

Drivers and challenges of launching innovative industrial technology applications through customer projects

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Abstract

The launch literature discusses launch drivers quite a lot, but launch challenges, however, have gained less research attention. It is argued, that both the drivers and the challenges need to be understood in order to manage launch successfully. In addition, launch studies have made context distinctions between consumer and industrial product launch, whereas for example the different types of industrial products have not been examined even though the context-dependent nature of launch is acknowledged. This study aims to refine understanding of industrial launch by examining launch drivers and challenges in the case of an innovative technology application launched through a customer project. The findings from the case study imply that the drivers and challenges of launch in the examined context are not adequately discussed in the current launch literature, but industrial marketing, project marketing, high technology marketing and reference marketing literatures can be applied to interpret the study findings. The key areas that launch management should pay attention to in the examined context are launch process management, overcoming customer adoption barriers, sales force management, external launch communications, and new product development, of which each includes both drivers and challenges. Succeeding in the first customer project, initial launch in relation to the respective customer project, acquiring the first functioning reference, developing the application into a repeatable product, and promoting it to a broader market are the identified main steps of launch in the studied context. It is suggested that in order to make sense of the launch concept and to enhance the conditions for managing launch in the examined context, launch research could incorporate these topics into its body of knowledge by exploring the key areas of launch related to the identified launch steps and understanding the re-launches as part of the product's life cycle.

Keywords: Launch drivers, launch challenges, industrial marketing, technology applications, innovations, project business

INTRODUCTION

Launch is the process of introducing a new product into the market for initial sale (Tzokas et al. 2004). It has a significant effect on the new product's success (Crawford & Di Benedetto 2008). Accordingly, a great deal of launch literature examines the launch elements that contribute to new product success (e.g. Guiltinan 1999; Hultink et al. 1997; Hultink et al. 2000; Hultink & Robben 1999; Lambert & Slater 1999). Instead, even though launch is said to be often poorly managed (Hultink et al. 2000), and the launch process to be unstructured (Calantone & Di Benedetto 2007), a more comprehensive understanding of the launch challenges is missing. In order to develop a more organized approach on launch, it is argued here that it would be important to examine both the drivers and the challenges of launch.

Launch appears to be a context dependent phenomenon, since the launch processes are tailored in every company to fit its culture, customers, industry and types of products provided (e.g. Nagle 2005), and the launch decision sets are extremely sensitive to environmental or competitive context (Hultink et al. 1998). The typical context for launch research is a product-focused firm offering its products through multiple channels to global markets. The broad repertoire of different types of offerings and business environments makes industrial launch as a rich research subject. This study aims to explore a specific industrial launch context, in order to refine contextual understanding of industrial launch and to enhance conditions for successful launch management. The context involves project business, and a customized innovative technology application. Even though in project business it is common that solutions developed for a particular customer are later further developed to repeatable solutions and introduced to a broader market, this topic has not gained research interest in the launch literature. The research question of this study is *what kinds of launch drivers and challenges can be identified when launching innovative industrial technology applications through customer projects?* In addition, the drivers and challenges are examined from the perspective of marketing. Hence, for example the technical difficulties delaying launch are not of interest but perhaps the effects of the delay on launch success.

Next, a literature review on how drivers and challenges of launch are discussed in the current launch literature is presented. The review does not limit the studies conducted in the context of industrial markets, because the launch findings specified to that context are quite scarce, and a broader view makes it possible to compare whether the findings from consumer market or unspecified contexts apply to this industrial context of the study. The literature review is followed by a methodology description and a case study. Finally, conclusions and ideas for further studies are discussed.

LITERATURE REVIEW ON LAUNCH DRIVERS AND CHALLENGES

LAUNCH DRIVERS

Launch driver means here a launch element contributing to launch success. Typically launch success refers to the financial success, such as profitability, sales or market share of the launched product (e.g. Di Benedetto 1999). Discussing strategic and tactic launch decisions is a typical approach on launch studies (Biggadike 1979; Hultink et al. 1997), and the launch drivers are often discussed through this categorization (e.g. Di Benedetto 1999; Guiltinan 1999; Hultink et al. 1997; Hultink et al. 2000; Hultink & Robben 1999). Several studies point out the importance of having a well thought launch strategy with clearly defined objectives (Hultink & Robben 1999; Hultink et al. 1997; Hultink et al. 2000). Proficiency also in launch tactics contributes to new product success (Langerak et al. 2004). For a successful launch, the

two sets of decisions should be consistent, because the strategic decisions (e.g. product innovativeness, targeted market, the number of competitors, whether the product is marketing or technology-driven) affect the tactic decisions (e.g. branding, distribution expenditure and intensity, pricing) (Hultink et al. 1997). Proficiency in launch tactics affects new product performance, and it is more likely with market orientation (Langerak et al. 2004).

