

The influence from networks on the development of Business models

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ABSTRACT

For university spin-offs changes in their organization can be very important in order to keep existing, especially in the business model which is the backbone of any organization. Furthermore a partner network is also very important in organizations like university spin-offs because they can be the missing link in order to continue growing. The current literature doesn't provide many answers to the question if networks are influencing changes in business models. That's why this research aims at identifying what the role of networks are in the development of business models. This is done by analyzing the business model and network of three university spin-offs. The findings are that the establishment of networks has a positive influence on the development of a business model, however some parts of the business model are more affected than others. Hence, the results are showing that this effect also positively influences the market success of university spin-offs. Additionally the results show that the biggest influence from the network is on the value proposition, key activities, key resources and the partner network itself in a business model. Lastly as implication university spin-offs should pay close attention to what influence networks can have on the development of their business model.

Keywords: Business models, networks, development, change, university spin-offs, market performance

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1. INTRODUCTION

1.1 Introduction and Research Questions

The Goal of this research of this research is to analyze how the development of business models is influenced by the creation of networks. According to Teece(2009) a business model in an emerging industry is most of the times not complete in the early stage of a company and entrepreneurs/managers who are able to learn and adjust are more likely to succeed. This is the reason why in this research the impact of networks on the adaption of business models of university spin-offs will be analyzed in order to see how creation of networks enhance the development of business models and if it will enhance the success of university spin-offs in the market. This can give the spin-off companies an insight in the importance of establishing relationships with other companies or institutions and help them making future strategic decisions.

In this research the main focus will be on the influence that networks have on business models of university spin-offs and how it helps them adapting to the market and create value for them. Furthermore this will help the spin-offs make decisions about to what extent they can built up their networks and what effect it will have on their business model. Hence, we will look at how the development of the business model will affect the market success of a university spin-off.

According to Pries and Guild(2011) there is not a lot of empirical evidence that can help entrepreneurs choose which business model they should use when starting up a company. Teece(2009) argues that a new business model can only be successful after considerable trial and error. Which is the reason spin-offs often cope with the problem of setting up the most appropriate business model. Furthermore, the business model is very important element in bringing new technologies to the market, since a lot of technologies fail when they are brought to the market due to the little attention given to the design of the business model.(Teece, 2009) This is the reason why it is very important for spin-offs, who are offering innovative products, to have a good working business model and to develop it over time. Further Teece(2009) argues that figuring out how to deliver value to customers and capture value are the key issues of the design of a business model and that the right design of a business model will also contribute to the firm's competitive advantage.

As mentioned earlier the initial business model of a company in an emerging industry is most likely not directly the most appropriate one. Entrepreneurs and managers who have a good position, but not a perfect business model can succeed by adjusting the business model over time.(Teece, 2009) Over time companies will establish networks with third parties with as goal to help each other doing business. This will influence the business model of the university spin-offs and the way they are creating value. Zott, Amit and Massa(2011) argue that the network of a firm may constitute part of a generic business model and could cause differentiation in

the business model. Furthermore Hamel(2000) argues that new business models can be developed in a way that value capture and value creation occurs through a value network, which includes suppliers, partners, distribution channels, and coalitions. This means for university spin-offs that it is possible that the development of their networks can help to optimize their business model.(Osterwalder & Pigneur, 2005)

1.2 Research objective and questions

In this research the main question is to find out what influence the establishment of networks has on the development of a business model. As mentioned before University spin-offs often start with a small network and built larger ones over time. Furthermore the business model is not developed in the start-up phase of a spin-off and will evolve over time. That is the main reason why we are going to look at how big the influence of a network is on business model development and if this influence will enhance the value creation of university spin-offs. Furthermore we are going to look at the how networks influence the market success of university spin-offs.

Central Research Question

1. How do networks influence the development of business models of university spin-offs?

Sub-question

1.1 How does this influence the market success of university spin-offs?

1.3 Academic and practical relevance

This paper attempts to address the influence networks have on developing a business model, as stated "Business Models, Business Strategy and Innovation" by Teece(2009) start-up companies rarely find directly the most appropriate business model and by learning and adjusting it over time they are more likely to succeed. There hasn't been a research conducted about the influence of networks on this yet, so that is why this paper aims at exploring what the impact of the establishment of networks is on business models.

The practical relevance of this paper lies in the importance for university spin-offs to acknowledge how the establishment of networks can help them adapting their business model. Business models are a very important factor for the success of a company, it helps creating value and reducing risk.(Achtenhagen, 2013) Therefore it is very important to have a business model which suits the best with the technology a spin-off is selling on the market. Since the right business model is rarely found in the beginning stage of a company, it is very important to keep adjusting it in order to sustain or increase value creation.(Osterwalder and Pigneur 2010) The establishment of networks can have an impact on this, because with an increasing network over time it is possible to gain more value by cooperating with the established system of relationships. This paper aims at giving a guiding light on how big the influence of networks is on the change of business models and if it

will increase the value creation and market success of university spin-offs.

1.4 Outline of the study

The introduction gives an outline about the problem university spin-offs often face, in the theoretical part an outline is given on how to define business models and the importance of developing them. The next section explains how the data is collected. Then the results will be presented followed by a discussion and conclusion section. The last part will consist of the managerial implications of this research and will present the limitations and further research.

2. THEORETICAL FRAMEWORK

2.1 Business models

2.1.1. Defining business models

There are a lot of different definitions about business models, for example Zott et al. (2011, p.2) suggest there are four themes which define business models: (1) *they refer to a unit of analysis whose boundaries are wider than those of the firm*; (2) *they “emphasize a system level, holistic approach to explaining how firms do business”*; (3) *they articulate the activities of the firm with those of its partners*; and (4) *they seek to explain both value creation and value capture, e.g., how assets are protected and profits generated*. Chesbrough and Rosenbloom (2002, p. 532) defines a business model as a “*focusing device that mediates between technology development and economic value creation.*” More specifically, the business model results from “*sequential adaptation to new information and possibilities and articulates an innovation’s value proposition and its market segment, the value chain, the revenue model, the value network and the competitive strategy*” (Chesbrough and Rosenbloom, 2002, p. 550). There are still a lot of other definitions of business models, so it is hard to create a clear definition of it, this is mainly caused by the different perspective and background of the authors. However what they all have in common is that they combine the firm’s value network, revenue creation and value proposition. (Zott and colleagues 2011)

2.1.2. Business model framework

The business model canvas from Osterwalder and Pigneur (2010) is a way to define a business model and consists of nine different blocks which can be used to develop, analyze or compare business models. (Figure 1) The model consists of a product part, which is the value proposition, an infrastructure management part which consists of key partners, key activities and key resources. Hence, the customer interface part consists of client relationships, client segments and distribution channels. Finally the financial aspects consist of the cost structure and the revenue flow. With this canvas it is possible to analyze which kind of value is delivered from what kind of resources. In this research the framework will be used to analyze how the business models of university spin-offs have evolved.

