

# CUSTOMER NEEDS LINKED TO PRODUCTION STRATEGY AND FIRM'S DYNAMIC CAPABILITIES

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## ABSTRACT

This study identifies and analyzes the key factors of an efficient customer oriented production strategy. The paper supports the view that dynamic capabilities can be used successfully for improving company's efficiency. This research is a case study research related to production strategy. In a case company, totally 31 interviews were made from 16 subsidiaries and 13 from end customers. The present paper focuses more on end customers' than internal customers. Key findings can be identified as follows: effective information flow, flexibility, speed and responsiveness need more focus in the study of dynamic capabilities. Delivery accuracy is the key, while short delivery time is a competitive factor. This research is focused to power electronics business segment which is research limitation. To make wider conclusions, more empirical studies are needed. As a Practical implications, this research helps firms to improve their strategy process by understanding real customer needs. The research results bring additional value to the previous studies regarding company strategy, business environment, innovativeness and operational excellence.

## KEYWORDS

production strategy, innovativeness, effective information flow, flexible production system, dynamic capabilities.

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## Introduction

Due to tightening competition and business turbulence as well as changing customer's needs, firms need new capabilities in the future to be competitiveness. Customer's needs should be more deeply understood, and firms should react faster to the changes around the company. Firms need to be more innovative, that requires more than just cheap labour force [1], and such a new advantage could be dynamic capabilities. Teece (2012) defines dynamic capabilities as ability to integrate, build, and reconfigure internal and external resources and competences in a rapidly changing business environment [2].

Although the link between organizational performance and firm performance is well researched, and these are typically connected to the strategy struc-

ture performance, only little empirical research has been conducted, how customer needs can be linked to the firm's dynamic capabilities and strategy process. Porter (1985) contends that there are two types of competitive advantage: cost leadership and differentiation [3]. This study focuses on the end customers and the elements, which are important for them in a tightening completion. Wilden et al. (2013), propose that dynamic capabilities framework consist of three major elements: organizational structure, organizational performance and competitive intensity [4]. Based on their definition, dynamic capabilities, organizational structure and organizational performance are internal and competitive intensity is external. Companies, that want to follow an operational excellence strategy need competitive product price, customer perceived quality and lead time, and

on time delivery for purchasing [5]. By working different way than competitors, companies can create success, Ravishankar et al. (2012), suggest that this could be for example modular production linked to the strategic making abilities [6].

Companies should organize their operations so that they can make fast changes in their own organization as well as in their partnership network, to react to the changes in the business environment. This includes very widely company's processes, for example product creation, production and supplier network. The former requires more resource work to understand the connection between mentioned elements. Winter (2012) has noticed that there is only little empirical evidence that network effects the market success of new products [7].

To be competitive in such turbulent environment, companies should organize their operations so that they have a fast response to the changes in the market. Many industrial producers are changing their business models into the long-term client solution [8].

There is a broad unanimity in the literature that dynamic capabilities contrast with ordinary capabilities by being concerned with change.

This research addresses questions related to delivery time, delivery accuracy, and scope of offering, product technology, and availability of information, product customization, product performance and quality. The central research question of this paper is as follows, what are the main elements, in customer's point of view, that company should take into account in the strategy? The paper discusses this main question in three steps. The first step is to understand the key elements which are important for the customer. The second step is to analyze reliability of the answers. The third step analyzes the correlation between satisfaction of products and satisfaction of services. This step answers the following sub question; what kind of relationship is there between satisfaction of products and satisfaction of services?

## Research methodology

This paper is a case study, which is based on the interviews conducted in the case company's sales conference 2011, at Cancun, Mexico. Four people made the interviews during the three days sessions. Two of interviewers were working in the case company and two other interviewers were from Consultant Company. Totally 31 persons were interviewed from 19 different countries. End customers were in 7 different countries, including 13 interviewees. Figure 1 described the data collection process, from getting

people to the same place to the conclusion of the results. Corresponding author of this paper took part to the Cancun sales conference.

