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## Management summary

Gaining and sustaining a competitive advantage is of great importance nowadays. To create this competitive advantage, multiple strategies can be defined. In this thesis, a strategy called co-makership will be explained. This strategy will be applied to new product development through innovation for organizations. The following definition of co-makership is made: *A relationship between buyer and supplier in a supply chain, who share information among each other regarding research and development, marketing and distribution.* A literature research has been performed according to the following problem statement:

- How can co-makership in innovation lead to a competitive advantage?

This study targets co-makership as an opportunity for organizations to create and maintain a competitive advantage through the use of innovation for new product development. Through a literature review, the problem statement and research questions will be answered.

Co-makership can have multiple advantages for organizations. Through the use of (dis)continuous innovation, new products can be developed. The design process of these new products can be improved by working together with the supplier. With this collaboration, product cycle time can be reduced, and delivery rates will be higher. Moreover, co-makership can help to cut costs and the use of knowledge and expertise of the supplier is a great advantage. However, there are some drawbacks for co-makership as well. First of all, co-makership does only have advantages for large organizations due to the high contracting and monitoring costs. Secondly, there is a potential risk of losing critical information to competitors through the supplier. However, if a firm measures the risk of co-makership to the extent of advantages it can provide, most organizations will find that an collaboration with their supplier can give them great advantages. Limitations of this thesis include the focus on co-makership for new product development by innovation. Because of this focus on new product development through innovation, other possibilities of co-makership are not described. Future research can be focused on for example the relationship establishment between buyer and supplier.

## **Preface**

This thesis is written to complete the pre-master program of Strategic management at the University of Tilburg. Before I started here, I did a HBO study in the Hague, where I finished my bachelor in commercial economics. This pre-master is a link between my completed HBO bachelor and the master of the University of Tilburg. By finishing this pre-master program, I can begin my master program next year.

I would like to thank my supervisor Onno Cleeren for giving feedback and helping me to write this bachelor thesis in an academic matter. Because of my lack of experience in writing in English and in academic style, I sometimes needed some feedback and my supervisor was always able to provide me with such.

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## **Chapter 1: Introduction**

### *1.1 Problem indication*

Innovation is a subject which is quite popular nowadays. Look for instance at the number one search engine Google. When you enter the term 'innovation', there are over 85 million records found. Even in scientific articles, innovation is a very popular used subject. In the online database of Sciedirect alone, there are almost 200.000 articles that contain the subject innovation. However, innovation can be used in many different ways. This thesis will focus on innovation in terms of product innovation.

Floyd and Lane (2000) state that an organization which wants to implement product innovation should both exploit existing competences and explore new ones. Ichimura (1986) discusses that it is almost impossible to improve or redesign a management system for the purpose of product innovation. In addition to the reasoning of Petersen, Handfield and Ragatz (2005), an other benefit can become co-makership. Moreover, they discuss that cooperation between buyers and suppliers can help to cut costs. Furthermore, collaboration can be in product design and product coordination (Mol, 2007; Ro et al., 2008; Youngdahl et al., 2008). Therefore, further research is needed on the question how innovation can help organizations to create a competitive advantage.

In addition to the concept presented by Petersen, Handfield and Ragatz (2005), is co-makership. This concept tells how buyer and supplier could cooperate with each other to cut transaction costs. This collaboration is strongly dependent of trust in the relationship.

By combining the subject innovation and co-makership a unique competitive advantage could arise. After doing research, it can be said that there is little literature which combines innovation with co-makership. This thesis will therefore try to combine these factors. Moreover, it will help to create a competitive advantage for organizations.

## 1.2 *Problem statement*

- How can co-makership in innovation lead to a competitive advantage?

## 1.3 *Research questions*

In order to analyze the problem statement, there are research questions made. By answering these questions, it will be attempted to evaluate the main problem statement. The following research questions are formulated:

- How can co-makership lead to a competitive advantage?
- What is innovation for new product development?

## 1.4 *Relevance*

This research can get the interest of management in organizations because it can give an overview of options in how to create a competitive advantage via innovation and collaboration with suppliers. In every organization, management tries to find the best ways possible to gain more profit. This thesis can help to implement innovation and collaboration with suppliers within organizations.

Barney and Hansen (1994) discuss that trust is the most important factor among cooperating organizations. However, research of Lhuillery and Pfister (2009) showed that cooperation between organizations is not always a good solution. They discuss that cooperation between organizations can lead to abandoning or delay of their innovation projects, also called 'cooperation failures'.

