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Identifying New Markets For Technology Orientated Solutions With a Restricted Primary Market

A Master's Thesis submitted for the degree of
"Master of Business Administration"

supervised by
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Vienna, 31.07.2012

Affidavit

I, DI(FH) Christian Cerny, hereby declare,

1. that I am the sole author of the present master's thesis "Identifying New Markets For Technology Orientated Solutions With a Restricted Primary Market", 74 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and

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Abstract

Especially small and medium sized technology orientated companies often find themselves in situations where an industry specific technical problem is solved together with a customer. After the project is finished and the developed solution is in place the supplying company often realizes that the potential to leverage the created asset by selling the solution to other customers with similar requirements could be quite high. If the developed solution solves a customer specific problem the supplying company often has to sign an exclusivity agreement, which states that the supplying company is not allowed to offer the solution to other companies which are direct competitors within the customers industry. This leads to a situation of enforced commercial underutilization of the technological asset. Basically it can be assumed that some functional characteristics of the solution could also be useful within a different industry context in a different (non restricted) market. If the technical solution in question could be adopted to a certain degree to fit a new market, it should be possible to identify new, commercially interesting, unrestricted markets. Goal of this thesis is to identify and describe a structured process to find such markets in the first place and to evaluate the attractiveness of the identified markets in second place. Already established approaches to technology push and technology resource leveraging have been reviewed and have been used as a reference to define this process. Finally, a case study for a really world solution has been conducted within the business software industry. The results of the case are quite promising as several interesting new applications have been identified based on the suggested process.

keywords: *resource underutilisation, innovation, technology push, technology resource leveraging, market attractiveness*

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CHAPTER 1

Introduction

1.1 Problem Formulation

Especially small and medium sized technology orientated companies often find themselves in situations where an industry specific technical problem is solved together with a customer on a project basis. After the project is finished and the developed solution is in place the supplying company often realizes that the potential to leverage the created asset by selling the solution to other customers with similar requirements could be quite high. If the developed solution solves a customer specific problem the supplying company often has to sign an exclusivity agreement, which states that the supplying company is not allowed to offer the solution to other companies which are direct competitors within the customers industry. Depending on the exact nature of the problem solved this could lead to a serious reduction of potential customers for the solution as it is shown in figure 1.1. While these technological assets certainly have an innovative character, they are not necessarily radical innovations, which are or could be patented. While it is natural that a firm aims to protect its competitive advantage it gains through the implementation of specialized and certainly paid for solutions, it might be economically frustrating and even be a competitive disadvantage for the supplying company not being able to exploit the created asset within the obviously most appropriate target market. Furthermore due to the uncertainties of this type of innovative projects the re-

sources needed to finish such a project often are highly underestimated, which might lead to low contribution margins for the supplier.

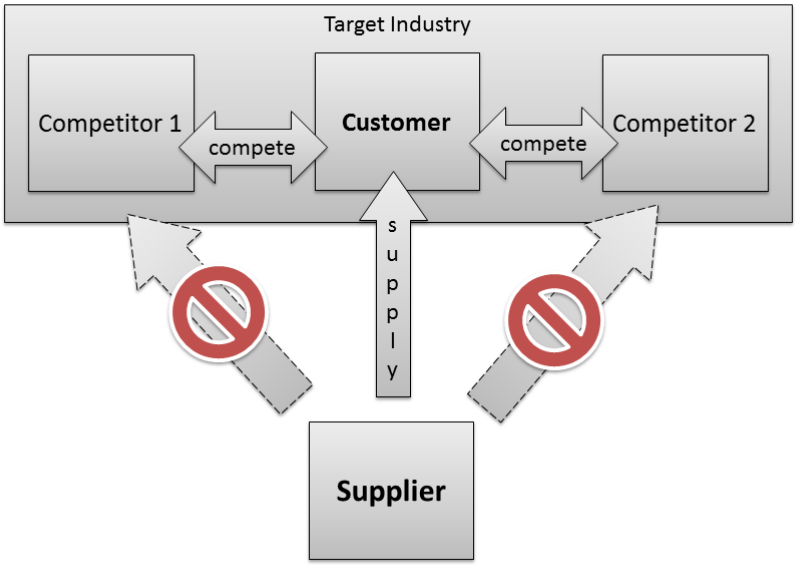

Figure 1.1: Market Restriction

One straight forward approach to address these low contribution margins in such a situation would be to either not engage in this kind of industry exclusive projects at all or alternatively charge a significant price premium to foster contribution margins for this kind of projects. While this approach basically follows a valid argumentation, it assumes that potential customers are willing and able to pay more for the solution because of this industry exclusiveness, which is not necessarily the case. Furthermore it assumes that the supplying company is not economically dependent of engaging in this kind of projects.

The second approach to make such an industry exclusive development commercially more attractive for the supplying company would be to find other attractive markets for the created technological assets outside the exclusivity restrictions. This assumes that

although the solution was created for an industry specific problem it can be adopted to fit functional similar problems in other industries. If markets could be found where the adoption needed to fit the new market is relatively small, it would be possible to leverage and exploit the already created assets and resources at a higher degree. As this newly identified markets could be exploited without infringing a valid exclusivity agreement a lower contribution margin within the initial project would be acceptable as the leverage of the already created assets would contribute further to overall profitability.

1.2 Objective of the Master's Thesis

To foster the utilization of available technological resources, the goal of this master's thesis is **to find an effective way to identify new attractive markets which can be exploited without market restrictions**. There can also be a regional aspect to this restriction. If e.g. the customer is only operative in Europe, he would eventually not consider companies operating in the same industry in the U.S. as a competitor. Offering the solution in the U.S. would therefore not infringe the agreement and open up new markets for the solution. While this is a valid approach to overcome these restrictions the goal of this thesis is to find new markets within the currently addressed regional market, by matching the *functional aspects* of the solution with the markets needs.

Literature describes several interesting approaches like the method described by Souder (1989), the technology competences leverage process (Danneels, 2007) or the I.S.A.A Method (Keinz and Prügl, 2010) to identify relevant opportunities for already existing technological assets or resources.

A first review of these concepts shows that these methods are mainly focused on identifying completely new applications for highly innovative and often patented technological assets. Significant strategic moves and technical adoptions are often needed to exploit such new opportunities.

The goal of this work is to down scale and leverage the essential insights of these methods into an SME (Small and Medium Sized Enterprise) environment to identify new potential unrestricted target markets which balance commercial attractiveness with minimal strategic changes and minimal needed adoptions to the solution itself.

Target Audience

The target audience for this process are small to medium sized suppliers of relatively complex technical solutions, which are created for and used to **support the customers value creation process**. It is assumed that the technical solution in question shows a **significant degree of adaptability**. Typical examples would be business software solutions or any type of processing machinery within a certain industry.

Identifying Interesting Unrestricted Markets

The main goal of this process is to overcome the market restriction and to identify the commercially interesting markets for already existing technological solutions.

Balance "Commercial Attractiveness" and "Changes Needed"

While the commercial attractiveness is for sure an important indicator whether or not to enter a new market, several other factors are of importance when the possible new markets are evaluated. The goal here is to find markets where the commercial attractiveness is high while the changes to the solution itself as well as to the strategy and the needed resources are relatively low.

Minimize Resources

Even very small companies with very scarce resources in terms of time and budget should be able to execute such a search process. In terms of requirements of the designed process this means that every identified action, which needs to be executed, should be thoroughly assessed for importance and relevance.

1.3 Structure of the Thesis

The thesis consists of 4 main parts: Within chapter 2 relevant literature is going to be reviewed and discussed. Based on this findings in chapter 3 a process to identify and to evaluate new market applications in unrestricted markets will be developed. Chapter

4 shows the implementation of the process based on a real world case study. The final chapter 5 analyses the outcome of the real world implementation in comparison to the theory.

CHAPTER 2

Investigation and Discussion

2.1 Course of Investigation

Based on the available literature several relevant approaches will be reviewed and discussed within the context of the needs of the process. The problem of underutilisation of technological resources and the existing approaches to overcome this problem were identified as promising starting point for the analysis. While actions to reduce this phenomenon in most companies are triggered by the idea and the need to foster exploitation of existing technological resources, the trigger for starting such a process in the context of restricted markets is the inability to sell the product in the most appropriate market. As this industry exclusiveness can be seen as enforced underutilisation of a firm's technological assets, it is assumed that approaches to overcome this underutilisation basically also would be valid in the problem context of this thesis.

The motivation for starting this search process is the underutilisation of technological resources *because of market restrictions*. The characteristics of these restrictions and their impact on the search process are analysed as a first step. The next step of the analysis will be a discussion of the basic technology push concept (Lettl et al., 2008) (Herstatt and Lettl, 2004) and it's relevance for the problem on hand.

As new markets and thus new customer groups would be addressed the criteria which influence the diffusion in a market (Rogers, 2003) will be reviewed and discussed.

Following this course of investigation the next step will be the discussion of various aspects of the technology competence leveraging process (Danneels, 2007). Especially the aspects of the I.S.A.A. (Iterative Search for Alternative Applications) method (Keinz and Prügl, 2010) as a well described method to find new market applications for existing technology will be reviewed and evaluated in the context of the given problem.

2.2 Underutilisation as Motivation

Several studies and statistics show that the underutilisation of technological resources and assets is a widely observable phenomenon in technology orientated firms. While these studies mainly analyse the underutilisation of technological assets, which are actually patented or are formally protected, it can be assumed that this problem also exists for technical solutions which are not formally protected for various reasons. Two basic reasons of underutilisation can be distinguished.

In the first case the technology holder *is aware* of some potential other market applications for it's technology or solution but does intentionally not exploit these opportunities because of strategic concerns. Due to the widely accepted strategic importance of focusing on markets and the very scarce resources of especially smaller companies it is essential for them to evaluate the attractiveness of such a potential new market in the strategic and resource context of the company (Hill and Jones, 2009) (Burgelman et al., 2008).

In the second case the technology holder *is not aware* of potential new markets or even new applications as the company struggles in identifying attractive opportunities fitting their existing technology (Herstatt and Lettl, 2004) or the company is not aware of the phenomenon at all.

Putting this in the problem context of this thesis it can be said that both types of underutilisation apply in this case. The company is aware of an enforced underutilisation due to the market restriction on the one hand, which is intentionally not exploited due to legal reasons. On the other hand the company is not yet aware of new potential markets for the technical solution in question.

2.3 Analysis of Market Restrictions

One important step to identify unrestricted markets is to analyse the type of market restriction and it's impact on the actual market size. While the fit of functionality which delivers added value to the customer is the essential factor which determines the addressable market (Lynn and Heintz, 1992), there are several other factors, like regional bindings, basic technical restrictions and even pricing issues, which can reduce the market size for a solution further.

Changing one or more of this limiting factors, e.g. entering foreign markets, could increase the addressable market size significantly in some cases. While this approach would in some cases allow to overcome market restrictions and therefore help to foster profitability, this approach is per definition not in the focus of this thesis. The goal of this thesis is to find interesting markets by matching the functionality and the features of an technical solution to the customers demands.

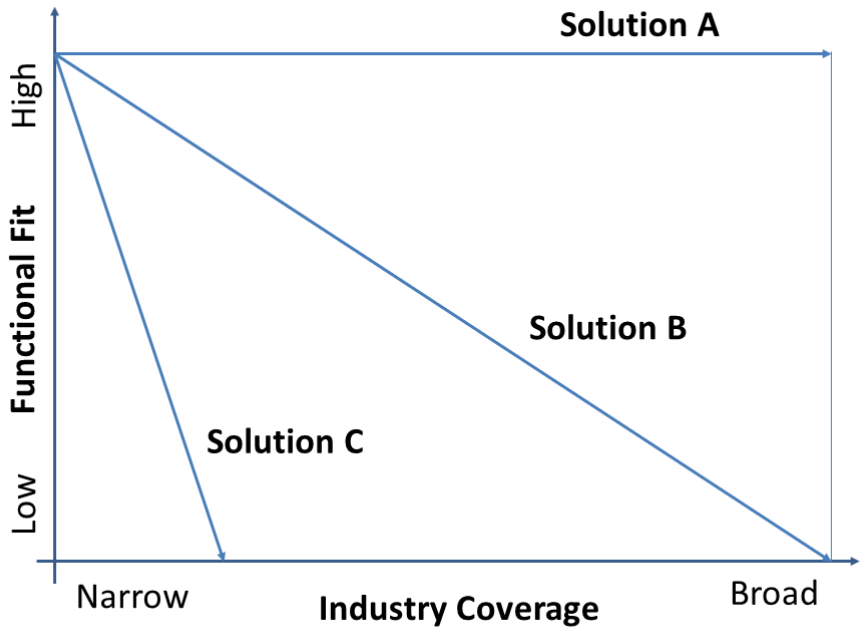

Figure 2.1: Specialisation of Solution

As sketched in figure 2.1 it is assumed that different technical solutions have different levels of specialisation to fit the demands of a specific customer or, more common, a specific target industry. While the X-axis shows the "industry coverage" of a solution in terms of the customers core business, the Y-axis shows the functional fit of the solution within the industry. Functional fit is a measure introduced trying to quantify the exact match of a given solution to a problem to solve. Details to the functional fit concept will be discussed later in this work.

According to this model Solution A in figure 2.1 does not show a significant industry dependency. One real world example taken from the software industry for such case would be an operating system like Microsoft Windows ™. This technical solution functionality wise nearly fits all industries. This kind of solution often is often referred to as horizontal solution. Solution B in figure 2.1 on the other side shows a significant industry specialisation. An example for it would be a production planning tool for the manufacturing industry. Although it's functions exactly meet the needs of the manufacturing industry, the solution might not fit the service industry at all. Finally, Solution C shows an extreme industry specialisation. It only has a high functional fit within a very narrow industry coverage. An example for such a solution would be, again taken from the software industry, a specialised software for optimizing the production process in the folding carton manufacturing process. This type of solution is also often referred to as a vertical solution and the according market as a niche market.

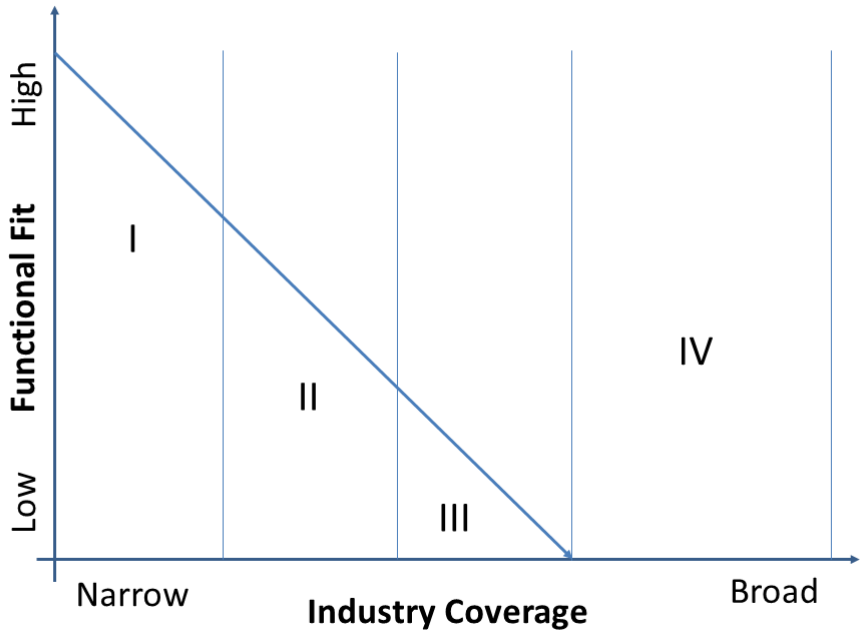

Figure 2.2: Functional Fit For an Example Solution

Table 2.1: Functional Fit For an Example Solution

No.	Industry Specialisation
I	Manufacturing of Printed Folding Cartons
II	Print & Packaging Industry
III	Manufacturing Industry
IV	Any Industry

Figure 2.2 and Table 2.1 show an estimated functional fit model for a specialized production planning system for the folding carton manufacturing industry. While it shows the best functional fit in the specific industry, it's core functionality is also assumed to basically fit the complete manufacturing industry. Outside the manufacturing industry the functional fit is assumed to be very low to zero.