Both for consumer and industrial products successful launches appear to contain an innovative new product, a broad product assortment, early timing, utilization of a firm's or another brand's reputation, existing market, penetration pricing, and awareness of competitor's reactions (Hultink & Robben 1999). Hultink et al. (2000) later came up with similar findings stating that in general, launch successes are more likely to be "broader assortments of more innovative product improvements that are advertised with print advertising, independent of market" (Hultink et al. 2000). Some launch decisions are more relevant for only consumer or industrial product success (Hultink et al. 2000). Industrial firm's higher success is associated with innovativeness and short time-to-market cycles to enter the market with few competitors. Accordingly, earlier in a study of Hultink et al. (1997) niche innovator was the best performing strategy for industrial product launches including an innovative product aimed at niche markets with few competitors. Tactical launch decisions related to industrial new product success are linked to intensive distribution, skimming pricing, and broad product assortments (Hultink et al. 1997).

A broad set of different capabilities and situational factors are needed in order to succeed in launch. Getting logistics involved early in planning and having cross-functional teams for strategic launch activities, especially in making marketing and manufacturing decisions, drives launch success (Di Benedetto 1999). In addition, perceived superior skills in marketing research, sales force, distribution, promotion, R&D, and engineering are related to successful launches (Di Benedetto 1999). Launch tactics related to new product success are e.g. high quality of selling effort, advertising, and technical support; good launch and support program management; and right launch timing relative to customers and competitors (Di Benedetto 1999). The way the products are launched to the salesforce is important for launch success, because it influences the manner in which the products are sold (Rackham 1998). Also marketing communication message clarity and integration has been found to affect positively new product performance, and message uniformity affects positively sales (Chen et al. 2007).

LAUNCH CHALLENGES

Launch challenge means here a launch element hindering launch success. One of the most often discussed challenges related to launch is timing (e.g. Wong 2002), which is often wrong in some aspect. Timing can be related to product (usually technical) readiness (Kalish & Lilien 1986), announced launch date (Hendricks & Singhal 1997), competitors acts (Lambert & Slater 1999), firm's other own product launches (Moorthy & Png 1992), and managing global and local launch timings (Chryssochoidis & Wong 2000; Calantone & Griffith 2007). Technical, engineering and development problems are often reasons for delays (Hendricks & Singhal 1997). Delays are common in businesses, where product is customized to different markets (Chryssochoidis & Wong 2000). Delayed product announcements can have a negative effect on sales (Kalish & Lilien 1986; Chryssochoidis & Wong 2000) and decrease the market value of a firm (Hendricks & Singhal 1997), even though the correlation between staying in schedule and good business results is not always existent (Lambert & Slater 1999). Realistic schedules and sufficient resources help to achieve a timely launch with a ready product (Chryssochoidis & Wong 2000). Cannibalization is a relevant problem when looking launch timing in a firm at a product family level or higher (e.g. Srinivasan et al. 2006).

Another timing question is a choice between sequential and simultaneous launch in different markets. Simultaneous launch strategy is supported in the literature, because it is considered to lower the risks (e.g. Kalish et al. 1995). Sequential launches are more often delayed than simultaneous launches, which depends on sufficiency of marketing and technological resources, proficiency in executing NPD activities, and effectiveness of communication between headquarters, business units and customers in different markets (Chryssochoidis & Wong 2000). The division of launch responsibilities between headquarters and local organizations can vary greatly. However, geographically dispersed virtual multicultural teams are suggested for taking care of the coordination (Harvey & Griffith 2007).

As the sales force plays an important role in launch, sales force management is an often discussed launch challenge (e.g. Atuahene-Gima 1997; Rackham 1998). Sales force carries out product positioning. Marketing managers should treat sales force as the front end to customer base and put effort on presenting the new product to them (Atuahene-Gima 1997), because unclear segmentation and positioning can lead to new product failure (Sarin & Kapur 1990). Salespeople are often more reluctant to sell innovative products than their companies would expect (Atuahene-Gima 1997; Wieseke et al. 2008), so more innovative product launches may face extra challenges in educating and motivating the sales force. Not only firm's own sales force and customers, also other channels should be motivated to promote and sell the new product preferably relative to competing products (Bruce et al. 2007).

Not only the adoption barriers of the sales force, but also of the customers, build up launch challenges. For a buyer, innovative products are more difficult to compare with other products and the benefits might be difficult to understand, which requires learning effort and means higher perceived risk (Aggarwal et al. 1998). Longitudinal performance data is not available for innovative products, which makes risks even higher. For industrial firms this means that being adventurous might be expensive, if the risks of adopting innovative products or technologies are realized. The buyer might not have enough resources to evaluate for example a complex technology and instead chooses a simpler technology (More 1983). Therefore, getting the first customer reference for an innovative product is important for creating future sales (Gomez-Arias & Montermoso 2007; Ruokolainen & Igel 2004). The reference is utilized in promoting the product for potential customers in order to increase the seller's and the new product's creditability (Jalkala & Salminen 2010). Overcoming the adoption barriers successfully takes a lot of communication effort from the selling firm during launch. Adoption process is different in every buying company and even for different products in a same company (More 1983). Finding a balance between informational and more sentimental launch message is challenging. Messages that are too product-centric cause the customer interest to fade (Rackham 1998). On the other hand for example high-tech customers' interest can be increased by informational messages (Chen et al. 2007).

