MASTER THESIS



CONNECT TO EVOLVE

CONNECT TO EVOLVE

Research on the diffusion of innovations within the B2B market in the Dutch telecom industry

Graduate

Name:	Deni Hadzic
Education:	Master Business Administration – Innovation & Entrepreneurship
Student number:	s0200611
E-mail:	d.hadzic@student.utwente.nl
Term:	September 2013 to May 2014

Examination board

Ir. J.W.L. (Jann) van Benthem, MSc (University of Twente)

Prof. dr. ir. L.J.M. (Bart) Nieuwenhuis (University of Twente)

Florian Overkamp (CEO, SpeakUp B.V.)

Contacts

Universiteit Twente Faculteit Management en Bestuur Postbus 217 7500 AE Enschede http://www.mb.utwente.nl/

SpeakUp B.V. Institutenweg 20-22 7521 PK Enschede http://www.speakup.nl/

ACKNOWLEDGEMENTS

In front of you is my master thesis on a research on the diffusion of innovations within the B2B market in the Dutch telecom industry, which I conducted on behalf of SpeakUp B.V. in Enschede. The CEO and the HR manager, respectively Florian Overkamp and Lizanne van Ommeren, offered me an opportunity to do my graduation project on a subject which is both within my curricular specialization as well as within my interests.

In an interconnected and globalized world which is continuously evolving it is both challenging and fascinating to contribute in an industry which provides in its commodity of communications. Hence my choice in graduation at a company is defying the status qua and develops new ways in facilitating customer needs.

Hereby I would like to thank my supervisors from the University of Twente, Ir. Jann van Benthem, MSc and Prof. dr. ir. Bart Nieuwenhuis, for their guidance and expertise during the process of conducting this research. For his practical guidance and support in the company SpeakUp, I would like to thank my external supervisor Florian Overkamp. Towards all other colleagues from SpeakUp and business partners of SpeakUp that contributed in the completion of my research I wish to express my gratitude for all they have done. Lastly I would like to thank my family and friends that supported me from the start of my curriculum until the very completion.

The following quotes provide a deeper insight in my choice of naming this master thesis "Connect to evolve" and my choice for conducting this research within the telecom industry.

"We are like islands in the sea, separate on the surface but connected in the deep." — *William James*

> "We cannot live only for ourselves. A thousand fibers connect us with our fellow men; and among those fibers, as sympathetic threads, our actions run as causes, and they come back to us as effects." — Herman Melville

> > "Niets bestaat dat niet iets anders aanraakt" – Jeroen Brouwers (Nothing exists that does not affect something else)

Deni Hadzic, May 2014

ABSTRACT [PARTLY CONFIDENTIAL]

In order to conclude how to project the timing of adoption for technological innovations in the B2B market of a telecom operator in the Netherlands, a qualitative research has been conducted at a small and medium enterprise named SpeakUp B.V., which is operating in the business to business segment of the telecom market. To form an answer to the research question, five sub-questions were formulated to investigate different aspects of the overall question. Key theories in this research that provide perspective upon these questions are the resource based view theory by Barney (2001) the diffusion of innovations theory by Rogers (2003), business models by Osterwalder et al. (2005) and the hype cycles by Gartner (Fenn & Raskino, 2003).

First of all, developments in the telecom industry were analyzed which happened in the past for SpeakUp to learn from recent trends in this sector. It became clear that is that forces for change were mediated by dampening forces stemming from delays in implementation, developments in collateral technologies and congealing of user preferences around a set of functionalities below what had been projected for the new technology.

Afterward the history analysis, the situation the telecom industry is currently in has been analyzed using the five forces by Porter (2008). These consist of the threat of new entrants; which is currently high, bargaining power of suppliers; which is currently high, bargaining power of buyers; which is currently high, threat of substitute products or services; which is currently high, and rivalry among existing competitors; which is currently high.

Thereafter the current operations of SpeakUp, along with its strengths and weaknesses has been analyzed, using the business model canvas (Osterwalder & Pigneur, 2010) and SWOT analysis (Humphrey, 2005). Strong points of the company's operations are

Weak points are however that

There are two types of partners SpeakUp is collaborating with when offering their solutions, namely "white label" partners and "agents". The difference between these two types of partners is that a white label partner buys whatever SpeakUp is offering and resells it under its own brand name. This way the end customer has nothing to do with SpeakUp, and every support or maintenance is handled by the white label partner. Agents on the other hand, are making sure that the end customer gets aware of SpeakUp, and brings these customers in touch with SpeakUp. Agents do not have the risk of buying products from SpeakUp and having to resell them, and therefore handling maintenance issues themselves.

