

The impact of effectuation on the introduction of innovative products

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- Research questions:** Q1: How should a company handle the creation or discovery of an opportunity in the most effective way? Q2: How should an opportunity be screened when there is not enough market data available? Hypothesis: An effectuation decision making strategy has increased value for a newly created highly innovative opportunity at the beginning of the product life-cycle management process.
- Methods:** Empirical study in a company using as qualitative research the interview as an instrument to question twelve experienced product managers and developers that are currently employed in that company. The study provides insights into the product life-cycle process and analyses the effect of entrepreneurial action during the introduction of new innovative products.
- Results:** An effectuation decision making strategy has increased value for a newly created highly innovative opportunity at the beginning of the product life-cycle management process. The study was able to identify some areas in which entrepreneurial action showed positive outcomes and managed to give a particular insight into modern development processes.
- Structure of the article:** Abstract; Introduction; Literature review; Research questions and methods; Empirical results; Analysis; Bibliography

Abstract

This article relates to the general field of strategic management and leadership to which the concept of entrepreneurship belongs.

The purpose of this article is to present the results of the research conducted for the analysis of the state of the art in current entrepreneurial actions with focus on effectuation and its influence on the introduction of new innovative products in large companies. Focusing on the entrepreneurial decisions the study was designed to analyze how large companies that generally work in processes, and take only informed decisions, could somehow act more entrepreneurial.

Testing of the identified hypothesis was performed by using qualitative research in the interviews. Twelve product managers and development engineers active in a large company and having relevant knowledge and experience formed the sample.

The study was able to identify some areas in which entrepreneurial action showed positive outcomes and managed to give a particular insight into modern development processes. The following identified hypothesis was confirmed: an effectuation decision making strategy has increased value for a newly created highly innovative opportunity at the beginning of the product life-cycle management process. The research has identified practical implications for a large company when effectuation strategies are used by product managers in the introduction of innovative products. This is of interest both for product managers when it comes to new opportunities and executive managers that are able to actually practice the innovation and entrepreneurship as defined company values.

Keywords: Product life-cycle management process, entrepreneurial action, effectuation, causation, opportunity, ideation, screening, validation, innovation, new product introduction, launch;

Introduction

Innovation is critical to companies if they want to stay ahead in the game. In fact, a company can either choose to be innovative or become a cost leader. Innovation is fundamental for survival and prevailing in an increasingly globalized world as companies have to evolve continually (Cooke, 1998).

Decisions such as which product should be developed next and why and if a product should be kept on the market as it is or changed, are crucial in today's business environment. This is why many companies are focusing this responsibility on dedicated employees who are in the driver seat, steering these decisions (Burnett, 2003).

As difficult as it is, product managers must visualize innovations that anticipate and satisfy unmet needs (Gorchels, 2000).

Therefore, the primary purpose of this study was to identify how opportunities come to be and how they are handled along the product lifecycle management process of a company.

The hypothesis was derived from the analysis of the currently existing knowledge in the literature and own knowledge, experience in the matter and evaluation of the topic and was confirmed during the interviews.

Practical implications were identified and the results show that large companies should be able to improve the future development processes and be more innovative when practicing an entrepreneurial approach.

Literature Review

Processes and phases of product development

Small firms do not deploy a formalized process. Instead, large companies use the best practice of a new product development process to manage their product portfolio (Berends et al., 2014).

Some body of research on new product development has identified benefits of a formalized process with planned activities and decision points (Cooper & Kleinschmidt, 1995; Ettl & Elsenbach, 2007).

A new product development process for innovative products was found out to be part of the best practice of the product development processes. (Barczak et al., 2009).

The first stage of the process is the ideation or idea-generating part, where ideas for new products or business models are being created. This is a significant part as consumer research during the opportunity identification phase should provide an understanding of what drives consumers' decision processes and which factors influence these processes as the foundation for the generation and screening of new product ideas, and concrete input for subsequent technical development stage (Rochford, 1991).

Once an opportunity is identified or created, the next step in the process is entered, namely the validation of the product or business model. This phase is described as a screening step where the ideas are examined by using pre-established criteria (Gorchels, 2000).

Most companies try to avoid working without a process but instead implement methods such as total quality management and lean management dominate the managerial practice over the last decades, making

the companies more effective when it comes to low innovative products.

Screening new industrial product ideas – the initial “go” or “no go” decision in the new product process – is a critical decision (Cooper & De Brentani, 1984). Wrong information at this stage could mean that many resources could be potentially wasted for an idea that would be unfruitful. At the screening stage, relatively little reliable information is available on the proposed product's market, its costs, and the nature of the investment required (Albala, 1975).