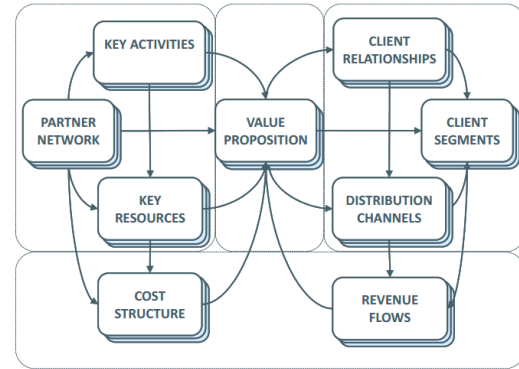


Figure 1 Business model canvas (Osterwalder and Pigneur, 2010)

2.1.3. Adaption of business models

According to Osterwalder and Pigneur (2010) sustained value creation relies on successfully shaping, adapting and renewing the business model on a regular basis. Which will enhance the rate at which the company can deliver and capture value. It has been argued that business models cannot be anticipated fully in advance and that they rather must be learned over time through experimentation (McGrath, 2010). Teece (2009) adds that when entrepreneurs are well positioned, but not have a perfect business model, are likely to succeed when they are able to learn and adjust.

To determine how business models change the framework of Cavalcante (2011) will be used. He distinguishes four different kind of business model changes: (1) business model creation; (2) business model extension; (3) business model revision; and (4) business model termination. (see table 1) On basis of this framework the evolvement of the business models of university spin-offs will be analyzed.

Type of Change	Characterization
1. Business model creation	Creation of a new processes
2. Business model extension	Adding new processes
3. Business model revision	Changing existing processes
4. Business model termination	Terminating existing processes

Table 1: Business model change, Cavalcante (2011)

The first category “business model creation” is related to putting a business idea into practice and creating a complete new business model. It refers to the introduction phase of a company which most university spin-offs already had when they started up their company. In figure 2 it is the first block which indicates the phase of starting up a company. In the next stage, when the business model company is already established, there is still need to develop the model. Which leads to the second block “business model extension which is the growth and expansion stage of university spin-offs.” This category refers to adding new activities and/or expanding the existing core process of the business model which can be seen in ‘block II’ from Figure 2. The third business model change is “business model revision,” this happens in the maturity stage of a spin-off when they need to

change to different markets and change their business model. This is indicated in figure 2 with the transition from block II to block III. Revision means to delete an existing part of the business model and replace it with a new process. It implies going into a different direction and exploring alternative ways of doing business. Finally the fourth block in Figure 2. “business model termination,” refers to abandoning or removing a process in the business model, this can affect only a small part of a company, but also an entire company. This usually happens in the maturity or declining stage of a spin-off, when there are no more opportunities to become successful in a market they need to change their focus or leave the market.

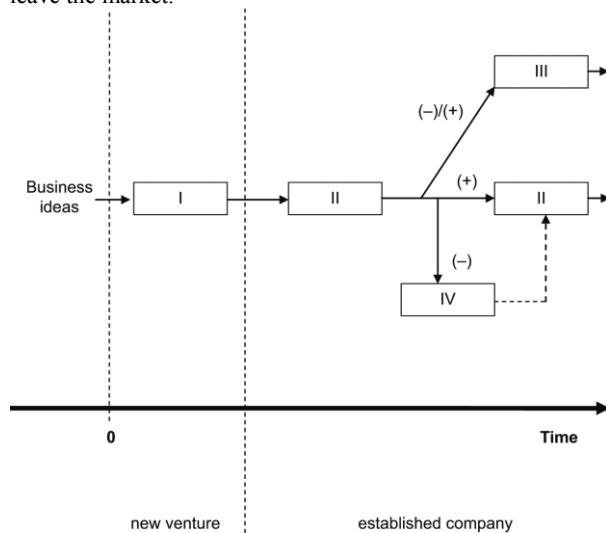


Figure 2 Business model change (Cavalcante 2011)

Networks

2.2.1. Defining partner networks

In its most abstract form a network is a structure where a number of nodes are related to each other by specific threads. A complex business market can be seen as a network where the nodes are business units manufacturing and service companies and the relationships between them are the threads. Both the threads and the nodes in the business context have their own particular content. Both are “heavy” with resources, knowledge and understanding in many different forms (Hakansson, 1997). This heaviness is the result of complex interactions, adaptations and investments within and between the companies over time. It is not a world of individual and isolated transactions between companies. Instead, each node or business unit, with its unique technical and human resources is bound together with many others in a variety of different ways through its relationships. (Hakansson, 2001, p1)

Value networks consist of multiple organizations that collaborate and utilize their resources and capabilities to produce and deliver a product or service to an end customer and create value for the organizations within the value network (Helander and Rissanen, 2005; Peppard and Rylander, 2006) In the business model canvas from Osterwalder & Pigneur(2010) there are present as the “Partner network.” This is why they are important in the development of business models. Furthermore the key

partnerships block in the business model canvas describes the network of a company. This network consists of suppliers and partners who make the business model work. (Osterwalder & Pigneur(2005) This indicates that networks are the driving force of a business model. According to the canvas partner networks influence the value proposition, key activities, key resources and cost structure. Furthermore, Nenonen & Storbacka (2009) discuss that a value network in business model definitions consist of partner networks, links to external stakeholders and links to exchange partners. Therefore it is very important that the construct of a business model is also oriented towards those external partnerships. This is also evidence that networks can be a key in creating and developing a business model.

2.2.2. Framework for analyzing networks

To analyze the network of the university spin-offs the network value analysis from Peppard and Rylander (2006) will be used. This model contains of five different steps and will make it possible to create a network value map which gives an overview of the company’s network. Hence, it will make it possible to see how the different actors in the network are influenced by each other.

The first step in the framework is to (1) Define the network, which means to set the boundaries of the analysis. Then the network focal, which are all organizations and business units who rely on the network, need to be identified.

The next step is (2) identifying and defining network participants. These participants are all actors that influence the value the network focal network delivers. All actors, people or communities that have influence on value proposition to customers and exist in the current network focal environment can be called the network of a company.