According to the problem formulation it can be assumed that, as the customer wants to secure it's competitiveness within it's core industry, the created solution shows a significant industry specialisation. If the solution does show a significant horizontal

character the impact of not being able to offer the product to direct competitors of the customer would not restrict the market.

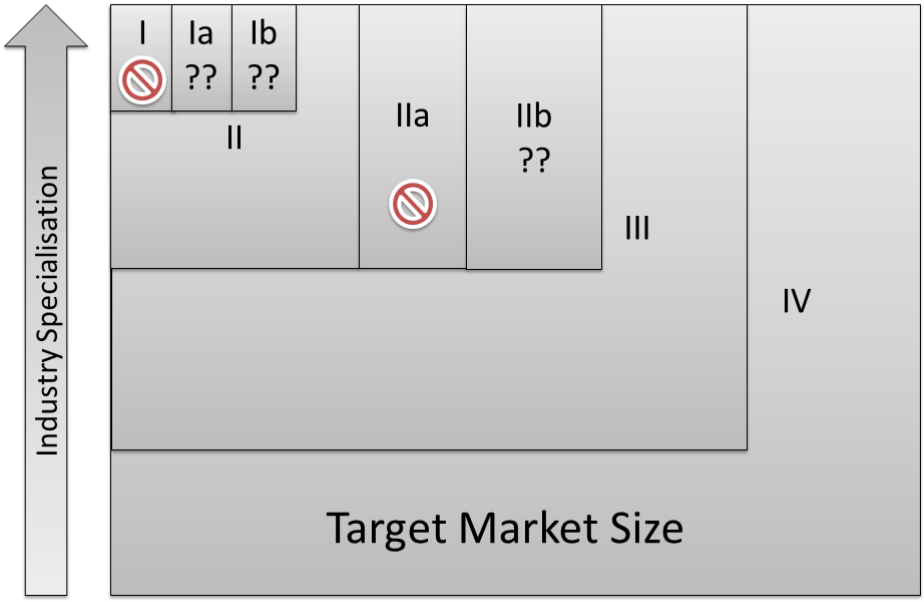

Figure 2.3: Target Market Sizes

Table 2.2: Target Market Sizes

No.	Industry Specialisation
I	Manufacturing of Printed Folding Cartons
Ia	???
Ib	???
II	Print & Packaging Industry
IIa	Pulp & Paper Industry
III	Manufacturing Industry
IV	All Industries

One of the major goals of this thesis is to open up new unrestricted markets which

need minimal adoptions to the solution to fit the new market. It is assumed that the addressable market size, in terms of number of companies which could be addressed, is very much dependent on the level of specialisation of the solution in question. Figure 2.3 shows a model of the different markets and it's estimated sizes in the relationship to the specialisation of the solution.

Figure 2.3 and table 2.2 also show restricted markets by an example. If the solution in question shows a high functional fit only in the restricted market the economic exploitation of the solution is not sufficiently possible. Based on such a model basic considerations can be made towards the search direction for eventually possible new markets. To overcome the market restrictions in this case two basic directions can be chosen. One consideration would be to create a more generic solutions which would fit the next larger more generic market, if this is possible in terms of adaptability of the solution. If this direction is chosen it also should be considered that a more generic solutions tend to be more complex, which might reduce an effective diffusion into the market as stated by Rogers (2003). The second approach would be to find currently unknown (niche) markets (like Ia, Ib in figure 2.3) with similar functional requirements. These markets can also be referred to as analogous markets (Poetz and Prügl, 2009). Finding these markets with minimal effort is the primary goal of the process developed.

Defining such a basic search field restricts the possible new market applications which could be found, but it also reduces the effort needed to execute the search process, which is also an important target of this process.

2.4 The Process of Finding New Applications

Two basic steps can be identified within the process of finding new applications for already existing technology. The first step is always to identify and describe the *essential characteristics* of the object a new usage context should be found for (Souder, 1989) (Keinz and Prügl, 2010). This process and the *level of abstraction* of the description are essential for the possible results and will be discussed later in more detail. The second step is to search for new applications based on the search specification identified in the first step. Due to the immense size of the possible search field strategies are needed to

control the search process in a way to get valid results while keeping the needed search resources relatively low. Research identified several search methods like the concept of broadcasting (Lakhani et al., 2007) or pyramiding (von Hippel et al., 2009) which will be discussed in greater detail within this chapter. These two interrelated steps are also often referred to as De-Linking and Re-Linking of technology (Danneels, 2007). While those two steps would be sufficient to find new applications the goal of such a process in a corporate context normally is to identify applications which have a high potential for profitability. So, a final step which evaluates the quality of the identified market in terms of profitability will be needed.

The next sections are going to discuss the different steps and approaches in more detail. A short review of the market pull versus the technology push principle will lay the ground for the following discussion.

2.5 Market Pull versus Technology Push

Basically two different principles for matching a technical resource with a market application can be identified. The main difference between these principles is the order of existence of things. The market pull principle as shown in figure 2.4 has as a main issue that there is an obvious existence of a market need (Chidamber and Kon, 1994). This market need could be identified e.g. via market research or simple observation of problem by the inventor. As a next step this problem needs to be solved by the means of technology. The research process might find none, one or multiple technical solutions for the problem. If more than one solution for this specific problem can be found, the best solution needs to be identified and will be implemented. Summarizing the market pull principle in mathematical terms it can be said that the problem to be solved is constant while the possible solutions are variable and need to be found. The solution found to solve this problem could also have other market applications, which could in some cases even have a greater market potential than the original market which "pulled" the solution (Lynn and Heintz, 1992).

The technology push principle as shown in figure 2.5 on the other hand starts with an already existing technology. The technology could have been developed as market

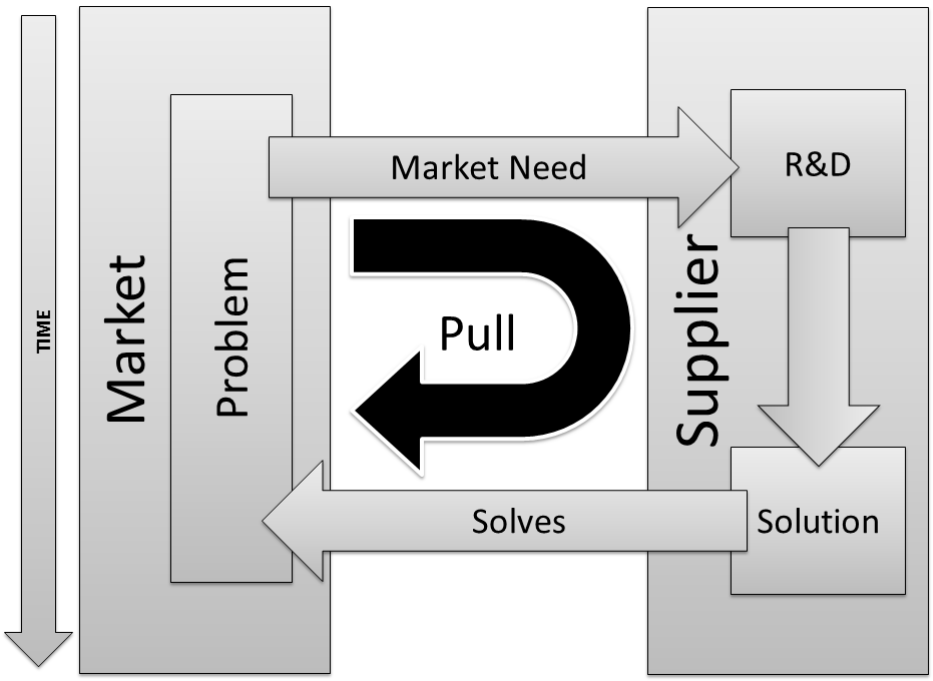

Figure 2.4: Market Pull

pull in the first place or the technology has been developed in a research context and the inventors did not have any market application in mind. Again - in mathematical terms - it can be stated that the solution is constant while the problem to be solved is variable and needs to be found. If the whole life-cycle of some technologies which have different market applications is analysed it can be found that some of these technologies have been developed in a market pull situation and later on found other markets through technology push activities (Herstatt and Lettl, 2004). These new market applications often economically outperform the original applications by far. This could be explained by the tendency of inventors not to focus on market sizes when inventing new technologies (Lynn and Heintz, 1992), but to focus on the technical problem to solve. On the other hand inventors often do not even know about the existence of other markets of the invention in question (Gruber et al., 2008).

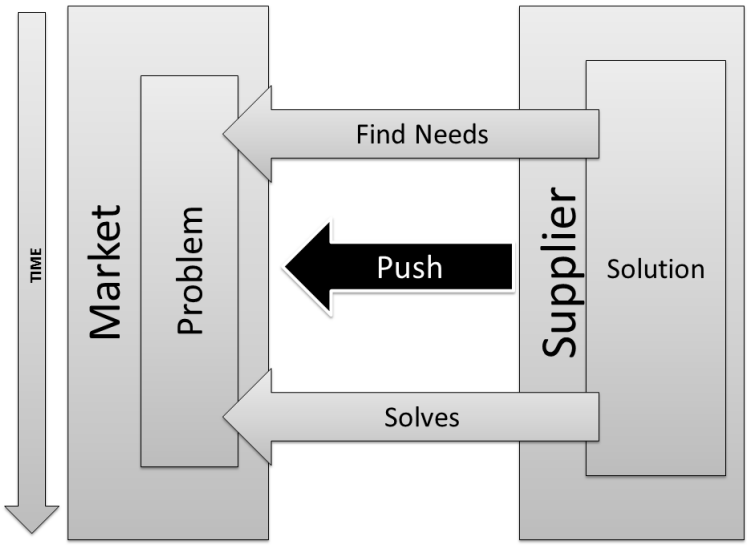

Figure 2.5: Technology Push

2.6 Defining the Search Specification

Even if the technological solution in question is not necessarily a radical innovation the problem to be solved in this thesis can be seen as a typical market push scenario. Before new markets for an already existing solution can be searched for a search specification needs to be created (Keinz and Prügl, 2010). The goal of this specification is to describe the solution's characteristics in such way that the linkage to new applications is as easy as possible for the recipient of the specification.

This process was described by Souder (1989) as "to reveal the technology's features and the users needs they might satisfy" in it's "total systems approach to technology push". This step is also referred to as De-Linking (Danneels, 2007) as the technological resources currently are tightly coupled with it's current application and are going to be de-linked. To support this a certain level of abstraction of the solutions characteristics needs to be applied. The level of abstraction chosen in the description can have a major impact on the possible new application which will be identified.

Furthermore it has to be decided which type of search specification will be used. One straight forward approach is the solution or technology based search specification

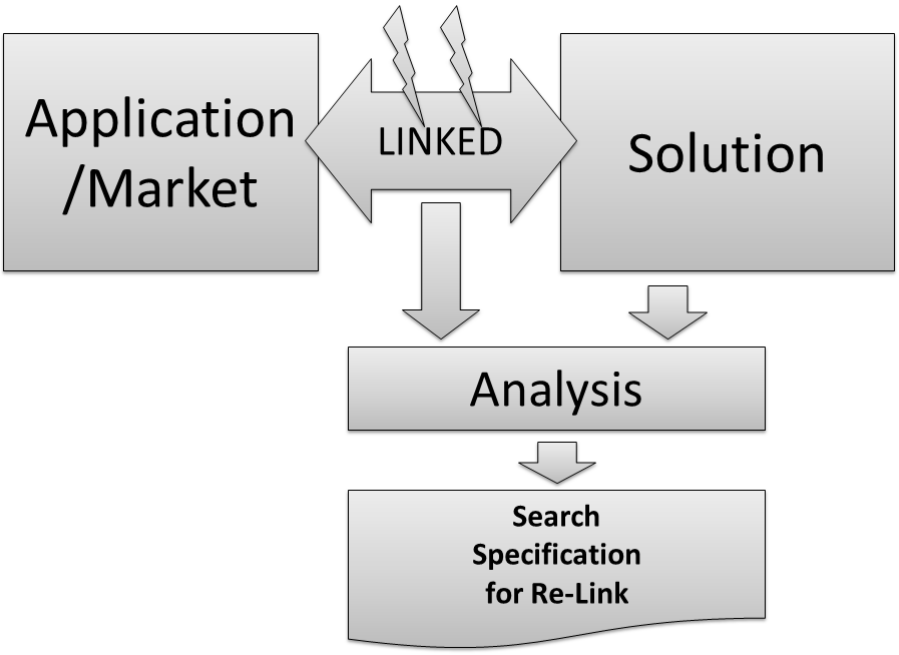

Figure 2.6: De-Linking

(Danneels, 2007), which describes the features and the functionality of the solution and leaves it to the recipient of the search specification to identify the possible benefits of the solution within a new field of application. This process is criticised (Keinz and Prügl, 2010) as only some experts would have the cognitive abilities to understand the underlying benefits on the bare description of the solutions functionality, all others will fail to do so.

To illustrate the different levels of abstraction and the difference between the solution and the benefit based search specification approach, some examples of different search specifications for conducting a fictive search for applications of the *incandescent light bulb* is discussed next.

Description I:

"The solution consists of a filament wire, which is heated to a high temperature until it ***glows****. The hot filament is protected from oxidation in the air*

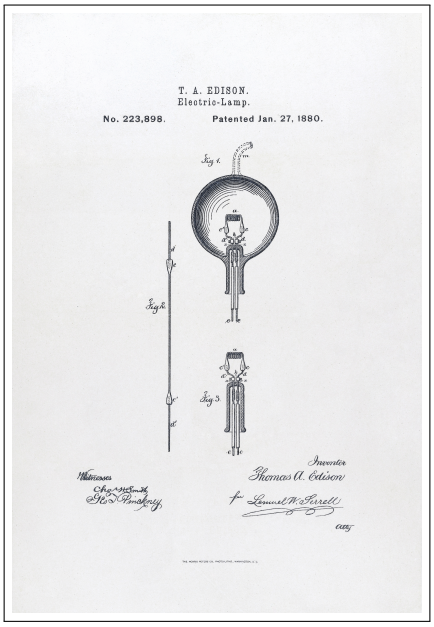

Figure 2.7: Patent of the Light Bulb

> *with a glass enclosure that is filled with inert gas or evacuated. The solution is supplied with electrical current by feed-through terminals or wires embedded in the glass."* [1]

This description explains very exactly how an (incandescent) light bulb - invented by Thomas Alva Edison - actually works. While this is technically a very correct definition, it is not easy to understand for end users, that it is a source of light and therefore an alternative for other sources of light, like candles or even the sun. The only indication that it is a source of light is the mentioning of the "glowing wire". This information needs to be implicitly translated and understood from the recipient. The advantage of this type of description is, that through it's technical exactness experts could eventually identify other applications for a wider range of characteristics of the solution, like the fact that also a significant amount of heat is produced from the bulb or the concept of protecting the wire from oxidation through the evacuation of the bulb. On the other hand it makes it harder for non experts to understand the (for them) relevant characteristics of the solution.

[1] Excerpts from: http://en.wikipedia.org/wiki/Light_bulb, accessed 30.07.2012

Description II:

> *"The solution is a rather small device in the form of a glass bulb which is capable of steadily **producing light**. It's operated electrically and can be turned on and off easily. It lasts a significant number of hours."*

This description uses a more abstract and already a more "needs focused" way to explain that the solution is a source of artificial light. While it makes it more straight forward for the recipient of the specification to understand the essential characteristics of the solution, it still does not directly explain the effective benefit for the end user of the solution. It also already limits the potential outcome of the search to a certain degree, as the author of the search specification already decides which the relevant characteristics of the solution are. For example the fact that 90 % of the power a light bulb consumes is converted into heat could not be derived from Description II, but it could eventually be derived from Description I. Although this information could also be added in Description II the author of the description has to have the relevance of this information already in mind.