Once a product passes through the screening stage, which is usually again part of a decision committee, the next phase in the process is reached. In this phase, the requirements for the new product are researched and laid out in the form of a document. The document can be a rigid one, meaning that the requirements are fixed and cannot be changed or adapted, or those which

are flexible allowing for a later adaptation. Design flexibility further enables them to meet changing customer requirements during the development process (Thomke, 1997).

Seidel (2007) also states that goals may be unclear and also could change and the objectives may also be ambiguous at the beginning, but also they may change over time. This is especially important for the next phase as during the predevelopment many requirements may vary due to new information available only at that point. A prototype is obtained at the end of this phase, where also the proof of concept is being validated and checked. Not understanding the customer as fast as possible through a proof-of-concept might lead to longer development processes and a higher cost (Ripsas et al., 2015).

As the last development stage, the serial development optimizes all the production processes in advance and fixates the drawings to an approved status. After this stage, the production setup may be constructed. Parallel to these steps the launch is prepared and carried out, first internally, and later to the end customers as well. Companies use the launch process to research and verify if consumers will accept a new product launched on the market (van Kleef et al., 2005). With the launch completed, the introduction part is finished.

Product life-cycle management process

The most common tool used by product managers and strategists to keep track of their portfolio is the product life-cycle management process (Gorchels, 2000).

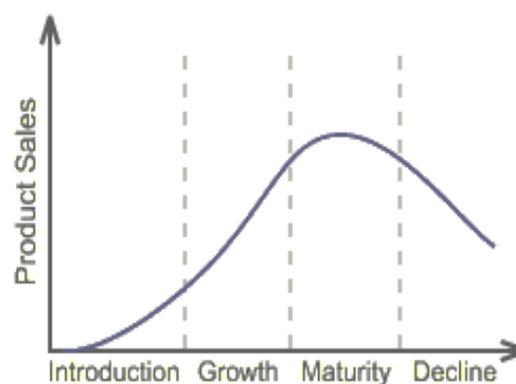
Osland (1991) studied the origins and development of the product life cycle concept and stated that diversification strategies and promoting new uses for declining products are different responses to changing realities in the marketplace.

Dean (1950) was the first to mention the term "product life cycle", in an economics-oriented study of pricing policies for new products. Vernon (1966), an economist at Harvard University, developed a theory called the "product cycle" after observing how products were manufactured in developing countries and how they were introduced in developing countries. With the standardization of production processes, the manufacturing could move into cheaper labor countries while exporting those products back to developed markets.

Day (1981) renamed the product cycle into the product life-cycle and readapted the process to include other functions as well, as marketing and research and development.

The first graphic description of the product life-cycle process (Figure 1) was made by Forrester (1959). The now often used S-curves of sales and profits are diagrammed as a function of time in four stages: introduction, growth, maturity, and decline – figure 1. The S-curve describes the stages after a product is introduced in the market. Directly after a product is being launched, it enters the introduction phase, where the awareness of the product rises, and its turnover is also increasing. After that, a successful product typically enters the growth stage followed by the maturity where the maximum potential is reached.

Figure 1: *S curve (Forrester, 1959)*



In this study, the focus of research is on the first stage of the product life-cycle process, the introduction part, especially the ideation phase: the opportunity creation and the opportunity screening.

Entrepreneurial strategy and its impact during the ideation phase

. Entrepreneurial actions and strategic actions can independently contribute to value creation, and they can add an increased value when they are integrated (Svensrud & Åsvoll, 2012).

It was mentioned (Venkataraman, 1997) that one of the most evaded questions in the

entrepreneurship literature is where do opportunities to create goods and services in the future come from, as entrepreneurship is concerned with the discovery and exploitation of profitable opportunities.

Short, et al. (2010) defines the opportunity discovery as a known supply and unknown demand and the opportunity creation as the situation where an entrepreneur creates both supply and demand.

Sarasvathy (2001), who intensively studied the creation of opportunities, suggests that if neither supply nor demand can be predicted, several economic inventions in marketing, financing, management, etc. have to be made, for the opportunity to come into existence.

The use of entrepreneurship activities is the main topic of this paper, particularly for the development of products that do not yet have a known supply and demand, also known as the “Knightian uncertainty”, an environmental condition that makes prediction impossible (Knight, 1921).

Effectuation and causation

Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes, on the other hand, take a set of means as given and focus on choosing between possible effects that can be created with that set of means (Sarasvathy, 2001).

Effectual entrepreneurs begin with what they know and whom they know, rather than with a predetermined vision or validated opportunity. After this, the entrepreneur relies on a series of valuable courses of actions, but always being flexible. He will also try to integrate the team and all interested personnel having by this way committed team members. The team always has to adapt to the environment in which it's operating. Working after the

effectual logic means that team members are acting on things within their control, reshaping the future as they go. They are always expanding their knowledge and adapting, making the need for prediction obsolete, at least in the early stages of creating the new opportunity (Wiltbank et al., 2009).