## 1.5 *Research design and data collection*

In this thesis a literature review will be used to answer the problem statement. The main concept of this thesis consists of innovation and cooperation with suppliers, which will lead to a competitive advantage.

In order to retrieve the information needed for this thesis, a digital

catalogue of the Tilburg University will be used called the 'web of science'. This database has records of various scientific literature. Search criteria include the following:

- Innovation
- Cooperation with suppliers
- Co-makership
- Co-development

### *1.6 Overview of the rest of the chapters*

The chapters will be categorized via the research questions. Each question will be a chapter in this thesis. After analyzing the research questions, a discussion chapter will follow. After this, a chapter called discussion follows, a final chapter will be made which will include the conclusions.

## **Chapter 2: Co-makership to a competitive advantage**

In this chapter a analysis will be made of several definitions of co-makership, given by well-cited authors. After this analysis, a definition of co-makership is made which will be used throughout this thesis. Following after the definition is Total Cost of Ownership (TCO). This concept can help organizations to choose the right supplier. After TCO follows the emergence of co-makership. This explains why organizations should or should not incorporate co-makership. Furthermore, the advantages and disadvantages of co-makership are described. To finish, a table is made which sums up the main advantages and disadvantages of co-makership. Finally, the implementation of co-makership for organizations is presented. At the end of the chapter, the definition of competitive advantage is discussed. Multiple definitions of well cited authors will be compared and finally a definition will be given which will be used throughout this thesis. To end this chapter, a section with the implementation of co-makership which will lead to a competitive advantage is presented.

### *2.1 Definition of co-makership*

Petersen, Handfield and Ragatz (2005) show that in some organizations it can be helpful to involve suppliers in process and product design. Key in this research is supplier integration into new product development. This can help to coordinate process in supply chain-, product- and process design. The model explains for example that it is important for integration to select the right supplier for new product development. In conclusion, the research of Petersen, Handfield and Ragatz (2005) shows that the input from a selected supplier can have a positive influence in better decision making by the development project team. This can help to make a better design and finally, a better financial performance.

Bessant (1990) describes co-makership as a major shift in the relationship in the nature of the relationship between organizations. This can be made clear by the fact that buyer and supplier will work together frequently, which will lead to a mutual development within the relationship. This relationship is more intense than the usual buyer-supplier relationship, because there is more than an adversarial relationship. Levy et al. (1995) discuss that a co-makership

relationship leads to support for each other (buyer and supplier). In traditional supply chains, there is competition among each company. The difference with a co-makership relationship is that there is support for the supplier and the developer. According to Bessant (1990) buyer – supplier relationships have extended compared to years before. At this point, not only information of used raw materials are being discussed, but information on design, financial information, expertise, specialist services, and distribution and marketing is being exchanged. Choi and Rungtusanatham (1999) support this vision, even participation in final assemblers' product design activities and proactive management of quality and delivery is conceivable.

In conclusion it can be stated that many authors discuss that co-makership is a relationship between the buyer and supplier in the supply chain. This relationship will help to cut costs, such as transaction costs and will establish trust among each player. Therefore, the following definition of co-makership will be used in this thesis:

*A relationship between buyer and supplier in a supply chain, who share information among each other regarding research and development, marketing and distribution.*

## 2.2 Total Cost of Ownership (TCO)

As mentioned above in the definition of co-makership, transaction costs can become quite high. Therefore, it is important to look closer at all the costs that an organization has to make. Some of these costs relate to service, quality, delivery, administration, communication, failure and maintenance for example (Ellram, 1994). To help evaluating these costs, a model will be used which is called Total Cost of Ownership (TCO). This model explains all the costs which are made through the entire value chain of the firm. The insight in the total costs can help for organizations to make a decision if co-makership can cut some of these expenses.