The success of an incremental product is more closely tied to rapid and efficient product ramp-up and rollout than for more innovative products (Song & Swink 2009). However, taking a systematic and well-defined approach on launch process management is not a common practice (e.g. Calantone & Di Benedetto 2007), and unstructured launch process itself has been identified by several authors as a notable launch challenge (e.g. Calantone & Di Benedetto 2007; Greenley & Bayus 1994).

SUMMARY OF THE IDENTIFIED DRIVERS AND CHALLENGES

As the literature review on the drivers and challenges of launch was examined, it was noticed that the drivers and challenges were partly overlapping. For example, timing can be a success

factor but it also often causes challenges. That implies that themes common to both the drivers and challenges can be identified. Based on that notion, categories that would encompass all the identified drivers and challenges were searched for. The categories were named as the key areas of launch, which means that based on the existing launch research, they appear to be the issues that have a key role either in facilitating or harming launch success. In other words, the management of these issues appears to be critical in launch. Almost every key area includes several findings concerning drivers *and* challenges. The key areas of launch are briefly summarized in Table 1 (a more detailed table with references is in Appendix 1).

Table 1. Key areas of launch identified in the literature review

<i>Key areas of launch and the related drivers (+) and challenges (-)</i>	
Timing	<ul style="list-style-type: none"> +Early timing, excellent timing relative to customers and competitors +Realistic schedules and sufficient marketing and technological resources +Proficiency in executing NPD activities +Effectiveness of communication between headquarters, business units and customers in different markets - Being too late related to announced launch date or competitors - Mismatch with firm's other product launch timings
Launch strategy	<ul style="list-style-type: none"> +A well thought launch strategy with clearly defined objectives +Consistent strategic and tactic launch decisions +Market orientation positively affects new product success +Broad product assortment, existing market, penetration pricing, awareness of competitor's reactions, superior skills in market research +Niche innovator strategy (industrial product launch) - Lack of a clear launch strategy, meaning for example unclear segmentation and positioning alternatives, can cause product failure
Launch process management	<ul style="list-style-type: none"> +Proficiency in launch tactics +Cross-functional launch activity teams in making marketing and manufacturing decisions, involving logistics early in planning +Good launch and support program management +Rapid and efficient product ramp-up and rollout (for less innovative products) - Unsystematic approach on launch process
Customer adoption barriers	<ul style="list-style-type: none"> +References and customer education can lower customer adoption barriers - Customer adoption barriers for innovative products - Customers might have not have enough resources to evaluate complex technology
Managing launch across markets	<ul style="list-style-type: none"> +Simultaneous global launches have lower risks - Communication problems between headquarters and local organizations - Sequential launches are often delayed
Sales force management	<ul style="list-style-type: none"> +Superior skills of the sales force and high quality of selling effort +Putting effort on presenting the new product for the sales force - Getting sales motivated for selling the new product and understanding the positioning and segmentation of the product right - Motivating sales force to sell innovative products
External launch communications	<ul style="list-style-type: none"> +Utilization of an existing brand +Utilization of print advertising (industrial product launch) +Superior skills in promotion and high quality of advertising +Marketing communication message clarity, integration, uniformity +High-tech customers' interest can be increased by informational messages - Balancing informational and sentimental elements for an effective launch message
New product development	<ul style="list-style-type: none"> +Innovativeness can affect positively new product performance +Superior skills in R&D and engineering can increase the desirability of the product - Delays due to product not technically ready at the time of launch

Distribution	+Intensive distribution for industrial new product launches +Superior skills in distribution - All channels should be motivated and educated to promote and prefer the product
Pricing	+Skimming pricing (industrial new products)

Even though the approach on launch based on strategic and tactic decisions is not encouraged here due to its limited focus on decision making and not on implementation or on broader organizational issues, it can be noted that the strong position of that approach can be seen in the identified key areas, too. A key area might include both strategic level and tactic level issues. For example, concerning the key area of external launch communications, utilization of an existing brand can be considered as a strategic decision, but deciding on the launch message is a tactic decision. However, in general it can be said that launch timing, strategy and new product development decisions concerning the product are close to the strategic level, whereas launch process management, customer adoption barriers, managing launch across markets, sales force management, external launch communications (promotion), distribution and pricing are more related to the tactical level, i.e. how launch is implemented (Hultink et al. 1998; Hultink et al. 2000).

From the launch literature review no clear indicators on the drivers and challenges related to the specific chosen context of this study were identified, but for example notions concerning the innovativeness and importance of the first reference are linked to the characteristics of the examined case. These key areas are further examined through an empirical case study.

