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INNOVATIVE AND CREATIVE STRATEGIES IN THE CONTEXT OF BUSINESS TRIZ

İŞLETMESEL TRİZ BAĞLAMINDA İNOVATİF VE YARATICI STRATEJİLER

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ABSTRACT

Service and product development processes are vital functions for every organization in order to maintain strength in a competitive environment and these kinds of vital processes must continuously be improved. Regarding these processes it is possible to mention about two different approaches for improvement. First one is the improvement of the existing products and the processes and the second one is considering the concept with an innovative perspective. Many methodologies and structural tools are proposed and widely accepted for the first type of approach. However the second approach which will provide real leadership of the market is still vague and only a few tools are proposed by the researchers and practitioners still have problems in making use of them. TRIZ is one of these tools which give the opportunity of methodological innovation. In this study we proposed an approach which supports the process of building innovation strategies. By the use of QFD and the house of quality, the relationships between customer needs and company resources are analyzed and the contradictions which we regard as the opportunities of innovation are defined. Once the contradictions are established Business TRIZ methodology can be used in order to find the best solutions. This study proposes a structural tool that integrates QFD with TRIZ methodology for building creative and new strategies

Key Words: Innovation, innovative strategies, QFD, TRIZ

ÖZ

Ürün ve hizmet geliştirme süreçleri kuruluşların rekabetçi ortamda güçlerini korumaları için yaşamsal öneme sahiptir ve sürekli geliştirilmelidirler. Bu süreçler gözönüne alındığında iyileştirme için iki farklı bakış açısından söz edilebilir. Birincisi mevcut ürün ve hizmetlerin iyileştirilmesi, ikincisi ise iyileştirme kavramını inovasyonel bir bakış açısı ile ele almaktır. Birinci tür yaklaşım için pek çok farklı yöntem ve yapısal araç önerilmiştir. Ancak pazarda gerçek liderliği sağlayacak ikinci türdeki yaklaşım için araştırmacı ve uygulayıcılar az sayıda metod önermiştir ve bunların kullanımında halen sorunlar mevcuttur. Bu metodik yenilik araçlarından bir tanesi TRIZ dir. Bu çalışmada inovasyonel stratejilerin üretilmesi sürecini desteklemek için bir yöntem önerilmiştir. Bu yaklaşımın ortaya koyduğu bakış açısına göre QFD ve kalite evinin kullanılması ile müşteri istek ve ihtiyaçları ile şirket kaynakları arasındaki kısıtlar analiz edilmeli ve çatışmalar ortaya konmalıdır. Çelişki veya çatışmalar ortaya konulduktan sonra İşletmesel TRIZ bu çatışmaların değerlendirilmesinde ve en uygun çözümün bulunmasında kullanılabilir. Bu çalışma yaratıcı ve inovasyonel stratejilerin oluşturulmasında QFD ve TRIZ in bir arada kullanılabileceği yapısal bir araç önermektedir.

Anahtar Kelimeler: İnovasyon, İnovatif Stratejiler, QFD, TRIZ

1. INTRODUCTION

One of the most vital functions of the managers is to compose a well suited strategy which will carry the organization to its goals. In order to build a strategy they first analyze the current and future state of the market and their competitors, and then determine where the most beneficial opportunities are by regarding their own conditions and resources. "As well as defining the long-term direction and scope of the organisation, the purpose of strategic management is also to match internal activities to environmental change, and match resources to those activities".(McDonald, 1996) Frequently the tactics selected for achieving the desired targets of the company tend to have negative effects on some other crucial key metric belonging to some other goal. In situations like this organisations that can build creative strategies succeeds to leave their competitors behind. Competitive strategy has been defined as: "positioning a business to maximise the value of the capabilities that distinguish it from its competitors" (Slack et al.,1998)

E.J. Munive-Hernandez et al. summarize the strategic by the following four steps:

1. Establishing main strategic objectives and performance targets;
2. Formulating the strategy:
 - a)Analysis of the organisation's environment;
 - b)Analysis of the internal capabilities; and
 - c) Selection of an adequate strategy;
3. Implementing the strategy; and
4. Establishing strategic control and evaluation (strategic feedback). (Munive-Fernandez et al., 2004)