Description III:

> *"The solution makes it possible for human beings to see, when this normally would not be possible through the absence of sufficient light"*

This description only describes the significant identified benefit of the solution without describing how the solution works. Also no surrounding aspects, which might impact the usefulness of the solution in different scenarios are explained at this point. While nearly every individual understands the benefits of having artificial light produced out-of-the-box as explained in Description II, this might not be the case for other more unusual things. So describing the needs based benefits (Keinz and Prügl, 2010) to the recipient of the specification should enable him to more easily identify other applications for the solution. While the "needs based benefit" approach makes it easier to recognize alternative applications for a solution, these identified applications might functionally

not fit the real solution very well as important surrounding aspects are not communicated in the specification. For example any kind of night-vision device [2] would also fit the description of the needs based benefits described here and "night-vision" could therefore be identified as an possible application. But most real world applications of night vision devices, would not fit the real features of a light bulb. The identified applications which functionally do not fit the solution can easily be filtered after the search. Therefore this fact would not be seen as a real drawback (Keinz and Prügl, 2010), if the overall quantity and variety of identified possible new applications is higher. Still this type of specification could be limiting as the identification of the solution's benefits by the author(s) of the search specification already might direct the search in a specific direction and thereby possibly already filter potential applications from being revealed. E.g. it is highly unlikely that the heat production of a light bulb would be described as benefit in such a search specification, even though there are several known applications where the heat radiation of (special) light bulbs is useful (e.g. heat radiation therapy or animal breeding).

To summarize the insights of the discussion and to put it into the problem context of this thesis it can be said that depending on the context and the goals of the search the approach for the search specification needs to be chosen. Furthermore it can be assumed that a needs based benefit approach Keinz and Prügl (2010) is more promising if the search population consists mainly of non experts. If the search is conducted within a population of experts a solution/technology based approach could help to identify application within broader field.

As the solutions in question in this thesis are more complex technical solutions which serve other businesses within their value creation process we can assume that people which are able to identify alternative applications and markets need to be experts to a certain degree. As approach to the search specification a combination of describing the benefits in the first step, but also to describe the main features of the solution on a more detailed part of the search specification will be chosen.

[2] These devices normally do not use a active source of visible light, but amplify the still available light by the means of sensors & electronics

2.7 The Search Process

After the definition of the basic search area and the search specification the actual search which is the second part of the Re-Linking process needs to be executed.

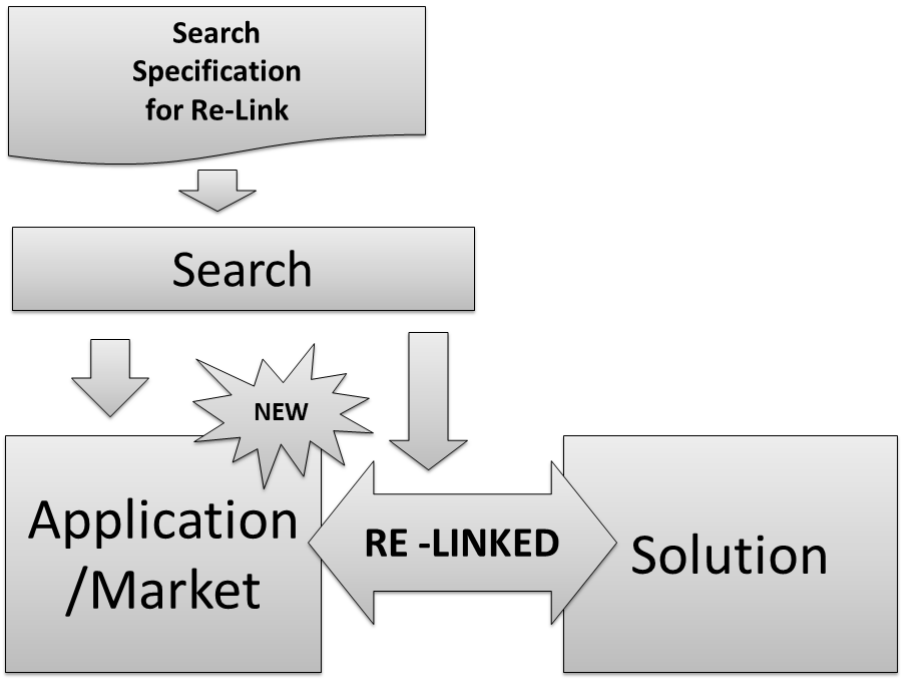

Figure 2.8: Re-Link

One major aspect thereby is the definition of the population within the target persons which are able to identify new application could be found. Traditional approaches like Souder (1989) and others suggest to mainly search within the confinement of the own company. The advantage of this process is that the execution of the search process is relatively straight forward as the search population is clearly defined. The drawbacks of this approach are local search biases (Nelson and Winter, 1982) which might limit the possible results. The company and inventors and their network often share similar experiences and therefore tend to find applications which might already be known to them or are very similar to the already existing applications.

Basically it can be assumed that to widen the search area beyond the boundaries of the company enables the possibility of finding more novel applications. The result of

this decision at a first sight is that the possible search population gets effectively very big as literally every person would eventually be able to find an alternative application and would therefore needed to be asked. Besides cultural limitations like different languages, this would be highly ineffective and inefficient to search within such a big population.

To reduce the population which needs to be searched in a limitation of the search needs to be defined. This can be done by defining certain industry domains in the first step and identifying relevant people and communities to start the search in the second step. To search within the now smaller, but still large population two basic approaches can be identified. The first approach is the directed search, an active, company driven search (von Hippel et al., 2009) (Poetz and Prügl, 2009); the second approach is the indirected search, a concept were open calls are used, to activate possible problem solvers which self select themselves as such (Lakhani et al., 2007).

Directed Search

The simplest form of directed search would be to screen the complete population which was defined to be in scope of the search. This screening (or parallel) search process, which could e.g. be done by the means of a questionnaire, is highly ineffective and inefficient.

Assuming that some members of the population to be searched can refer to each other and form some kind of network a more effective directed search approach can be used to search for solutions - respectively new market applications in the problem context of this thesis. A very effective way of searching a defined population is a concept called pyramiding (von Hippel et al., 2009) (Enkel et al., 2009) (Poetz and Prügl, 2009).

The target of the pyramiding approach is to reach the top of the (expertise-) pyramid by getting referrals to the next level of expertise from the involved members as sketched in figure 2.10 (von Hippel et al., 2009). The first step after defining the search specification and the interview questions is to identify the bottom of the pyramid. This is normally done by basic research activities. Next step is to contact the identified root persons and conduct an interview to find the level of expertise on the one hand and a possible referral to the next level within the pyramid. This process is highly interactive.

The bidirectional communication channel enables the interviewer to explain certain aspects to the interviewee if needed. This feedback can be used to adopt and clear the search specification if needed. Also the personal contact shows the commitment of the searching party, which might have a positive impact towards the willingness of the target person to participate in the process.

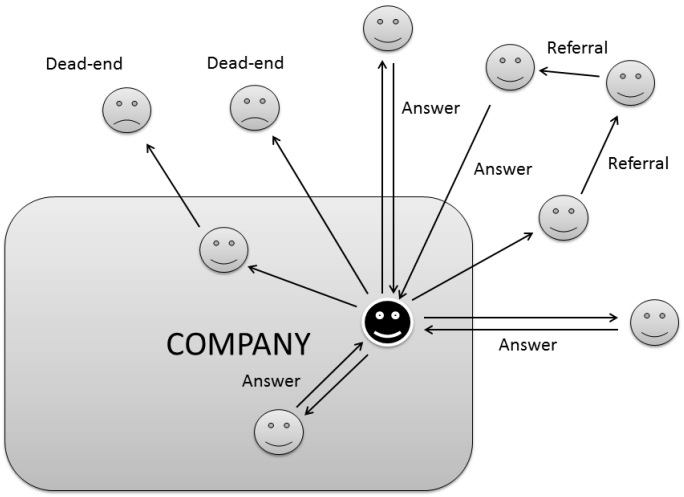

Figure 2.9: Directed Search

A study regarding the efficiency of the pyramiding approach shows that it is highly effective as in every setting top-experts have been identified. Furthermore the method is more efficient as on average only 30 % of the effort was needed to get to the target person compared to a parallel search (screening) method (von Hippel et al., 2009).

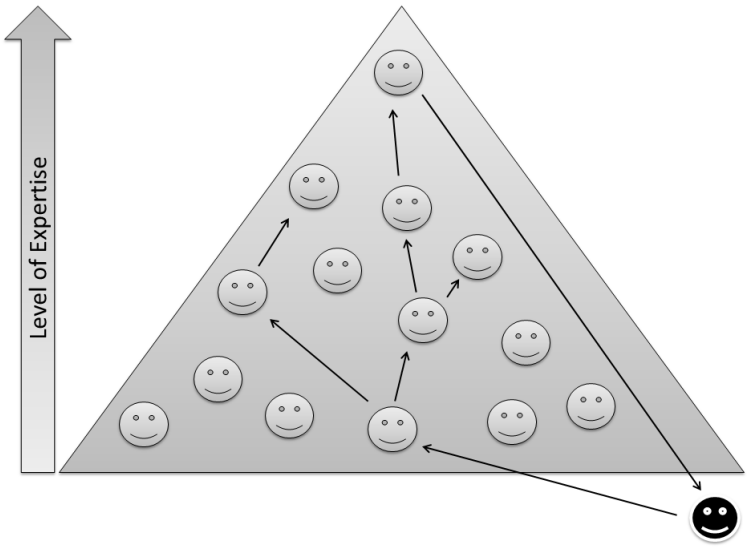

Figure 2.10: Pyramiding

Indirected Search

The second approach to reach as many people as possible which might be capable of identifying new market applications based on the search specification is the indirected search through broadcasting. Especially the endless amount of interest based on-line communities for nearly all different topics and interests one can think of, enables the broadcasting approach to theoretically reach as many potential problem solvers as possible. Broadcasting the problem description e.g. in an on-line forum which is relevant for the search domain enables the searcher to reach a broad self activating crowd of possible problem solvers (Lakhani et al., 2007).

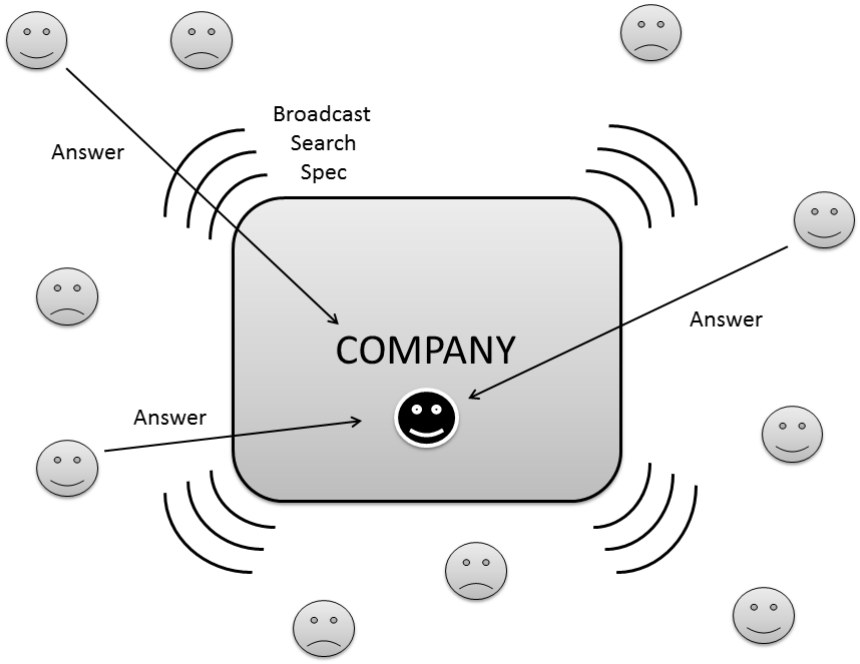

Figure 2.11: Broadcasting

Search Strategy

Given the concrete search problem in the problem context of this thesis a mixed approach to search seems to be reasonable. A broadcasting approach cloud help to identify the roots for a pyramiding approach in a second search phase.

2.8 Evaluation of Markets

After the search process a list of possible new applications and thus new markets should be available. Some of the applications are more similar to the current applications, while others are within a completely new and currently unknown industry. Some of the applications seem to have a better functional fit to the current solution and thus would maybe require less changes to the solutions. Some markets seem to be more attractive in terms of size and competitiveness than others. Finally, as the entry to a new market always has a strategic component, the fit of the market to the current strategy needs to

be considered too (Burgelman et al., 2008).

Due to the several different perspectives on market attractiveness it is not easily possible to decide which market is the most attractive. To decide which market is the most appropriate a system to structure and visualize the trade-offs between the different aspects would be helpful. To create such a decision support system a view main dimensions, which are actually evaluated, need to be identified to reduce the complexity and to enable easier decision making.

Internal Change Needed

One of the major goals of the thesis is to find markets which need *minimal adoption* to the technical solution respectively the product itself. As not only the product itself, but also the internal resources needed to serve a specific market are widely accepted as important criteria (Penrose, 1959) to evaluate the appropriability of a new market, the *changes to the currently available resources* also should be part of the evaluation. As a third component the change needed within the current strategy of the company is identified as a relevant factor to the change needed when a new market is going to be entered. These three change components are going to be consolidated *one total change needed* dimension within the actual rating system.

Commercial Market Attractiveness

Having identified the "internal" change needed on the one hand the second important dimension obviously is the commercial attractiveness of the target market or even more concrete the possible profitability. Two main aspects are identified to evaluate the target market and it's attractiveness. The first aspect is the *market size* itself which would indicate how big the addressable market for the technical solution in question would be. The main problem with the market size as evaluation criterion is a high level of uncertainty due to a lack of available information about the market for the new market application. Individual market research to get valid figures typically can not be done easily for all markets in question due to the lack of human and financial resources. On the other hand it is easier to get statistical data about the revenues in the target industry

itself. If it is assumed that a larger industry in terms of overall revenue also offers a larger market for the technical solution in question the *relative size of the target industry* enables a comparison of the different possible new markets.

Furthermore not only the market size influences the attractiveness of a market, but also other aspects are relevant. Based on market attractiveness considerations (Porter, 1980), several aspects have been identified to estimate the *industry attractiveness* of a specific possible new market. As it is assumed that it is easier to sell innovative technical solutions to customer within an industry which is not as technically advanced as other industries yet, the estimated *technical advancedness* of the industry in question was chosen as criteria. The other two components are classic industry attractiveness components (Porter, 1980): The *competitiveness between solution suppliers* on the one hand and the *entry barriers for new solutions* on the other hand.

An actual rating and evaluation system as well as a model for visualizing the different dimensions will be developed in section 3.4.

CHAPTER 3

Process Development

3.1 Process Overview

Based on the discussion and analysis in chapter 2 and especially inspired by the I.S.A.A Method (Keinz and Prügl, 2010) three major phases have been identified. The first phase consists of the analysis of the market restriction and the definition of the search specification. The second phase contains the search process for possible new market opportunities based on the search specification defined in phase 1. This search process is essential as it lays the ground for the quality of the possible results. The goal of the third phase of this process finally is to decide for the most attractive identified market. As discussed in section 2.8 not only the market size itself but also other criteria need to be considered in the selection process to make the opportunity attractive for implementation within the company. Figure 3.1 already shows the complete process which will be discussed in detail in this chapter.