The fundamentals of this effectuation theory are based on four basic principles defined by Sarasvathy (2001). The first would be the affordable loss rather than expected returns meaning that the objective of an entrepreneur or manager should lie in creating prospective options rather than maximizing profits in the present. The second principle is to develop strategic alliances rather than competitive analysis, attempting to reduce uncertainty and eliminate entry barriers. The third principle is to exploit contingencies rather than using pre-existent knowledge. This means that it is more useful to utilize the involved contingencies rather than giving to an unpredictable future preexistent knowledge. The last principle states that it is better to control an unpredictable future than to try to predict it by any means. If there is an unpredictable future, it is better to focus all the means to control the situation rather than try to predict it.

Causation rests on a philosophy of prediction, effectuation on logic of control. They can co-occur, overlap and intertwine over different contexts of decisions and actions (Sarasvathy, 2001a). It was suggested that the necessity of firms in more mature and complex industries to use strategic market control techniques while firms in more technologically turbulent environments to resort to more entrepreneurial methods should be considered.

There is a fundamental tension between the corporation's trust towards market control and

efficiency on the one hand, and the necessity to continually innovate on the other. This is also the struggle between the two concepts of effectuation and causation in the field of entrepreneurship (Galambos, 1988).

Effectuation processes are actor dependent (Sarasvathy, 2001a), meaning that these processes are intended to exploit contingencies. If there is no data about a specific market or the data is unreliable, operating possible contingencies may prove to be the most effective way to go, even if the whole approach may be perceived as perhaps unorganized and unfocused for typical business schools, as causation is the strategy taught in entrepreneurship courses.

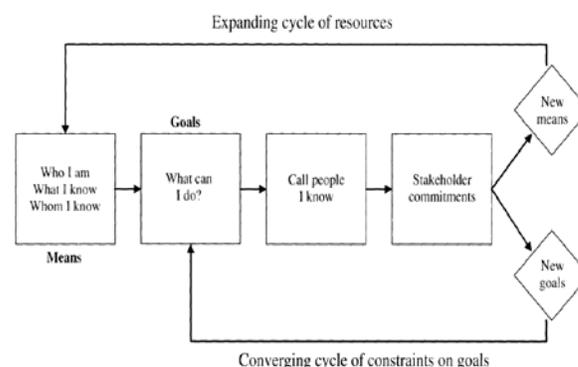
Causation processes are effect dependent (Sarasvathy, 2001a), meaning that they are excellent at exploiting knowledge. If we know the way, this is the perfect tool, as it follows a typical process layout. This means that if all parameters are known, we can gain speed and quality by defining a process and following it through, with the typical milestones and gates found in a rigid process. Decision units of exploitation would fit best for causation.

The notion of effectuation is relatively new but nevertheless it has found much interest in several disciplines, including management (Augier & Sarasvathy, 2004), economics (Dew et al, 2004), finance (Wiltbank et al, 2009), marketing (Read et al, 2009) and the field of research and development (Brettel et al., 2012).

The typical decision process that effectuators undergo are presented in figure 2 (Wiltbank et al., 2006). Effectuation starts with the means that the entrepreneur has. Effectuators rely on people they know, on their network. First customers are engaged to pass over the idea, as they are customers that are

already convinced about the idea. This all creates new means and new goals which enrich the personal possibilities of the entrepreneur, allowing him more options to move forward.

Figure 2: *Effectual Process—Dynamic and Interactive* (Wiltbank et al., 2006)

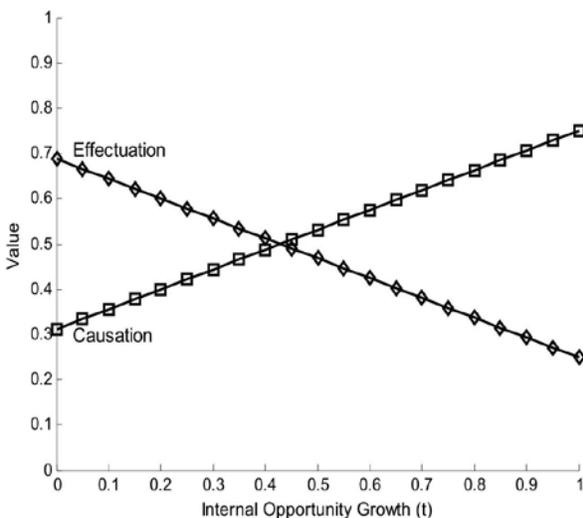


Svensrud & Åsvoll (2012) studied the theory of effectuation and its influence on innovation in a large corporation and found out that the higher the value of the innovativeness of an idea is, the more benefits a company has if they act upon effectuation. With the exploitation of an opportunity over time, the value of using effectuation drops and after a particular time the use of causal means is more effective. The same conclusion can also be found in the original work of Sarasvathy (2001a). A visualization of this concept can be seen in figure 3.