In order to make a strategy bring success to an organization one of the most important factors is an effective implementation process. For building and deploying a good strategy many tools and methodologies like hoshin planning, QFD and policy deployment, have been proposed by researchers. These tools can be generalized as "design approach to management" According to Michael Clargo "Design perspectives in general, and QFD in particular are immensely powerful tools that will transform the quality and impact of your goal setting and thereby transform your business." (Clargo, 2002)

2. INNOVATION TODAY

Today in our global world competition among organizations have come to a new level and this new state is called as hyper competition by D'Aveni (1994) According to D'Aveni "hyper competition is a competitive situation where the key competitive success factor is the ability to constantly develop new products processes or services providing the customer with increased functionality and performance." (D'Aveni , 1994) According to Mollemann and Timberman "Organization that opt for innovation have a competitive advantage if they come up with new ideas and creative services and products that are at least partly unique. The strategies they employ will have a substantial impact on the process of transformation." (Molleman and Timmermann, 2003) According to Anne Martensen and Jens J. Dahlgaard "Business excellence will, among other things, be achieved by companies which can react quickly to new market conditions and customer needs, and which are constantly looking for creative solutions and continuous improvements in products and processes. Today's companies must continuously adapt, develop and innovate." (Martensen and Dahlgaard, 1999) At this point the importance of "strategic innovation" concept comes forward. Anders Drejer defines Strategic innovation as "the ability to create and revitalize the business idea and concept of the company by changing both the market of the company and the competencies and business system of the company (Drajer,2006). Many perspectives on understanding the structure of corporate culture and it's effects on learning and innovation, or providing an environment where employees are motivated on innovation and learning have been widely reflected in the literature. Tools like balanced scorecard are established to measure the performance of the company including the innovation and learning aspects. These balanced measurements regarding the strategies consider the three dimensions of the organizational process flow. First one is the effectiveness of the activities, second is the efficiency where the efforts spent for the desired effects are taken into consideration. And the third one is the adaptability dimension of the strategies which is defined as "gaining new or high value customers".

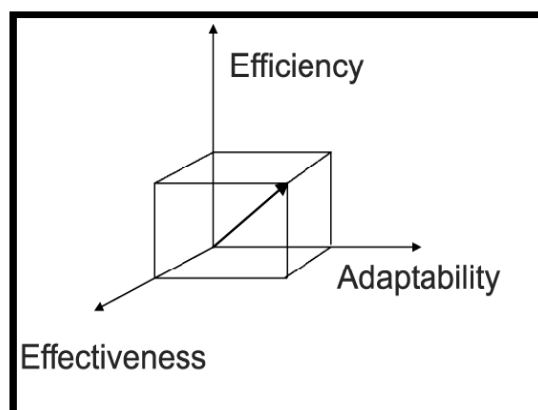


Figure 1. Performance Dimensions of Business Processes (Moseng and Bredrup,1993)

In our belief this dimension of being innovative or adaptive is not restricted by this definition. In fact this adaptability dimension is about redefining the product, understanding the environmental factors, and most importantly reanalyzing the business processes or more generally the way the company does its business. There's also a point neglected in the traditional approach. Strong tactics for improving the ability to learn and innovate can be defined and moreover tools like balanced scorecard can be employed in evaluating the progress in the defined metrics but still this approach is restricted by improving the performance of the deployment process of the selected strategies and tactics into the sub processes. In fact the important thing is whether the managers during the strategy building phase are being creative themselves. If the company does employ brand new and innovative strategy then measuring the performance of actions will lose its importance. So the responsibility of managers is not only limited by starting and motivating an environmental transformation on behalf of a learning and creative organization, besides they have to be innovative themselves and develop a differentiated strategy. The traditional approach provides a good measure of change on the products and services but it is not that effective on the architecture of the management processes. It is a real fact that many opponents are working on parallel strategies and innovativeness is not just doing things more effectively or efficiently but doing things for the first time with a different perspective.

