marketing are present. The heuristic in figure 8 can be used as a selection tool. If a company chooses a launch strategy for a product it can determine what launch factors need to be employed and which launch factors need to be avoided. This might improve the success rate of the radical product launches and reduce uncertainty of which action to employ.

7.4 Suggestions for further research

Future research may replicate this research with a larger data set to solve the validity problems that the configurations have. This might also uncover additional configurations which add to the richness of the heuristic. Apart from the validity of the configurations, further research should also be conducted on the causality between the individual factors of a configuration. Is one factor a result of another factor or do they exist independently to cause a positive effect? This question remains unanswered and should therefore be investigated thoroughly. Once the validity and causality issues are solved the heuristic can be used to create a comprehensive decision making tool by adding the identified measurement constructs. More specific research may be conducted on purely B2B or B2C type companies or on specific product groups.

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Appendix 1 Existing Launch Literature

Article	Research Scope and Method	Strategic Variables
<p>1989</p> <p>C. Easingwood and C. Beard</p> <p>“High Tech Launch Strategies in the UK”</p>	<ul style="list-style-type: none"> • Interview of 15 senior marketing managers in the U.K. • Phenomenological method of analysis • Market Subgroups in study: <ul style="list-style-type: none"> ○ New stand-alone products introduced to established markets ○ New stand-alone products introduced to new markets ○ New processes introduced to established markets ○ New processes introduced to new markets 	<ul style="list-style-type: none"> • <u>Cooperate with Other Producers</u> (<i>third most important variable</i>) <ul style="list-style-type: none"> ○ Share the technology (e.g. licensing) ○ Education program (e.g. educating the market) • <u>Position the Product in the Market</u> (<i>Most important variable in study</i>) <ul style="list-style-type: none"> ○ Approach innovative adopters (innovators) ○ Approach heavy users (lead users) ○ Approach heavy users of preceding technology • <u>Reduce Risk of Adoption</u> (<i>Least important variable</i>) <ul style="list-style-type: none"> ○ Trial without purchase ○ Absorb the risk • <u>Win Market Support</u> (<i>Second most important variable</i>) <ul style="list-style-type: none"> ○ Win backing of opinion leaders ○ Establish a winner reputation (e.g. spend heavily on launch) ○ Legitimize the product (e.g. Publicize names of enlightened adopters)
<p>1995</p> <p>E.J. Hultink and J.P.L. Schoormans</p> <p>“How to Launch a High-Tech Product Successfully: An analysis of Marketing Managers’ strategy Choices”</p>	<ul style="list-style-type: none"> • Questionnaires filled in by 28 product or marketing managers representing 19 well know companies in the Dutch consumer electronics industry • Conjoint measurement task was performed using the launch tactics (price, product, promotion, and place) as attributes. • Launch strategy in this research is defined as “a particular combination of launch tactics” • Successes and failures measured 	<p>All combinations of the following Tactics:</p> <ul style="list-style-type: none"> • <u>Pricing:</u> <ul style="list-style-type: none"> ○ Penetration ○ Skimming • <u>Promotion:</u> <ul style="list-style-type: none"> ○ Push (trade) ○ Pull (customer) • <u>Product Assortment:</u> <ul style="list-style-type: none"> ○ Small ○ Large • <u>Competitive Advantage:</u> <ul style="list-style-type: none"> ○ Quality ○ Design ○ Innovation
	<ul style="list-style-type: none"> • Research assumes an operational approach to marketing • Research focuses on existing and new technologies 	<p>Product launch process steps with their corresponding launch tactics</p> <ul style="list-style-type: none"> • <u>Market preparation:</u>