In the next step we will start (3) Identifying value dimensions of the network participants. This means we are going to look at what kind of value is captured from which participants in the network. *Network influences can be direct or indirect depending on whose perspective one takes. With NVA, we take the perspective of the network focal with respect to its objectives and offerings towards its customers. Only those influences that have an explicit effect on their business are considered. (Peppard and Rylander, 2006, p12)*

Further step four involves the (4) defining of value linkages between participants of the network. According to Peppard & Rylander(2006) there are four different kind of linkages who define what is exchanged in the network:

- (1) Exchange of goods and services; for example, new content.
- (2) Affective and liking (expressive/emotional); for example, customers attracted to a brand.
- (3) Information and ideas (cognitive); for example, ideas for new service offerings coming from customers, content developers or market research companies.
- (4) Influence and power (prescriptive); for example, regulators

Finally in the last step (5) Analyze and shape we will be able to create an overview of the network and see how the participants are influenced by each other and what influence they had on the development of the business model.

3. METHODOLOGY

This research was carried out in a period of approximately 10 weeks. A total of 3 university spin-offs which are located in the area of Enschede were involved, in order to gather enough data for reliable results. The data was collected by qualitative research methods in order to obtain results which sketch a picture of the reality and come from a real life scenario. In order to obtain the data semi-structured interviews were taken with each of the managers from each spin-off. These people were able to give the most reliable answers since they have gone through the whole process of developing their business model and have experienced how their business model and networks have changed in their company over time.

The spin-off companies business model were analyzed on basis of the business model canvas from Osterwalder and Pigneur(2010) together with the business model changes framework from Cavalcante.(2011) From all the participating spin-offs companies the beginning situation(block I in the framework from Cavalcante(2011) and current situation of their business model were analyzed. Furthermore the networks of the university spin-offs were analyzed on the hand of the network value analysis from Peppard and Rylander(2006). After obtaining the data it was possible to write the results and see how the network of each spin-off had influenced the development of the business models. Furthermore it was possible to see how his had influenced the market success of each spin-off. Finally the results were analyzed together with the literature in order to give answers to the research questions.

The first interviewed company, spin-off A, is a company which focusses on the market of game based learning. They started 10 years ago with virtual reality and gaming and have changed over the years to a knowledge institution on serious gaming. Then they started to change their focus again and started to bring this knowledge into board games, which finally evolved in offering an online gaming platform which can be used to give training in different kind of companies.

The second spin-off B is a company in the bio health care industry. Initially they were trying to create a coating material for implants in human bodies, but they moved their focus to the lenses industry and are offering a coating material which enables the safety and comfort of contact lenses. They already exist a few years but due to the huge amount of research they needed to do they were not able to go to the market yet.

The third spin-off C delivers high-tech equipment which is used for the coating of next generation thin materials. In 2006 they started off as a consultancy company which served customers who were in the need of material knowledge. In 2009 they made a switch to delivering coating machines after many requests from customers. They developed a pulsed laser deposition machine which they are currently selling on the market.

The interview consisted of 15 main questions with additional sub-questions which were intended to get more information about changes in the spin-offs. The first few questions are about the company itself, what their initial idea was and how they created the company. Then a few questions were asked about the business model and how the business model has develop over time. For each block in the business model canvas there is one questions, with sometimes an additional question. To analyze the network influence there were questions to analyze the network and a few additional questions which dealt with how big the influence was. Lastly there was a question asked about how big the influence was on the market success of the spin-offs. The following questions were asked in order to obtain the data:

Q1. What was your initial idea when the company was created? /What do you offer to the market? /

Q1a. How many employees do you have?

Q1.b. How many years have you been on the market?

Q2. Who was involved in creating the company? (help from other organizations/third parties etc.)

Q3. What was the initial market of your company? / How did this change over time? Why?

Q4. Which activities did your company initially perform to create a product? / How has this changed over time? Why?

Q5. How have your resources changed over time? Why?

Q6. How did the value you deliver to your customers change over time? Why?

Q7. How have your customer relationships changed over time? Why?

Q8. Did you change your way of reaching customers? Why?

Q9. How did your costs over time? Why?

Q10. How did the way you make revenue change over time? Why?

Q11. Which are the most important networks for your company? / What do you receive from them?

Q12. How has this network developed over time?

Q13. How big was the influence of these networks on the development your company? How big was this influence on your business model?

Q14. How does your network help you to gain success in the market?

4. RESULTS

After interviewing each of the spin-offs, the following results could be derived from the data. A complete transcript of the interview can be found in the appendix.

4.1 Spin-off A

4.1.1 Product & infrastructure management

Spin-off A was created by the university and with the help of a big organization they were able to set up the company. They both helped the company grow with a few employees, an office and financial support. In the first few years they weren't focused on creating a product and their **value proposition** lied in offering knowledge about virtual reality and gaming to other companies. Over time this has changed into researching and producing serious games, which are games which can be used for learning and training in organizations. *"Ten years ago we started with virtual reality and gaming and switched our focus to serious gaming after a few years. Currently we are focusing on bringing our knowledge into products and sell them on the market."* Initially they were only offering these games as board games, but over the past several years their focus changed to the online gaming industry. Currently they are offering their games on an online platform which can be accessed via the internet by customers. Their **key activities** initially consisted of offering knowledge about virtual reality and gaming to other companies and doing research in this field. Over time they started researching and producing serious games, which became their new key activity. At this moment with the online platform they are still creating games but are more focused on collaborating with customers and partners in order to obtain input for their games. The transition spin-off A made, also affected the **key resources**. In the initial stage of the company they only had a few employees with knowledge in the field where it was needed. When they started with serious gaming they needed to have a lot more knowledge from different domains like graphical design, but also the knowledge about how to train people, which they needed to put into the game. Finally with the online gaming platform the amount of areas from which they require knowledge even became bigger, because they are offering their service to a lot of different branches which requires knowledge from each of these different domains. Hence, the **partner network** of spin-off A initially consisted of the university and the company which collaborated to start spin-off A. After they started to develop games they built relationships with organizations which provided funding for their research. When they started to make the games they were getting involved with the customer who wanted the game. For example an air force institution wanted to use serious gaming for training their employees, so they started to share knowledge with spin-off A, which made it possible to create a board game for this institution. Furthermore when they started with the online platform a lot of networks were built with customers who wanted to use it, so they could start sharing knowledge about what to implement in the game. These networks were a lot of big companies and also

various learning institutions. Lastly, they also started collaborating with training bureaus, which are using spin-off A's platform as a tool to give training in organizations.