RESEARCH METHOD

The research question is addressed in a qualitative case study (see e.g. Denzin & Lincoln 2000; Yin 1989). The 14 semi-structured interviews (Arksey & Knight 1999) with marketing, sales, and R&D managers from the examined seller firm form the main data. Hence, the view on the case is the seller's. The case presents a customer project, during which an innovative technology application was developed as a part of a broader technological solution, and the followed marketing activities, and the marketing activities of the firm in general. Interview data is complemented by case-related presentations and e-mails of the firm, researcher's observation memos from firm workshops and meetings with firm representatives, and publicly available data such as news, firm's Internet pages, articles, press releases, and brochures. This utilization of complementary data made data triangulation possible. The research problem is answered through systematic combining of empirical data and theory based on abductive logic (Dubois & Gadde 2002). Analysis includes phases of data reduction, data display and conclusion drawing (Miles & Huberman 1994). Data reduction aimed to outline the content related to launch drivers and challenges, and then the data on drivers and challenges was organized, but not limited, with the help of the key areas of launch identified in the literature review. In addition, launch drivers and challenges related to the examined context were also identified. Data display was conducted with the help of tabulation. Several analysis iterations were made to clarify the findings and to draw the conclusions. It should also be pointed out, that instead of discussing success *factors*, a concept of *driver* is utilized, since it is considered to match better the qualitative approach of this explorative study. The perception of the relation between the identified drivers and challenges and launch success is based on the gathered qualitative data and the perceptions of the interviewees.

LAUNCH OF AN INDUSTRIAL TECHNOLOGY APPLICATION THROUGH A CUSTOMER PROJECT: A CASE STUDY

PRESENTATION OF THE CASE

The examined firm has a strong position in its market and it is referred as a knowledgeable and professional solution provider. The firm delivers customized process solutions which are based on the existing knowledge base of the firm. Major technological innovations are developed in the R&D unit, but every now and then challenging customer cases require innovative solutions, which are then developed within the customer project. Solutions might consist of several interlinked applications and together form an entire facility delivered to the customer. The examined case includes this kind of an innovative solution developed for a specific customer project. Especially one part of the innovative solution, an innovative technology application, and its introduction is examined here. The application was publicly mentioned for the first time in the press releases presenting the customer project. After the project was implemented, the application was further developed, and a product family was based on it. These products also were introduced via press releases, brochures and other promotional means.

The business field is highly dependent on relationships and the customer base is well known. However, the analysis here does not focus on the external technological or relationship elements outside this particular customer project but on the activities of the seller. That focus is chosen, since the seller firm and the customer can be considered as quite independent actors. They were not involved in a strong relationship before this project, there are no other important firms affecting the development or launch of the application that need to be considered, and the project cannot be said to be a true co-development project, even though some cooperation took place during the project. If the time-span of the examination would have been longer, of course the response from other firms on the market would have played an important role in understanding the adoption of the application by other firms and its effects on launch success. In addition, technological interfaces did not cause major problems in this case, since the facility delivered to the customer forms and independent unit for which the selling firm provides maintenance services, and the innovative application was an independent unit of the solution for which interfaces were not the problem. The main dilemma in the project was that the application was so innovative that the customer perceived high risk in investing in such a solution including an innovative application with no functioning references, which are crucial for marketing in the examined business. The customers are conservative and it is commonly difficult to bring innovative solutions to the market. *"The responsibilities, warranties, we have to give for a non-proven technology, they are remarkably heavier. This business is very conservative. Everyone wants to be the second user. And to get someone to be the first user, it's really difficult. It's unbelievable. To establish a new technology in this field is also amazingly hard. (...) It takes then to 15 years before the market is mature for a new technology. It must be tried and proved and researched from all aspects. It really is a long process."* (VP Sales II). Hence, next the drivers and the challenges are discussed from the seller's perspective.

THE IDENTIFIED DRIVERS

Launch success is often understood by financial measures related to the launched product, such as market share, profits, or sales. However, it is difficult to analyze the absolute financial success of the examined application, since the financial data is not available for the researchers, and it has been on the market less than ten years, which is a short time in the business field. But the application was considered to be a success by the firm representatives,

it was patented and its business potential was considered high, so that it was developed into a product family. Hence, the possible drivers that can contribute to the application's success are discussed keeping these limitations in mind.

First, innovativeness of the application can be considered as a driver since it provides cost benefits and good performance for the customers compared to previous comparable solutions. For the seller, proprietary innovative applications provide pricing opportunities. *"...and one of them [the applications included into the solution] is a proprietary piece of equipment. We can price them freely, quite freely, get good margin from them."* (Project Manager).

Because the innovative application was developed in a customer project, the potential first customer reference was acquired already during the development process, which possibly accelerated the applications introduction to the market. Hence, after the project customer was convinced to commit to the proposed solution, the applications way to the market can be considered smoother than for an internally developed solution.

A cooperative relationship with the project customer was identified as one driver for a successful launch through a customer project. It does not only enhance the chances of getting the permission to later utilize the project as a reference, but the project is more likely to go on and to be a success, if the customer trusts the firm even during the challenging episodes of the development. When the customer is committed to the project, it also provides its knowledge for solving problems. *"Of course, from the discussions and the questions what they [the customer] presented, and the briefings that we did, we had to do, from test runs, also we learned. The customer put emphasis on this too. This is an exemplary cooperation, because the customer could have said that hey, we don't really need you, we'll hire the world's top five [experts] and they can put heads together and let's see what the end result is. But they thought that we have a well-based, good solution, in principle, and they want to develop and verify it so that it works, they kind of believed, that is works."* (VP Sales II). All in all, if there is a good relationship the customer's adoption barrier can be lowered more easily.