<p>1996</p> <p>C. Beard and C. Easingwood</p> <p>“New Product Launch”</p>	<p>and markets</p> <ul style="list-style-type: none"> • Interviews of 15 senior marketing managers where held in which they were asked to select a major product or process that their company had recently introduced. • Out of the interviews a general framework of 22 tactics was devised, out of which a questionnaire was made with a Likert scale and sent to 750 marketing managers in high tech sectors. • The 123 usable questionnaires were tested by using the Cronbach’s Alpha measurement of internal consistency • There was more significance of the tactics for the new technology in the new market. 	<ul style="list-style-type: none"> ○ Licensing the product ○ Supply to other equipment manufacturers (OEM’s) ○ Provide pre-launch information ○ Create special distribution arrangements • <u>Targeting:</u> <ul style="list-style-type: none"> ○ Target Innovators ○ Target early adopters ○ Target late adopters ○ Target existing customers ○ Target competitors customers • <u>Positioning:</u> <ul style="list-style-type: none"> ○ Appeal to heavy users ○ Emphasize Exclusivity ○ Emphasize a low price ○ Emphasize technological superiority ○ Emphasize special application ○ Emphasize a safe bet (customer protection) • <u>Market Attack:</u> <ul style="list-style-type: none"> ○ Use opinion leaders ○ Use reference sites ○ Use education methods ○ Use a winner image ○ Promote the product to dealers ○ Lend or lease the product ○ Promote to one special customer
<p>1997</p> <p>E.J. Hultink et al.</p> <p>“Industrial New Product Launch Strategies and Product Development Performance”</p>	<ul style="list-style-type: none"> • Launch strategy in this research is defined as “the decisions of what, where, when and why to launch a product” • Mail survey with a Likert scale was used to collect launch decisions of products launched in the last five years in the U.K. market. 138 usable questionnaires were produced. • Marketing-, general- & product managers targeted. • Overall success ratings and ratings for each independent dimension of success were obtained by simple averages of the appropriate items. • Cronbach’s alpha was used for the composite success dimensions variables. • <i>Niche followers, niche innovators, mass marketers and ‘would-be-me-too’ where identified as strategies.</i> Variety of products and markets where researched. 	<p>Key Strategic Decisions in Launching a New Product</p> <ul style="list-style-type: none"> • <u>Product Strategy:</u> <ul style="list-style-type: none"> ○ Product innovativeness ○ Relative product newness ○ Cycle time • <u>Market Strategy:</u> <ul style="list-style-type: none"> ○ Breadth of segments served (targeting) ○ Stage of product life cycle ○ Target market growth • <u>Competitive Stance:</u> <ul style="list-style-type: none"> ○ Number of competitors ○ Product advantage • <u>Firm Strategy:</u> <ul style="list-style-type: none"> ○ Innovation strategy ○ NPD Driver
<p>1998</p>	<ul style="list-style-type: none"> • Launch strategy in this research is defined as “the decisions of what, where, when and why to launch a 	<p>Key Strategic Decisions in Launching a New Product</p>

<p>E.J. Hultink et al.</p> <p>“In search of generic launch strategies for new products”</p>	<p>product”</p> <ul style="list-style-type: none"> • Launch decisions are difficult and expensive to change when made and the impact tactical decisions made later on. • Survey held in the U.K., U.S.A. and the Netherlands using a Likert scale and measured 15 indicators of new product performance which produced 622 usable responses. • Companies participating had to: <ul style="list-style-type: none"> ○ Have developed and introduced a physical product within 5 years ○ Respondent was responsible for the launch strategy ○ The company had more than 25 employees • Canonical correlation analysis and clustering and cross-tabulating were used to analyze the data. • All fields and types of products were investigated. • <i>Innovative new products, offensive improvements and defensive additions were identified as the generic strategies.</i> • Successes and failures measured 	<ul style="list-style-type: none"> • <u>Product Strategy:</u> <ul style="list-style-type: none"> ○ Innovativeness ○ Newness ○ Cycle time ○ Improvement • <u>Market Strategy:</u> <ul style="list-style-type: none"> ○ Growth rate ○ PLC stage ○ Targeting ○ # Competitors • <u>Firm strategy</u> <ul style="list-style-type: none"> ○ NPD Driver ○ Strategy ○ Objectives <ul style="list-style-type: none"> ▪ Expand product range ▪ Erect competitive barriers ▪ Increase penetration ▪ Utilize excess capacity ▪ Produce at lower costs ▪ Capitalize on new technology ▪ Establish market foothold ▪ Capitalize on existing market ▪ Offset seasonal cycle time ▪ Increase company’s image ▪ Preempt emerging segment
<p>1998</p> <p>E.J. Hultink and Susan Hart</p> <p>“The world’s path to the better mousetrap: myth or reality? An empirical investigation into the launch strategies of high and low advantage new products.”</p>	<ul style="list-style-type: none"> • New products with high advantage requires a different launch strategy than other products • Survey with a Likert scale was held across five industries with 293 responses. Both consumer as well as industrial goods manufacturers in the UK were targeted. • Cronbach’s alpha was used for analysis • The conclusion stated that launch strategies of products with a low product advantage differed significantly from products with a high product advantage. • Successes and failures measured 	<p>Strategic launch decisions</p> <ul style="list-style-type: none"> • <u>Objectives</u> • <u>Timing</u> (between ideation and launch) • <u>NPD Cycle time</u> • <u>Targeting</u> • <u>Target market growth rate</u> • <u>Target market PLC stage</u>
<p>1999</p>	<ul style="list-style-type: none"> • Survey of Dutch companies in four industries • Likert scale used • Respondents from marketing and general management. • Successes and failures measured 	<p>Strategic product/market decisions</p> <ul style="list-style-type: none"> • <u>Relative product innovativeness</u> • <u>Targeting</u> • <u>Introduction objectives</u>