According to Wouters, Anderson and Wynstra (2005), TCO can be seen as an application of Activity Based Costing (ABC). These costs are the costs of acquiring and purchasing goods or services. This means that TCO not only

focuses on costs, but on total received value. Wouters, Anderson and Wynstra (2005) explain TCO as the cost accounting application that allows purchasers in organizations to make decisions by combining value and price in making sourcing decisions. An other view is of Anderson, Glenn and Sedatole (2000), who state that for the sourcing decisions which are described above, it is essential to focus on cost of ownership rather than supplier price. This means that not only the price of the product is important, but the total value of the product as well. In addition to this theory, Ramanathan (2007) states that the selection of the right supplier can make the difference between profit or loss. The supplier can have a very positive or a negative impact on the overall performance of the organization. Heizer and Render (2006) discuss that the majority of quality problems in an organization occur with defective materials or products acquired by the supplier. Therefore, it is important to have a good relationship with the supplier in terms of cutting back these defectives and enhance the quality of the output of the organization.

Bhutta and Huq (2002) have made an evaluation of the use of different suppliers. Most organizations only look at the price of the material, product or service which they obtain of their supplier. However, according to Bhutta and Huq (2002), these prices are not the only factor in choosing the right supplier. They have created four criteria on how to select the right supplier. Firstly, are the manufacturing costs. These include raw material and labor costs. Secondly, are the quality costs. Here, the following factors are relevant: Cost of inspection, rework costs and costs due to delay. Thirdly, becoming more and more important nowadays is technology. Design and engineering costs are presented here. Finally, the costs of after-service. After combining these four criteria for different suppliers, an overview can be made to evaluate the suppliers.

### *2.3 Emergence of co-makership*

Why should an organization begin a relationship with their supplier? This question comes to mind when you see the definition of co-makership as described above. A relationship between buyer and supplier comes to exist through the growing confidence in a supplier's quality, on time arrival of parts at their agreed destination, avoiding unnecessary storage and a shift towards

supplier responsibility for quality. Suppliers deliver an added value to product development (Trent and Monczka, 1999). This means that the supplier can be a great partner when it comes to cutting costs. Moreover, new products will be easier to fabricate.

Since the beginning of the consumer market, buying products at the lowest costs is always one of the main focuses of the consumer. Therefore, suppliers always wanted to produce at the lowest possible costs. To conduct these low prices, suppliers will have to embrace economies of scale. A disadvantage of economies of scale is that it is difficult for suppliers to respond to unexpected changes in demand or supply (Lee, 2004). This is where co-makership can make a difference. Via the collaboration with the buyer and supplier, products can be made which are fixed to the changed need of the consumer. Together they can respond faster and therefore create a competitive advantage compared to the competitors who do not cooperate with their suppliers.

Bevan (1987) explains that co-makership will ensure that both parties are working towards a common goal. They do this because it can cut back expenses when they work together. The buyer and supplier therefore learn from each other in the process. Bevan (1987) discusses three causes to start co-makership. Firstly, there could be a great number of competitors in the market or the market is declining. Via the relationship with the supplier, a competitive advantage could emerge. Secondly, through quality-management projects and the need for communication a demand arises to communicate with the supplier. Thirdly, taking action is better than to react to others in the market.

Petersen, Handfield and Ragatz (2005) discuss that firms are seeking infinitely to cut costs in developer time and new products. Moreover, they try to improve quality and provide a smooth launch of new products. According to their research, integration with material suppliers into new product development can achieve these above mentioned facts. The integration of the material supplier could be different in each company. In some cases it will be fully integrated, while in others it will just be involved in R&D. Moreover, suppliers may be involved in different stages of the organization. Examples are coordination of process in supply chain design, product- and process design. In which factor the

integration of the supplier is a success, depends on the matter of when the supplier is integrated and what kind of responsibility it has.

#### *2.4 Disadvantages of co-makership*

In this section, some disadvantages as described by some well cited authors will be summed up. Until now, only positive factors of co-makership are discussed. However, co-makership has a downside as well. Due to transaction costs, relationships within a supply chain can be expensive. These transaction costs include the following: Negotiation, implementing, coordinating, monitoring, adjusting, enforcing and terminating exchange agreements (Car and Pearson, 1999). According to Williamson, (1985); Hennart, (1993) and North, (1990) transaction costs contain the following four factors. (1) search costs, (2) contracting costs, (3) monitoring costs and finally (4) enforcements costs. Search costs are the costs for finding a suitable partner to cooperate with. Contracting costs are the costs which are made when there is a suitable partner found, and there is a need for a contract with this partner. Monitoring costs include the costs of holding the partner to his agreement which is made in part (2). The fourth and last factor enforcement refers to the costs associated with sanctioning partner(s) when they do not meet the agreement. It is clear that there is great overlap with Car and Pearson, Williamson, Hennart and North. For example, negotiation could be linked with (2) contracting costs, monitoring is mentioned in both theories as well as enforcing.