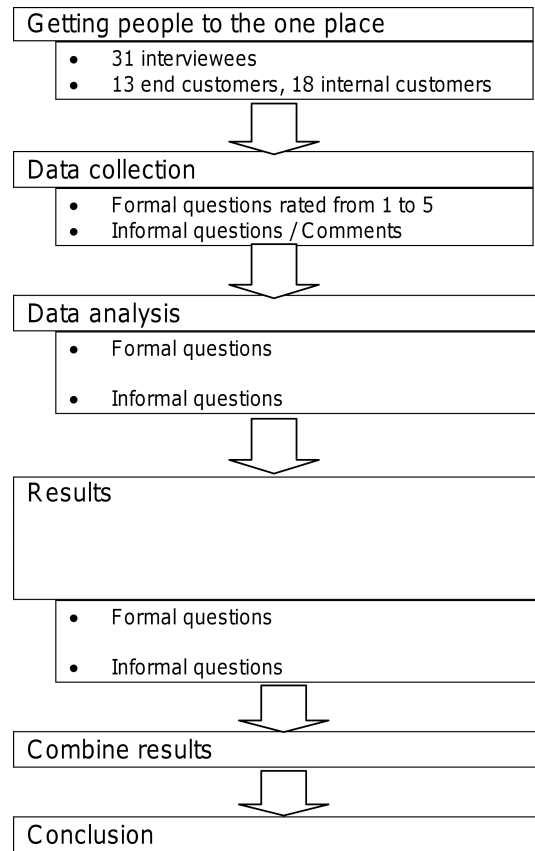


Fig. 1. Data collection process.

The case company has more than 1400 employees and the revenue is more than 400 million euro. The company has an aggressive growth and profit target. Firm's aim is to achieve revenue of 500 million euro and to get an operative profit of 14% in 2014. The case company focuses on frequency converter business. Frequency converters provide stepless control of rotation speed of electronic motors.

This paper focuses on the end customers because strong "customer voice" was the main focus of the research, also internal customers opinions were noticed during the research work.

The main motive for the paper is to study customers' needs in a fast changing business environment and connect that information to the company strategy. To have right information directly coming from end customers helps managers and project team members to understand the power of customers interest and to do right improvement actions in next coming period.

Innovation is one of the key elements in enhancing the efficiency of the firm, although the link be-

tween technological innovation and business performance is not widely studied. Annavarjula, etc. (2012) have studied relationship between firm's technological innovation capabilities and its international performance [9].

The reason to select interviewing as research methodology was to get understanding of complex issues in power electronics business. The reason to select the case company was their long experience on power electronics business and opportunity to study customers' opinions extensively and from different countries. The aim was to study real customer needs, to understand the positioning in a market and to improve case company's operations in the future. For global operated company it is extremely important to make right actions in a fast changing business environment.

### Literature review

Resent discussion on dynamic capabilities focuses on changes happening around the company. In a fast changing business environment, companies should find new ways of working and encourage people to be innovative in order to find new solutions. In turbulent business environments, the importance of innovation will increase and knowledge is one of the most critical inputs to innovation process [10].

Information sharing is important factor to reach results and right products to the marketplace. Ayers et al. (2001) test a model that suggest that new product success is a function of the relational norms and integration between marketing and R&D [11]. The research group stated that new product development success was related to the presence and strength of relational norms. Their study also found that positive relationship between collaborative relationship between R&D and marketing. There are many studies that focuses on information flow and importance of co-operations between divisions and departments [12–14].

Information sharing and decision making in a global company is complex issue to handle. Several automotive companies are using product platform design process where they handle information very systematic way. The challenge is that market needs are changing all the time and it is difficult to estimate customer behavior. Flexible product platform concept has been developed to solve this complex problem. Flexible product platform concept helps to handle product variations and modifications are done in a systematic way with sharing widely used modules in different car models [15].

In summary, it can be concluded that for an environment where there are many changes like volumes variation and the need to individualize products according to customer need, information sharing and co-operation between different teams are crucial.

## Results

### Variability coefficient

By calculating the mean and the standard deviation of the ratings in all the questioners, we calculated the variability coefficient in excel. One should always consider the variability coefficients which are below one for the ratings to be accurate. In our case all the variability coefficient turned out to be below one, indicating that they all stand accurate for the given ratings. Figure 2 shows the graph of these efficiencies.