4.1.2 Customer interface

As stated above the **client segments** of spin-off A have grown over time, in the initial stage of the company they offered knowledge to companies about virtual reality and gaming, this changed to creating board games which were designed for a specific situation. For example they offer board games which aim at: collaboration between humans in crisis situations, planning new initiatives, cost estimation, business modelling, creating customer relationships and change management. When they started their online platform they were able to serve a lot more different businesses, because they could create different scenario's on this platform which were specifically designed for each type of organization. *"With the online platform we are also able to serve a lot more companies, because with the input we get from customers we are able to create a lot of different game scenario's."* Furthermore the **distribution channel** of spin-off A changed from offering knowledge to a tangible product, the board game, to the current situation of offering value through an online platform. Hence, they are also offering their product through their partner network like the trainings bureaus, which is also a change in their distribution channel. The **customer relationships** spin-off A has with their customers also have changed. Initially spin-off A didn't have close customer relationships because they offered a one-time service to customers. However, when they started creating board games the relationships became closer because the knowledge which had to be put into the games, had to come from the customers. *"We started collaborating with companies who give training and normal companies in order to obtain information about which kind of scenario's we needed to build into the game."* Finally with the creation of the online platform the relationships became very close and spin-off A started to create alliances with their customers. Now the customers are constantly giving feedback on the online gaming platform and are giving input for new content like more different scenarios for a game. Spin-off A tries to make the relationships even more close by organizing events where customers are able to test their new tools and games.

4.1.3. Financial aspects

The **revenue flow** from spin-off A has changed from obtaining money from service, to selling an actual product, to the online platform which customers can use by payed access. Furthermore they are also offering their product to trainings bureaus now, who can use it to give training in the different organizations which are customer of spin-off A. The most important **cost structure** change was the increase in employee cost. In the initial stage spin-off A didn't need many employees. However the amount of knowledge they needed increased a lot, so they needed more experts from different fields as they developed, which made the costs of employees rise drastically.

4.1.4 Influence of the network

For spin-off A the network was a very important factor in the change of the product and infrastructure management part of the business model. The establishment of the network was very important in the change in the value proposition from offering knowledge to serious gaming. The reason the network was important in this change is because with the knowledge from the university and customers, spin-off A was able to get the input for their games and with the help from the funding organizations they had the money to do the research and make the games. *“There are a lot of different parts which have influence on our company. E.g. the technology, software, the content of the games, so you need to have knowledge about different domains, because we cannot employ people for each of these parts, like an air traffic specialist, health care specialist, we obtain this knowledge from companies in our network.”* Furthermore this change caused that the key activities and resources also needed to adapt to the change in value proposition, which made the infrastructure management part of the business model completely change. Furthermore spin-off A started to develop a bigger network, because the change in value proposition caused that more knowledge was required from different fields, which made it important for the network to become larger in order to obtain this knowledge. Concluding we can say that the network had a high influence on the changes in the product and infrastructure management part of the business model from spin-off A. Hence, in the part of the customer interface the network also had a big influence. Due to the development of the network with customers and training bureaus, spin-off A was able to create a bigger client segment, because with the input of knowledge from these partners into the games they could provide a training tool to a lot of different organizations. Their distribution channel and customer relationships were not directly influenced by the network, but they were indirectly affected because of the changes in the

value proposition. So we can also conclude that the network had a high influence on this part of the business model. Lastly in the part of the financial aspects the only direct influence from the network is in the revenue flow. Due to the creation of a network with different trainings bureaus they also started to earn money from the companies who are using spin-off A's online platform as tool to give training. The other changes in the revenue flow and cost structure are indirectly caused by the network because of the change in value proposition. So in conclusion we can say that the influence of the network on the financial aspects part is mediocre.

As stated above the impact from the network had a big influence on spin-off A's development in the introduction stage of the company. First of all the funding from the collaboration between the university and a company helped them to start up the company. (**business model creation**) Further, in the expansion stage of the company spin-off A used this network and new connections with funding institutions in order to start researching and creating serious games, which caused the changes in their value proposition. Eventually this was the main reason there was a **business model revision** in spin-off A, because most of the existing processes from the business model canvas were changed. Hence, spin-off A built networks with customers and training bureaus which provided input for their games and enabled them to create an online platform where it is possible to create a lot of different game scenario's. This caused a **business model extension**, because new processes were added into the business model. Overall the establishment of their network made spin-off A more successful in the market and makes them still growing bigger at the moment. The main reason for this is the help from their partners to create their games, which enabled them to serve a larger range of companies than they initially did. Furthermore they were able to obtain revenue from training bureaus, which also enhanced their success in the market.

Network Participants	Value dimensions	Linkages	Business model change	Influence from network on parts of business model
University	Knowledge, funding, office space	Affective and liking	Business model creation, revision	Change in product and infrastructure management part
Organization which supported the founding	Funding, employees	Affective and liking	Business model creation, revision	Change in product and infrastructure management part
Funding organizations	Funding	Affective and liking	Business model revision	Change in product and infrastructure management part
Customers	Content for the games, feedback	Information and ideas	Business model extension	Change in customer interface part
Training bureaus	Use spin-off A's platform, feedback	Exchange of goods and service	Business model extension	Change in customer interface and financial aspects part

Table 2: Network analysis with the framework from Peppard and Rylander (2006) and the influence on the business model from spin-off A

4.2 Spin-off B

4.2.1 Product & infrastructure management

The **value proposition** and **key activities** of spin-off B changed from researching a coating material for implants to researching a coating material for contact lenses, which they are currently bringing to the market now. This material enhances the safety of contact lenses and prevents infection or irritation of these lenses. This change was caused by the business developer who argued that it was hard to penetrate the market of implants and that with going a step back and firstly develop such a material for contact lenses, they would be able to bring it much faster to the market. The **key resources** needed to create this product haven't changed drastically after they switched to making it for contact lenses. However they needed to adapt the coating material a bit after they switched because contact lenses are completely different from implants. According to the manager of spin-off B the **partner network** of spin-off B has developed rapidly over time: *"Initially we were supported and funded by the university and a regional institution."* *"They helped us setting up the company with a business developer and organizing subsidiaries."* *"Then we got the support of big other institutions which brought us a lot of funding for research, which made it possible to come up with the end product."* After they started with the contact lenses project they also built relationships with contact lenses manufacturers, from which they obtained a lot of information and feedback on their product.

4.2.2 Customer interface

With their initial idea spin-off B wanted to provide hospitals with a material which would make implants in human bodies safer. In the current situation their **client segment** consists of contact lenses producers, which makes spin-off B still a business to business company. The **distribution channel** of spin-off B is still the same, however the **client relationships** of spin-off B have changed from almost non-existence to close relationships with fabricants of lenses. These relationships are very close because spin-off B needs the feedback from these fabricants in order to develop their product: *"Currently we are meeting with our customers every week, in order to receive feedback on the development of our product."*

4.2.3 Financial aspects

At the moment spin-off B doesn't have a **revenue stream** yet, they are very close to going to the market, but there is still some development which need to be done to their product. They are planning to sell their product with the same kind of model as a printer which needs ink cartridges. They want to sell a device which can bring the coating material on the contact lenses and they want to sell the fluid which the machine needs to operate. Their **cost structure** has changed from research costs to market research costs and prototyping, furthermore their staff has increased with one more researcher.