Transaction costs are not the only drawback that co-makership has. Harrigan (1985) stated that the process of collaboration requires sharing sensitive costs and process information. This can reduce bargaining power and increase exposure. For organizations, this kind of exposure can be quite harmful if it comes in the wrong hands. Think of competitors for example. Another issue that is possible, is the leakage of information by the supplier to competitors. This will help the competitors to gain information on the production process of the organization and can therefore have a competitive advantage.

Eisenhardt and Tabrizi (1995) found that supplier involvement in new product development can only benefit from advantages when the organization is very large. This means that small organizations do not have an advantage when they

incorporate their supplier into new product development.

The above stated factors make clear that cooperation with a supplier does not only have benefits, but drawbacks as well. This can be explained by the fact that without a relationship with the supplier, transaction costs would not have been paid. Moreover, suppliers can leak information which results in reduced bargaining power and increased exposure. It is therefore crucial to build a strong and powerful bond with the supplier so that the organization can trust the supplier with sensitive information.

## *2.5 Advantages of co-makership*

After describing the main disadvantages of co-makership, it is time to make an overview of the main advantages of co-makership as described by some well cited authors.

Research of Flynn and Flynn (2005) showed that there is a direct relationship between co-makership and supply chain performance. They conclude that a strong relationship with supplier(s) can be helpful to create a competitive advantage. Co-makership will lead to benefits in quality and supply chain management. The advantages of co-makership are: reduced cycle time, increase inventory turnover ratio and higher on-time delivery rates.

Theoretical research of Dyer and Singh (1998); Handfield et al. (1999); Monczka et al. (1998) and Petersen et al. (2003) shows that early and extensive supplier involvement results in a faster development process. However, the process of product design is still largely undetermined by organizations. Even if the supplier is integrated in the product design, it will only be in the early stages of product development. Therefore, huge chances appear for organizations to improve on new product development. For example, the Bose Corporation allows suppliers to work in their factory. They can place orders themselves, and therefore manage the inventory. This is a great advantage for the organization because Bose cuts back expenses on agency costs and gets information on how to improve their product process and design.

Williamson (1985) discusses that in a relationship between buyer and supplier, investments could be done to strengthen the relationship. These investments

could be tangible, like a specific machine for example, or intangible like knowledge or a specific capability. These investments are not easily transferable and therefore strengthens the relationship between buyer and supplier. This can have a stabilizing effect in the relationship, because none of the committed organizations wants to lose the investment. Moreover, it provides a certainty for future business.

Ragatz, Handfield and Petersen (2002) discuss that by using the knowledge and expertise of suppliers, the following advantages will arise. The customer cycle time, costs and quality problems will be reduced. Moreover, the overall design effort will be improved. This means that the production process will be shortened and therefore products will be produced faster.

Overall can be said that co-makership can lead to lots of advantages for organizations. First of all, the supply chain performance will be superior compared to the supply chain without a relationship between buyer and supplier. It will lead to benefits for quality and supply chain management. Secondly, co-makership will lead to reduced cycle time, increased inventory turnover ratio and higher on time delivery rates. Thirdly, co-makership can lead to a faster development process. Fourthly, (in)tangible investments can be made to strengthen the relationship and provide a certainty for future business. Finally, advantages like customer cycle time, costs and quality problems will be reduced.

## 2.6 Overview of the advantages and disadvantages of co-makership

Table 1: advantages and disadvantages of co-makership

<b>Advantages</b>	<b>Disadvantages</b>
Benefits in quality and supply chain management	Search costs
Reduced cycle time	Contracting costs
Increase inventory turnover ratio	Monitoring
Higher on time delivery rates	Enforcement
(In)tangible investments	Risk of losing crucial information to competitors
Use of knowledge and expertise of supplier	Only large organizations benefit from supplier integration in new product development

## 2.7 Competitive advantage

A competitive advantage exist through the added value to a product or service of an organization. Barney (1991) stated that by conceiving and implementing a valuable strategy, some firms are successful and others are not. This means that some organizations can achieve a competitive advantage, an advantage which other organizations do not possess. Moreover, Barney (1991) gives the following definition of a competitive advantage. He stated that a firm has a competitive advantage when it implements a value creating strategy which at that time is not simultaneously implemented by a current or potential competitor. Multiple writers support the vision of Barney. Amit and Shoemaker (1993) and Dyer and Singh (1998) underline the importance of specializing resources and relationships.