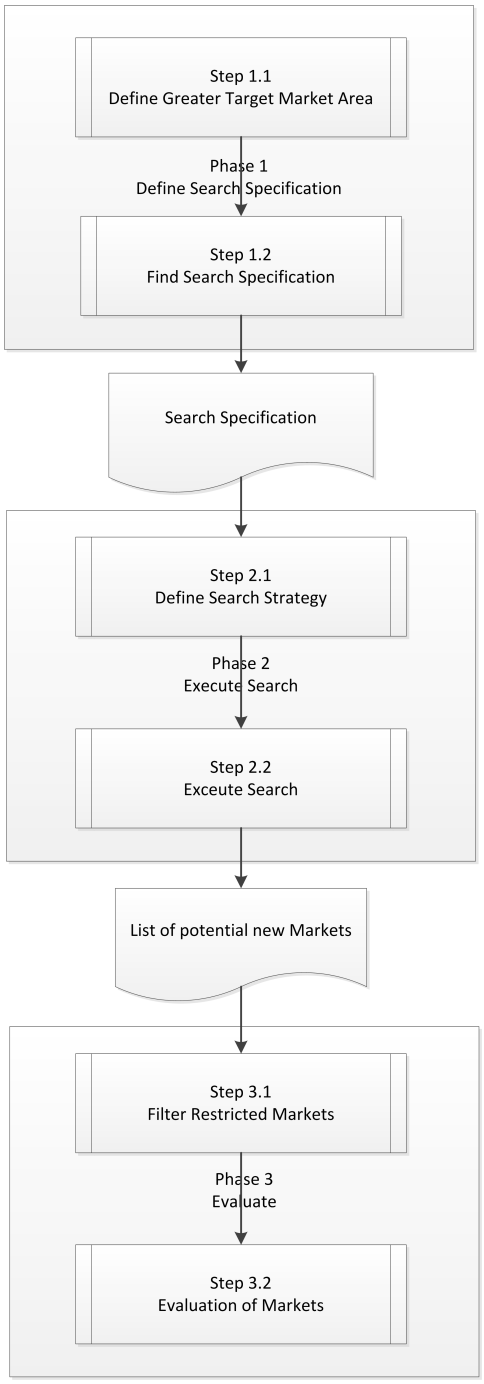

Figure 3.1: Process Overview

3.2 Phase 1: Define Search Specification

Phase 1 consists of two steps. The first step is to analyse the current market restrictions and basic definition of the search area based in the considerations in 2.3, while the second step is the actual definition of the search specification.

Step 1.1: Define Greater Search Area

Step 1 is to roughly analyse the market restrictions and it's implications and to define a greater target search area. This is done as a first step and not within search phase (phase 2) because it is considered that it has an important impact on the level of abstraction used to describe the benefits and the functionality of the solution. While this step and the restriction of the search area is obviously limiting the possible outcome of the search process, it is done to reduce the resources needed for executing the search process. To create a model as discussed in 2.3 a certain level of industry know-how is needed. As this type of industry segmentation is not straight forward it is considered valuable to develop such model within a team of people which know the target industry from different perspectives. In many companies the marketing department would eventually already have a model like this to get an overall idea about the industry the company is serving, which could be a starting point for such analysis.

Table 3.1: Target Market Sizes

No.	Industry Specialisation
I	Manufacturing of Printed Folding Cartons
Ia	???
Ib	???
II	Print & Packaging Industry
IIa	Pulp & Paper Industry
III	Manufacturing Industry
IV	All Industries

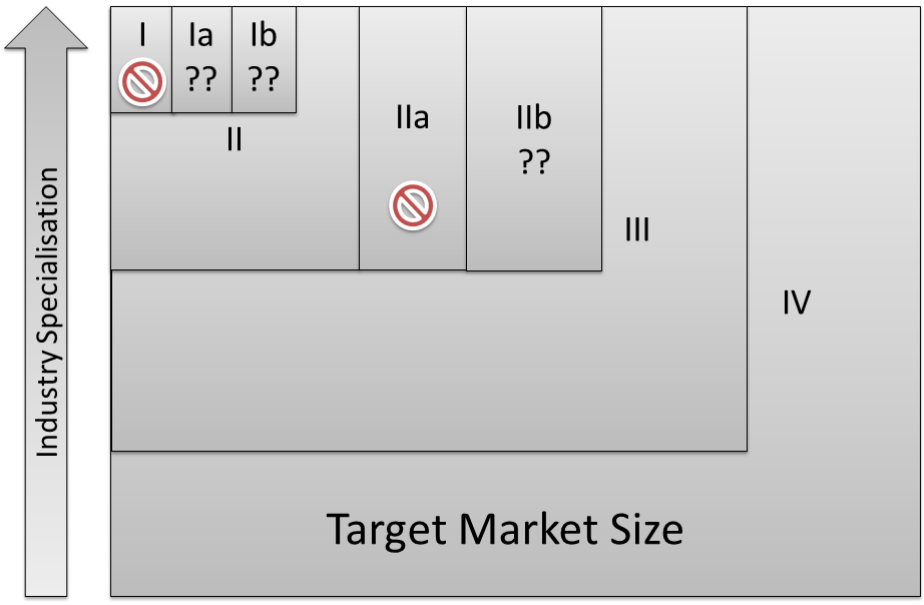

Figure 3.2: Target Market Sizes

If it is assumed that the solution in question shows some functional fit within the complete manufacturing industry, the manufacturing industry would be chosen as the greater search field for identified possible new specific markets for this solution. The industries Ia, Ib or as well IIa would be possible target outcomes of the search process in this case.

Step 1.2: Create Search Specification

As intensively discussed in 2.6 the actual search specification needs to be created as a next step. Derived from this discussion the proposed search specification consists of two parts. The basic abstract description of the solution and a set of functional fit criteria which are used to quantify how well the solution fits a current problem respectively industry.

Abstract Description of Solution

The first part is the description of the relevant features and the resulting benefits. It is important to consider the right abstraction level based on the search field chosen in Step 1.1. This step should be performed within a group of involved people to get as much different perspectives and inputs as possible. To find the right description some iterations and discussions are needed (Keinz and Prügl, 2010).

Definition of Functional Fit Criteria

The second part of the search specification is a set of functional fit criteria. A functional fit criterion is defined as important characteristic of the problem in question, which influences the usefulness of the solution to solve the given problem. As some functional fit criteria are more important then others each criterion gets a weight to express it's importance in terms of functionality. If it is a very simple problem and a very simple solution only one criterion with 100% weight would exist. The defined functional fit criteria are used within the search specification as well as in the evaluation of the identified new markets later in the process.

Some examples for functional fit criteria for e.g. the *light bulb* would be:

- Visible light is needed
- The environment is dry
- Electrical power is available

Table 3.2: Example Functional Fit Criteria Table

Functional Fit Criteria	Weight
Criterion 1	20 %
Criterion 2	20 %
Criterion 3	15 %
Criterion 4	15 %
Criterion 5	20 %
Criterion 6	10 %
Total	100 %

Output Phase1

- Definition of search field
- Search specification:
  - Description of solution's benefits and features
  - Functional fit criteria

3.3 Phase 2: Identification of Options

The second phase in the process is the identification of possible new market applications for an existing solution. To meet this target two steps are suggested. First a search strategy in terms of possible methods to search the defined search as discussed in 2.7 needs to be defined before the search process itself finally can be executed as second step.

Step 2.1: Define Search Strategy

Based on the search field and the search specification an actual search strategy needs to be derived. Often a mixed strategy is useful to search a area as large es possible with relatively low resources needed (Keinz and Prügl, 2010). Possible search strategy components which could be used are the following:

Internal Pyramiding

Pyramiding within the own company could eventually find directly new markets and/or interesting external contacts to start a external pyramiding approach. Within the own company people could eventually be identified, which could on the one hand be able to identify possible market opportunities directly or on the other hand could identify starting points for external pyramiding as well as interesting external broadcasting instruments. As the issues of local search bias could significantly reduce the amount of new markets identified it is also suggested to perform a external pyraminding search.

Internal Broadcasting

The search specification could eventually be posted internally (e.g. the Intranet or other means of internal broadcasting instruments). The goals would basically be the same as of the internal pyramiding approach.

External Pyramiding

Based on the analysis done in 2.7 the external pyramiding approach is the most promising approach to find new markets. It should be possible to overcome the local search bias and to eventually find new applications in analogous markets (Poetz and Prügl, 2009). To start an external pyramiding process promising root persons of the pyramid need to be identified before the search can start. This identification is done by the means of basic research within the search area in question. Also a brainstorming within the project team could lead to interesting starting points respectively persons here.

It needs to be mentioned that a pyramiding process as described by e.g. Poetz and Prügl (2009) typically has hundreds of involved persons within the pyramid. Such scale process could not easily be conducted from a small company. Thus the idea is to downscale this process for the needs of SMEs.

External Broadcasting

External Broadcasting as described in 2.7 is also considered to deliver promising results. It is more unlikely that broadcasting delivers a lot of results if the solution in question

is rather complex, as the recipient of the broadcast would need more time and therefore personal investment to fully understand the search specification. If the recipient does not see a possible benefit for himself immediate it's likely that he would not invest a lot of time to fully understand the features of the solution in question.

Step 2.2: Execute Search

Finally the search process is executed based in the defined search strategy. Basically a broadcasting and pyramiding approach can be executed simultaneously. If an internal pyramiding/broadcasting approach is chosen it could be useful to finish the internal search before the external is started.

Especially the pyramiding process is very interactive and agile. Based on the feedback of the interviewed persons the search specification eventually would need to be adopted. Furthermore feedback from interviewees could lead to new ideas for possible broadcasting instruments (Keinz and Prügl, 2010).

Documentation of the search process is a crucial part of the process and it's credibility (Keinz and Prügl, 2010). All outcome of contacts with different persons and contact information as well as all other relevant meta-data should be documented. If a possible new market has been identified it is also crucial to rate the possible new market according to the functional fit criteria identified before the search process. The so gathered information will be needed as an important input for the evaluation of the new market.

It is defined that each criterion can be rated with 3 discrete values based on how well the criterion fits the solutions characteristics. The possible values are shown in table 3.3.

Table 3.3: Functional Fit Rating Definition

Functional fit rate	Description of rate
0	no functional fit
1	partial functional fit
2	full functional fit

Table 3.4 shows weighted *functional fit criteria* with some sample values. The functional fit for each possible new market therefore is calculated as the weighted average

Table 3.4: Functional Fit Rating per Identified Market

Functional Fit Criteria	Weight	Rating
Criterion 1	20 %	2.00
Criterion 2	20 %	2.00
Criterion 3	15 %	1.00
Criterion 4	15 %	1.00
Criterion 5	20 %	0.00
Criterion 6	10 %	0.00
Total	100 %	1.10

of the single ratings as shown in equation 3.1.

$$FunctionalFit = \frac{\sum_{0}^{n} FunctionalFitCriterion_n * WeightOfCriterion_n}{\sum_{0}^{n} WeightOfCriterion_n} \quad (3.1)$$

Output: Phase 2

- List of identified possible new markets
- Functional Fit Rating for each solution

3.4 Phase 3: Evaluate Markets

As discussed in 2.8 the identified possible new markets need to be evaluated to find out which are the most appropriate markets to enter and to exploit. Before that a filter step is going to mark all restricted markets as unavailable for exploitation.

Step 3.1: Filter Restricted Markets

Although the impact of the market restrictions has been considered already within the definition of search field and therefore the identified market opportunities should not lay

within the restricted markets area it is possible that another restricted market has been identified by the search process. Within this step basically each identified possible new market is checked if it is restricted or not. It is suggested that restricted markets stay on the list for comparison in the evaluation, but are marked as restricted.

Step 3.2: Evaluation of Markets

Based on the discussion in section 2.8 and inspired from other methods like the I.S.A.A. method (Keinz and Prügl, 2010) a concrete rating and evaluation system is developed to enable an efficient way of choosing the most appropriate market to enter. Two main aspects have been identified: *Change Needed* on the one hand and the *attractiveness of the target market* on the other hand. While *Change Needed* mainly deals with the relevant aspects within the own organisation, the second aspect deals with external basically not influence-able market attractiveness aspects.

Dimension 1: Change Needed

As discussed in 2.8 not only the functional change needed, but also changes within the currently available internal resources as well as the change of the current strategy of the company are evaluated in this context. A rating system for quantifying theses aspects is developed within the next sections.

Functional Change Needed

Basically it can be assumed that the need for change is higher the lower the functional fit is. Therefore the changes needed to fit the new market and the changes needed are roughly indirectly proportional as shown in figure 3.3. If a value of 2 is the maximum value for the functional fit, the functional change of an actual new market is calculated as described in equation 3.2. This value can only be an indication for the change needed to make a first judgement.

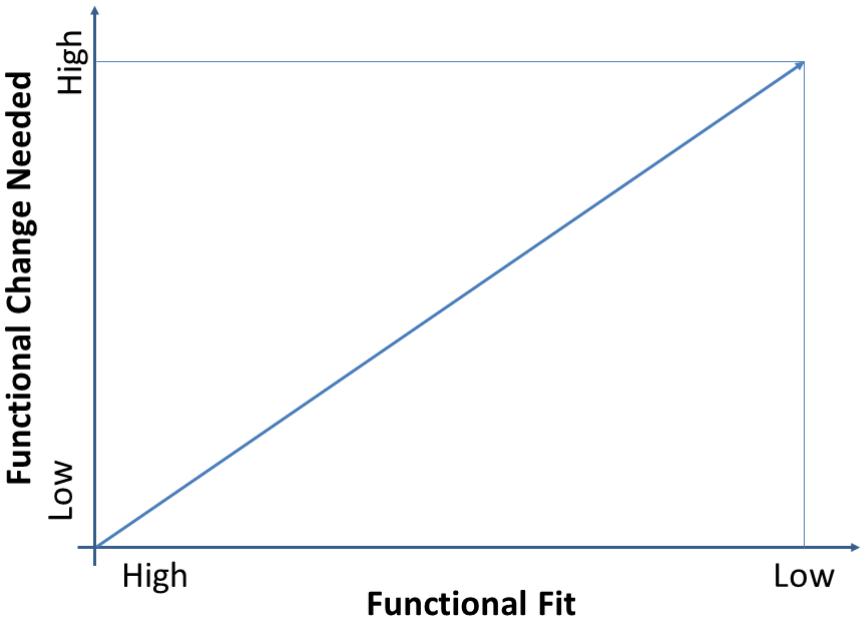

Figure 3.3: Estimated Functional Change Needed

$$FunctionalChange = 2 - FunctionalFit \tag{3.2}$$

Resource Change Needed

To estimate the internal resource change needed to enter a specific new market three components have been identified. First component is the gap to the currently available *technical resources*, like machinery, software or other technical infrastructure needed. Second component identified is the gap to the currently internal available *know how*. Finally the last component deals with the changes needed within the current *sales force* of a company for being able to effectively serve the new market. Table 3.5 shows the suggested rating system for the resources change components. Equation 3.3 shows the calculation of the effective resource change needed as arithmetic means of all three components. The *Resource Change Needed* can be seen as the inverse value of the Resource Fit as suggested in the I.S.A.A method (Keinz and Prügl, 2010).

Table 3.5: Resource Change Rating

Rate	Technical Resource Gap	Know How Gap	Sales Force Gap
0	Technical resources available	Know how available	Sales force Available
1	Resources partly available	Know how partly available	Sales force partly available
2	No Technical resources available	No know how available	No Sales force

$$ResourceChange = \frac{TechnicalResourceGap + KnowHowGap + SalesForceGap}{3} \tag{3.3}$$

Strategic Change Needed

Also for the *strategic change needed* three components have been identified. The first component deals with the current customer target industry. The gap between the current and the needed industry focus is rated therefore. Second component is the gap to the typical customer size. Because targeting large enterprises needs a different strategy as serving mostly SMEs this component seems to be valid. Finally it is rated if the companies vision would need a significant change in case the new market would be entered. Table 3.6 shows the suggested values for the actual rating. The resulting strategic change needed finally is calculated as shown in equation 3.4 again by calculating the arithmetic means. The *strategic change needed* can be seen as the inverse value of the strategic fit as suggested in the I.S.A.A method (Keinz and Prügl, 2010).