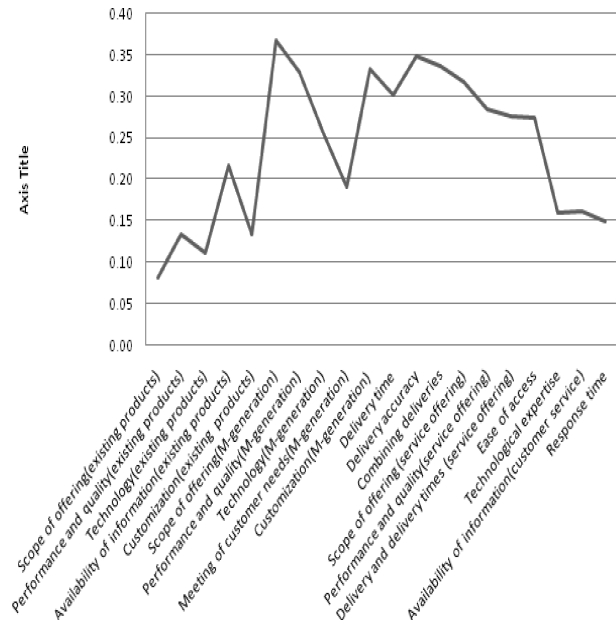


Fig. 2. Variability coefficient.

The X-axis lists all the factors indicated in the questioners by the case company and the Y-axis contains the number of the variability coefficients.

### Satisfaction between products and services

Based on the analysis of the interviews, we can see a certain type of pattern or relation between the satisfaction of the customers with the products and their satisfaction with service level. This rate of satisfaction can be measured or shown in accordance with the regression graph standards. Figure 3 shows the regression graph of this relation between the quality of the products and their services in general.

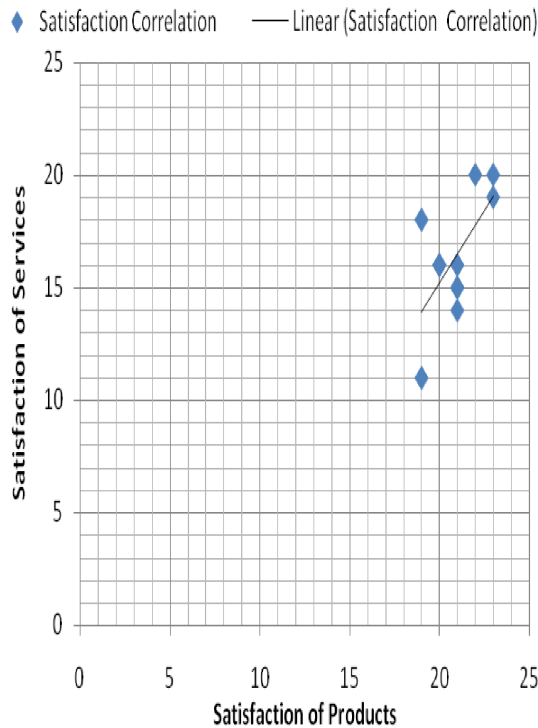


Fig. 3. Satisfaction correlation between product and service.

As we can observe from the above mentioned graph (Fig. 3), there is an upwards sloping line to the right, forming the regression relation between the satisfaction of products and satisfaction of services. The chart shows us that there is a medium positive relation between these two factors. Consequently, as the rate of the satisfaction from the quality of the items goes higher, the satisfaction from the services follows accordingly, hence increase in satisfaction of the customers from the items results in the increase of the satisfaction from the services.

**Correlation between the technology of existing products and the availability of information**

The Fig. 4 is considering the correlation between the technology of existing products and the availability of information. As we can see from the graph, there is a very small correlation between these two factors. This happens to be a slight negative correlation between technology of existing products and the availability of information. Generally one can always claim that the slope of the curve is so small that the factors practically have no relations with one another. Hence we can conclude that regardless of the technology in existing products, availability of information remains to be independently a very crucial and important factor.