Strong market position of the firm possibly affects positively in their ability to introduce innovative applications successfully, as their technological expertise is widely acknowledged and therefore can create trust towards the firm and its solutions compared to a firm with a weaker brand and weaker existing customer relationships. The strong knowledge base of the firm also helped to convince the customer. For example, in addition to the meetings of technical experts, several methods to concretize the functioning of the application were utilized, such as scale models, calculations, and comparable reference site visits.

When the firm initially introduced the application in context of the respective customer project, it created anticipation and interest on the market towards the customer project and the innovative application, which can be considered to have positive effects on the launch success later. The success of the first customer project made it possible to really utilize the project as a reference in promoting the application.

The firms aim to develop modular repeatable products can also be considered to affect positively to launch success, since the characteristics of the application are then developed to answer the needs of a broader customer base and the characteristics can be communicated to the customers more clearly. In addition, the costs of the application can be lowered by re-engineering, and therefore the margin of the modular products can be higher.

THE IDENTIFIED CHALLENGES

References are very important in the examined business and for the launch of an innovative application this means several kinds of challenges. *"Because in this our business references mean everything, if you don't have a functioning reference, it is remarkably, remarkably more difficult [to sell]."* (VP Sales I). A comparable reference was, however, presented to the customer, but the situation at the reference facility was not thoroughly known and it resulted as a long list of deficiencies and questions from the customer. The reference list needs active management and keeping up the relationship with the reference customers that the utilization of references would support the promotion of the solutions.

The good relationship with the customer was discussed above as a launch driver. However, it takes time to develop a good relationship, therefore it might be important to identify the customers with whom the innovative projects could be implemented. The challenge is that innovative projects cannot be that systematically planned, because they usually answer a specific emerging customer need.

Innovativeness of the application means that getting the first customer to commit to the offered solution required a lot of effort. As mentioned, several expert meetings and ways to concretize the functioning of the application were needed. Even though the relationship with the customer was cooperative and good, the innovativeness made the customer to question the application. It is so unusual that the experts are exacted to thoroughly explain and justify their solutions that it can be taken as a lack of trust. That illustrates the professional pride of the experts and the strong knowledge of the firm. *"That how many and how broad enquiries they requested shows that they might have lacked the general trust towards [the examined firm]. The basic assumption was that we have it wrong: not that 'let's see if they are in error'. That's how I perceived it."* (Technology Specialist).

The negotiations took long and required a lot of effort, which was then away from the resources needed for project planning and implementation. Innovativeness means compromises in price and heavier warranties, because the customer wants compensation for the risk it takes. *"There are still risks, but they are compensated with the price. The customer considered that also when making the contract that actually this is a prototype."* (Project Manager). The development and testing of the application was conducted as a part of the customer project and the costs for doing this were difficult to estimate. *"If you have one functioning there and you just make another similar, it is then a lot cheaper and easier."* (Technology Director). Often customers take part in the development and testing costs. There were both positive and negative unforeseen technical developments during the project, but after the project contract has been signed, price issues are difficult to change.

If the first challenge is to get a customer committed to a project involving an innovative solution or application, the second is to succeed with project implementation. When the innovative application is first introduced together with the related customer project, it is not usually fully functioning. Nevertheless, after that initial introduction, the public interest is aimed at the project and if it fails, it is likely to harm severely the future sales potential of the developed innovative application. *"For [the technology applied in the examined project] we don't have...it is first of its kind. (...) this is a serious case, it is in Europe, the word spreads very quickly, this is the focus of everyone's interest. Everyone knows about [the project]. So if we fail, it will have major consequences."* (VP Sales II).

In project business the business objectives and strategies are tied to performing in projects and the role of individual products and applications was identified to be somewhat ambiguous, which made the concept of product vague. Launch strategy concept was not mentioned in the interviews. However, the firm utilized the concept of launch when introducing new technologies or applications, and usually the initial introduction was linked to introducing a respective customer project. Later the concept of launch was used again when introducing a further developed application or a product family to a broader market, and then the previous customer project was mentioned as a reference. Thus, based on the way the concept of launch is utilized in the firm and on the activities it takes to bring new applications to the market, it seems that the process of launch is different in the examined context than usually in product-focused firm not operating in project business, selling their products via multiple channels. Firstly, it might take decades that an idea develops to a salable application as the idea is refined and improved through numerous customer projects. Secondly, the systematic management of a launch process is a less important matter in the firm and also more difficult, as the proceeding of the launch is dependent on the customer projects. The development of modularized, still customizable, applications was a target for improvement in the firm during the time of examination. Thirdly, systematic and planned promotional efforts aimed at a broader market at the time of launch are also less emphasized. The main thing is to introduce the new application briefly to the market, and then integrate it into the set of offered solutions. The main promotional effort happens via personal selling. Several interviewees mentioned sales personnel to be focused on solving the specific needs of the customers and therefore often ending up offering novel solutions instead of existing ones. Hence, the success of the launched applications could be then undermined, and therefore the introduction of new applications to the sales force requires special attention.