4.2.4. Influence of the network

Looking at the impact from the network on the product and infrastructure management part of the business of spin-off B, it becomes clear that due to influence of the regional institution they were able to change their value proposition and key activities from making a coating material for implants, to making a coating material for contact lenses. Due to this change they gained financial support from other institutions and created a partnership with lens manufacturers. *"A few weeks ago we received over 90.000 euro from a regional Nano institution for our project."* So we can conclude that the establishment of the network had a high influence on this part of the business model. However in the customer interface part the influence is not that high, since the only thing that has changed is the customer relationships, which have become closer due to the partnership with lens manufacturers. *"The network is necessary in order to get closer to the customers and get to know the language of the market."* This is the only important change caused by the network, so we can conclude the influence of the network on this part of the business model was small. Further, the impact in the financial aspects is non-existence because there are no changes in it caused by the network.

As stated above, the network of spin-off B had a high influence on the development on the product and infrastructure management part in the business model. In the entrepreneurial stage of the company when spin-off B was still researching, they were supported with funding by the university, a Nano technology institution and a local business developer. With this funding they were able to start researching their ideas and come up with a product. Concluding from this it is clear that these networks were essential in the **business model creation** of spin-off B. The switch from making a coating material for implants to making it for contact lenses was very important. The manager said: *"This was a make or break for our organization because we were stuck with the development of the coating material for implants."* Due to the contacts the Nano technology institution provided for them with contact lens manufacturers and the funding they received, they were able to find a new market and make the decision to switch their focus to contact lenses. This change didn't cause many adaption to their business model, since it was not completely developed yet. The only thing they needed to do is to add new processes into their model which means they had a **business model extension**. Spin-off B is still in the entrepreneurial phase and they are not selling to the market yet, so it is hard to define how big the influence of their network was on their market success. However they are already established a lenses producer as partner and when they will go to the market it is very certain that their product will be used. *"We were able to gain contacts with lens manufacturers, which made a very big impact on the development of our product and makes it possible to access the market in a few months."*

Network participants	Value dimensions	Linkages	Business model change	Parts of business model changed due to influence of the network
University	Funding, organizing subsidiaries	Affective and liking	Business model creation	
Nano institution	Business developer, funding	Affective and liking	Business model creation, extension	Product and infrastructure management part
Funding institutions	Funding for research	Affecting and liking	Business model extension	Product and infrastructure management part
Contact lens manufacturers	Feedback on product, access to the market	Information and ideas	Business model extension	Customer interface part

Table 3: Network analysis with the framework from Peppard and Rylander (2006) and the influence on the business model from spin-off B

4.3 Spin-off C

4.3.1 Product & infrastructure management

Spin-off C initially started off as a consultancy company, which offered help to customers who needed knowledge about different kind of materials. After two years they changed their **value proposition** into offering a product. *“After many requests from customers who asked us if we could offer a coating machine, we changed our focus in developing this machine and came up with the pulsed laser deposition.”* With this change in their value proposition their **key activities** also changed. Initially they consisted of interacting with customers and offer them a service. Now they have a lot more different activities like R&D, the production of a product and after sale service. This also means that the **key resources** have changed from knowledge as main resource, to high-tech material as most important resource. Further the partner network from spin-off C has developed over time: *“Our partner network initially consisted of the university who offered us a loan, an office, a small budget, but also the help of professors who helped us guiding the company in the right direction.”* Hence, they also got help from a local institution which offers supports to innovative companies. This is the help from networks spin-off C had in the entrepreneurial stage of the company. When they started to grow and came in the expansion phase, a few local investors started to fund their project. With further help of the university they could obtain different loan constructions which helped them to invest in the development of their product and company.

4.3.2 Customer interface & financial aspects

The **client segments** of spin-off C also changed. In the early stage of the company they served around 100 Dutch SME's, after the switch to the production of pulsed laser deposition machines they started to serve the Mems (Micro-Electro-Mechanical Systems) market. Furthermore this caused that the **distribution channel** changed from offering service to selling a tangible product with a much higher value and profit margin. This is also directly the main change in their **Revenue stream**. Another thing that changed in their revenue stream is the margin they are able to ask now. The manager said: *“With selling a product we are able to get a much bigger margin and also the future value is much higher.”* The

cost-structure of spin-off C has changed from only costs of a few employees who could offer service, to costs from employees who are very specialized and also the costs of R&D have become much higher. The transition also caused that the **customer relationships** of spin-off C changed. In the consultancy stage they served customers until the service process was finished. However, at this moment the relationships are much longer. This is mainly because customers always need to come back if they trouble with their machine. *“With offering a product customers always need to come back because our company is the only seller of this kind of product in the market.”* Furthermore spin-off C is the only company in the market which sells such kind of a technology, so customers always will come back if they need a new machine.

4.3.3 Influence of the network

Looking at the influence the network of spin-off C had on the development of their business model, it becomes clear that with the help from the university and local technology investors, spin-off C was able to develop their value proposition and to start researching the laser pulsed deposition machines. *“With the funding we were able to grow fast and invest in the development of our product.”* The change in value proposition also caused changes in their key activities and key resources, which can be seen as indirectly influences of the network. Concluding we can say that the network caused a main change in value proposition and enhanced the speed of the development of the business model from spin-off B, so the influence of the network was mediocre here. The changes in the customer interface and the financial aspects part are caused by the change in value proposition, so they are indirectly influenced by the network. Concluding on this we can say that the influence of the network was small in the customer interface and financial aspects because there were no developments in these parts of the business model which are directly caused by the network.

As stated above in the entrepreneurial stage the network of spin-off C mainly consisted of partners who offered loans or funding. This funding helped them with their **business model creation**, which initially was a business model for offering service to customers. When spin-off C was in the maturity stage with offering service, there was a demand for special coating equipment. This made spin-off C change their focus and starting to research and

develop the pulsed laser deposition machine. However in order to do that they needed a lot of money, which they obtained from the university's loan constructions and investments from local technology investors. With the help of these investors they were able to make a fast switch to selling high tech equipment. Their business model also needed to adapt to this so there was a **business model revision**, which caused that a lot of processes in the business model canvas changed. The help of the networks helped spin-off C with the fast

development of their company, which made them also more successful in the market: *"Without the help of all the funding partners and the university, we would have grown much slower and would not be on the level we are right now."* Hence the manager said: *"The help of the network helped us to be more successful in the market because we were able to grow faster and invest in a product which is unique and no competitors are offering."*

Network participants	Value dimensions	Linkages	Business model change	Influence on business model
University	Loans, small budget, office space, knowledge	Affective and liking	Business model creation, revision	Change in product and infrastructure management part
Local funding institution	Funding	Affective and liking	Business model creation	
Local technology investors	Funding	Affective and liking	Business model revision	Change in product and infrastructure management part

Table 4: Network analysis with the framework from Peppard and Rylander (2006) and the influence on the business model from spin-off

4.4 Cross-case Analysis

Looking at the results from each of the spin-offs it becomes clear that almost every part of the business models has developed over time. In spin-off A the changes are the most significant followed by spin-off C, in spin-off B the changes aren't that big but are still existent.