Effectuation notably adds in a context where opportunities are not seen as pre-existent, already recovered or recognized, but where they are created in an exercise of design (Wiltbank et al., 2009). To best use the concept of effectuation, it should be implemented at the very beginning when creating a new opportunity, especially if the opportunity has a high innovativeness degree as innovation is defined as the process through which opportunities get

transformed into practical utilities (Tidd, Bessant, & Pavitt, 2005).

Figure 3: *Evaluation of Effectuation and Causation in Large Corporations (Svensrud & Åsvoll, 2012)*



As defined by Svensrud & Åsvoll (2012) the value of following effectuation processes is the highest at the initiation of the opportunity, but during the growth of the opportunity, its value for effectual methods will decrease, and consequently, following causation processes seems more adequate. The intersection between these lines occurs halfway through the lifespan of an internal opportunity. Here, there should be a shift where management of the opportunity should change strategy and go from effectual activities to more predictive causation based ones.

The research that forms the subject of this article concentrates on the impact of effectuation during the ideation phase, respectively the identification and screening of an opportunity that should lead to the development of a highly innovative product.

Research questions and methods

The following hypothesis was derived: *An effectuation decision making strategy has increased value for a newly created highly innovative opportunity at the beginning of the product*

A qualitative research approach was chosen as the use of qualitative research is especially useful when the important variables to examine are missing or not clearly identifiable (Creswell (2014)).

This is the case with the theory of effectual strategy and its application in the product life-cycle management process. There are no studies relating to this particular topic, and the matter is somewhat abstract so that a clear statement cannot be made.

The questions of the expert interviews that have been used in this study reflect the different statuses of the process and analyze which type of entrepreneurial approach is beneficial in the ideation phase: Question 1: How should a large company handle the creation or discovery of an opportunity in the most effective way? The first question tackles the notion of opportunity creation or discovery and how this should be handled. This directly aims the attention on the first section of the process, namely the ideation phase. Here, interviewees are challenged with the concept of having an innovative new product idea, and the presence of a market is uncertain. During this phase, the concept of effectuation should be identifiable.

The second question addresses the next phase of the process, asking how the screening procedure should be carried out, when not enough market data is available. Effectuation should be again clearly identifiable during this question. Question 2: How should an opportunity be screened when there is not enough market data available?

The questions were aligned to the product life-cycle management process and are pointed directly to the individual phases during the frontloading, development and product introduction. In order to be able to get any meaningful data to support or dismiss the hypothesis, the research questions on hand were explained to the target group to be very well understood.

The department in charge of creating, identifying and gathering new opportunities and later on screening and specifying them is the product management department. The members of this department stay in the driver seat when it comes to the overall strategy and are also responsible for the product introduction phase, for the creative and innovative part. Since product managers and development engineers do the new product frontloading and development, they represent the target group for this research. A total of twelve persons were selected to participate in the interviews, half from the product management department and half from the research and development department.

The study was carried out considering the business model of a large German limited liability company in the construction industry. The chosen company is best suited for this study as one of its values recently defined was that it wants to become more entrepreneurial and innovative.

As the interviews were carried out without many boundaries and interventions it was essential that the two interviewees were involved in the same type of projects, to allow for examples to be understood and stories to be told by the two partners. Besides the position, the years of experience are also shown, to quantify the years of experience the interviewees had.

An interview protocol was set in place allowing for later analysis of the gathered data. The answers were written down in the protocol files. Audiotaping was permitted, so it was carried out to have a complete picture of the data. A transcript of the interview was later carried out that allowed a better analysis of the gathered data.

The interviewees were asked to join the research and invited to a corresponding face to face meeting via email, where the interviewer provided a short explanation of the purpose and the topic. The interviews were not organized to take more than one and a half hours but slots of two hours were set to allow for later comments. These have been carried out over a period of two weeks, were conducted face to face or one via skype call, where geographical distance didn't allow an on-site meeting. As an introduction to the interview, some informative data about the research was presented and discussed.

Although it was intended to conduct the interviews in the English language, to have a precise transcription of the exact words used by the participants, since this is not the native language of the interviewees, it would have represented a limit in expressing ideas and thoughts. Therefore, the interviewer decided to conduct the interviews in the German language, except for one, where a colleague couldn't speak German, so this interview was conducted in English. Interviewee's didn't agree to be named, so the author used only their initials and position in the company.