Table 3.6: Strategic Change Rating

Rate	Industry Focus Gap	Target Company Size Gap	Vision Gap
0	Already in focus	Complete match	Complete match
1	Partially in focus	Partial match	Partial match
2	Not in focus	No match	No match

$$StrategicChange = \frac{IndustryFocusGap + TargetCompanySizeGap + VisionGap}{3} \tag{3.4}$$

The total value for the *change needed* entrance of a newly identified market finally is calculated as shown in equation 3.5. It simply is the sum of the three identified change components.

$$ChangeNeeded = FunctionalChange + StrategicChange + RessourceChange \tag{3.5}$$

Dimension 2: Commercial Market Attractiveness

The commercial attractiveness of the target market is the second aspect which is taken into account for the evaluation. As analysed and argued in section 2.8 the relative size of the target industry in terms of revenue is one important component. It is used as a substitute for the solution's market size itself due to the lack of data available. The relative industry size is calculated as shown in equation 3.6.

$$RelativeIndustrySize = \frac{SizeOfIndustry}{SizeOfLargestIndustry} \tag{3.6}$$

As discussed in 2.8 the target industry attractiveness was identified as an important component to evaluate if a market is suitable or not. The three components of this dimension and the calculation of the resulting value are shown and explained in table 3.7 and equation 3.7.

Table 3.7: Resource Change Rating

Rate	Technical Advancedness of Industry	Competitiveness Between Solution Suppliers	Entry Barriers For New Solutions
0	Low	Low	Low
1	Mid	Mid	Mid
2	High	High	High

$$\begin{aligned} IndustryAttractivness = 6 - TechnicalAdvancednessOfIndustry \\ + CompetitivenessBetweenSolutionSuppliers \\ + EntryBarriersForNewSolutions \end{aligned} \tag{3.7}$$

Visualisation of Evaluation

Finally after all values are gathered and calculated a figure like shown in 3.4 can be drawn. This type of graphical overview enables the evaluation of the markets and shows the trade-off between attractiveness of market and internal change needed. In the visualisation shown in figure 3.4 it can be seen, that two identified markets could be interesting. Possible new market No. 2 for example shows a significant industry attractiveness and a reasonable market size at a relatively low value for the *change needed*. Market number 3 on the other hand also could be quite interesting. Although the *needed change* is very high compared to the other markets, the relative market size also is quite high and shows that the market could be interesting for exploitation.

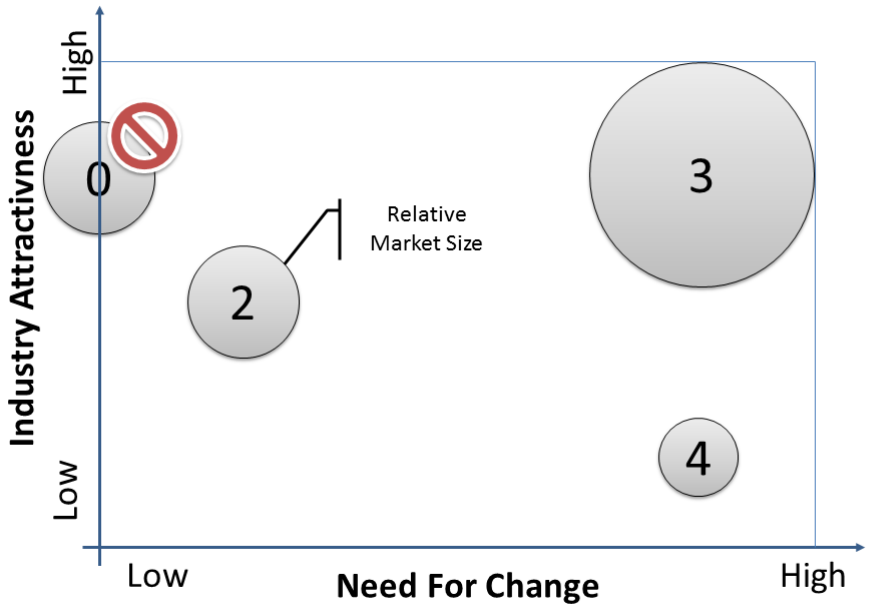

Figure 3.4: Visualisation of Evaluation

Output: Phase 3

- Most promising new markets for the technical solution in question

- An indication of the following relevant dimensions for the solutions:
  - Functional change needed
  - Target industry attractiveness
  - Relative target industry size

CHAPTER 4

Case Study - VMI Planning Cockpit

4.1 Mapping the Scene

free-com internet services gmbh

free-com internet services gmbh (free-com) is a software company with roughly 20 employees located in Vienna. Core competence is the custom development of business software exactly fitting the needs of it's client. The firm was founded in 2000 as a subsidiary of Mayr-Melnhof Karton AG (MM). MM is one of Europe's market leader in recycled carton board (8 mills throughout Europe) as well as one of Europe's largest manufacturer of folding cartons (30 plants in greater Europe). In terms of equity distribution of free-com this means 55 percent of the shares belong too MM, while the rest stays in the hands of the management team. The main focus in the first years of free-com was to fulfil the specific business software needs of MM, mainly supporting web based communication portals and Intranet tools.

There are several reasons why an own firm was created to fulfil this needs. One of the most important for sure was the possibility to leverage the created assets and generate revenue on the outside market. With one serious restriction to that: Per statute free-com is not allowed to work for direct competitors of MM which forces free-com to search for customers in other industries. Although free-com succeeded in doing some

projects for external customers in the first years of its existence it still has not managed to grow the external business to a substantial part of revenue by 2012.

The outcome of this thesis should enable free-com gmbh to be able to fully leverage the technical assets created in projects with it's main customer Mayr-Melnhof. To get first empirical results of the designed process it should be used to find possible new markets for free-com's product *VMI planning cockpit*.

The Technical Solution

While vendor managed inventory (VMI) supply scenarios are quite common and established in industries like the automotive supply chain since the ninety-eighties, these kind of supply strategy still is not completely established in the fast moving consumer goods (FMCG) supply chain. In the years since 2000 more and more global FMCG (fast moving consumer goods) manufacturer requested from their suppliers to produce and deliver the material based on regularly and electronically sent demand forecasts and certain business rules. No classic purchase orders are sent and acknowledged any more. In theory this scenario has advantages for the customer and the supplier. While the advantages for the customer (mainly reduction of administrative work) are more easily to realise, it is not so easy to realise the potential on the vendor side. The vendor needs to decide when to produce and when to deliver the goods into the customer's warehouse. To make sure to be able to deliver, to optimize stock levels and optimize production batch sizes a perfect and accurate overview throughout the complete supply chain is needed (future customer demands, stock levels and historical data).

Today's ERP (Enterprise Resource Planing) systems typically do not support this type of planning out of the box. This is the reason why vendors often built their own tools based on simple office tools like Microsoft Excel ™. These tools often do not show a high level of technical integration. The planning process with these tools in many cases is very time consuming and the output often is far from being optimized. Finally free-com developed a new tool completely integrated within the MM ERP-system. Planning time and planning accuracy is dramatically improved and finally it is possible for the vendor to realize the theoretical VMI benefits on the vendor side as well.

4.2 Project Setup

For the execution of the search process within free-com a project team consisting of 3 people has been defined. The project team consisted of the technical director (the Author), the marketing director and the managing director of free-com. The duration of the project was planned to be roughly a month. To initiate the project a kick off meeting to present the idea and the detailed process to the project team was held.

4.3 Phase 1: Define Search Specification

The search specification itself was jointly created within the project team based on the description of the process and on the already established market experience.

Step 1.1: Definition of Greater Search Area

Based on the prior market knowledge and the considerations under 3.2 a model of the current market situation has been developed as shown in table 4.1 and figure 4.1. It shows that the *Manufacturing of Printed Folding Cartons* is the primary restricted market. Although the solution has some very *folding carton specific* functionalities it is assumed that the *core functionality* also could be valuable for other manufacturers which have the demand of VMI-planning.

After some further internal discussion it was decided, that the complete ***Manufacturing Industry*** should be the greater search area for alternative applications of the "VMI Planning Cockpit".

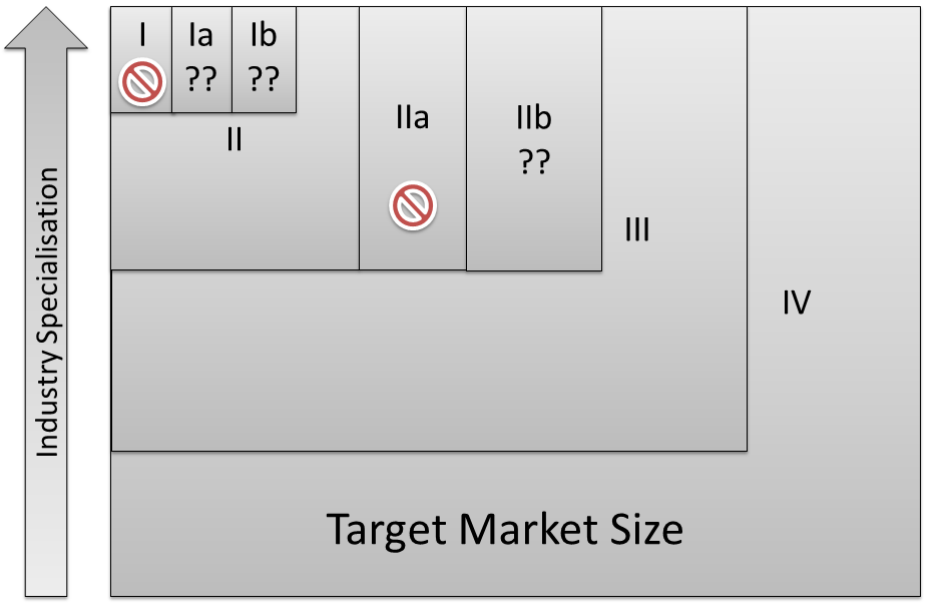

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Figure 4.1: Target Markets Model

Table 4.1: Greater Search Area

No.	Industry Specialisation
I	Manufacturing of Printed Folding Cartons
Ia	???
Ib	???
II	Print & Packaging Industry
IIa	Pulp & Paper Industry
III	Manufacturing Industry
IV	All Industries

Step 1.2: Create Search Specification

Based on the greater search area and the prior experience of the project team the following search specification and functional fit criteria have been identified jointly. The abstraction level of the search specification was chosen in a way to fit the recipients

within the manufacturing industry. It is clearly explained that it is a solution for *VMI-Planning scenarios*. All *folding carton process* specific functionalities have been left out in the description of the benefits and main functionality. Also the functional fit criteria have been identified and weighted according to the estimated relevance of criterion.

It also would have been possible to explain the functionality even more abstract without the mentioning of *VMI planning* at all. Such a more abstract search specification might be able to reveal more and even broader market applications which even might be more attractive. But it is considered that these markets would need more *total change* on the one hand and a larger search field, which would need more resources to be searched, on the other hand.

Search Specification

What is the "VMI Planning Cockpit" ?

The "VMI Planning Cockpit" is a completely integrated software planning tool. The cockpit was created together with one of our major customers. It works well for doing the VMI planning for hundreds of articles every day and serves the customers. Before this integrated tool was used our customer used tons of excel sheets to solve this problem, which took much more time and did not achieve outstanding planning results. Although the tool is quite complex and specific to the customer's needs, we are sure that there are several other companies in different industries out there, which face the same or a similar problem.

What is this solution about ?

VMI stands for Vendor Managed Inventory. Often also referred to as SMI (Supplier Managed Inventory). This concept basically means, that the supplier is responsible for producing and delivering material based on the customer's demand. The solution provides a complete overview of the supply chain for a specific article at a specific point in time. This enables the supplier to make decisions about needed actions, like triggering new production orders or deliveries to the customers warehouse. The goal is to ensure the

supply of goods for the customer for any given time on the one hand, while optimizing stock levels and thus working capital on the other hand. No traditional Purchase Orders are sent from Customer to Supplier any more.

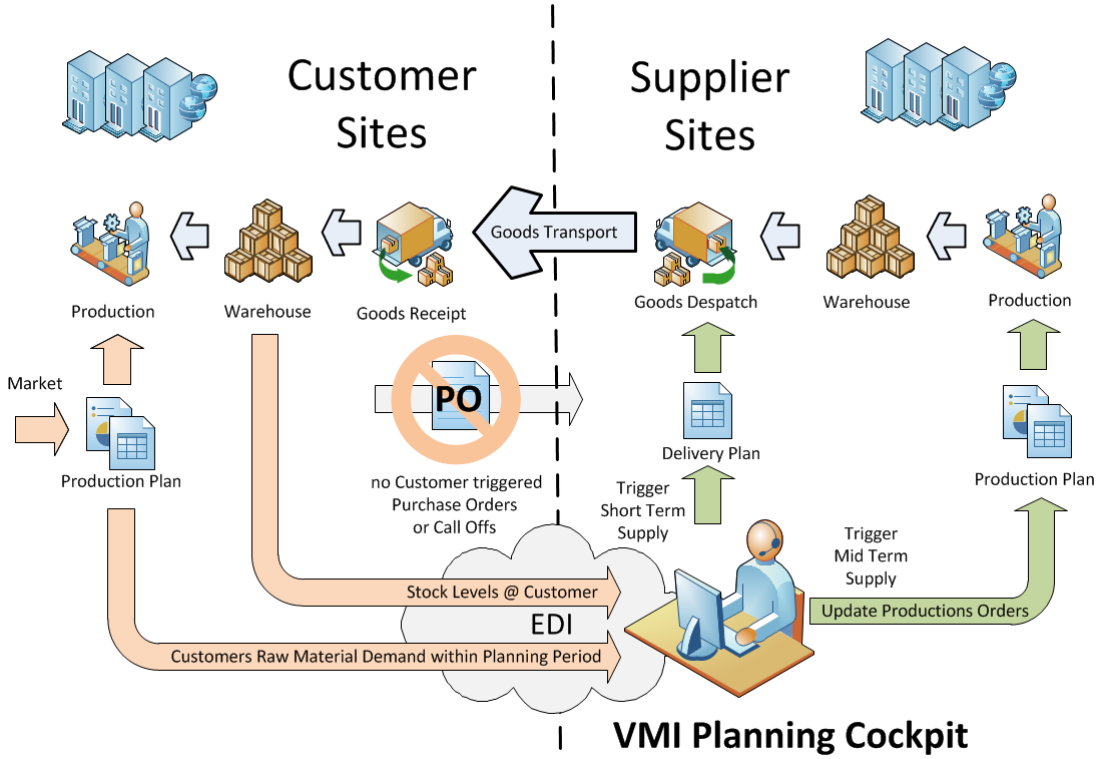

Figure 4.2: Working Principle of the VMI-Planning Cockpit

Although we are not trying to sell you the VMI process itself here, it is said to provide the following business benefits:

- Highest order and delivery planning accuracy
  - Full Supply Chain Transparency
  - Minimize "out of stock" situations
- minimize working capital
  - optimize production batch sizes on supplier side
  - minimize warehouse costs by bringing down stock levels
- minimize transport costs by optimizing the truck loads

- binding of the customer through outstanding service

To fully leverage these possible benefits of VMI the supplier needs some kind of tooling to merge the customers and suppliers data and to calculate and show all figures needed to make supply chain relevant decision.

The solution provides the following main benefits when a VMI planning solution is needed:

- High planning accuracy through full supply chain transparency
  - No (avoidable) stock outs through sophisticated alerting system
  - Automated suggestions for optimized deliveries based on agreed rules
  - Automated suggestions for optimized production orders based on agreed rules
- No data collection issues through automated data collection and preparation
- No manual booking of orders and deliveries through full ERP-Integration

It is considered that the solution fits best if the problem meets the following criteria:

Table 4.2: Functional Fit Criteria for the VMI-Planning Cockpit

Functional Fit Criteria	Weight
VMI-Planning for Production Orders Needed	20 %
VMI-Planning for Deliveries Needed	20 %
Products are Custom Made for the customer	15 %
Products have a relatively High Production Lead Time	15 %
A relatively High Number Of Products need to be planned regularly	10 %
Customers demands change relatively often	10 %
Products are shipped on pallets and on the road	10 %

4.4 Phase 2: Execute Search

Step 2.1: Define Search Strategy

The project team decided to use a combined external search strategy. Due to the smallness of the company an internal approach has already been done informally before the project has been started. It was decided to create a public blog as shown in appendix A which explains the idea of the process itself on the one hand as well as the search specification for the "VMI-Planning Cockpit" on the other hand. The blog has been the starting point for the *Broadcasting* search as well as the for a simple *Pyramiding* approach.