A firm can create a *sustained* competitive advantage as well. This can be done when it is unable for rival firms or potential entrants to duplicate this value creating strategy. Some authors claim that this sustained competitive advantage is for a certain period of time (Porter, 1985). The amount of time which is needed for a competitive advantage to become a sustained competitive

advantage is therefore not certain. However, it is clear that a sustained competitive advantage should last a long period of time. It is not only this period of time that defines the existence of a sustained competitive advantage, but the inability of (potential) competitors to duplicate this value creating strategy that makes this competitive advantage sustained. The foundation of the theory of Barney (1991) is based on the findings of Baumol, Panzar and Willig (1982). They claim that a firm not only has direct competitors, but potential competitors as well who want to enter the market. Therefore, it is important to not only look at the current market situation, but to concentrate on potential competitors as well to sustain a competitive advantage.

In conclusion it can be said that Barney (1991), Amit and Shoemaker (1993) and Dyer and Singh (1998) share the overall opinion that a competitive advantage is a value creating strategy which is not possessed by competitors or potential entrants. According to Barney (1991), the key element of creating a competitive advantage is to specialize in resources and to create differentiated products or services. Only by this differentiation a competitive advantage can be created. To let this competitive advantage become sustained, Barney (1991) suggests that organizations should make sure that competitors and potential entrants cannot duplicate their valuable strategy. In this thesis the following definition will be used for the term *competitive advantage*:

*A competitive advantage is an advantage in resources or valuable strategy for products or services of an organization compared to competitors or potential entrants.*

## 2.8 *Co-makership leads to a competitive advantage*

At the end of this chapter, an overview can be made of the subjects who are described and analyzed using the work of well cited authors. Key in this chapter is how co-makership can be implemented in organizations and therefore create a competitive advantage. The following definition of co-makership is made:

*A relationship between buyer and supplier in a supply chain, who share information among each other regarding research and development, marketing and distribution.*

Co-makership can lead to all kinds of benefits for organizations. First of all, it can help to maintain quality and supply chain management (Flynn and Flynn, 2005). Williamson (1985) adds a second benefit, namely (in)tangible investments. Suppliers could support their buyer by this investment. Thirdly, Ragatz, Handfield and Petersen (2002) show that the use of knowledge and expertise of the supplier could lead to reduced customer cycle time and improved quality and design process.

Co-makership does not only lead to benefits, there are some drawbacks as well. First of all, a suitable partner (supplier) must be arranged. Therefore, search costs are involved. When the suitable partner is found, contract costs are the next drawback, as well as monitoring the partner (Car and pearson, 1999). Moreover, according to Harrigan (1985) organizations could lose bargaining power when co-makership is implemented. This could happen because the supplier knows all about the buyer and could pitch this to competitors.

Besides co-makership, competitive advantage is described in this chapter. The following definition of competitive advantage is given:

*A competitive advantage is an advantage in resources or valuable strategy for products or services of an organization compared to competitors or potential entrants.*

The research question for this chapter was; How can co-makership lead to a competitive advantage?

Co-makership showed some advantages and disadvantages for organizations when they implement this strategy. To conclude, large organizations can benefit from the advantages that co-makership has to offer, such as quality and supply chain management, knowledge and expertise of the supplier and (in)tangible investments. These benefits can make sure that they can obtain a competitive advantage in their sector.

For smaller organizations co-makership is not the best option. Costs of the implementation, such as search costs, contract costs and monitoring do not weigh up to the advantages which larger organizations can create.

## **Chapter 3: Innovation for new product development**

New products can play an important role in building and sustaining a competitive advantage that takes care of the profit- and grow margin of the organization (Abdul, 1994, Calantone and Benedetto, 1998, Kleinschmidt and Cooper, 1991, Robertson, 1971). Veryzer (1998) states that most organizations focus on improving or upgrading their existing products. However, just a few organizations are focused on really radical new products. This so called discontinuous innovation process involves dramatic changes in terms of customer familiarity and use (Meyers and Tucker, 1989). In this chapter it will be made clear why organizations should or should not implement innovation for new product development in their production process.