<p>E.J. Hultink and H.S.J. Robben</p> <p>“Launch strategy and new product performance: An empirical examination in the Netherlands”</p>	<ul style="list-style-type: none"> • Multiple regression used to determine relationships • Factors other than product launch and market characteristics were found to contribute to new product performance. 	<ul style="list-style-type: none"> • <u>Product newness</u> • <u>Speed to market</u> • <u>Timing of market entry</u>
<p>1999</p> <p>C.A. Di Benedetto</p> <p>“Identifying the Key Success Factors in New Product Launch”</p>	<ul style="list-style-type: none"> • Retrospective methodology used • Products of last five years were considered and measured using a Likert scale. • 183 usable questionnaires were received from different types of products and industries • Mean perceived levels of performance of launch activities were compared using t-tests. • Differences due to product characteristics were not explored 	<p>Strategic Launch Activities:</p> <ul style="list-style-type: none"> • Interdepartmental committees were set up to allow departments to engage in joint decision-making • Task forces or temporary groups were set up to facilitate interdepartmental collaboration. • Liaison personnel existed whose specific job it was to coordinate the efforts of several departments • Cross-functional teams made decisions concerning <ul style="list-style-type: none"> ○ manufacturing strategy. ○ distribution or logistic strategy ○ marketing or sales strategy • Our logistics operations from the manufacturing facility to the customer are highly integrated with: <ul style="list-style-type: none"> ○ marketing. ○ manufacturing and production operations. • Logistics was involved in: <ul style="list-style-type: none"> ○ planning marketing programs ○ formulating our distribution strategies ○ coordinating with sales management ○ lean inventory strategies ○ service planning (after sales) ○ setting return or replacement policies

<p>1999</p> <p>J.P. Guiltinan</p> <p>“Launch Strategy, Launch Tactics, and Demand Outcomes.”</p>	<ul style="list-style-type: none"> • Core assumption of the framework is that the fundamental process underlying market acceptance is essentially the same regardless of the nature of the product. • Conceptual paper • Framework divides high/low compatibility and high/low relative advantage and determines the launch tactics for each quadrant. 	<p>Strategic Marketing Decisions/Actions</p> <ul style="list-style-type: none"> • <u>Target Market</u> (Niche vs. mass) • <u>Leadership</u> (Lead vs. Follow) • <u>Design Features and Relative innovativeness</u>
<p>2000</p> <p>E.J. Hultink et al.</p> <p>“Launch Decisions and New Product Success: An Empirical Comparison of Consumer and Industrial Products”</p>	<ul style="list-style-type: none"> • Research describes three-country (the Netherlands, U.K. and U.S.A.) multi-industry investigation of new product launches. • Companies participating had to: <ul style="list-style-type: none"> ○ Have developed and introduced a physical product within 5 years ○ Respondent was responsible for the launch strategy ○ The company had more than 25 employees • Analysis by cross-tabulation • Industrial products are more radical innovative and consumer products more incremental • Research describes statistical associations, not causality 	<p>Strategic Decision Variables</p> <ul style="list-style-type: none"> • <u>Product:</u> <ul style="list-style-type: none"> ○ Product Innovativeness ○ Product Newness ○ NPD Cycle Time • <u>Market :</u> <ul style="list-style-type: none"> ○ Market Growth Rate ○ Targeting Strategy ○ Stage of PLC • <u>Competitive:</u> <ul style="list-style-type: none"> ○ Product Advantage ○ Number of Competitors • <u>Firm:</u> <ul style="list-style-type: none"> ○ NPD Driver
<p>2001</p> <p>J.M. Thölke, E.J. Hultink and H.S.J Robben</p> <p>“Launching New Product Features: A multiple case examination”</p>	<ul style="list-style-type: none"> • Study of mini-cases on 8 firms by taking interviews. • Interviews where analyzed, which resulted in 	<p>Feature Launch Decisions:</p> <ul style="list-style-type: none"> • <u>Dictatorship:</u> Develop new-to-the-world features early in the life cycle • <u>Pioneering:</u> Represents the in-house development of new features based on minor technological efforts. • <u>Establishing:</u> Consider the right timing to copy a feature more important than the perceived newness of this feature. • <u>Following:</u> Launch features that already exist in the market.