Step 2.2: Execute Search

External Broadcasting

Three broadcasting instruments have been identified within the project team:

- The created Blog itself:
  http://solution-jeopardy.blogspot.com
- A Logistics Group on the Business Network XING:
  http://www.xing.com
- A Logistics Group on the Business Network LinkedIn:
  http://www.linkedin.com

The link to blog and a short explanation has been posted on 9.7.2012 to these platforms. After three weeks *no answer* has been posted.

External Pyramiding

The small scale external pyramiding search have been executed by two members of the project team. Possible starting persons have been identified and contacted mainly via e-mail. The whole process has been documented by the means of a spreadsheet as shown in table 4.3.

Table 4.3: Search Result Table

Person	Relationship	Prof. Context	Contact	Answer	Medium	Feedback	Markets Identified	Referred to 1	Referred to 2
Person 1	former Co-Worker	consultant - erp	12.07.2012	20.07.2012	XING	unclear			
Person 2	Close Friend	process engineering	12.07.2012		E-Mail	no			
Person 3	Close Friend	engineering	12.07.2012	13.07.2012	E-Mail	yes		Person 8	
Person 4	Close Friend	project management - it	12.07.2012	13.07.2012	E-Mail	yes		Person 10	Person 11
Person 5	Friend	office management	12.07.2012	19.07.2012	E-Mail	yes			
Person 6	former Co-Worker	consulting - manufacturing	12.07.2012	16.07.2012	XING	yes			
Person 7	Friend	consulting - processes	12.07.2012	14.07.2012	E-Mail	yes	Suppliers of Folding Cartons Suppliers of Flexible Packaging		
Person 8	Friend	consulting - manufacturing industry	12.07.2012	20.07.2012	E-Mail	yes	Suppliers of Cast Parts to the Industry		
Person 9	Friend	product management - processed food	12.07.2012		E-Mail	no	Suppliers of Processed Food to Retail	Person 8	
Person 10	unknown	consulting - manufacturing industry	12.07.2012	19.07.2012	E-Mail	yes	Suppliers of Packaging to FMCGs		
Person 11	unknown	consultant - automotive industry	12.07.2012		E-Mail	no			
Person 12	Co-Worker	consultant - erp	12.07.2012	15.07.2012	E-Mail	yes	Suppliers the Automotive Industries		
Person 13	Co-Worker	managing director - erp	12.07.2012		E-Mail	no			
Person 14	Customer	manager - packaging industry	12.07.2012		XING	no			
Person 15	former Customer	managing director - it	12.07.2012	17.07.2012	E-Mail	yes	Suppliers of glue-lam trusses		
Person 16	Friend	purchasing - electronics	13.07.2012		XING	no			
Person 17	Author	technical - director	12.07.2012		-	no	Suppliers to Cereal Producers Suppliers to Detergents Producers		

After the search process was finished and all results have been analysed the list shown in table 4.4 of possible new markets has been identified.

Table 4.4: List of Identified Possible New Markets

No.	Name	Industry
1	Suppliers of Folding Cartons of large FMCGs	Print & Packaging
2	Suppliers of Flexible Packaging of larger FMCGs	Print & Packaging
3	Suppliers of Cartonboard	Paper & Cartonboard
4	Suppliers of Processed food to Retailers	Food Processing
5	Suppliers of Raw Material for Detergents Producers	Chemical Industry
6	Suppliers of Raw Material for Cereal Producers	Agriculture
7	Suppliers of Cast Parts	Foundry Industry
8	Suppliers of Custom Parts to the Automotive Industry	Automotive Industry
9	Suppliers of Glue-Lam Trusses	Wood processing industry

Based on the discussion with the persons who actually identified new markets on the one hand and further research done by the project team on the other hand the following functional fit rates for the different possible new markets have been identified.

Table 4.5: Functional Fit Rating of Identified Markets

Functional Fit Criteria	**No.:**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
VMI Planning for production orders needed	20%	2	2	2	2	0	0	2	2	2
VMI Planning for deliveries needed	20%	2	2	1	2	1	1	1	1	1
Products are custom made for the customer	15%	2	2	2	2	0	0	2	1	2
Products have a relatively high production lead time	15%	2	1	2	2	0	1	2	2	2
A relatively high number of products need to be planned regularly	10%	2	2	1	1	0	1	1	1	2
Customers demands change relatively often	10%	2	2	1	1	2	2	1	0	0
Products are shipped on pallets and on the road	10%	2	1	2	2	0	2	2	2	0
Functional Fit	100%	2,00	1,75	1,60	1,80	0,40	0,85	1,60	1,35	1,40

4.5 Phase 3: Evaluate Markets

As a next step the identified possible new markets have been evaluated based on the rating system developed in section 3.4.

Step 3.1: Filter Restricted Markets

A first evaluation of the possible new market opportunities shows that one additional market has been identified which actually also is restricted as another division of the Mayr-Melnhof Group is in the business of carton-board manufacturing. While market number one is restricted as it is the primary market the solution was developed for, market number three also needs to be marked as restricted due to this fact. For comparison reasons the further evaluation also is done for the restricted markets.

Table 4.6: Filter Restricted Markets

No.	Name	Industry	restricted
1	Suppliers of Folding Cartons of Large FMCGs	Print & Packaging	X
2	Suppliers of Flexible Packaging of Larger FMCGs	Print & Packaging	
3	Suppliers of Cartonboard	Paper & Cartonboard	X
4	Suppliers of Processed food to Retailers	Food Processing	
5	Suppliers of Raw Material for Detergents Producers	Chemical Industry	
6	Suppliers of Raw Material for Cereal Producers	Agriculture	
7	Suppliers of Cast Parts	Foundry Industry	
8	Suppliers of custom Parts to the Automotive Industry	Automotive Industry	
9	Suppliers of Glue-lam Trusses	Wood Processing Industry	

Step 3.2: Evaluation of Markets

To actually identify the new markets which are most attractive a rating according to the evaluation system developed in 3.4 needs to be done.

Change Needed

The first dimension which has been rated was the *Change Needed* to fit the new market. Based in the functional fit values already available the functional change component could be derived. Furthermore an actual rating for the *Resource Change* needed as well as the *Strategic Change* was done. The ratings for the components have been made

jointly by the team members based on their experience on the one hand and based on research and interviews with experts on the other hand. Table 4.7 shows the resulting *Change Needed* matrix.

Table 4.7: Change Needed

Market No.:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Functional Fit	2,00	1,75	1,60	1,80	0,40	0,85	1,60	1,35	1,40
Functional Change Needed	0,00	0,25	0,40	0,20	1,60	1,15	0,40	0,65	0,60
Technical Resource Gap	0,00	0,00	0,00	1,00	1,00	1,00	2,00	1,00	0,00
Sales Force Gap	0,00	0,00	0,00	1,00	1,00	1,00	2,00	1,00	0,00
Know How Gap	0,00	0,00	0,00	1,00	2,00	2,00	1,00	2,00	1,00
Resource Change Need	0,00	0,00	0,00	1,00	1,33	1,33	1,67	1,33	0,33
Industry Focus Gap	0,00	0,00	1,00	2,00	2,00	2,00	1,00	1,00	1,00
Target Company Size Gap	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00
Vision Gap	0,00	0,00	0,00	1,00	2,00	2,00	2,00	1,00	1,00
Strategic Change Needed	0,00	0,00	0,33	1,00	1,33	1,33	1,33	1,33	0,67
Total Change Needed	0,00	0,25	0,73	2,20	4,27	3,82	3,40	3,32	1,60

At this point of the evaluation the *Needed Change* already be discussed. Figure 4.3 shows the change rating for the different identified markets. The analyses of the chart shows that some markets have been identified which would require more change than others. As a reference value the restricted primary market shows a value of 0. The markets two, three, four and nine show a relatively low *Change Needed* value. Unfortunately market number three was marked as restricted and therefore is not available for exploitation. In terms of *Change Needed* market number two seems to be very interesting, because it shows a very low overall value on the one hand and because it does only require some *Functional Change* and no *Strategic or Resource Change* according to this rating. Currently no further market related aspects are taken into consideration. This dimension will be added within the next step of the evaluation.

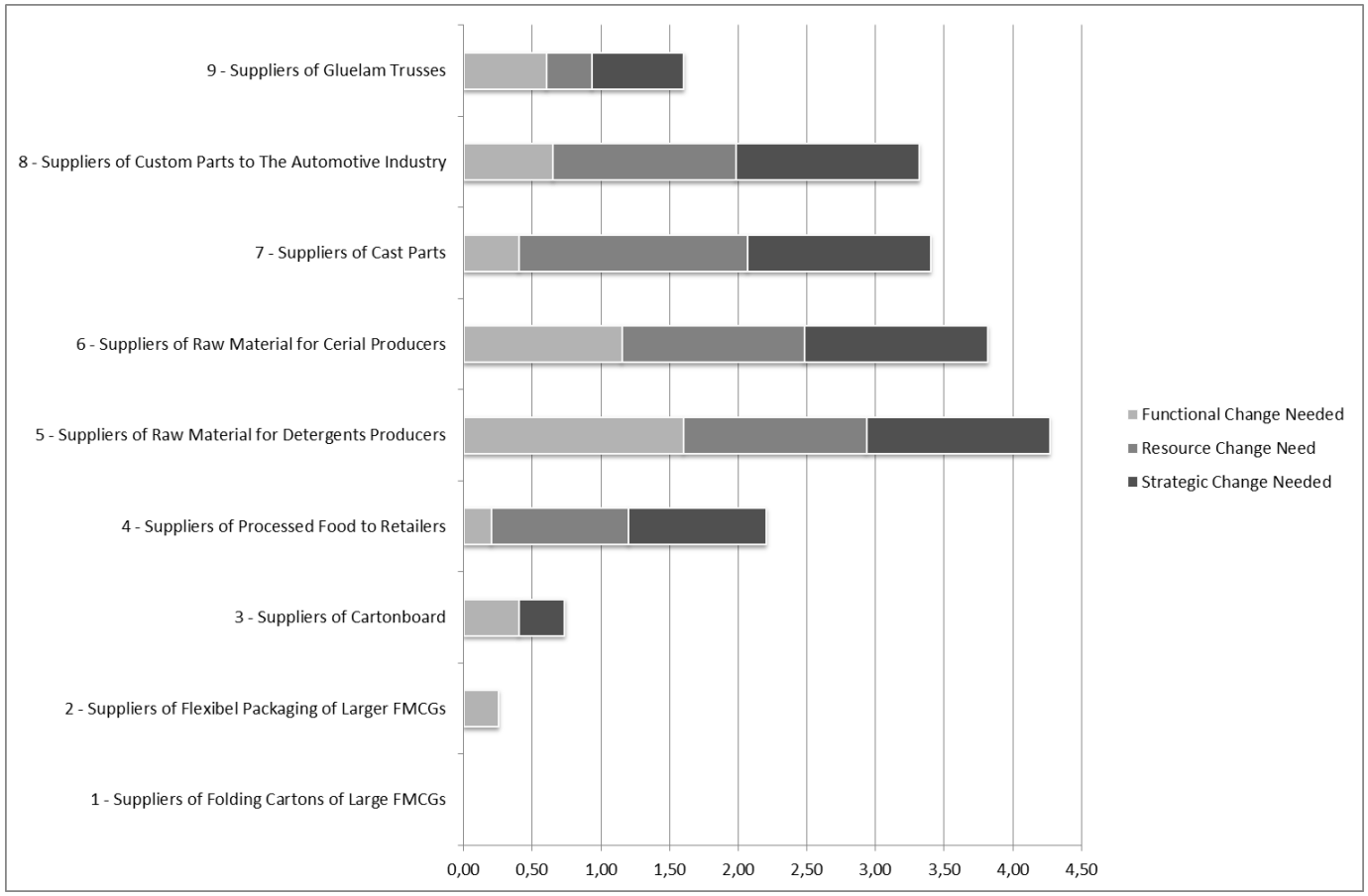

Figure 4.3: Change Components of Different Markets

Commercial Market Attractiveness

The second important aspect is to rate the attractiveness of the industry for solution suppliers. This rating was done based on the experience of the team members as well as by contacting industry experts and asked. It needs to be said that these rating values still are biased from the personal experiences of the person who dies the rating to a certain degree as it is very hard to find objective measures for such a rating system.

Table 4.8: Evaluation of Target Industry Attractiveness

Market No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Competitiveness Between Solution Suppliers	1	1	1	2	1	1	1	2	1
Entry Barriers for new Solutions	1	2	2	2	1	1	1	2	1
Technical Advancedness Of Industry	0	0	0	1	1	1	1	2	1
Target Industry Attractiveness (-)	2	3	3	5	3	3	3	6	3
Target Industry Attractiveness (max=6)	4	3	3	1	3	3	3	0	3

The final information needed for being able to evaluate the estimated size of the market in question. Based on publicly available information (see Appendix B) the size respectively revenue of the target industry has very roughly been estimated. This value is by no means the size of the market the solution could be sold in. This industry figures are only substitutes to get the a rough idea of the industry's dimension. As well they evaluation is only done on a relative basis for comparing the markets. The absolute figures are not useful for the evaluation at all.

Table 4.9: Relative Industry Size

Market No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Rough Target Industry Size in Bn €	11,30	7,00	15,00	40,00	14,00	15,00	10,00	**50,00**	20,00
Relative Target Industry Size	0,23	0,14	0,30	0,80	0,28	0,30	0,20	1,00	0,40

Visualization & Interpretation

Figure 4.4 finally shows the graphical representation of the overall evaluation. This type of chart enables the searching entity to easily see the trade off between the *change*

needed to enter the market on the one hand and the attractiveness of the target market in the other side. Market **two** which was identified as attractive market based on the *change needed* doesn't have very large market but it shows a high target industry attractiveness. Although the market is assumed to be rather small this market is considered interesting.

As market **three** as well does not need a lot of *change* and has a larger market an exploitation would be quite interesting. Unfortunately the market was marked as restricted. The markets **five, six and seven** would need relatively high level of *change* at the cost of having a quite small market sizes. The larger markets **four and eight** show a low attractiveness of the target industry and a relatively high *change needed*.

Finally market nine also could have been identified as being quite interesting because it has a significant market size and does not need a high level of *change*. The markets which would be most attractive to be exploited next would therefore be markets **two and nine**.