After the transcripts were written down and the translation was done, the obtained data was carefully analyzed. This was done as Creswell (2014) described it, by segmenting all data, by taking it apart and then putting it back together. This was later on

done and the structure of the interview was broken down and put back together after similar topics that were identified and mentioned throughout the whole transcript. Keywords and statements were identified in order to do this, by coding and clustering similar topics together.

Empirical results

The interviews led to many discussions and answers full of content around the selected topics addressed. The open questions, chosen with the purpose to offer the participant the possibility of presenting issues not yet considered, offered valuable insight into the processes of large companies, the management of opportunities and product development strategies.

The results of the qualitative research represent valuable data that not only confirms the hypothesis but also provides practical implications, maybe even possibility for significant improvements in the processes and strategy of major companies.

Processes in the initial phase

Code statements were those that included the word process in them. The obtained data was used to test the identified hypothesis.

All participants admitted that a process is not necessarily useful at the beginning of an idea, as the sources are very different from each other. But one participant brought in the potential of having only one approach path for all ideas so that they are gathered into one place and can be analyzed and prioritized amongst each other. The approach path would act as a funnel and it should be completely opened for all new ideas, no matter where the source lies. Another factor that was brought up by many participants is that a

creative time would be needed at the beginning of the development; this again is not limited by the process itself.

Another participant mentioned that the process is more an obstacle than a help, as it is hindering him with his development. He mentioned that a new type of process, not created after the waterfall principle, but preferably one with parallel phases would be more helpful in his case, as he needs very fast development phases where he can test out prototypes.

Rapid testing, rapid results, qualification, quantification in commercial and technical aspects are traits that the next participant wants to have during the development of new products for new markets. A consequent transformation and execution must follow this; ideally, it should be a flow so it can naturally pass quickly through it. When ideas are not understood well enough, then much time and capacity are clogging up the process. The unsystematic analysis takes too many resources and capacities. Ideally one should be able to work out 80% of ideas with only 20% of capacity, to get the maximum out of them.

Anyway, it is hard to have a process that covers all bases, another participant concluded. There will always be some exotic projects that do not fit anywhere. A process is useful for orientation but to work strictly according to one is almost impossible, especially when you create new products for new markets. While working on a project the individual brought an example where he worked inside the process and they reached a stage where they needed some management approval and they faced a brick wall as they did not have any of the data needed to be analyzed. For innovative projects there is rarely data, so one works more or less inside a black box, where

you have to assume some risks to go forward. This is not covered in any way by any process.

When discussing the process with another group, one participant stated that during the opportunity creation phase, you cannot have a real process, but the results have to be somehow standardized. Some quality criteria must be fulfilled, but the way to reach the idea is dependent on the innovation level for the company. The tools to get to a result can be standardized, for example by using market research, a questionnaire, or a methodology to get new ideas. Creativity can flourish if you do not have to think about the process, but the results have to be measurable after a certain standard.

Opportunity creation

The issues of how to create or identify an opportunity were heavily debated in all interviews and many interviewees underlined how vital this stage was. It was also by far the most extensive stage of the transcript and a much-disputed topic. Many examples from different industry areas were brought here. Code words that are used in this phase are opportunity, idea, and source. All topics related to the creation of ideas from which new possibilities can emerge are summed up.

One individual stated that sources for new ideas mustn't be restricted. They should come either from internal departments such as product development and application or externally from a subsidiary directly from sales or even the end client. If the opportunity was created internally, then the R&D should have some dedicated time for trying to develop innovative solutions, like for example 10% of their time, where they have some time to bring in new ideas over dedicated problems. The ideas for creating a unique opportunity can be reached by analyzing ideas

that are already on the market. But one interviewee stated that, from his experience, many people overestimate the value of ideas that come externally, from the market, as he was under the impression that many external influences are competitor or sales driven, but they rarely reproduce the real and innovative opportunities that can be found on the market. His interview partner emphasized this statement as we usually get from our subsidiaries a rear view mirror image, as they are always benchmarking our existing products with those of our competitors. The first partner intervened and stated that the most significant difficulty that a company has is to get radical ideas that lead to innovative products and that many people find it difficult to believe in something new and revolutionary as they are afraid to lose face and instead pursue the easier opportunities, which are much safer.

A common agreement between two other participants was also reached when it comes to creativity, as this should be encouraged at the beginning. The development team should be aware of the state of the art, so they also need to be informed of everything that is happening in the research market and what can be useful for further developments. At the beginning of a new development, creativity workshops would be beneficial. If statistics are analyzed, the results are obvious: a much bigger part of innovative new ideas emerge from inside the company rather than from outside. So the employees working on new ideas must have the freedom to do precisely this, as this is the exact moment where a company needs to be creative before the whole commercializing part can follow afterwards. Once a concept is limited, you cannot think beyond those boundaries. If the freedom is there at the beginning,

even imperfect ideas can lead to sparks and the team can downsize or upsize on an existing idea. These creativity stages are needed at the beginning and need to be focused on specific topics that need a solution. The wow effect that the customer should later have needs to happen at this stage.