3. CONTRADICTIONS AND TRIZ

The manager of the system which is supposed to provide a certain amount of good or service having a certain level of quality aims to maximize the output and minimize the cost or the effort to provide this output. According to Darrel Mann %80 of the problems exist because a system has hit a fundamental limit then a very effective short-cut involves looking for conflicts and then using the conflict and contradiction elimination tools to directly challenge them Mann says that "the worlds strongest solutions have emerged from situations in which a problem solver has successfully sought to avoid the conventional trade offs that everyone else has taken for granted". (Mann,2002) TRIZ is a widely used tool for producing creative solutions for real life problems. It is based on the evaluation of the past scientific experience, analysis of the formulated solutions of different kinds of problems and knowledge about successful inventions. Conceptual structure of TRIZ consists of the following four steps:

1. The problem-solver should analyze his specific problem in detail. This is similar to many other creative problem-solving approaches.
2. He should match his specific problem to an abstract problem.
3. On an abstract level, the problem-solver should search for an abstract solution.
4. If the problem-solver has found an abstract solution, he should transform this solution

into a specific solution for his specific problem. (Mann,2002)

Contradiction thinking plays an important role in creating inventive solutions that no one ever proposed before. Orloff (2002) has pointed out that the human as a problem-solver plays a central role, so the success of a problem solution depends on two resources:

- (i) Resources of the problem;
- (ii) Resources of the problem-solver. (Orloff, 2002)

The most important aspect of this methodology for the managers is having an accurate perception of the concept “resource” and identifying the resources that are currently being used or not used but available within the system.

By drawing attention to all resources currently used and those additionally available and by listing them completely, the analysis tool itself can offer possible solutions (Pannenbaecker,2002) In TRIZ terms, a resource is anything in and around the system that is not being used to its maximum potential. (Mann,2002)

A problem solver can identify the resources with the help of tools like brain storming or conceptual mapping and can group them by categories. Resources are categorized in many different ways by different authors. Sandra Mueller has studied and listed these classifications in her paper.

Mann (2002) categorized the resources as (i) environment, (ii) low-cost, that is, plentiful, (iii) material, (iv) transforming, that is, modifying, (v) manufacturing and (vi) associated with humans. (Mann,2002). It is possible to say that contradiction thinking plays a major role in TRIZ methodology. Mann proposed a matrix structure where contradictions between resource categories can be analyzed. Contradictions between resources can be resolved by the 40 inventive principles proposed by Mann.

4. A MODEL INTEGRATING QFD AND TRIZ FOR STRATEGY BUILDING

We believe that building a creative strategy starts with understanding the true needs and requirements of the customer. Then available resources within the organization, the resources within the related industry and the relationships between those two must be identified and analyzed by all of the strategy builders. If the resources are well defined and agreed on, it can be possible to see the conflicts and contradictions among them clearly. Next step should be grasping the relationships between customer needs and resources. We believe that new and unique strategies can be achieved throughout this definition and analysis process.

If innovativeness is doing things for the first time or in a distinctive fashion then focusing too much on the opponents can be a factor that narrows the vision of the company. The first thing to do is to examine the relationships between customer needs and both industrial and organizational resources. If a parallel relationship exists between customer needs and company resources then strategies that strengthens this relationship can be obviously seen and selected. These strategies which come out easily do not bring an advantage within the competition. When a contradiction between customer needs and resources are found out, the solution for this problem can bring an advantage in the competition. But the contradiction that will bring the leadership of the competition is the one between customer needs and industrial resources. True innovation is the solution for these kinds of contradictions and these solutions must be unique for the organization

In this study we proposed a model in which QFD is used for building innovative strategies. By the use of the house of quality, the relationships between customer needs and resources will be analyzed and the contradictions which we regard as the opportunities of innovation will be defined. Once the contradictions are established TRIZ methodology will be used in order to find the best solutions This study proposes a structural tool that integrates QFD with TRIZ methodology for building creative and new strategies

Customers and their needs are the reason of existence of the profit oriented organizations. So just like QFD does in the first step of house of quality our model begins with the evaluation of the customer needs. In order to obtain an effective model first thing to do is to define an area of needs that will serve as the reflections of customer needs regarding the concept of the product or service in hand. The selected area of needs is a start point and a guide for the decision makers through the path that is drawn by the model. The area of needs is developed by considering the basic needs (be do have needs) of the customer. Then the process where customer needs are satisfied must be mapped in detail and the critical incidents must be determined and analyzed. This can be done by using a conceptual map. In order to provide a better understanding of customer needs about the concept of the product or service this analysis should include a detailed assessment of the relationships between basic customer needs and the critical incidents. Through this process of assessment and analysis customer needs must be identified and prioritized within a new system of categorization. This categorization is needed in order to build a linkage between basic customer needs and the company’s processes. This linkage provides a wider perspective and by that way increases the ability to materialize the concepts that are shaped up by the perceived customer needs. This first step of evaluation can also be considered as the first step of a deployment process. By this step the influence of basic needs are deployed into a more specific status of statements. By these statements we try to explain

how the customer expects to benefit from the product or the service. These statements can be identified as customer needs projections or customer needs reflections. Some examples can be listed as be as:

1. Specific or known needs
2. Integrating the whole
3. Less effort or cost for result
4. Less initial cost
5. Continuous performance
6. Flexible usage

In the traditional deployment process this is a one way flow where customer needs deploy into the products, parts processes and so on. Some criticisms on QFD applications are made by the practitioners. One of the criticisms mentions the fact that the steps following the first house of quality starts to loose its strength and begins to fade away. Despite the criticisms this perspective of one way effect is very idealistic and still can be effective if its performance can be improved. We can also make use of this deployment process in order to build creative strategies and differentiate in the market. We believe that a more realistic two way model where company resources are also concerned during the deployment process will also bring an advantage of creativity by demonstrating the contradictions between customer needs and company resources.

Our conceptual model considers the fact that on the other side of the customer-supplier inter relation there exists the processes that materializes the concepts regarding the needs of the customer. The structure of the company's processes is in fact also reflections or projections of the company resources. This structure of reflections also must be re-identified by means of new statements regarding the purposes of processes in terms of their contributions into the product or service.

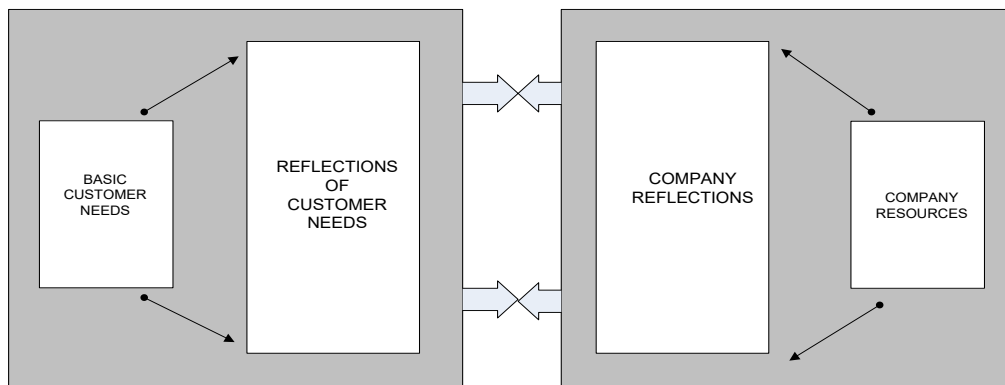


Figure 2. A Two Way Conceptual Model for Creative Strategies

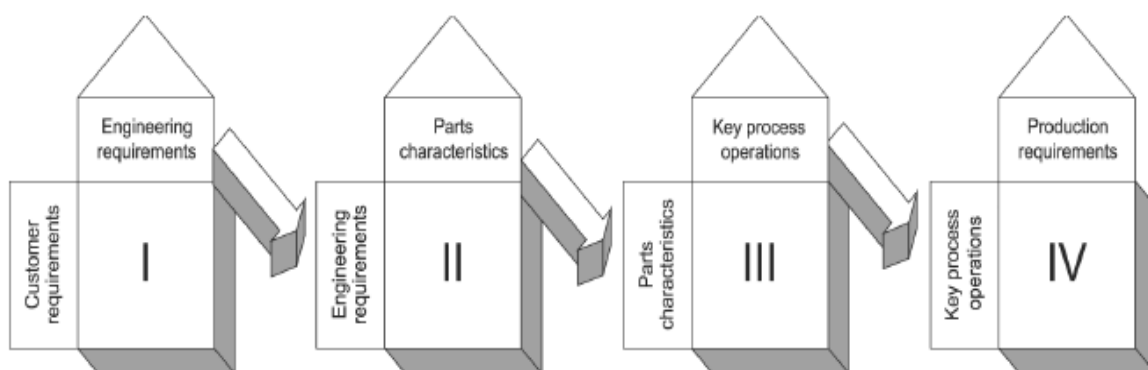


Figure 3. Traditional Deployment Process. (Hauser and Clausing, 1998)