	SPIN-OFF A	SPIN-OFF B	SPIN-OFF C
VALUE PROPOSITION	<i>From offering knowledge to offering board games to offering an online gaming platform</i>	<i>From coating materials for implants to a coating material for contact lenses</i>	<i>From consultancy to offering a pulsed laser deposition machine</i>
KEY ACTIVITIES	<i>Offering knowledge to creating games</i>	<i>From researching a coating material for implants to researching it for contact lenses</i>	<i>From offering service to the production of a product</i>
KEY RESOURCES	<i>Over time they started to need more knowledge in different areas</i>	<i>No change</i>	<i>From knowledge to high-tech material</i>
PARTNER NETWORK	<i>From the university and another company as partner to partnerships with a lot of customers and training bureaus</i>	<i>From the university and a regional institution to partnerships with funding institutions and lens manufacturers</i>	<i>From the university and a local institution to the help from local investors and even bigger support from the university</i>
CLIENT SEGMENTS	<i>From companies in virtual reality and gaming to a lot of different businesses and training bureaus</i>	<i>From hospitals to lens manufacturers</i>	<i>From around 100 SME's to the MEMS market</i>
CUSTOMER RELATIONSHIPS	<i>From a one-time service to a long term and close relationship</i>	<i>From almost non-existence to close relationships with lens manufacturers</i>	<i>From a one-time service with short relationships to long relationships with after sale service</i>
DISTRIBUTION CHANNEL	<i>From offering service to customers to offering a product</i>	<i>No change</i>	<i>From service to offering a product</i>

REVENUE STREAM	<i>From obtaining revenue from service to gaining it by selling games on an online platform</i>	<i>No change</i>	<i>From obtaining revenue from service to gaining it from selling a product</i>
COST STRUCTURE	<i>From low employee costs to high employee costs</i>	<i>From research costs to market research and prototyping costs</i>	<i>From employees specialized in offering service to highly specialized employees and more R&D costs</i>

Table 5: *Changes in each part of the business model*

After analyzing the changes in the business model from spin-off A, B and C and looking at which parts are the most affected by the network, it becomes clear that the product and infrastructure management part of the business model canvas are most affected and also most important. As stated in the individual analysis part of each spin-off, in spin-off A&B the network had a big influence on the development of these two parts and in spin-off B the influence was mediocre. However, the customer interface part isn't that much affected. The influence from the network is also much smaller in this part, in only spin-off A there is a high influence and in spin-off B&C there is a small influence, which makes the average influence from this sample in this part mediocre. Finally in the financial aspects part is least affected, also the influence from the network is very small here because only in spin-off A it is mediocre and in spin-off B&C the influence is small, which makes the average of this sample also small. So in general we can say that networks have the highest influence on the product and infrastructure management part of the business model. The value proposition from each of the university spin-offs in this sample has developed over time due to the influence of their network. This development caused that with further help from partners the key activities, key resources and network parts of the business model could

also develop. The influence on the customer interface in each of the spin-offs is most of the times indirectly caused by the network, since due to the change in value proposition spin-off changed their focus to a different market which caused that client segments, customer relationships and distribution channels had to change in order to adapt to this. However in spin-off A there are a few changes which are directly caused by the influence of networks. Lastly the influence on the financial aspects part of the business model there are no huge changes in the sample spin-offs. If there are changes they are also caused due to the change in the value proposition which means the network had an indirect influence on these changes. In table 6 for each spin-off is given how big the influence was from the network on each part of the business model. When there is a high influence it means that due to the networks direct changes are caused in the part of the business model. When there is a mediocre influence, only some parts are directly influenced by the networks and others are not influenced or indirectly influenced. Lastly when there is a small influence, the network caused indirect or no changes in the specific part of the business model.

	Spin-off A	Spin-off B	Spin-off C
<i>Product</i>	High	High	Mediocre
<i>Infrastructure management</i>	High	High	Mediocre
<i>Customer interface</i>	High	Small	Small
<i>Financial aspects</i>	Mediocre	Small	Small

Table 6: *The influence from networks on each part of the business model*

Looking at how the business models of each spin-off have developed, one can see that in each of the spin-offs the network contributed to the business model creation of spin-off A, B and C. Which means the networks have played a very important role in the introduction stage of each spin-off. Furthermore the network had an influence on the business model revision that occurred in spin-off A&C. They both were in the maturity stage with their current value proposition, so it was very important to make a change in order to start growing again. In spin-off A the network influence was the knowledge they needed in order to develop their product and in spin-off C this was the funding they needed in order to start researching

a product. Lastly in spin-off A&B there was a business model extension. In spin-off A this was in the expansion stage of their serious gaming project. The network influenced this by the partnerships they build with customers and training bureaus, who provided input for their games and enabled them to make the switch from board games to the online gaming platform. In spin-off B the extension was in the growth stage and was mainly caused by the Nano technology institution who provided contacts for spin-off B with lens manufacturers, which made them move into making the same product for a different industry in order to get to the market faster.

5. CONCLUSION & DISCUSSION

After analyzing the data it becomes clear that the establishment of networks can have a big influence on the development of a business model in an university spin-off. However some parts of the business model are more affected than others. To answer the central research question: "How do networks influence the development of business models of university spin-offs," we can say that the influence of the network is the highest on the Product and infrastructure management part of the business model. So the value proposition, key activities, key resources and the network itself are mostly influenced by the development of the network. Furthermore there is also an influence on the customer interface of a business model, but this influence is small to mediocre. The reason for the influence not being as high as it is for the first part is because the network only has an indirect influence on the client segments, customer relationships and distribution channels, since the change is caused by the development of the product and infrastructure management part. Hence, the influence on the financial aspects of the business model is also small and only indirectly influenced by the networks. The influence from networks is already high in the introduction stage of a spin-off, in each of the spin-offs the network contributed to the business model creation. Furthermore in the growth and expansion phase networks caused business model extension changes in two spin-offs, which makes them also have a high influence in this phase. Lastly in the maturity stage were changed was needed in two spin-offs in order to start growing again, the network influenced business model revision which made these spin-offs change their focus from offering service to making a product and enhancing their growth again.