<p>2002</p> <p>C. Easingwood and S. Harrington</p> <p>“Launching and re- Launching High Technology Products”</p>	<ul style="list-style-type: none"> • Conceptual paper • Describes Launching to “innovators”, re-developing product with market feedback and re-launch it to “early-adopters” to cross the “chasm” 	<p>Launch Strategies</p> <ul style="list-style-type: none"> • <u>Market preparation:</u> <ul style="list-style-type: none"> ○ Co-operation/Licensing/Alliances ○ Provide pre-launch information ○ Educate the Market • <u>Targeting:</u> <ul style="list-style-type: none"> ○ Target Innovative adopters (‘Techies’ and ‘Visionaries’) ○ Target current customers • <u>Positioning:</u> <ul style="list-style-type: none"> ○ Emphasize technological superiority • <u>Execution:</u> <ul style="list-style-type: none"> ○ Cultivate a winner Image
<p>2002</p> <p>E. Montaguti et al.</p> <p>“Entry strategy for radical product innovations: A conceptual model and propositional inventory”</p>	<ul style="list-style-type: none"> • Conceptual paper 	<p>Variables influencing time to take-off, awareness, willingness to pay and availability.</p> <ul style="list-style-type: none"> • <u>Strategic Actions:</u> <ul style="list-style-type: none"> ○ Penetration strategy ○ Compatibility (with existing industry standards) ○ Pre-announcing ○ External Routes to market: Market alliances • <u>Technology Characteristics:</u> <ul style="list-style-type: none"> ○ Network externalities (for the product) ○ Appropriability (attributes of innovation that capture profits) • <u>Competitive Environment:</u> <ul style="list-style-type: none"> ○ Industry concentration (number and size of firms operating in industry) ○ Level of incumbency • <u>Firm-specific factors:</u> <ul style="list-style-type: none"> ○ Reputation ○ Order of entry (in a new product category)
<p>2003</p> <p>Y. Lee and G.C. O’Connor</p> <p>“New product launch strategy for network effects products”</p>	<ul style="list-style-type: none"> • Conceptual paper • Focus on launching network products 	<p>Product launch strategy value drivers:</p> <ul style="list-style-type: none"> • <u>Order of entry</u> • <u>Relative product advantage</u> • <u>Penetration pricing</u> • <u>Bundling</u> • <u>Mass targeting</u> • <u>Pre-announcing</u>

<p>2007</p> <p>R.J. Calantone and C.A. Di Benedetto</p> <p>“Clustering Product Launches by Price and Launch Strategy”</p>	<ul style="list-style-type: none"> • Retrospective methodology used • Likert Scale used • K means clustering procedure was used to group the new product launches into clusters • Sample contains several industries • 	<p>Variables affecting Launch</p> <ul style="list-style-type: none"> • <u>Pricing and marketing mix strategy</u> • <u>Firm resources, skills and NPD activities</u> • <u>Work group structure</u> • <u>Logistics and inventory strategy</u> • <u>Market orientation</u> • <u>Launch Timing</u> • <u>Industry structure an environment</u>
<p>2009</p> <p>T.Y. Eng and G. Quaia</p> <p>“Strategies for improving new product adoption in uncertain environments: A selective review of the literature”</p>	<p>Conceptual paper</p>	<p>Theoretical Underpinnings of new product adoption in uncertain environments</p> <ul style="list-style-type: none"> • <u>Innovation diffusion:</u> <ul style="list-style-type: none"> ○ Speed to market ○ Timing of product launch ○ Targeting customer initiators • <u>Market orientation</u> <ul style="list-style-type: none"> ○ Product meets customer needs ○ Create customer demand ○ Achieve customer satisfaction ○ Customer input and feedback • <u>Product orientation:</u> <ul style="list-style-type: none"> ○ Product technical sophistication ○ Technology based competencies • <u>Organizational learning:</u> <ul style="list-style-type: none"> ○ Discontinuous innovations ○ Exploit competencies ○ Flexible systems <ul style="list-style-type: none"> ▪ Product-user interface

Appendix 2 Questionnaire for an integrated view of strategic variables for better understanding launch of new products

General Data

1. Name of the company:

2. Name of the participant:

3. Function of the participant within the company

4. Name and description of the product that was launched

5. The year when the product was launched

Product Innovativeness:

In terms of the product offering:

- an entirely new set of performance features *and/or*
- a five to ten-fold improvement in known performance features *and/or*
- at least a 30% - 50% reduction in cost for the product.

1) The product is new to the market

Strongly Disagree Strongly Agree

2) The product is new to the company

Strongly Disagree Strongly Agree

Dominant Product Design

1. Your company plays a leading role in the development of a dominant product standard

Strongly Disagree Strongly Agree

2. The effect your company has on the development of a dominant product standard is high, for the product chosen on page one.

Strongly Disagree Strongly Agree

Experimental Product Market Learning

- 1. Initial market launches (e.g. in test markets) for the new product are chosen on the basis of how much we can learn from potential customers.**

Strongly Disagree Strongly Agree

- 2. Insights gained in early market experiments are used to redirect innovation project.**

Strongly Disagree Strongly Agree

Pre-Launch Market Education

- 1. The company gives functionality and/or technology information to media before the launch**

Strongly Disagree Strongly Agree

- 2. The company gives pre-launch demonstrations of the product**

Strongly Disagree Strongly Agree

- 3. The company creates market awareness of the product functionality and/or technology**

Strongly Disagree Strongly Agree

Organizational Coordination Flexibility

1. The time of changeover to a different product is short on main production line

Strongly Disagree Strongly Agree

2. The cost of changeover to a different product is small on main production line

Strongly Disagree Strongly Agree

Alignment of the Strategy with Marketing Tactics

Product Tactics Defined:

- Using brand extensions (possibly through sub-branding under a family umbrella, by using another brand's reputation) to brand the new product.
- Trying to achieve compatibility between the new product and existing products.
- Aiming to have a broad product assortment of the new product to cover customer preferences and budgets is associated with higher success.