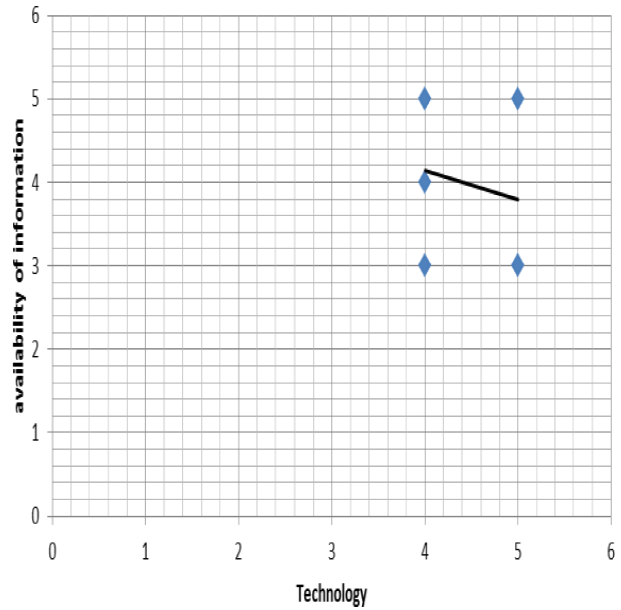


Fig. 4. Correlation between the technologies of existing products and the availability of information.

**The free comment analysis**

The Table 1 below consists of a number of operations and factors taking place in the case company. The right column belongs to the free comments or feedback which was given by the customers. Some comments indicated a lack of communication between the marketing and R&D. The delivery times were one of the main concerns of almost every feedback, indicating that the company needs to work more on their delivery times. New generation seemed to be attracting quite a bit of negative attention due to its quality problems and low price competitiveness in comparison to Japanese products. Moreover, it was indicated by many customers that some of the new generation products have been launched rather too early.

Figure 5 shows that customer needs are changing all the time. The number of product features, customer's quality requirements and number of product variants are increasing. On the other hand customer's requirements are that sales prices should decrease and delivery time should decrease as well. This means, that manufacturing units should develop their operations all the time to be more competitive. One big challenge is to decrease lead time in an environment where the numbers of product features are increasing and production process is more complex. Automotive industry has solved this challenge by using modular product design. Modularity helps manufacturing units to control the production process effective way, also supplier network is more easily to control.

Table 1  
Key findings.

Key findings	Number of being referred to
<b>Technology</b> – Case company is keeping up with the new technologies – Company does not have the leading edge yet but is one of the best ones in the market – IEC 611 31 tools was mentioned to be the main reason of cooperation with the case company – More product features and product solutions are needed	<b>Technology</b> – All thirteen feedback givers were satisfied with the level of existing technology – Need for fieldbus was mentioned to by 1 customer – IEC 611 31 tools were mentioned by 1 customer – More product features and solution mentioned by four customers
<b>Performance and quality</b> – New generation product was mentioned to be an unsure topic (information flow) for a number of the customers – New generation product (small units) need price improvement to be competitive with Japanese products – Some of the products have minor problems with speed of communication	<b>Performance and quality</b> – New generation product was mentioned to be 10than the expected price by 1 customer – Uncertainty (information flow) about new generation was mentioned by 3 customers also quality improvements are needed in the future – New generation product (small units) price issues and compatibility was mentioned by 2 customers
<b>Delivery and service</b> – Improvements in delivery time and accuracy is one of the key issues – Combining delivery need to improve	<b>Delivery and service</b> – Combining delivery was mentioned to be needed by one customer – All thirteen of the customers wanted to have more faster or accurate delivery times – Delivery of the smaller spare parts for the purpose of service was said to be more accurate than the bigger parts by 3 customers
<b>Availability of information</b> – Finding specific information in some specific cases (hard data) is rather difficult – The availability of information and the quality of need to improve	<b>Availability of information</b> – Existing products: information and communication need to improve mentioned by 7 customers – Service information: need to improve mentioned by 3

### Customer needs in power electronics business

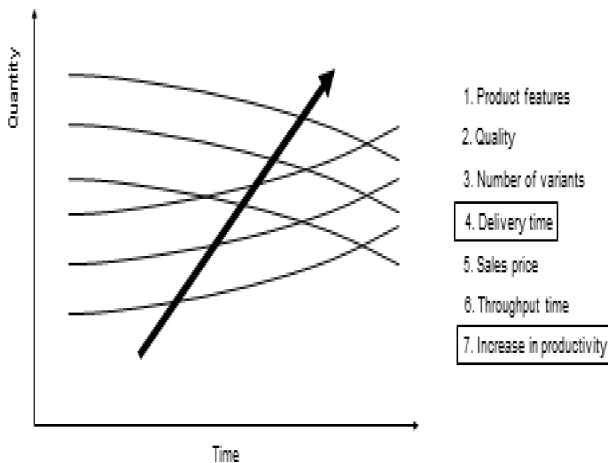


Fig. 5. Main elements in a power electronics business environment.