The answer to the sub-question "How does this influence the market success of university spin-offs" is that the results show that in each of the analyzed spin-off the establishment of networks had a big impact on their success in the market. Due to the business model creation in each of the spin-offs, the business model extension in spin-off A&B and the business model revision in A&C, these companies were able to make steps forward in the market. So we can conclude that the establishment of networks enhances the success in the market.

The first insight between the results and the theory is that the results confirm Teece(2009) who states that the right business model is not apparent early on, but entrepreneurs who are able to learn and adjust their business model over time, are more likely to succeed. This is confirmed by what happened in the university spin-offs who developed their business model and became more successful in the market. Secondly, the influence networks have on the development of a company which is argued by Nenonen & Storbacka

(2009) who are saying that a business model should also be oriented towards partnerships is also confirmed by the results, because it can be concluded that networks have a high influence on the development of a business model. Other interesting findings are that the network has the greatest influence on the product and infrastructure management part of the business model, the other parts are also affected but the influence from the network was not that high on this.

6. MANERGIAL IMPLICATIONS

The results of the study provide possible implications which can be used in practice. First of all managers of university spin-offs should pay close attention to the fact that their business models can change and that the changes can enhance the growth of their organization. Secondly they should be aware that the establishment of networks can be a very important factor in this development of their business model and organization. In the introduction phase of an university spin-off networks are already very important. With partners who can offer funding and knowledge spin-offs are able to start-up their company and grow faster. Hence, in the next stages of the company networks can help with changing the focus of what they are doing or help with extending their current value proposition.

7. LIMITATIONS & FURTHER RESEARCH

There are a few limitations in this research which should be addressed. First of all the sample of the study only consisted of three university spin-offs. To derive conclusions it is very hard to only rely on this sample. Furthermore these companies were each out of three different industries and were all university spin-offs which means that the data in other organizations and industries can be different. The second limitation is the fact that each spin-off was in a different stage of their life-cycle and the data gathered with the interview reflects to the time and situation the spin-off was at that stage. A third limitation is the subjectivity in analysis on the results in for example the part where the impact from the network on each part of the business model is analyzed. Lastly the study doesn't take into account which networks are having a greater impact than others, so in a further research it could be possible to make a distinction between networks and analyze which kind of network has the most influence on the business model. It would also be interesting to investigate which other parts of the business model have a great influence on change. This would give more insight in how the elements of the model are related to each other.

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9. APPENDIX

9.1 Transcript interview spin-off A

Q1. What was your initial idea when the company was created? /What do you offer to the market?

‘Our company started as collaboration between the university of Twente and a big international company Thales. Ten years ago we started with virtual reality and gaming and switched our focus to serious gaming after a few years. Currently we are focusing on bringing our knowledge into products and sell them on the market. Our games offer training in the area of leadership, with the help of a gaming platform we are able to train managers or leaders. For example we have a training game for majors. We offer this training on a platform which is designed to create different kinds of game scenario’s. We offer this platform as service to for example trainings bureau’s which use it as tool to give training in organizations.

Q1a. How many employees do you have?

‘Currently 10’

Q1.b. How many years have you been on the market?

‘We are 10 years active as company’

Q2. Who was involved in creating the company? (help from other organizations/third parties etc.)

‘Our company was an initiative from the university of Twente, Thales helped with a few employees, and helped with the financial stuff.’

Q3. What was the initial market of your company? / How did this change over time?

‘First of all we were focused on offering knowledge to companies, then we started making board games which could help organizations to train employees, and now we are focusing on making a gaming platform which helps organizations to learn and train employees.’

Q4. Which activities did your company initially perform to create a product? / How has this changed over time? /Why?

‘First of all we didn’t create products, then we offered board games and currently we offer an online gaming platform. This reason for this changes are because off the developments over time made it possible to implement their knowledge firstly into board games and later into an online game platform.

Q5. How have your resources changed over time? /Why?

‘In the beginning our resource was knowledge, now our resource is the knowledge we have put into the games. The collaboration with customers made it possible to gain input for the games.’

Q6. How did the value you deliver to your customers change over time? /Why?

‘First of all we only offered the knowledge to customers, but now we offer the platform which can be used for giving training to people.’ With the online platform we are also able to serve a lot more companies, because with the input we get from customers we are able to create a lot of different game scenario’s.’

Q7. How have your customer relationships changed over time? /Why?

‘First of all we didn’t have a lot of close customer relationships, but over time we started collaborating with companies who give training and normal companies in order to obtain information about which kind of scenario’s we needed to build into the game and how the customer wants the game to be like.’

Q8. Did you change your way of reaching customers? Why?

‘At the moment we are trying to get closer to the customer by organizing events at the company where customers can test the training tools/games. We also try to create partnerships with customers now, which we previously did not do.’

Q9. How did your costs over time? /Why?

‘The costs to make games have changed and become cheaper, also more competition, Increase in more specialized employees which also increased costs.’

Q10. How did the way you make revenue change over time? /Why?

‘First of all we were selling board games, we changed it to making the online gaming platform with payed access, so it is easier for customers to reach and pay for it.’

Q11. Which are the most important networks for your company? / What do you receive from them?

‘First our development network consists of: Teno, different universities and learning institutions, who helped us with research projects and funding for research. Then we have Cesar a collaboration about a big research program about air traffic research, for which we are designing an air traffic management tool. The national air force research institution wants to do learning with gaming, so they are a very important partner of ours. Our business network consists of a lot of educational institutions

which we offer learning and training tools. Furthermore we have partnerships with different training bureaus and consultancy companies. Lastly we have a lot of big companies for which we design a training tool to train employees, so we collaborate together in order to get the input for the games.'

Q12. How has this network developed over time?

'We were forced to build a network early on, because we needed to have knowledge in a lot of different areas. This network has grown fast and most of these networks are also customers of our company because they give us knowledge and input for our games because they want to have these kind of games. Also because our games are getting more complex we sometimes need to seek help from companies which are specialized in a specific area.'

Q13. How big was the influence of these networks on the development your company?

'There are a lot of different parts which have influence on our company. E.g. The technology, software, the content of the games so you need to have knowledge about different domains, because we cannot employ people for each of these parts, like an air traffic specialist, health care specialist, we obtain this knowledge from companies in our network. The university of Twente helps us to develop and test the games and with the help of graduating students and researchers who find it an interesting project to work on.'

Q14. How does your network help you to gain success in the market?