1. My company engages extensively in the defined product tactics.

Strongly Disagree Strongly Agree

Pricing Tactics Defined:

- Using a **Skimming** pricing tactic when the products uniqueness is high (e.g. with patent protection) and an early ROI is desired

or

- Using a **penetration** pricing tactic when a network product is concerned, economies of scale must quickly be reached and when dealing with an existing market.

2. My company engages extensively in the defined pricing tactics.

Strongly Disagree Strongly Agree

Promotion Tactics Defined:

- Investing more in promotion than the competition.
- Employing heavy sales force involvement is used to push the new product.
- *Targeting:*
 - Target a **niche market** when products uniqueness is high (e.g. with patent protection). Focus on customer and/or heavy users especially within the innovators segment by cultivating a winner image and emphasizing the technological superiority (use opinion leaders to harness word of mouth communications)

or

- Target the **mass market** when it involves a network product and economies of scale must quickly be reached one should
-

3. My company engages extensively in the defined Promotion tactics.

Strongly Disagree Strongly Agree

Distribution Tactics Defined:

- Investing more in distribution than the competition
- Using exclusive distribution
- Using current distribution channels.
- (Follow an external route to market (using others to distribute)

4. My company engages extensively in the defined Distribution tactics.

Strongly Disagree Strongly Agree

5. Overall my company engages extensively in the defined Marketing tactics.

Strongly Disagree Strongly Agree

Product Success

- 1. The customer satisfaction rating is high for the launched product**

Strongly Disagree Strongly Agree

- 2. The customer acceptance rating is high for the launched product**

Strongly Disagree Strongly Agree

- 3. The profit goals are met for the launched product**

Strongly Disagree Strongly Agree

- 4. The IRR (Internal Rate of Return) or ROI (Return On Investment) are above the rate expected for the launched product**

Strongly Disagree Strongly Agree

- 5. The launched product has a high competitive advantage compared to the competition**

Strongly Disagree Strongly Agree

Appendix 3 Validity Table for QCA Sample Size

		# Variables				
		4	5	6	7	8
# Cases	5	>33%	>33%	>33%	>33%	>33%
	6	>33%	>33%	>33%	>33%	>33%
	7	>33%	>33%	>33%	>33%	>33%
	8	>33%	>33%	>33%	>33%	>33%
	9	>10%-<33%	>33%	>33%	>33%	>33%
	10	>1%<10%	>10%<33%	>33%	>33%	>33%
	11	>1%<10%	>10%<33%	>33%	>33%	>33%
	12	0	>10%<33%	>33%	>33%	>33%
	13	0	>1%<10%	>10%<33%	>33%	>33%
	14	0	>1%<10%	>10%<33%	>33%	>33%
	15	0	0	>10%<33%	>33%	>33%
	16	0	0	>1%<10%	>10%<33%	>33%
	17	0	0	>1%<10%	>10%<33%	>33%
	18	0	0	>1%<10%	>10%<33%	>33%
	19	0	0	>1%<10%	>10%<33%	>33%
	20	0	0	>1%<10%	>10%<33%	>33%
	21	0	0	>1%<10%	>10%<33%	>33%
	22	0	0	>1%<10%	>10%<33%	>33%
	23	0	0	>1%<10%	>10%<33%	>33%
	24	0	0	>1%<10%	>10%<33%	>33%
	25	0	0	>1%<10%	>10%<33%	>33%
	26	0	0	0	>10%<33%	>10%<33%
	27	0	0	0	>1%<10%	>10%<33%
	28	0	0	0	>1%<10%	>10%<33%
	29	0	0	0	>1%<10%	>10%<33%
	30	0	0	0	0	>10%<33%
	31	0	0	0	0	>10%<33%
	32	0	0	0	0	>10%<33%
	33	0	0	0	0	>10%<33%
	34	0	0	0	0	>10%<33%
	35	0	0	0	0	>10%<33%
	36	0	0	0	0	>1%<10%
	37	0	0	0	0	>1%<10%
	38	0	0	0	0	>1%<10%
	39	0	0	0	0	>1%<10%
	40	0	0	0	0	>1%<10%
	41	0	0	0	0	>1%<10%
	42	0	0	0	0	>1%<10%
	43	0	0	0	0	>1%<10%
	44	0	0	0	0	>1%<10%
	45	0	0	0	0	>1%<10%
	46	0	0	0	0	0
	47	0	0	0	0	0
	48	0	0	0	0	0
	49	0	0	0	0	0
	50	0	0	0	0	0

0 = Model-specification will always generate contradictions on the basis of random data. None of the trials with this model-specification generated 0 contradictions. Models developed on the basis of this specification are valid.