KEY AREAS OF LAUNCH IN THE EXAMINED CASE

The identified launch drivers and challenges of the case are presented in Table 2. The key areas of launch in the examined context are launch process management, overcoming customer adoption barriers, sales force management, external launch communications, new product development and pricing.

Table 2. The identified drivers and challenges in the examined case

<i>Key areas of launch and the related drivers (+) and challenges (-)</i>	
Launch process management	<ul style="list-style-type: none"> +Cooperative and trusty relationship with the customer helps to 1) get the project contract, 2) manage technical uncertainties and challenges caused by innovativeness, 3) get the first customer to agree to be utilized as a reference - The steps of the launch process for applications developed in customer projects are different than typically in product-focused firms operating outside the project business: vagueness, long time frame and unpredictability of the launch process - Difficult to foresee with which customers to implement innovative projects
Customer adoption barriers	<ul style="list-style-type: none"> +The strong market position of the firm creates trust +The strong knowledge base of the firm helps to convince the customer +Cooperative and trusty customer relationship can lower the adoption barriers - Difficult to get the first customer for innovative applications - Compromises in price, heavy warranties, negotiations might be difficult
Sales force management	<ul style="list-style-type: none"> +Introducing new applications to the sales force - Encouraging sales of launched, existing solutions instead of new, unique offerings

External launch communications	<ul style="list-style-type: none"> +Creating market interest towards the application by preannouncements +Concretizing the application and its functions to the customer - Lot of effort needed in order to convince the first customer - No emphasis on systematic promotion at the time of launch: potential benefits lost - If references are utilized for promotional purposes, the relationship with the reference customers needs careful management and the situation at the reference customers must be known
New product development	<ul style="list-style-type: none"> +Innovativeness of an application benefits the buyer and the seller +Developing a solution in a customer project can accelerate time to market +Developing modular but still customizable products helps to sell them - How to develop modular but customizable applications - High pressure to succeed with the first customer project - If the first project fails, it harms the application's future business opportunities
Pricing	<ul style="list-style-type: none"> +Innovativeness of an applications improves pricing opportunities - Innovativeness means compromises in the price of the first customer project - The development and testing costs difficult to foresee for an innovative application

Compared to the presented literature review, launch strategy, managing launch across markets, timing and distribution were not identified as key areas of launch in the examined context. The differences between the key areas identified in the literature review and in the case can be explained by the industry characteristics, operating in project business, applications innovativeness, and the strong position of the firm. In the examined industry the applications are based on the existing knowledge base built during the decades of the firm history. It is not likely that if the development of an application takes a little more time than estimated that a competitor would introduce a similar application first and get a major competitive advantage. Even though someone *would* be on the market first, the strong position of the firm and the broad scale of offered solutions decrease the role of the timing of an individual application, especially if the impact on *project* sales is considered. In firms where application sales has a bigger role, timing might be more important. Nevertheless, the innovative applications are the core of broader solutions. Technology application launch includes activities during and after the first customer project. In addition, relationship marketing is in a greater role in the examined context than product-focused traditional marketing communications. Based on the findings it seems that a technology application launch is not a straightforward process, which brings out different kinds of drivers and challenges compared to typical product launch.

CONCLUSIONS

The study identified drivers and challenges for launch of innovative technology applications through customer projects. Based on the findings the key areas for launch in the examined context are launch process management, overcoming customer adoption barriers, sales force management, external launch communications, new product development, and pricing, each including both drivers and challenges discussed above at length. The set of key areas and also the included drivers and challenges are different in the examined context compared to the literature review on launch drivers and challenges. Thus, the findings support the previous notions on the context-dependency of launch (Hultink et al. 1998; Nagle 2005). For example, the sales force adoption barrier was not identified in the examined context, but quite contrary, encouraging sales force to sell *existing* solutions instead of unique offerings was a sales force management challenge. That supports, however, the previous research on the importance of motivating and educating the sales force to follow the sales strategy (Atuahene-Gima 1997).

Innovativeness, customized technology applications, and project business were the context elements not often discussed in the launch literature. This provided the basis for this study to contribute to the current launch literature. *Firstly*, the study was able to identify the drivers and challenges for launch in this specific context and therefore to point out gaps in the current launch literature. At the same time, the study broadens the scope of the examined launch contexts and discusses the possible linkages of the included context elements to launch drivers and challenges. Due to the limitations of the launch literature, other research streams of marketing can be utilized to interpret the findings of the study. Industrial marketing, innovation, project marketing, high technology marketing and reference marketing research partly discuss the issues related to the identified drivers and challenges. For instance, the importance of the first reference has been examined in context of software-based start-ups (Ruokolainen 2005, 2008; Ruokolainen & Igel 2004), Jalkala and Salminen (2009, 2010) have researched the utilization of references as marketing assets, and Romanainen and Salminen (2007, 2008, 2009) have studied the importance of references for launching industrial innovations. However, the focus of these studies is not on launch but on references. In addition, the studies by IMP group (for a review, see e.g. Håkansson et al., 2009) have examined the different types of interactions and interdependencies, for example related to the technologies and capabilities, between firms and their effects on the networked business markets (for a review, see e.g. Turnbull et al., 1996). Especially, the friction caused by the existing technological base affects how new innovations emerge and develop (Håkansson & Waluszewski 2002). These perspectives can help to understand the high customer barriers identified in this study, and on the other hand, how the new innovation emerged in the interaction between the two firms, of which another had a very special need and the other had the needed technological resources and the capability to answer the need. However, even though those studies discuss issues related to this study, they do not examine them in the context of launch and therefore offer only a partial help in interpreting the findings.