### *3.1 Defining innovation*

Van de Ven (1986) states that innovation is a critical mechanism for organizations to secure a place in the market for the near future. Gupta and Wilemon (1990) state that in order to maintain and secure a competitive advantage an organization should implement continuous product innovation and flexibility to face the intense competition and a rapidly expanding global market. This means that continuous product innovation is one of the most important factors of an organization nowadays. Krajewski and Ritzman (1993) support this vision. They have conducted research and found that more than \$50 billion are spent in designing new products or improving old ones. Moreover, more than fifty percent of a firm's turnover is generated by products less than ten years old. Other research of Kekre and Srinivasan (1990) has shown that a broader product line leads to a higher market share and increased profitability.

Van de Ven (1986) defines innovation as the development and implementation of new ideas by people in an organization who work with each other. This creates innovation on multiple levels such as technical, product, process and administrative innovations. Nord and Tucker (1987) identified the routine and radical innovation in product development. Routine innovation is a new product or service that is completely new but the organization has some experience with the production process. Unlike routine innovation, radical innovation is not a kind

of product or service where the organization has experience with. As the name suggests, a radical innovation is a product or service which is completely new for the organization. Therefore, the organization has no experience in making the new product. An other view on radical and routine innovation is the following. Through the use of new technologies, new products can be developed (Abdul 1994, Lee and Na, 1994, Tushman and Nadler, 1986). This so called discontinuous innovation has brought most of the technologies which are used today. Examples of discontinuous innovations which contain the use of new technologies are personal computers, televisions and mobile phones when they were first developed. In many cases, the new introduced products attracted new customers who were not even known with the concept because there was no market for the product yet. The products became quite challenging to sell, because of their high technology factor and uncertainty of the potential customers. Veryzer (1998) has stated that organizations can use discontinuous innovation as described above, but continuous innovation as well. Continuous innovation is the process of innovating existing products in their portfolio. Most organizations work with this method in their innovation process. This is because it is hard to come up with new products and it is easier to innovate existing products. Think of a new version mobile phone, an other type of LCD television or a better laptop compared to the previous model.

However, organizations can have a different view on the innovation process compared to the described theory. Some may call their innovation process discontinuously, while it actually is continuously. Abernathy and Utterback (1988) state that the focus on innovation for organizations depends on the rate of maturity of the organization. The employees of the organization are of great importance when discontinuous innovation is implemented. For instance, the employees have to be familiar with the possible technological difficulties that might occur with the new innovation project (Green, Gavin, and Aiman-Smith (1995; Hage, 1980; Roberts and Berry, 1985).

### *3.2 Classification of innovation*

Innovation can be classified in multiple dimensions. Veryzer (1998) makes use of the following classification. Firstly, the technological capability dimension. This

dimension refers to the degree of expanding (technological) capabilities which are beyond present boundaries. Secondly, is the product capability dimension. This refers to the benefit which the product creates for the user. This makes clear that multiple classifications can be used to classify innovation in an organization. According to Wheelwright and Clark (1992), development projects with the intention to innovate can be classified in the degree of change in product and the manufacturing process to make this product. In addition to this theory, Kleinschmidt and Cooper (1991) identified this degree of innovation or change in product in terms of a low, medium or high change rate. These described dimensions are summarized in figure 1.