Business environment can change very fast, in power electronics business there are elements which effects to the company’s customer performance. We can identify following increasing trends: the number of product variants, product features and quality requirements are increasing (Fig. 5).

### Production strategy

Based on study made and earlier studies as well as experience of the business segment, the case company launched strategy (see Fig. 6) which is focuses on:

- giving more customer value through effective network (including material flow and information flow),
- fast delivery time,
- high level of quality,
- cost efficiency,
- fast time to market for new products.

#### Global factory operations strategy

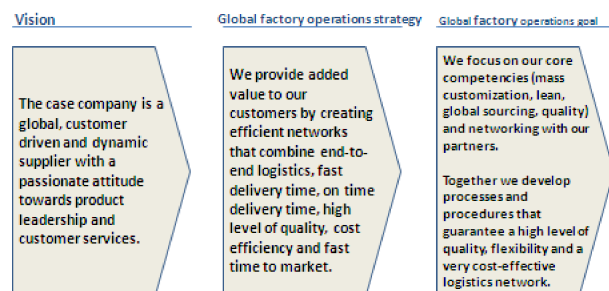


Fig. 6. Connection to production strategy.

## Effective information flow

The latest IT technology is significantly advanced and therefore enables extended automated data collection systems. However, usually there are no existing solutions or systems to exploit this ability. In the future these kinds of new solutions will be more common. Based on the study, the case company should build up this kind of system for business purpose, to collect, share and distribute the data, to get better customer support. Previous can be provided to improve information handling towards knowledge management system. The corresponding writer of this article proposes that the trend of data processing can be divided into the three waves shown in the Fig. 7.

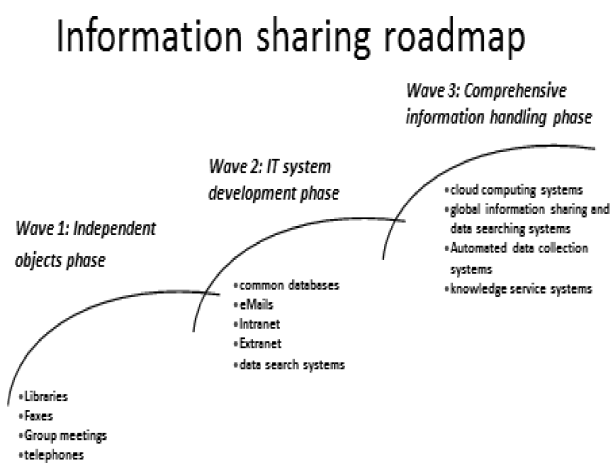


Fig. 7. Information sharing roadmap.

We have defined that the *knowledge service* by being a service/ideology which provides versatile ability to access and create information throughout the whole community. The service commonly uses dedicated IT systems and software as an interface towards the user. These systems are tailored to fit their purpose by the service owner. These systems then make use generally the majority of the databases created in the community.

## Conclusions

Entrepreneurial strategy, effective processes, innovativeness and dynamic capabilities which take environment changes to the account are one way to develop a more agile customer oriented company. Working in collaboration with customer and partners, it is possible to understand customer needs more deeply and to achieve more faster, flexible, and more agile processes to support the changing customer needs. The aim of this study was to understand and to analyze factors that are most important

to the customers in a power electronic business industry. One of the key findings was the importance of effective information flow in a global business. This is related to the communication of technical, delivery, installations and service matters.

It seems globalization level effects to the quality of information and speed of the information flow. We can summarize that effective information flow, flexibility, speed and responsiveness need more focus in the firm's strategy. Delivery accuracy is the key, while short delivery time is a competitive factor.

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