Secondly, the study suggests a step-wise approach on technology application launch in project business. The steps take place along the phases of the application development from an idea to a salable product or even to a product family. Succeeding in the first customer project, initial launch in relation to the respective customer project, acquiring the first functioning reference, developing the application into a repeatable product, and finally promoting it to a broader market are the identified main steps of launch in this context. All of these steps do not necessarily happen, if the market does not seem to adopt the innovative application as assumed. Hence, careful evaluation of the business potential is important and must be done after the initial launch, at the latest. The initial launch offers an opportunity to probe with low marketing efforts how the market reacts to the applications before a decision about developing the product further needs to be made. The study supports the role of preannouncements as an important but sometimes risky way of creating interest towards a new product (e.g. Le Nagard-Assayag & Manceau 2001; Schatzel & Calantone 2006). The idea of launch and re-launch has earlier been presented in high-technology context by Easingwood and Harrington (2002), and linked to the idea of enhancing adoption by the development of a user network (Harrison & Waluszewski (2008). In order to make sense of the launch concept in the examined context, launch research could adopt the stair step approach on launch and the re-launches as part of the product's life cycle.

MANAGERIAL IMPLICATIONS

For managers responsible for new product introductions in firms operating in high technology project business this study offers a perspective from which to analyze the drivers and challenges of launch in the respective context. It is perhaps beneficial to identify the steps of

a technology application launch and the people involved along the steps in order to manage the launch cycle for such products more systematically. That, in turn, would be important if shortening the time-to-market is aimed at. The steps go through the first customer project, the first reference, further development and a re-launch. The first crucial point is to convince the first customer to commit to a project including an innovative solution requiring intensive communication efforts. Reference management also deserves special attention when the industry is conservative and the investment costs high, thus also the risk perceived by customers in relation to innovative solutions is high. The situation at the each reference customer should be monitored, the reference lists should be updated and relationship with the reference customers nurtured.

Even though an application launch might not appear relevant for a firm focused on the delivery of customized solutions, innovative applications are the core around which the customized solutions are built, and therefore the applications and their introductions are important also in that type of business. In addition, the current research encourages development of modular solutions (e.g. Hellström & Wikström 2005) to minimize costs and to optimize the utilization of resources. It is challenging, but important, to encourage innovativeness and keep the modules compatible, whereas the extreme degrees of modularization might reduce innovativeness and harm product performance (Lau et al. 2011).

LIMITATIONS AND IDEAS FOR FURTHER RESEARCH

The findings of the study can be considered applicable to launches of customizable, complex industrial products including advanced technology by firms with a strong position operating in relationship-based, conservative industrial project business. The specified context is both a benefit and a limitation for the study. The theoretical generalization of the findings was supported by linking the findings to the launch literature, which was also the basis for the research design. A single-case research design offered limitations but also a possibility to build a rich description. The future studies could test the validity of the findings with broader datasets. More interviews or more cases in similar context might have brought up more drivers and challenges, but instead of capturing a high number of drivers and challenges the aim was to identify central, acknowledged drivers and challenges in the examined context. The aim was supported by including several data types, interviews from different levels and organizational units, and excluding individual notions of drivers and challenges, which were not explained in the data any further (such as “Not enough resources.”). In order to enhance the reliability of the findings the data sources and the analysis process and quotations from the interviews were presented, so that the analysis path was made transparent (Yin 1989). The iterative analysis process aimed to strengthen the internal validity so that the data categorizations would faithfully represent the data. Utilization of the case data from firm and public sources made data triangulation possible (Yin 1989), and no remarkable differences (e.g. how the concept launch was used) were identified between different data sources. It can be also argued whether another researcher of another case would have led to differing categorization of the key areas of launch.

Instead of examining the mere success factors or challenges of launch, the idea of further exploring the key areas of launch and what they actually are and represent could be contemplated. Considering the complexity of the drivers and the variety of challenges, there are several research opportunities to better understand launch and its management in different contexts not yet captivated. In order to understand what the key more empirical research addressing them is needed. Launch challenges were not the main focus of any of the reviewed launch studies and in general more research on them could help to understand also the drivers