Another participant suggested small development teams, which should always be challenged to come up with new ideas for the problems that are easily identifiable. This team should sit down for days, away from the office space and their only task would be to come up with feasible solutions for those problems. The team would be set up with core members, who trust each other, which could be completed by other specialists, brought in to help with specific problems. They should be free from all processes, not have a timeframe constraint or any budget they need to align to. The interview partner wholeheartedly agreed, stating that in order to create a real opportunity you need the right people at the table, and they should not have any constraints at the beginning of the creation of a new chance adding, that if one opportunity is identified, that team should be allowed to pursue it to a certain degree.

Other sources of identifying new opportunities are to observe as many practical examples as possible, or by visiting unrelated industrial sectors that might have similar problems and observing how they are solved there. Anyway, the team has to work very close to the research and development department during the development phase, as they can add value or even solve some problems on the way. But they have to be focused on particular issues, and not develop the whole product as their input would be too valuable to do so. The critical

thing to note is that only by bringing new ideas can real innovation emerge.

A large company will always need radical ideas, ordinary ideas, and small ideas, to update its product portfolio. The example of a core development team is mentioned again. They should be small but engaged, should be also aware of the requirements of the market and know the urgency of the market if a solution is needed and also be familiar with pricing and business models. Also, resources should be planned and set aside for the team. The team should be able to react fast when needed. It is all about speed, as this is like the breeding ground if you want to develop innovative products. A local presence is also essential, so if products for regions are to be created, the team should either know the circumstances or have someone from that market. Assistance from universities, start-ups or other third parties was again mentioned that should help out with these radical ideas.

Opportunity screening

All participants underlined that after an opportunity is created, it has to be analyzed and evaluated. All ideas have to be assessed, and the ideas have to be prioritized amongst each other to see which idea is to be pursued next. Here, besides this prioritization also some ideas will have to be rejected as their value is perhaps not that high. These are all strategic decisions as the result of these ideas will be products that are carried out through the company's product portfolio. Another big problem is that many ideas that are born in this phase are not new, so their strategic relevance is limited. Many ideas are just product gaps that were already identified by product managers, but a decision was made that they will not be pursued.

During this phase, the potential of the idea is also estimated, through the creation of a first business case, but the more radical the idea is, the more difficult is the estimation of the real potential. The type of product is also important, if it is a completely new product line or just a facelift of an existing product. The idea needs to be analyzed by potential versus the overall resources and capacities it requires. Also, an analysis of where the ideas stand within our strategy for the coming years has to be made. If the idea is close to the core business, they can be easily integrated. If they are far from it, then the integration may be challenging, as the completion of the opportunity would require a significant change in the organization.

Many ideas are out there already, and one has to retake a closer look on them. During the analysis, another individual describes the necessity to have the intellectual property department to patent as many ideas as they can, this being the strength of a large company as it can afford to do that.

When it comes to screening new opportunities that look promising, there are three significant segments to be looked into, one being the commercial part or the market view, where the numbers have to confirm the potential of the opportunity, the second is the intellectual property departments, which besides patenting the idea has to analyze and see if a similar idea are not already secured by another company, as an omission here can have devastating results for the company, and the third is the technical feasibility, where technical experts take a look at the opportunity to see if it is realizable with standard means of production.

Another interviewee stated that we should simulate in our initial assessment the commercial and strategical benefits, but also the effort that some ideas

require to make them feasible. This can be established empirically, or using an indicative approach, meaning that ideas are compared against each other, resulting in a list of ideas where it is identifiable which ideas lay on the top, with the most significant potential versus effort ratio. Anyway, screening the concept at the beginning should be kept at a very rough level, as going in too deep would take too much time and bind many resources. If the list of ideas in a field is completed and the potential is tough to estimate tools like customers clinique can be used, as another interviewee already did with his products. But as the client needs to understand what benefits these ideas bring, some concepts need to be already finished and available for discussion.

During another discussion an important factor for the screening process was identified, mainly to get the market potential from talking to customers. The persons deciding about the potential need to have a general understanding of how the market is ticking. A market volume is always there, and this should be tested out with dedicated customers, that can give first feedback. For significant investments, this should always be done. This screening should not be a one-time action but should be an ongoing process, of navigation and seeing if the development is still on course. Examples from past experiences can also be perhaps helpful to get the necessary feedback, and even tools such as simple pains and gains analysis can also bring benefits.