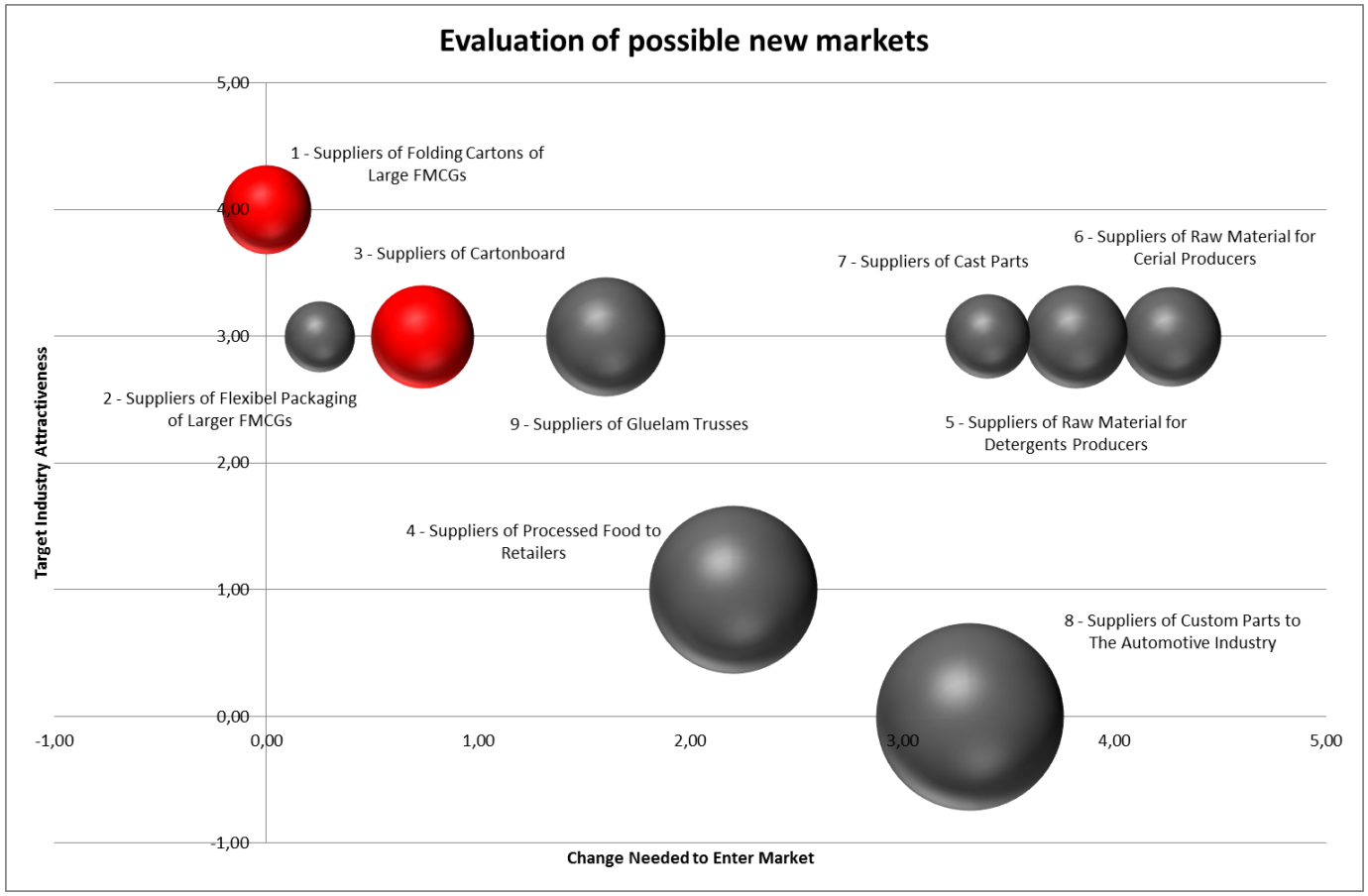

Figure 4.4: Evaluation of Identified Potential New Markets

CHAPTER 5

Conclusio

5.1 Results of Case Study

It can be said that the results of the case study are quite promising. With relatively low effort it was possible to identify several possible new markets without market restrictions for the *VMI Planning Cockpit* which have been previously unknown. Furthermore it was possible to evaluate the trade-off between the adoption needed and the commercial attractiveness of the new application. The marketing and sales team of free-com currently is actively approaching potential customers in the *Flexible Packaging Industry* as a first step to find a first customer in this new target industry. The results of these efforts will show if the assumptions about the *functional change needed* and the *attractiveness of target market* are basically valid.

5.2 Process Design Review

The design of the process has proven to be executable within an real SME environment. A presentation of the process and it's basic ideas to the project team showed that the concept is relatively easy to understand for others. This is important as the project team needs to understand the process completely. Also the effort needed for execution was

reasonably low within the conducted case study and therefore the process is suitable for small and medium enterprises.

The definition of the search specification itself has shown to be crucial. It is therefore suggested to put a significant amount of effort in the specification and to test if it is understandable. The feedback during the execution of the search process showed that the search specification in this case study might have been too extensive. It therefore is suggested to make it as short and understandable as possible, but still complete.

The execution of the search process reveals that the most effective way of finding people which are able to identify new market solutions is external pyramiding. One further outcome is that the best answers come from personal contacts of the searcher (not necessarily professional contacts). As the person approached needs to put some personal effort in the activity to think about possible markets the personal relationship fosters the willingness to contribute. Broadcasting in diverse communities did not result in any significant success. The reason therefore seems to be that the anonymous recipient of the search specification does not have a real motivation to contribute and also do not have a personal relationship.

Although the methods used for the evaluation of the markets are considered logically sound, the results can only be as valid as the input data. The input data in this case are the diverse ratings on the one hand and some market data gathered on the other hand. It has been shown that the input ratings are always biased somehow from the person doing the rating due to the lack of values which can be objectively measured. The market data itself is very hard to gathered and often need to be estimated as well. Furthermore the execution of the evaluation process has shown that the number of different input variables which need to be rated is quite high. To further simplify the process it might be considered to reduce the numbers of variables which need an actual rating.

5.3 Reflection

Finally it could be said that the designed process can be a solid structured and methodically alternative to *brainstorming* in combination with *professional networking*. It might have been possible to eventually identify the same alternative new markets by just

brainstorming and by asking around within the company's and the personal network. On the one hand this can be seen as valid criticism for the bare search process, but one the other hand the structured and analytical process to identify the most attractive market is assumed to enable more precise identification of new target markets.

5.4 Outlook

Due to the success the case study has shown free-com's management has decided to execute the process for two further business software solutions which have been developed for the *folding carton manufacturing industry* and therefore currently can not be offered to other customers due to exclusivity agreements with Mayr-Melnhof Packaging.

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APPENDIX A

Search Specification as Blog

A.1 Search Specification as Blog

Wanted ! The Problem to an existing Solution ! Please Help !

Sonntag, 1. Juli 2012

Searching for Problems ? Why would this be of any sense ?

I'm currently working on my Masters Thesis in the field of Entrepreneurship and Innovation.The goal of my thesis is to find an effective way of identifying applications (problems to solve) for already existing solutions. The economic idea behind this is to leverage the development already made in the development of the solution and thus open up new markets for this or a sligthly adopted solution. One important part of the framework is to search for problems to solve (use cases) based on a common description of the solution. This blog is part of this search process for one specific example and should be used to broadcast the description of the existing solution to as many potential problem holders as possible.

If you would like to support me, please read the next blog article ...

Just contact me if you have any further questions about the project or the thesis

Chris (christiancerny@gmail.com)

Eingestellt von chrisc um 15:19 Keine Kommentare:

Who could need the "VMI Planning Cockpit" ?

What is the "VMI Planning Cockpit" ?

The "VMI Planning Cockpit" is a completely integrated software planning tool. The cockpit was created together with one of our major customers. It works well for doing the VMI planning for hundreds of articles every day and serves the customers. Before this integrated tool was used our customer used tons of excel sheets to solve this problem, which took much more time and did not achieve outstanding planning results. **Although the tool is quite complex and specific to the customers needs, we are sure that there are several other companies in different industries out there, which face the same or a similar problem.**

The aim of this site is to find such industries, business cases and even actual companies !

VMI ?! What is this solution about ?

VMI stands for Vendor Managed Inventory. Often also referred to as SMI (Supplier Managed Inventory). This concept basically means, that the supplier is responsible for producing and delivering material based on the customers demand. The solution provides a complete overview of the supply chain for a specific article at a specific point in time. This enables the supplier to make decisions about needed actions, like triggering new production orders or deliveries to the customers warehouse. The goal is to ensure the supply of goods for the customer for any given time on the one hand, while optimizing stock levels and thus working capital on the other hand. No traditional Purchase Orders are sent from Customer to Supplier any more.

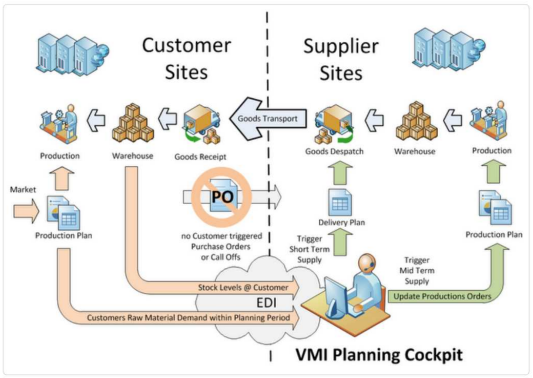
Although I'm **not trying to sell** you the VMI process itself here, it is said to provide the following business benefits:

- Highest Order and Delivery Planning Accuracy
  - Full Supply Chain Transparency
  - Minimize "Out of Stock" Situations
- Minimize Working Capital
  - Optimize Production Batch Sizes on Supplier Side
  - Minimize Warehouse Costs by bringing down Stock Levels
- Minimize Transport Costs by optimizing the Truck Loads
- Binding of the Customer thru outstanding service

To fully leverage these possible benefits of VMI the supplier needs some kind of tooling to merge the customers and suppliers data and to calculate and show all figures needed to make supply chain relevant decision.

Our solution provides the following main benefits when a VMI planning solution is needed:

- **High planning accuracy thru full supply chain transparancy**
  - **No (avoidable) stock outs thru sophisticated alerting system**
  - **Automated suggestions for optimized deliveries based on agreed rules**
  - **Automated suggestions for optimized production orders based on agreed rules**
- **No data collection issues thru ... automated data collection and preparation**
- **No manual booking of orders and deliveries thru ... full ERP Integration**



basic principal of the vmi planning process

The solution fits best if following criteria are met:

- Products are **Custom Made** for the customer
- Products have a relatively **High Production Lead Time**
- A relativly **High Number Of Products** need to be planned regularly
- Customers **Demands Change Relatively Often**
- Products are shipped on **Pallets And On Road**

I might have some input ! What's next ?
That's great !!! If you read the description of the solution above and you have the feeling that you know a company or a specific industry which could benefit from a solution which is capable of easing the process of VMI planning, please just send me a personal e-mail to christiancerny@gmail.com or post as a comment in this blog if it's a common info.

When making a suggestion please be as specific as possible. A potential company's name would be perfect, but it also would be very helpful if you give us a hint on a specific industry or a business case. While something like "Suppliers of xyz to the automotive industry" would be very helpful, "Automotive" industry as such would not be specific enough to really narrow down a possible industry part. Please also note in some words why you think the solution fits to the industry based on the defined fit criteria.

Reply to: christiancerny@gmail.com
Well ... I would like to help ! But contentwise this stuff is non of my business at all !
If this is the case you still could help me a lot to make this project a success simply by forwarding or sharing this link with people you know, who might have an idea where this solution could fit. Actually I'm especially thinking of people **working or have been working in manufacturing industries directly or as a consultant.**

This is nothing new ! I know other Software which does this type of planning.
Well. Yes. We know this. Still there are plenty of industry specific special need, which need to be addressed. That's the reason why we published the criteria, when our solution fits best. But if you know software which does address this topic please be so kind and share with us: christiancerny@gmail.com

Is this some kind of hidden new marketing activity ? You just want to sell this product !
While there is always some commercial aspect behind a MBA Master Thesis this is not a direct sales or marketing activity. We currently just would like to find out if there are interesting target markets for this solution out there.

Ok ! Thats good for you ! But what's in for me ?
Well. Have I mentioned thats a project for my master thesis which I really would like to finish as soon as possible. As well I'm sure you are all familir with the concept of Karma ..... ;-)

Seriously: If you leave me your contact information I would love to keep you up to date about the results of the my thesis and this experiment.
Many Many thanks for your support in advance !

Christian

Eingestellt von chrisc um 04:21 Keine Kommentare: Auf Google empfehlen

Startseite

Abonnieren Posts (Atom)

Blog-Archiv

▼ 2012 (2)
▼ Juli (2)
Searching for Problems ? Why would this be of any ...
Who could need the "VMI Planning Cockpit" ?

Über mich

chrisc
Mein Profil vollständig anzeigen

APPENDIX B

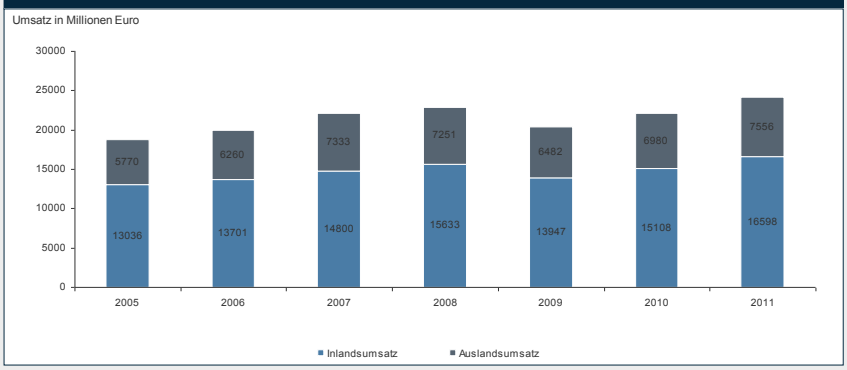
Industry Size Data

B.1 Industry Size Data

Umsatz der Verpackungsindustrie in Deutschland

Deutschland

In- und Auslandsumsatz der Verpackungsindustrie* in Deutschland in den Jahren 2005 bis 2011 (in Millionen Euro)



Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Statistisches Bundesamt, destatis.de

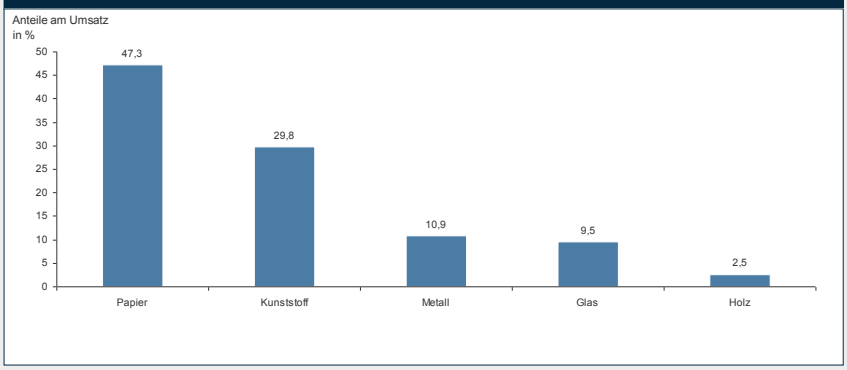
ID 165435

Verpackungsindustrie - In- und Auslandsumsatz bis 2011

Merkmal	Eigenschaft
Erhebungszeitraum	2005 bis 2011
Untersuchungsgegenstand	Umsatz der Verpackungsindustrie
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	Statistisches Bundesamt
Herkunftsverweis	destatis.de
Veröffentlichungsdatum	2012
Hinweis	* Zur Darstellung der Verpackungsindustrie wurden hier folgende Wirtschaftszweige des Statistischen Bundesamts verwendet und die Umsatzzahlen addiert:"Herstellung von Verpackungsmitteln, Lagerbehältern u.A. aus Holz""Herstellung von Hohlglas""Herstellung von Verpackungen und Verschlüssen aus Metall""Herstellung von Verpackungsmitteln aus Kunststoffen".Diese Statistik kann unter dem im Herkunftsverweis angegebenen Link aufgerufen werden. Geben Sie in der Suche den Code "42111-0005" ein. Werte wurden gerundet.
Lesehilfe	Die Statistik zeigt die Entwicklung des In- und Auslandsumsatzes der Verpackungsindustrie in Deutschland in den Jahren 2005 bis 2011. Im Jahr 2007 erzielte die deutsche Verpackungsindustrie einen Inlandsumsatz in Höhe von rund 14,8 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/165435/umfrage/Umsatz-der-Verpackungsindustrie-in-Deutschland-/

Umsatzanteil einzelner Segmente der Verpackungsindustrie
Deutschland

Umsatzverteilung der Verpackungsindustrie in Deutschland nach Bereichen im Jahr 2011



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Statistisches Bundesamt, destatis.de