Once the company structure reflections are stated the relationship between the customer need reflections and the company structure reflections are analyzed. Most important reflections of the structure can be identified with the help of a second matrix diagram. By this way the areas where improvement opportunities exist can be easily seen. Once the area of opportunities are determined the relationship

between the chosen reflections and the company resources are analyzed with the help of a third matrix. If there is no significant restriction on company resources regarding the selected structural reflection then a strategy focusing on the determined customer needs can be immediately employed. . The analysis until this point has a strong potential for obtaining a good strategy by just showing the opportunities where customer needs are not restrained by the company resources. But usually it won't be that easy to obtain a good strategy so quickly. Contradictions between customer needs and company resources will occur most of the time and these are the potential opportunities for creating a unique strategy

After the critical resources are determined the relationships and the interactions between different company resources are analyzed with the use of a fourth matrix proposed by Mann (1999). The contradictions occurring between the resources can be solved by the inventive principles proposed by Mann. In order to get satisfying results from the proposed model the procedure of four steps must be repeated a few times until a strong and differentiated strategy is built and agreed upon.

5. CONCLUSION

The proposed approach for building creative strategies can be materialized with the help of the following step by step procedure. The figure shown below is a revised version of the matrix notation of quality function deployment.

STEP 1. Listen to the voice of the customer, analyze the customer needs and enhance the needs with a new and generalized category of statements. These are called customer reflections. Analyze the relationship between basic needs and customer reflections. This is done by using the first matrix.

(It is also likely to find out that some contradictions exist between customer needs. If these conflicts can be expressed by means of parameters then traditional TRIZ can be employed to solve these contradictions and inventions can be made)

STEP 2. Define the company structure reflections and place them on top side of the second matrix. Analyze the relationship between the customer need reflections and the company structure reflections. Most critical reflections of the structure are identified with the help of the second matrix

STEP 3. Analyze the relationship between the chosen company structure reflections and the company resources with the help of a third matrix. If there is no significant constraint on company resources regarding the selected structural reflection then a strategy focusing on the determined customer needs can be immediately employed. On the other hand resources with restrictions are determined and carried to the fourth matrix They are the critical resources.

STEP 4. The relationships and the interactions between different critical company resources are analyzed with the use of a fourth matrix proposed by Mann (1999). The contradictions occurring between the resources can be solved by Business TRIZ methodology and the inventive principles proposed by Mann.

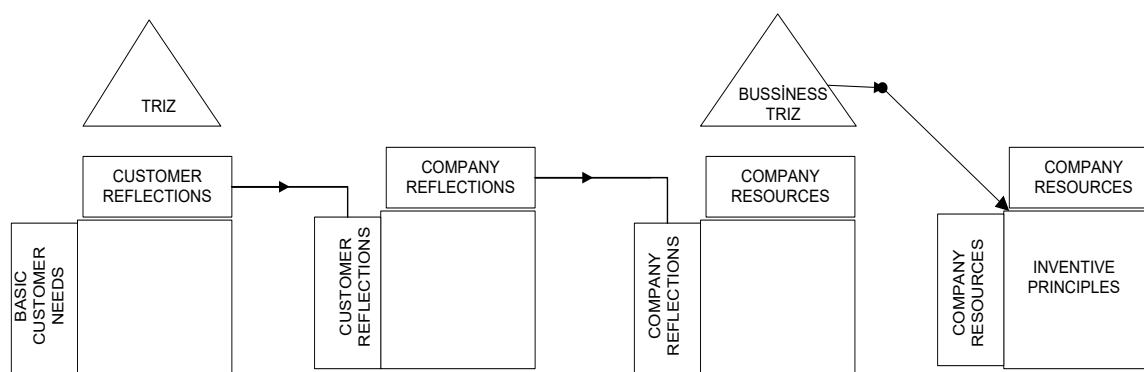


Figure 4. Deployment Methodology for Creative Strategies

Managers must understand that innovation, creativity and unique strategies does not come out just by luck, they have to be reached through methodological thinking and by utilizing structural tools. We believe that our proposed conceptual model will bring the following advantages to the practitioners:

1-Voice of the customer is taken into consideration both for product development and strategy development.

2-The two-way conceptual model takes both the customer needs and the company resources into consideration for decision making.

3-As both the company resources and the customer needs are analyzed together the contradictions can be clearly seen. Contradictions give the opportunity of leadership if they can be stated clearly.

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