One of the last statements to the matter of screening the opportunity is that if we decide to do something or not, it is always a business decision. It is often that one has to roll the dice and try its luck, or try to search for some market data and try to make an

informed decision. The market is always there, and one has to organize the data to do so.

Cultural aspects in large companies

In addition to the discussion about the process, other cultural factors were constantly emerging and these should also be handled if the company intended to develop more innovative products for the future. One participant stated that it is not the process that is hindering us when developing new projects but the people and how they interpret and apply it. Many employees think in a very bureaucratic way, bringing the process to the forefront and forgetting about the actual product that needs to be developed.

Another individual stated that he does not follow the process as it is; instead, he starts with the validation part if he has a promising idea, as this gives him the first direction if the idea has potential. It is a cultural aspect, especially in a large company, that people want to reassure themselves with each step so that they don't make a mistake. More freedom is necessary, to be able also to cancel some projects if the idea has no potential, but the freedom to alternate the idea is also necessary when it has potential somewhere else; freedom to operate is essential. In a large company, many approvals are necessary along the development project, often making it very difficult to explain why to go on.

The interview partner also added that in large companies, people always want to save their own skin. In small companies, it is much easier because the owner decides in which direction he wants to go. In a big company, someone has to sign off and they need to be convinced that it is a good idea. After that, they have to go to their bosses to convince them that it's a good idea and so on. The fact is that if you do a lot of

things, you do a lot of wrongs, but people are afraid of making mistakes. In a big company, the risk of failure is always prevailing and one needs to consider that new ideas do not equal new inventions. One has to try out many ideas to find one that has high potential. He also stated that human beings are habit creatures and many like things as they are because there is no mental challenge and gives them a feeling of safety.

Some participants mentioned the problem of being in some markets and thinking that we know how they operate. What works perfectly in one market, perhaps in a mature market, might not work in another one, for example in an emerging one, meaning that the company culture needs to adapt, considering regional factors. This also needs to be considered when developing new products for new markets.

Entrepreneurial action

The concept of entrepreneurship was brought up a couple of times during the interviews. Different approaches were depicted over all facets of development.

A couple of participants stated that when the company started, the owner decided all the actions that were later carried out precisely to his will. As the company grew and after the founder stepped down, these actions were replaced by strategists who wanted to justify all of their actions. From there on, many problems occurred, because the company was missing out on entrepreneurial action. Even before, not all ideas pursued by the founder came to be successful products, but some of the most brilliant products were created during that time, which are now the cash cows that the company is successfully selling all over the world. Now, in a world full of managers they all want to have everything safeguarded multiple times, but at the end of the day, they can rarely avoid the situation

where they have to take an entrepreneurial decision. Even the business case is updated as often as possible and the idea is validated, there is always a rest risk, where an entrepreneurial decision if to go on or not, is necessary. The more radical the idea is, the bigger the risk and the most significant the necessity of acting entrepreneurial. A process cannot emulate this.

If a large company is to be entrepreneurial, it should compare to start-ups and taking a look at other innovative companies, one can see that a large portion of their ideas do not reach the market introduction stage, as many of them are canceled. It's hard to see entrepreneurship in big companies, as another participant stated. In such companies, when it comes to innovation, it is mostly that the budget comes first. Entrepreneurship in big companies is difficult because there is always a tension between the efficient day to day operations requiring a stable routine and entrepreneurship requires flexibility and other requirements; it's about the necessity to try new ideas and not be bound by anything.

Another participant considers that entrepreneurship represents a scenario where we should weight strategic relevance, potential, and the probability of occurrence. This is how many companies worked in the past. Some sort of entrepreneurial evaluation is necessary to some extent as it is not always possible to foresee everything. One can never know the absolute value of an idea, only the relative one, but that is enough, meaning that one can identify the most valuable projects and prioritise them. Before product cycles went over a period of 5 to 7 years, today we have product cycles of only 2 years. The development cycle that before was 3 to 4 years takes today a maximum of 1 to 2 years. Companies need to win time somewhere and if a lot of time to

analyze different things is necessary, then the situation can become critical.

One interviewee mentioned that it is hard to combine the flexibility of a startup with the structure of a large organization. The professionalism of a big company needs time and cannot have the flexibility of a startup. Even if a new valuable idea emerges, it is hard to push it through the structure of a large company. Our clients have expectations of us and we need to bring quality. His interview partner stated that you can also be entrepreneurial in a large company. An entrepreneur sees an opportunity and has a vision; he places resources to reach that vision. If that vision cannot be followed at some point, he pulls those resources and cuts his loss and this can also be done in a big corporation. Unknown factors always change and become a reality if you pursue a strategy and if you have to go to a new market with a new product you will need facts and clear guidance towards a goal. This is why this topic requires the need to be entrepreneurial as it is most valuable at the beginning of development.