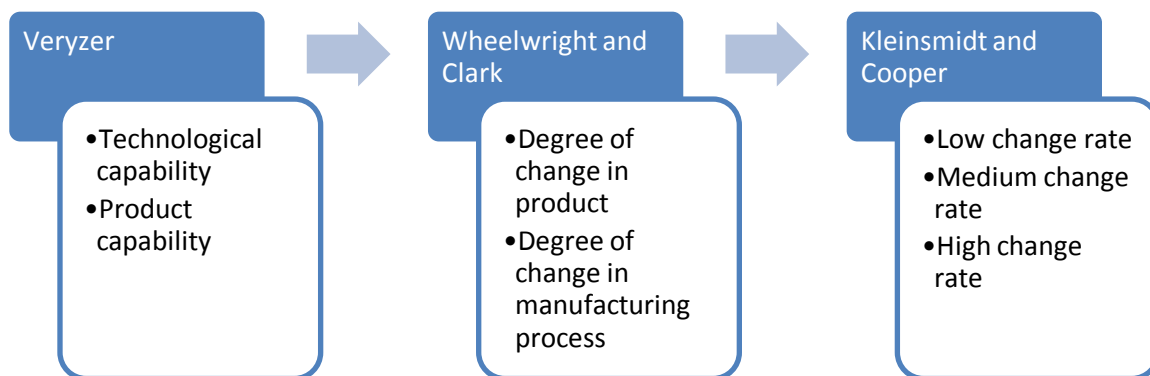


Figure 1: Classification of innovation

### 3.3 Successful innovation

The rate of success of innovation can be measured in multiple ways. For example, it can be measured via the commercial success of a product or service. However, Meyers and Tucker (1989) discuss that not only the commercial success should be evaluated but the development and the introduction of the product or service to the market as well. This means that an organization not only has to focus on the outcome of the finalized product, but at the whole production process as well. Only if organizations focus on their entire production

process and try to innovate this process, an innovation can be successful.

### *3.4 New product development*

New products for organizations are very important because this can attract new and satisfy existing customers. Malhotra, Grover and Desilvio (1996) state that organizations can have multiple reasons to create new products. Motives for new product development can be fulfilling the needs of a new market segment, improvement of existing product lines, or replacement of non-profitable products with new ones. These new product are brought to the market through technological breakthroughs, through clever marketing campaigns or via the Research & Development (R&D) department of the organization. New product development is knowledge development and knowledge activities which consists of routine and non-routine tasks, performed by an individual or a group (Purser et al., 1992; Parker, 2000; Zhang and Doll, 2001; Dougherty 1990; Donnellon, 1993; Ayers, 1997; Henke et al., 1993).

### *3.5 Research and development*

The R&D department of organizations have grown to huge numbers nowadays. Only in the USA, the number of employees working in R&D grew from 200.000 in 1950 to nearly one million in 1987 (National science foundation, 1989). Jones (1995) discussed that R&D is a key factor for growth in an organization. This can be explained by the simple fact that R&D provides new product development. This new product development can cause growth for the organization. The cause of this growth is an outcome of the collaboration of the R&D department and new product development in an organization.

Cohen and Levinthal (1989) suggest that R&D not only offers new information for the organization, but it also enhances the firm's ability to process and exploit existing information. Moreover, they conclude that R&D generates innovations, as well as the ability to identify, process and exploit knowledge from the environment. Dougherty (2000) explains that there are three findings in literature to explore product innovation in organizations. Firstly, the design of the product must meet with the customers' need (Rothwell et all. 1974; Lilien and

Yoon 1988). Secondly, the technological possibilities should be linked with the market possibilities so that it can be made clear who the customers are and in which way they will use the product. For this to be a success, collaboration between marketing, manufacturing and the sales department is key (Bonnet 1986; Dean and Susman 1989). Thirdly, product innovators should collaborate with the different departments in an organization. (Cooper and Kleinschmidt 1986; Souder 1987).

### *3.6 Continuous and discontinuous innovating product development*

New product development can be categorized in different stages. Firstly, a plan or idea has to be thought off. This concept will be tested and evaluated according to the market opportunity and market demand. Key in new product development is to manage risk and increase efficiency. A distinguish can be made in continuous and discontinuous innovation for new product development. For discontinuous innovation products it is for example possible to involve customers in the design process (Leonard-Barton, 1995; O'Connor and Rice, 1996; Rice and Kelley, 1996; Zien and Buckler, 1997). The process of evaluating customer experience and modifying the product to the customers need can take years before the product will actually be produced. Furthermore, when the product is produced, it is unclear what the market opportunities are (Morone, 1993). This is because customers are not yet familiar with the product and therefore need to be confronted with it. This makes clear that communication to the customer is of great importance when an organization creates a product out of a discontinuous innovation process.

According to Cosier (1981), in the future, organizations only competitive advantage will be the learning process. However, McKee (1992) states that organizations can not only learn from production oriented activities, but from innovation in product development as well. Learning in the production process for groups and individuals can become the most important factor for an organization in the future. According to McKee, (1992); Mishra et al, (1996); Zirger and Maidique, (1990), product innovation learning consists of the increase as a result of practice and the refinement of innovation related skills.