>1 %-< 10% = Model-specification will almost always generate contradictions on the basis of random data.

>10 %-< 33% = Model-specification will most of the time generate contradictions on the basis of random data. However, there is a significant possibility of finding non-contradictions.

>33% = Model-specification is not valid. The possibility of finding contradictions on random data is small. The >33% area of the table indicates that models falling in this space could also be generated ad random.

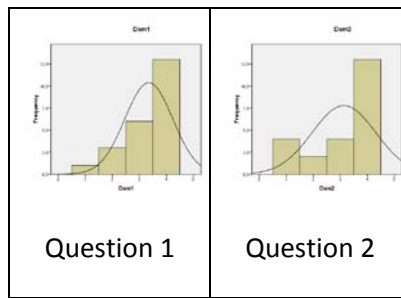
Appendix 4 Skewness and Kurtosis Values of the Questionnaire Data Set

Statistics

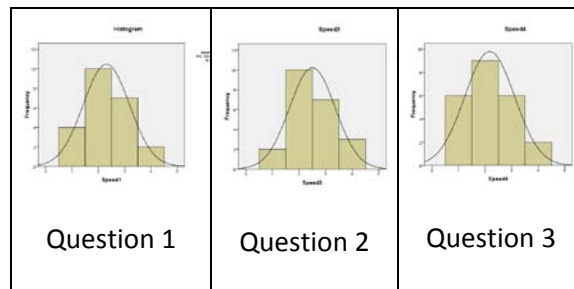
	Dominant 1	Dominant2	Speed 1	Speed 2	Speed 3	Learning 1	Learning 2	Pre-Launch1	PreLaunch2	Pre-Launch5	Flexibility 1	Flexibility 2	Tactics 1	Tactics 2	Tactics 3	Tactics 4	Tactics 5	Success 1	Success 2	Success 3	Success 4	Success 5	
N Valid	23	23	23	22	23	23	21	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Missing	13	13	13	14	13	13	15	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Mean	3,35	3,13	2,30	2,50	2,17	2,91	2,95	3,17	3,57	3,39	2,87	2,61	3,65	3,30	3,04	2,70	3,00	3,65	3,09	2,74	2,57	3,22	
Std. Error of Mean	,184	,246	,183	,183	,195	,217	,234	,195	,106	,186	,262	,233	,119	,159	,183	,203	,178	,119	,208	,245	,258	,217	
Median	4,00	4,00	2,00	2,00	2,00	3,00	3,00	3,00	4,00	4,00	3,00	3,00	4,00	3,00	3,00	3,00	3,00	4,00	3,00	3,00	3,00	4,00	
Mode	4	4	2	2	2	3 ^a	4	4	4	4	4	3	4	4	3	2	3	4	4	4	1 ^a	4	
Std. Deviation	,885	1,180	,876	,859	,937	1,041	1,071	,937	,507	,891	1,254	1,118	,573	,765	,878	,974	,853	,573	,996	1,176	1,237	1,043	
Variance	,783	1,391	,767	,738	,877	1,083	1,148	,877	,257	,794	1,573	1,249	,328	,585	,771	,949	,727	,328	,992	1,383	1,530	1,087	
Skewness	-1,218	-1,002	,219	,248	,352	-,608	-,707	-,738	-,282	-,1328	-,490	-,191	-,1457	-,601	-,531	,038	-,482	-,1457	-,791	-,360	-,164	-,1003	
Std. Error of Skewness	,481	,481	,481	,481	,481	,481	,501	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481	,481
Kurtosis	,710	-,584	-,426	-,412	-,630	-,700	-,653	-,590	-,2113	,895	-,1494	-,1281	1,411	-,974	-,434	-,1063	-,295	1,411	-,394	-,1360	-,1614	-,321	
Std. Error of Kurtosis	,935	,935	,935	,953	,935	,935	,972	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935	,935
Range	3	3	3	3	3	3	3	3	1	3	3	3	2	2	3	3	3	2	3	3	3	3	3
Minimum	1	1	1	1	1	1	1	1	3	1	1	1	2	2	1	1	1	2	1	1	1	1	1
Maximum	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