better. The concept of re-launch was relevant in the studied context, but it fits poorly to the current launch literature which often presents launch as the last phase of a NPD process (e.g. Crawford & Di Benedetto, 2008; Greenley & Bayus, 1994; Schatzel et al., 2001). Perhaps more research effort is needed in order to understand launch and re-launch as parts of the product life cycle. This study offered the starting point for launch research in varied contexts. Especially launches in markets where relationship marketing is the dominating norm could provide interesting future research opportunities, also other than the role of references for supporting launch. A broader stakeholder view could be applied for example in launch contexts, where raising early interest towards the new product is important due to network effects linked to the product (previously researched e.g. by Lee & O'Connor 2003), or due to its implications for the society, as for example clean-technology products. In addition, examining the effect of the technological and organizational interdependencies of the involved firms on technical development, for example through path dependency perspective as suggested by e.g. Håkansson and Waluszewski (2002), could offer novel insights on how to enhance innovation adoption in an industrial market. If combined with the research approach interested in the development of the user network as a mean to facilitate launch, that could provide a deeper understanding of the mechanisms through which a new innovative application affects the technological solutions in the network of firms in the business field during its development and launch, as well as after the launch. That in turn could help to understand better the adoption barriers of the industrial customers for innovative technology applications.

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APPENDIX 1

Table 3. The identified key areas of launch from the literature in detail

<i>Key areas of launch (+ indicates a driver, - a challenge)</i>		<i>References</i>
Timing	+Early timing	Chryssochoidis & Wong
	+Excellent timing relative to customers and competitors	2000; Di Benedetto 1999; Hultink & Robben 1999
	+Realistic schedules and sufficient resources help to achieve a timely launch with a ready product	
	+Sufficient marketing and technological resources, proficiency in executing NPD activities, and effectiveness of communication between headquarters, business units and customers in different market helps to have a timely launch	
	- Being too late related to announced launch date or competitors, or mismatch with firm's other own product launch timings can harm sales and decrease the firm value	Wong 2002, Lambert & Slater 1999; Moorthy & Png 1992; Chryssochoidis & Wong 2000; Kalish et al. 1995; Srinivasan et al. 2006
New product development	+Superior skills in R&D and engineering related to launch success	Di Benedetto 1999
	- Delays due to product not technically ready at the time of launch	Hendricks & Singhal 1997; Kalish & Lilien 1986;
Managing launch across	+Simultaneous global launches have lower risks	Kalish et al. 1995
	- Communication problems between headquarters	Harvey & Griffith 2007;

markets	<ul style="list-style-type: none"> and local organizations - Sequential launches are often delayed 	Kalish et al. 1995; Chryssochoidis & Wong 2000
Sales force management	<ul style="list-style-type: none"> + Superior skills of the sales force and high quality of selling effort + Putting effort on presenting the new product for the sales force - Getting sales motivated for selling the new product and understanding the positioning and segmentation of the product right - Motivating sales force to sell innovative products 	Atuahene-Gima 1997; Di Benedetto 1999 Atuahene-Gima 1997; Bruce et al. 2007; Wieseke et al. 2008
External launch communications	<ul style="list-style-type: none"> + Utilization of an existing brand + Utilization of print advertising in industrial product launch + Superior skills in promotion and high quality of advertising + Marketing communication message clarity, integration, uniformity + High-tech customers' interest can be increased by informational messages - Building an effective launch message balancing informational and sentimental elements 	Chen et al. 2007; Di Benedetto 1999; Hultink et al. 1997; Hultink & Robben 1999 Rackham 1998; Chen et al. 2007
Distribution	<ul style="list-style-type: none"> + Intensive distribution for industrial new product launches + Superior skills in distribution - All channels, not only own sales force, should be motivated and educated to promote the product 	Di Benedetto 1999; Hultink et al. 1997 Bruce et al. 2007
Pricing	<ul style="list-style-type: none"> + Skimming pricing for industrial new product success 	Hultink et al. 1997
Launch strategy	<ul style="list-style-type: none"> + A well thought launch strategy with clearly defined objectives + Consistent strategic and tactic launch decisions + Market orientation positively affects new product success + Broad product assortment + Existing market, penetration pricing, awareness of competitor's reactions + Niche innovator strategy is associated to successful industrial product launch + Superior skills in market research are related to successful launches - Lack of a clear launch strategy, meaning for example unclear segmentation and positioning alternatives, can cause product failure 	Di Benedetto 1999; Hultink et al. 1997; Hultink et al. 2000; Hultink & Robben 1999; Langerak et al. 2004 Sarin & Kapur 1990
Customer adoption barriers	<ul style="list-style-type: none"> + Innovativeness can affect positively new product performance + Adoption barriers can be lowered by educating the customers + References can be utilized to lower customer adoption barriers - Customer adoption barriers for innovative products - Customers might have not have enough resources to evaluate complex technology 	Gomez-Arias & Montermoso 2007; Hultink & Robben 1999; Ruokolainen & Igel 2004 Aggarwal et al. 1998; More 1983
Launch	<ul style="list-style-type: none"> + Proficiency in launch tactics 	Di Benedetto 1999; Langerak

process management	<ul style="list-style-type: none"> +Cross-functional launch activity teams in making marketing and manufacturing decisions, involving logistics early in planning +Good launch and support program management +Rapid and efficient product ramp-up and rollout (for less innovative products) - Unsystematic approach on launch process 	<p>et al. 2004; Song & Swink 2009</p> <p>Calantone & Di Benedetto 2007; Greenley & Bayus 1994</p>
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