### *3.7 Innovation for new product development*

At the end of this chapter an overview can be made of the subject innovation for new product development. The research question in this chapter was:

*What is innovation for new product development?*

According to the multiple theories used in this chapter, innovation is a way to create or maintain a competitive advantage for an organization. This can be done by continuous (routine) or discontinuous (radical) innovation (Nord and Tucker, 1987; Abdul 1994; Lee and Na, 1994; Tushman and Nadler, 1986; Veryzer, 1998). This innovation process can contribute for more than fifty percent of a organization's turnover. Moreover, a broader product line can lead to higher market share and increased profitability (Kekre and Srinivasan, 1990). This broader product line has to be established via the innovation process. This process has to be implemented in a right way. Employees have to be familiar with the technological difficulties which might occur (Green, Gavin, and Aiman-Smith, 1995; Hage, 1980; Roberts and Berry, 1985).

New product development is knowledge development combined with knowledge activities which consists of routine and non-routine tasks, performed by an individual or a group (Purser et al., 1992; Parker, 2000; Zhang and Doll, 2001; Dougherty 1990; Donnellon, 1993; Ayers, 1997; Henke et al., 1993). These new products can be developed via the research and development department of an organization. For this to be a success, collaboration between marketing, manufacturing and the sales department is key (Bonnet 1986; Dean and Susman 1989). In addition to the theory of innovation, is discontinuous innovation for product development. Here it is for example possible to involve customers in the design process (Leonard-Barton, 1995; O'connor and Rice, 1996; Rice and Kelley, 1996; Zien and Buckler, 1997). In the future, organizations can only create and sustain a competitive advantage through the use of the learning process (Cosier, 1981). This learning process consists of the increase as a result of practice and the refinement of innovation related skills (McKee, 1992; Mishra et al, 1996; Zirger and Maidique, 1990).

In conclusion, innovation is a key factor for new product development. Innovation in two different forms are possible, continuous (routine) or

discontinuous (radical). Unregarded to what form organizations choose, it will lead to a learning process which will eventually lead to new product development.

## **Chapter 4: Conclusion**

At the end of this thesis, an overview can be made of the described literature. Co-makership, innovation and new product development are subjects which are described in this thesis. In order to make a recommendation, the subject have to be reviewed and assumptions will be made.

### *4.1 Conclusion and recommendations*

Through the use of the research questions, the problem statement can be answered. This was the following:

*How can co-makership in innovation lead to a competitive advantage?*

The definition of co-makership for this thesis is: A relationship between buyer and supplier in a supply chain, who share information among each other regarding research and development, marketing and distribution. Co-makership can lead to multiple benefits for organizations. Examples are: Maintaining quality and supply chain management (Flynn and Flynn, 2005), (in)tangible investments (Williamson, 1985) and reduced customer cycle time.

Innovation is a way to create or maintain a competitive advantage for an organization. This competitive advantage can be created and sustained via the use of continuous (routine) or discontinuous (radical) innovation (Nord and Tucker, 1987; Abdul 1994; Lee and Na, 1994; Tushman and Nadler, 1986; Veryzer, 1998). Moreover, via a broader product line which can be established through the use of innovation, a higher market share and increased profitability can be achieved (Kekre and Srinivasan, 1990). Therefore, co-makership in innovation can lead to a competitive advantage because the organization has an advantage compared to other organizations in the same market who did not implement co-makership. Co-makership can only be successful if it is implemented in a large scale operation, for a large organization. Small organizations will not enjoy the benefits which large corporations will. Key in successful implementation of co-makership is to have a good relationship with the supplier. Trust in each other is a key element in this relationship. Moreover, contracts should be made to maintain the relationship between the two parties.

#### *4.2 Limitations and suggestions for further research*

This thesis is focused on the subject co-makership, innovation and new product development. Compared to innovation and new product development, co-makership is not widely described in literature. However, the information that is available is from well cited authors. This thesis only focuses on the assumption that co-makership can be used to produce new products through the use of innovation. The limitation of this thesis is therefore that it only describes a small subject of the possibilities of co-makership. A result of this is that in future research, more research is needed on the benefits of co-makership for organizations and suppliers. Future research could focus more on the relationship that is needed for co-makership. This relationship is the base for co-makership and should therefore be explored. How do organizations for example start this relationship, and how can they hold it together?

#### *4.3 Managerial implication*

Conclusions which are drawn from the theory in this thesis could be helpful for managers in large organizations. Through the use of co-makership organizations can benefit from some of the advantages which co-makership offer. Co-makership is explained in this thesis and advantages versus disadvantages are made clear. Through this comparison, managers can make a decision if co-makership will be an addition for their organization.

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