a. Multiple modes exist. The smallest value is shown

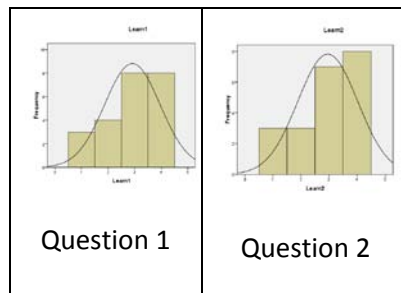
Dominant Product Standard



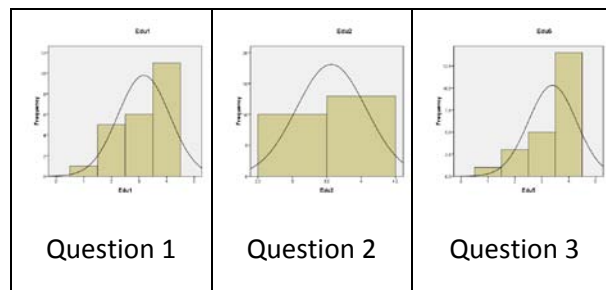
Speed to Market



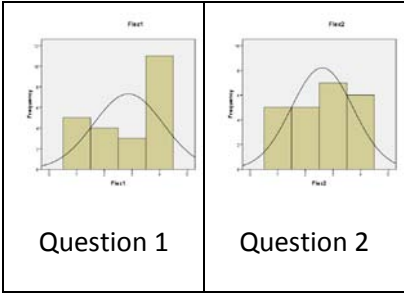
Experimental Product Market Learning



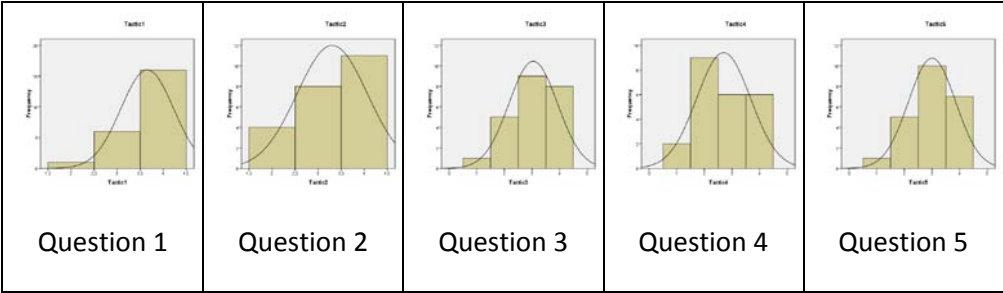
Pre- Launch Market Education



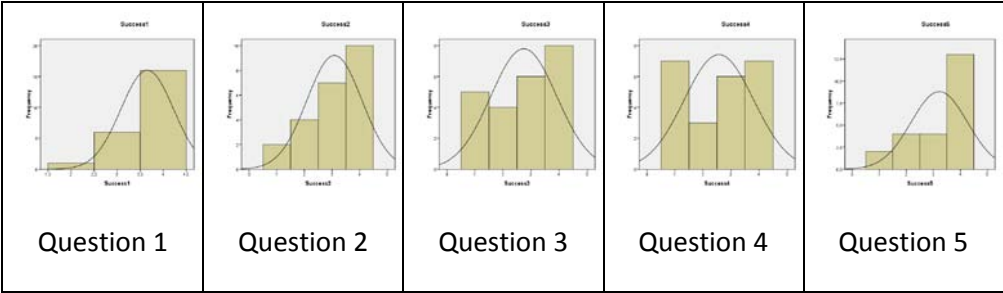
Operational Coordination Flexibility



Alignment Tactics (Marketing Mix) with Strategic Factors



Product Success



Appendix 5: Non-Parametric Correlations between the Variables

Dominant Product Standard

			Dom1	Dom2
Kendall's tau_b	Dom1	Correlation Coefficient	1,000	,596**
		Sig. (1-tailed)	.	,001
		N	23	23
	Dom2	Correlation Coefficient	,596**	1,000
		Sig. (1-tailed)	,001	.
		N	23	23

** . Correlation is significant at the 0.01 level (1-tailed).

<u>Speed to Market</u>			Speed 1	Speed 2	Speed 3
Kendall's tau_b	Speed 1	Correlation Coefficient	1,000	,579**	,399*
		Sig. (1-tailed)	.	,001	,015
		N	23	22	23
	Speed 2	Correlation Coefficient	,579**	1,000	,523**
		Sig. (1-tailed)	,001	.	,003
		N	22	22	22
	Speed 3	Correlation Coefficient	,399*	,523**	1,000
		Sig. (1-tailed)	,015	,003	.