Analysis

The product management department is a standalone, subordinated directly to the chief operation officer or chief executive officer, to which they need to deliver valuable, accurate and detailed information related to products and markets. This information represents the basis for crucial decisions which strongly influence the strategy and the future of the company. Such information makes the difference when it comes to being perceived as innovative and entrepreneurial as company.

Regarding the hypothesis, this was unanimously confirmed by all the participants in the

interviews. Entrepreneurship actions and especially effectuation are extremely beneficial when it comes to developing new products for new markets. Total flexibility when it comes to new products being developed for new markets is not only a nice to have criteria, but must be assured if companies want to create innovative products.

The purpose of the research was to analyze the entrepreneurial actions during the development of a new product meant to be introduced in a new market. To have a more detailed focus, a company's own standardized product life cycle management process was chosen to be analyzed. The theories regarding different aspects of entrepreneurial actions were considered alongside with the definition of the product life cycle process, a common tool used when having a portfolio of different products, but also the guideline of how new products come to be. This first part of the process and the entrepreneurial decisions were then brought together and the hypothesis was derived which reflected some statements found in current literature and which assumed a more efficient creation and development of a new opportunity by the use of effectuation, a new entrepreneurial view recently examined by many scholars. It is important to mention that even if the sources for the two scientific concepts were abundant, a correlation between the two of them would not be found in any literature source. Therefore, as no clear data was already available, a qualitative method of research was used to conduct expert interviews to gain a rough insight of current development processes and the eventual benefits of using entrepreneurial action alongside it. The chosen sample of participants were product managers and research and development experts that already have

relevant experience with developing new products for new markets.

When it comes to opportunity creation, the opinions of the participants to the interviews were very conclusive: they would all like to have a fast process of creating and screening ideas. All the participants profoundly stated that ideas have to start from within the company and that at this stage, there should not be a real process, as flexibility and creativity is needed in this phase and a process would undermine these ideation sessions. No one favored actual market research, teachings over internal idea creation that can lead to new opportunities.

There was also a common agreement between participants that the analyzed company was more successful in the past and although the company is now much bigger, at this moment, in terms of revenue and workforce, the enterprise should try to find its old ways of developing new products. What this means is that the company needs to find ways to quickly and continuously come up with new solutions that should create even more value for our customers. These ideas need to be filtered very fast and be prioritized. Afterwards, the most valuable of them are to be conceptualized and developed. This needs to happen very fast because the more time that is invested, the fewer resources are available for other developments.

Another common agreement of the interviewed experts was that radical ideas, which later lead to innovative products, can be created only when all barriers are eliminated and where creativity can flourish. In order to eliminate any barriers and think beyond what is thought to be possible, third parties such as customers, suppliers, and universities should be involved in the development process as they

complete the knowledge baggage that the company experts might lack and therefore bring faster results.

Even when screening opportunities, entrepreneurial action is very beneficial, because if you try to analyze idea after a formula, many good ideas can go to waste especially at the beginning, before testing, where not much can be said about a radical opportunity. Participants mentioned that employees need to be courageous and stand for ideas they believe in, even if this is risky at the beginning because the potential and feasibility of an idea is not known. Small steps can be made in each direction to test the feasibility on one side and the potential on the other not risking too much in the process.

Not all ideas have to be radical; it could be that a technology used in another industrial segment when implemented in our industry would have the potential to make a huge difference. This is why many participants mentioned that involving people from other sectors and having cross-functional teams can lead to good results.

Customer involvement needs to be also controlled because not all individuals are open to testing new products and also give constructive feedback. During the new product introduction phase, major benefits from entrepreneurial action were mentioned, such as the complete collapse of a core market or the introduction of a new standard, that would also require the flexibility and agility found in effectuation practices.

Conclusion

The overall results showed a positive correlation between entrepreneurial action and the beginning of the creation and further development of an opportunity. Many aspects were directly confirmed

by all interview participants. The objective of the paper was to analyze the entrepreneurial advantages during the beginning of the product lifecycle process. Being entrepreneurial is not only possible but also absolutely required also in large companies if they want to stay ahead of the game and achieve the goal of being innovative. However, such companies need to provide enough flexibility and room for creativity especially at the beginning of the development of a product, namely during the opportunity creation and screening.

The findings of this paper were made by analyzing in great depth the development of a new product along the product lifecycle management process. Other development guidelines were not part of this research. Also, the conclusions were based on one single company by interviewing a limited amount of specialists. For a broader perspective of benefits that effectuation has on the development of new innovative products, more companies from different sectors would have to be analyzed.

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