'All our networks are necessary for the existence of the company, we need the knowledge and input from all these networks in order to create our product and thus to be successful in the market. So the networks are vital for our existence.'

9.2 Transcript interview spin-off B

Q1. What was your initial idea when the company was created? /What do you offer to the market?

'To create a product called coating which makes it possible to improve implantations in human bodies. Now we are offering a coating product for contact lenses, to improve comfort and safety.'

Q1a. How many employees do you have?

'1 researcher, 2 management members, a marketing advice department and myself as main researcher.'

Q1.b. How many years have you been on the market?

'Not on the market yet, but in the coming months we can enter the market.'

Q2. Who was involved in creating the company? (help from other organizations/third parties etc.)

'University of twente, Mesa+, Kennispark. Kennispark is the business developer who helps us to set up the company and organize subsidiaries.'

Q3. What was the initial market of your company? / How did this change over time?

'First biomedical implants, now contact lenses. In the future we want to focus on implants again.'

Q4. Which activities did your company initially perform to create a product? / How has this changed over time? /why?

'We changed from researching the coating material for implants to researching it for contact lenses.'

Q5. How have your resources changed over time? /Why?

'NanonextNL started to fund my research, and funded the start of the company, making prototypes, this was the main resource to develop the product in the initial stage.'

Q6. How did the value you deliver to your customers change over time? /Why?

'We are not on the market yet, but the change in value proposition is that we changed from offering a coating material for implants to offering it for contact lenses.'

Q7. How have your customer relationships changed over time? /Why?

'Yes, first we didn't have any relationships with customers, now we are collaborating with a contact lenses manufacturer, who helps us to develop and improve the coating product.'

Q8. Did you change your way of reaching customers? /Why?

'Currently we are meeting with the lens manufacturers every week, in order to receive feedback on the development of our product.'

Q9. How did your costs over time? /Why?

'From market research costs to mainly prototyping costs now.'

Q10. How did the way you make revenue change over time? /Why?

'It changed from the idea to sell the implants coating material as a normal product to a revenue model like a printer and cartridge model with a big margins, the idea is to serve more contact lenses manufacturers and in later stages different markets. To make revenue we want to sell printers and the fluid to our customers.'

Q11. Which are the most important networks for your company? / What do you receive from them?

Regional institutions, a research institution from Nijmegen, the Government is also supporting us with discounts on loan and subsidiaries. Also the university who supported the research and offered an office and funding.' A few weeks ago we received over 90.000 euro from a regional Nano institution for our project.'

Q12. How has this network developed over time?

'Initially we were supported and funded by the university and a regional institution. They helped us setting up the company with a business developer and organizing subsidiaries. Then we got the support of big other institutions which brought us a lot of funding for research, which made it possible to come up with the end product.'

Q13. How big was the influence of these networks on the development your company?

'Very big, because the switch to go from implants to contact lenses came from the influence of third parties, Mesa+ advised it because of contacts with contact lenses fabricant.

NanonextNL started to fund the research and proposed to start a company essential for the company, it was a make or break for our company. Further the network is necessary in order to get closer to the customers and get to know the language of the market.

The target market has changed, revenue model has changed, how we approach customers have changed due to the network.

Q14. How does your network help you to gain success in the market?

'We were able to gain contacts with lens manufacturers, which made a very big impact on the development of our product and made it possible to access the market in a few months.'

9.3 Transcript interview spin-of C

Q1. What was your initial idea when the company was created? /What do you offer to the market?

'Our first idea came from the customers who were looking for help in material knowledge, so we initially started a consultancy company, 2 years later the customers asked if we also could offer a coating product. So we changed our focus and started researching and developing this machine.'

Q1a. How many employees do you have?

+ - 20

Q1.b. How many years have you been on the market?

'2006-2009 offering Consultancy service, 2007-2016 selling coating lasers.'

Q2. Who was involved in creating the company? (help from other organizations/third parties etc.)

'With the creation of the company we got help from the university of Twente who offered us loans and space.'

Q3. What was the initial market of your company? / How did this change over time?

'The first market was the consultancy market, 2 years later we changed it to offering coating machines to customers and since then we kept focusing on that.'

Q4. Which activities did your company initially perform to create a product? / How has this changed over time? /why?

Firstly we were offering service to customers, then we changed to offering coating lasers, this changed mainly because customers were asking for it but also the funding helped us to rapidly develop the product.

Q5. How have your resources changed over time? /Why?

'From only having knowledge as resource to having a tangible product we could offer to customers.'

Q6. How did the value you deliver to your customers change over time? /Why?

'From delivering services to customers, with very short customer engagement to selling machines to customers who will be dependent from you as long as they have the machine.

Due to this we also created a bigger transaction value because with selling a product we could get a bigger margin, also the future value is much higher now.'

Q7. How have your customer relationships changed over time? /Why?

From short to long relationships, because when we offered service we were done after the service was finished, with offering a product customers always need to come back because our company is the only seller of this kind of product in the market.

Q8. Did you change your way of reaching customers? Why?

‘In the beginning we offered service to around 100 Dutch SME’s which was only a one time relationships of offering service so the customers had to come to us for service. Now we are in the Micro-Electro-Mechanical Systems market and we are now more focusing on bringing our product to the customers.’

Q9. How did your costs over time? /Why?

‘With the service we didn’t have much research costs, when we made the transition to selling a product we had a lot more R&D costs and other costs which are involved with selling a product.’

Q10. How did the way you make revenue change over time? /Why?

‘First of all we offered services and obtained money from that, after 2 years we started selling coating machines and made the transition to selling machines. In 2009 we stopped offering services so currently we only getting revenue from the sales.’

Q11. Which are the most important networks for your company? / What do you receive from them?

‘First of all the University of Twente who offered loans, office, printer, meeting rooms, so we could start with a small budget and set up the initial company. Also the professors helped us guiding the company into the right direction. Further Kennispark helped us with 2 coaches. And we had two local investors: PMO and Twente technology fund who invested money for our research. Lastly the university of Twente offered different kinds of loan constructions which helped us growing and developing much faster.’

Q12. How has this network developed over time?

‘In the beginning it was only the UT, later when we started to develop the product we needed more investments which we obtained from the investors meant earlier.’

Q13. How big was the influence of these networks on the development your company?

‘Without all the help of the funders and the university we would have grown much slower and not be on the level they are right now. Our networks were also very important in the beginning stage of our company.’

Q14. How does your network help you to gain success in the market?

‘With the funding we were able to grow fast and invest in the development of our product, this made us create a product which is able to be an alternative to other coating machines on the market. ‘The help of the network helped us to be more successful in the market because we were able to grow faster and invest in a product which is unique and no competitors are offering.’