N	23	22	23
---	----	----	----

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

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Pre- Launch Information

			Pre-Laun1	Pre-Laun2	Pre-Laun3
Kendall's tau_b	Pre-Laun1	Correlation Coefficient	1,000	,700**	,498**
		Sig. (1-tailed)		,000	,004
		N	23	23	23
	Pre-Laun2	Correlation Coefficient	,700**	1,000	,374*
		Sig. (1-tailed)	,000		,032
		N	23	23	23
	Pre-Laun3	Correlation Coefficient	,498**	,374*	1,000
		Sig. (1-tailed)	,004	,032	
		N	23	23	23

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

Market Feedback

			Learning 1	Learning 2
Kendall's tau_b	Learning 1	Correlation Coefficient	1,000	,650**
		Sig. (1-tailed)		,000
		N	23	21
	Learning 2	Correlation Coefficient	,650**	1,000
		Sig. (1-tailed)	,000	
		N	21	21

** . Correlation is significant at the 0.01 level (1-tailed).

Operational Coordination Flexibility

			Flex1	Flex2
Kendall's tau_b	Flex1	Correlation Coefficient	1,000	,714**
		Sig. (1-tailed)	.	,000
		N	23	23
	Flex2	Correlation Coefficient	,714**	1,000
		Sig. (1-tailed)	,000	.
		N	23	23

** . Correlation is significant at the 0.01 level (1-tailed).

Marketing Mix

			Tactic1	Tactic2	Tactic3	Tactic4	Tactic5
Kendall's tau_b	Tactic1	Correlation Coefficient	1,000	,129	,296	,243	,270
		Sig. (1-tailed)	.	,258	,065	,105	,084
		N	23	23	23	23	23
	Tactic2	Correlation Coefficient	,129	1,000	,356*	-,046	,440*
		Sig. (1-tailed)	,258	.	,030	,404	,010
		N	23	23	23	23	23
	Tactic3	Correlation Coefficient	,296	,356*	1,000	,263	,326*
		Sig. (1-tailed)	,065	,030	.	,077	,041
		N	23	23	23	23	23
Tactic4	Correlation Coefficient	,243	-,046	,263	1,000	,413*	
	Sig. (1-tailed)	,105	,404	,077	.	,013	
	N	23	23	23	23	23	
Tactic5	Correlation Coefficient	,270	,440*	,326*	,413*	1,000	
	Sig. (1-tailed)	,084	,010	,041	,013	.	
	N	23	23	23	23	23	

*. Correlation is significant at the 0.05 level (1-tailed).

Product Success

			Success1	Success2	Success3	Success4	Success5
Kendall's tau_b	Success1	Correlation Coefficient	1,000	,309	,238	,384*	,369*
		Sig. (1-tailed)	.	,057	,108	,023	,030
		N	23	23	23	23	23
	Success2	Correlation Coefficient	,309	1,000	,428**	,359*	,427*
		Sig. (1-tailed)	,057	.	,009	,024	,011
		N	23	23	23	23	23
	Success3	Correlation Coefficient	,238	,428**	1,000	,780**	,417*
		Sig. (1-tailed)	,108	,009	.	,000	,011
		N	23	23	23	23	23
	Success4	Correlation Coefficient	,384*	,359*	,780**	1,000	,486**
		Sig. (1-tailed)	,023	,024	,000	.	,004
		N	23	23	23	23	23
	Success5	Correlation Coefficient	,369*	,427*	,417*	,486**	1,000
		Sig. (1-tailed)	,030	,011	,011	,004	.
		N	23	23	23	23	23

*. Correlation is significant at the 0.05 level (1-tailed).

** . Correlation is significant at the 0.01 level (1-tailed).

Appendix 6 Truth Table Analysis

```

*****
*TRUTH TABLE ANALYSIS*
*****

Label: 1
Model: Success = f(Dominant_Std, Speed_to_Mkt, Pre_Launch_Info, Mkt_Feedback, Flexibility, Mkt_Mix)

Rows:      17

Algorithm: Quine-McCluskey
True: 1

--- COMPLEX SOLUTION ---
frequency cutoff: 1.000000
consistency cutoff: 1.000000

                                     raw      unique
                                     coverage  coverage  consisten
                                     -----  -
Dominant_Std*Pre_Launch_Info*Mkt_Feedback*~Flexibility*~Mkt_Mix  0.363636  0.363636  1.000000
Dominant_Std*Speed_to_Mkt*~Pre_Launch_Info*Flexibility*Mkt_Mix    0.181818  0.181818  1.000000
Dominant_Std*Pre_Launch_Info*Mkt_Feedback*Flexibility*Mkt_Mix    0.181818  0.181818  1.000000
~Dominant_Std*Speed_to_Mkt*~Pre_Launch_Info*~Mkt_Feedback*Flexibility*~Mkt_Mix  0.090909  0.090909  1.000000
Dominant_Std*~Speed_to_Mkt*Pre_Launch_Info*~Mkt_Feedback*Flexibility*~Mkt_Mix  0.090909  0.090909  1.000000
~Dominant_Std*Speed_to_Mkt*~Pre_Launch_Info*Mkt_Feedback*~Flexibility*Mkt_Mix  0.090909  0.090909  1.000000
solution coverage: 1.000000
solution consistency: 1.000000

```