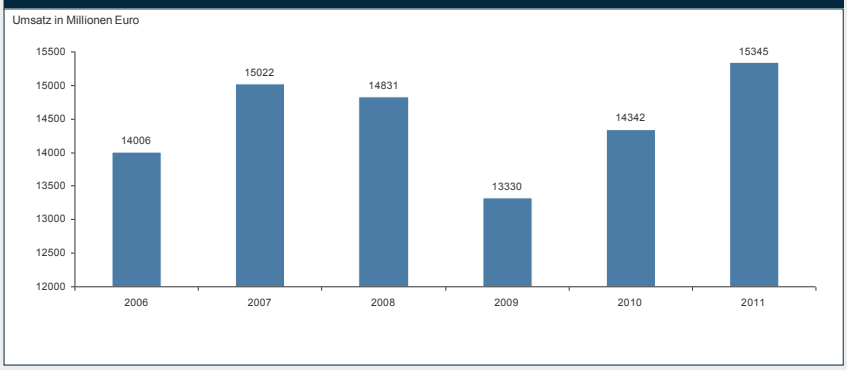
ID 165437

Verpackungsindustrie - Umsatzanteile nach Segmenten 2011

Merkmal	Eigenschaft
Erhebungszeitraum	2011
Untersuchungsgegenstand	Umsatzanteil einzelner Segmente der Verpackungsindustrie
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	Statistisches Bundesamt
Herkunftsverweis	destatis.de
Veröffentlichungsdatum	2012
Hinweis	* Zur Darstellung der Verpackungsindustrie wurden hier folgende Wirtschaftszweige des Statistischen Bundesamts verwendet und die Umsatzanteile eigenständig errchnet:"Herstellung von Verpackungsmitteln, Lagerbehältern u.A. aus Holz""Herstellung von Hohlglas""Herstellung von Verpackungen und Verschlüssen aus Metall""Herstellung von Verpackungsmitteln aus Kunststoffen".Diese Statistik kann unter dem im Herkunftsverweis angegebenen Link aufgerufen werden. Geben Sie in der Suche den Code "42111-0005" ein.
Lesehilfe	Die Statistik stellt die Umsatzverteilung der Verpackungsindustrie in Deutschland nach Bereichen im Jahr 2011 dar. Im Jahr 2011 erwirtschaftete die Papierverpackungsindustrie etwa 47 Prozent des Gesamtumsatzes der deutschen Verpackungsindustrie.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/165437/umfrage/Umsatzanteil-einzelner-Segmente-der-Verpackungsindustrie/

Umsatz der Papier- und Zellstoffindustrie seit 2006
Deutschland

Umsatz der deutschen Papier- und Zellstoffindustrie in den Jahren 2006 bis 2011 (in Millionen Euro)



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: VDP, Kennzahlen deutscher Zellstoff- und Papierfabriken

ID 5939

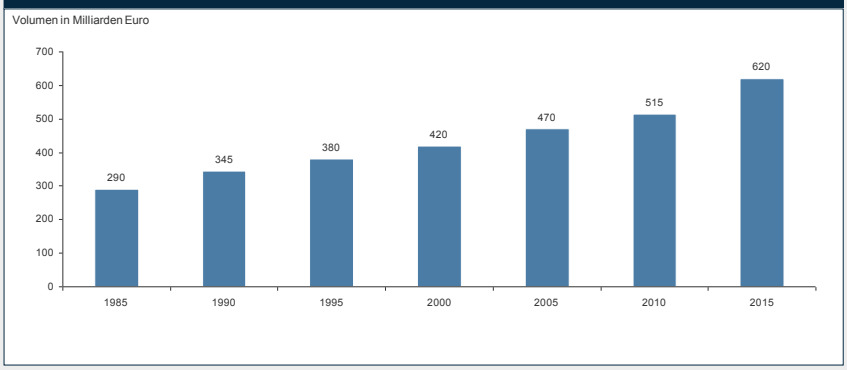
Umsatz der deutschen Papier- und Zellstoffindustrie bis 2011

Merkmal	Eigenschaft
Erhebungszeitraum	2006 bis 2011
Untersuchungsgegenstand	Umsatz der Papier- und Zellstoffindustrie
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	Verband Deutscher Papierfabriken e. V.
Herkunftsverweis	Kennzahlen deutscher Zellstoff- und Papierfabriken
Veröffentlichungsdatum	März 2012
Hinweis	Die Umsatzzahlen für 2006 bis 2009 wurden älteren Jahresberichten des Verbandes entnommen.
Lesehilfe	Die Statistik zeigt den Umsatz der deutschen Papier- und Zellstoffindustrie in den Jahren 2006 bis 2011. Im Jahr 2006 belief sich der Umsatz der deutschen Papier- und Zellstoffindustrie auf rund 14 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/5939/umfrage/Umsatz-der-Papier--und-Zellstoffindustrie-seit-2006/

Volumen des Automobilzuliefermarktes weltweit bis 2015

Weltweit

Volumen des Automobilzuliefermarktes weltweit von 1985 bis 2015 (in Milliarden Euro)



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Thomson Reuters Datastream, Focus-Money, 14. Juli 2010, Seite 13

ID 162994

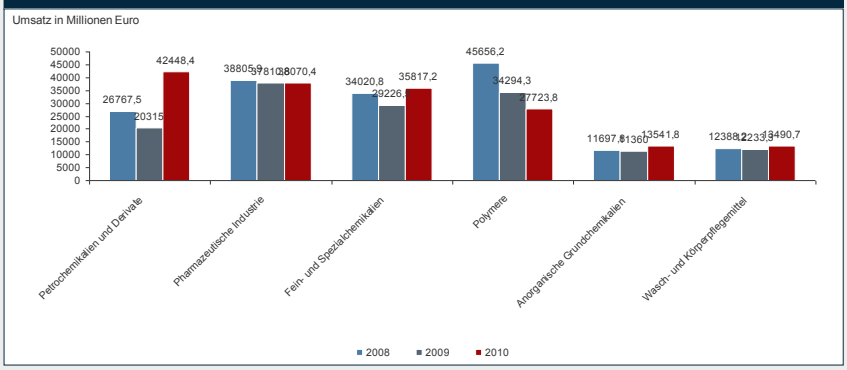
Automobilzuliefermarkt - Volumen

Merkmal	Eigenschaft
Erhebungszeitraum	1985 bis 2005
Untersuchungsgegenstand	Volumen des Automobilzuliefermarkt
Besondere Eigenschaften	
Region	Weltweit
Altersgruppe	
Veröffentlicht durch	Focus-Money
Herkunftsverweis	Focus-Money, 14. Juli 2010, Seite 13
Veröffentlichungsdatum	Juli 2010
Hinweis	Bis zum Jahr 2005 stellt die Statistik die tatsächlichen Werte dar. Ab 2010 bildet das Diagramm dagegen eine Prognose ab.
Lesehilfe	Diese Statistik zeigt das Volumen des Automobilzuliefermarktes weltweit bis 2015. Bis zum Jahr 2005 stellt die Statistik die tatsächlichen Werte dar. Ab 2010 bildet das Diagramm dagegen eine Prognose ab. Im Jahr 1985 betrug das Volumen 290 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/162994/umfrage/Volumen-des-Automobilzuliefermarktes-weltweit-bis-2015/

Spartenumsätze in der chemisch-pharmazeutischen Industrie in Deutschland

Deutschland

Spartenumsätze in der chemisch-pharmazeutischen Industrie in Deutschland in den Jahren 2008 bis 2010 (in Millionen Euro)



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Statistisches Bundesamt; VCI, VCI - Chemiewirtschaft in Zahlen 2011, Seite 34

ID 206253

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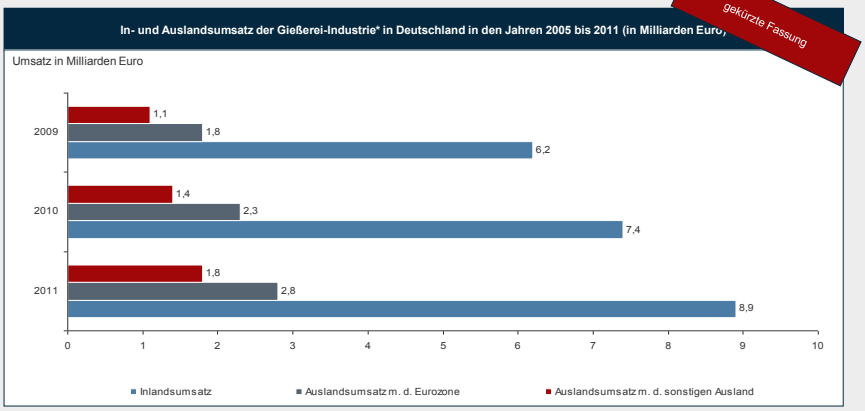
Chemisch-pharmazeutische Industrie - Spartenumsätze 2010

Merkmal	Eigenschaft
Erhebungszeitraum	2008 bis 2010
Untersuchungsgegenstand	Spartenumsätze in der chemisch-pharmazeutischen Industrie
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	VCI
Herkunftsverweis	VCI - Chemiewirtschaft in Zahlen 2011, Seite 34
Veröffentlichungsdatum	September 2011
Hinweis	* Ab 2008 neue statistische AbgrenzungDer Gesamtumsatz der chemisch-pharmazeutischen Industrie in Deutschland belief sich auf rund 171,1 Milliarden Euro im Jahr 2010.
Lesehilfe	Die Statistik zeigt die Spartenumsätze in der chemisch-pharmazeutischen Industrie in Deutschland in den Jahren 2008 bis 2010. Im Jahr 2008 lag der Spartenumsatz bei anorganischen Grundchemikalien bei rund 11,7 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/206253/umfrage/Spartenumsätze-in-der-chemisch-pharmazeutischen-Industrie-in-Deutschland/

statista © Statista GmbH

In- und Auslandsumsatz der Gießerei-Industrie in Deutschland

Weltweit



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Statistisches Bundesamt, destatis.de

ID 169615

statista © Statista GmbH

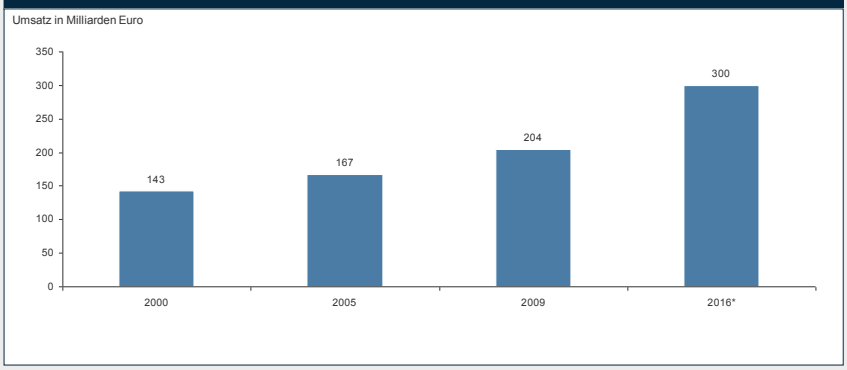
Gießerei-Industrie - In- und Auslandsumsatz bis 2011

Merkmal	Eigenschaft
Erhebungszeitraum	2005 bis 2011
Untersuchungsgegenstand	Umsatzentwicklung der Gießerei-Industrie
Besondere Eigenschaften	
Region	Weltweit
Altersgruppe	
Veröffentlicht durch	Statistisches Bundesamt
Herkunftsverweis	destatis.de
Veröffentlichungsdatum	2012
Hinweis	* Bezieht sich nur auf Betriebe mit 50 und mehr Beschäftigten. Originalbezeichnung der Kategorie laut Statistischem Bundesamt: "Gießereien".Abweichungen der Gesamtwerte gegenüber der Originalquelle sind rundungsbedingt.Die Statistik kann unter dem im Herkunftsverweis angegebenen Link aufgerufen werden. Geben Sie in der Suche den Code "42111-0003" ein.
Lesehilfe	Die Statistik stellt die Entwicklung des In- und Auslandsumsatzes der Gießerei-Industrie in den Jahren 2005 bis 2011 dar. Im Jahr 2011 erzielte die deutsche Gießerei-Industrie einen Inlandsumsatz in Höhe von rund 8,9 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/169615/umfrage/In--und-Auslandsumsatz-der-Gießerei-Industrie-in-Deutschland/

statista © Statista GmbH

Umsatz der deutschen Agrarbranche seit 2000
Deutschland

Umsatz der deutschen Agrarbranche im In- und Ausland von 2000 bis 2016 (in Milliarden Euro)*



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Ernst & Young, Frankfurter Allgemeine Zeitung, 05. November 2010, Nr. 258, Seite 14

ID 166487

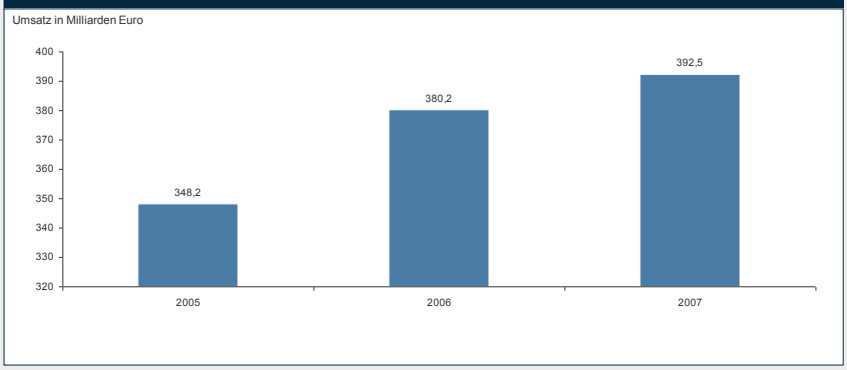
Umsatz der deutschen Agrarbranche

Merkmal	Eigenschaft
Erhebungszeitraum	2000 bis 2010
Untersuchungsgegenstand	Umsatz der deutschen Agrarbranche
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	Frankfurter Allgemeine Zeitung
Herkunftsverweis	Frankfurter Allgemeine Zeitung, 05. November 2010, Nr. 258, Seite 14
Veröffentlichungsdatum	November 2010
Hinweis	* Für 2016 Prognose und >Wert.
Lesehilfe	Dargestellt ist der Umsatz der deutschen Agrarbranche im In- und Ausland von 2000 bis 2016. Im Jahr 2000 lag dieser bei 143 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/166487/umfrage/Umsatz-der-deutschen-Agrarbranche-seit-2000/

Umsatz des Einzelhandels (ohne Handel mit Kraftfahrzeugen) in Deutschland seit 2005

Deutschland

Gesamtumsatz der Branche Einzelhandel in Deutschland in den Jahren 2005 bis 2007 (in Milliarden Euro)



Diese Statistik kann in PPT nur ausschnittweise gezeigt werden. Bitte laden Sie für vollständige Wiedergabe die Exceldatei der Statistik.
Hinweis: Weitere Angaben zu dieser Statistik, sowie Erläuterungen zu Fußnoten, sind im Backup des Dossiers auf Seite 12 zu finden.
Quelle: Statista, Creditreform, FirmenWissen, Branchenreport - Einzelhandel (ohne Handel mit Kraftfahrzeugen), Seite 7

ID 166223

Einzelhandel - Umsatz

Merkmal	Eigenschaft
Erhebungszeitraum	2005 bis 2007
Untersuchungsgegenstand	Gesamtumsatz der Branche Einzelhandel (ohne Handel mit Kraftfahrzeugen)
Besondere Eigenschaften	
Region	Deutschland
Altersgruppe	
Veröffentlicht durch	Statista
Herkunftsverweis	Branchenreport - Einzelhandel (ohne Handel mit Kraftfahrzeugen), Seite 7
Veröffentlichungsdatum	November 2010
Hinweis	Der Statistik wurden die Umsatzdaten des Wirtschaftszweiges 47 "Einzelhandel (ohne Handel mit Kraftfahrzeugen)" laut WZ Klassifikation von 2008 zugeordnet.
Lesehilfe	Die Statistik zeigt Daten zum Umsatz des deutschen Einzelhandels. Im Jahr 2005 betrug der Umsatz des Einzelhandels 348,2 Milliarden Euro.
URL auf der Webseite	http://de.statista.com/statistik/daten/studie/166223/umfrage/Umsatz-des-Einzelhandels-(ohne-Handel-mit-Kraftfahrzeugen)-in-Deutschland-seit-2005/