To research when new generations of technologies should be released in the B2B market that SpeakUp operates is, a questionnaire has been conducted among the business partners in order to innovative how these partners are and which adopter category they belong to according to Rogers' (2003) diffusion of innovations theory. Both partner types are assumed as an early majority when

adopting new technologies. They interact frequently with their peers but seldom hold positions of opinion leadership in a system, and therefore deliberate for some time before completely adopting a new idea. Since white label partners indicated that they significantly did introduce more new products to the market, SpeakUp can offer white label partners' products and services that are earlier in their life cycle, but still on the S-curve within the early majority category.

In order to anticipate on the adoption of future generations of technologies, Gartner's hype cycles should be consulted. These hype cycles aim to give businesses a clearer understanding of the right time to adopt a technology (Durham & Warden, 2005). Since it is assumed in this research that the partners of SpeakUp belong to the early majority adopter category, an interlink of Rogers' bell curve of adoption has been made to Gartner's hype cycle in order for SpeakUp to anticipate on which technologies will be adopted in the future in the telecom industry. The logic between this interlink is that the early majority will adopt technologies that are climbing the slope of enlightenment before entering the plateau of profitability of Gartner's hype cycle. So the technologies that are going through these stages should be offered to current business partners.

Slope of Enlightenment

More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

Plateau of Productivity

Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off.

Since it is not possible to look into the future, only a projection or extrapolation can be made according to historical events, the current situation, own operations and its opportunities, and the adopter category of SpeakUp's partners. Taking these results into account, it is advised that SpeakUp already looks at the stage in front of the slope of enlightenment as described by Gartner. This stage is the through of disillusion when interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.

These technologies should not be offered to partners yet, according to the made assumptions. Although, if further developed and optimized by SpeakUp, the company will have a product or service to offer when this technology is climbing the slope of enlightenment and eventually entering the plateau of productivity that the early majority has decided upon with peer interaction. SpeakUp would by then already have gained a lot of knowledge and experience with the technology before it is offered.

SpeakUp is a company that already has proven in the past to be able to deal with a first mover position, being good early adopters with the VoIP technology and gaining competitive advantage from it. The results and assumptions made in this research show that trying to be a first mover in providing the current business partners would not be beneficial. However, other customer segments have not been researched and it is recommended to conduct a follow up study to benchmark other customer segments and possibly meet their wishes, perhaps again with a first mover strategy.

Table of Contents

ACKNOWLEDGEMENTS
ABSTRACT [PARTLY CONFIDENTIAL]
1 INTRODUCTION
2 Research goal
2.1 Research question9
2.1.1 Sub-questions9
3 THEORETICAL FRAMEWORK
3.1 Diffusion of Innovations10
3.1.1 Innovation
3.1.2 Communication11
3.1.3 Innovativeness11
3.1.4 Social system12
3.1.5 Critical mass12
3.1.6 Innovation decision process
3.2 Resource Based View14
3.3 Business Models15
3.4 Gartner hype cycles16
3.5 Scientific relevance
4 RESEARCH DESIGN
4.1 Qualitative research

speakup

4.2 Industry analysis19
4.2.1 Porter's five forces19
4.3 Firm Analysis21
4.3.1 Business model canvas21
4.3.2 SWOT analysis23
4.4 Partner analysis27
4.4.1 Variables and units of analysis29
4.4.2 Questionnaire Design
4.4.3 Sampling
4.4.4 Member check
5 RESULTS
5.1 History analysis
5.1.1 Technological evolution in mobile communications
5.2 Industry analysis34
5.2.1 Porter's five forces
5.3 Firm analysis [partly confidential]
5.3.1 Business model canvas
5.3.2 SWOT analysis
5.4 Partner analysis40
5.4.1 SPSS output41
5.4.2 Adoption category47
5.5 Current technologies49

speakup

5.5.1 Gartner hype cycle49
6 CONCLUSION
6.1 Answering sub-questions54
6.1.1 What were past developments in the telecom industry?
6.1.2 What situation is the telecom industry currently in?54
6.1.3 What are the operations of a telecom operator such as SpeakUp? [partly confidential]
6.1.4 When should new generations of technologies be released?56
6.1.5 How to anticipate on the adoption of future generations of technologies?58
6.2 Advice [partly confidential]59
7 APPENDICES
7.1 Innovatie enquête voor partners van SpeakUp62
7.2 SWOT analysis [partly confidential]69
8 Bibliography

1 INTRODUCTION

The telecommunication industry has been surprised by the sudden emergence of the Social Media technologies in the recent past. Social media refers to a combination of three elements: content, user communities and Web 2.0 technologies (Ahlqvist et al., 2008). This refers to an ability for customers to create, share and exchange content amongst other user in virtual networks. Companies like e.g. WhatsApp, Twitter and Facebook have gained great advantages due to the successful implementation of these technologies. This at the expense of companies that relied heavily on formerly established technologies like e.g. SMS. Therefore businesses in this market have lacked potential profits or have suffered great losses.

SpeakUp is operating in the business to business (B2B) segment of the telecom market. This company offers Voice over Internet Protocol (VoIP) services to Internet Service Providers (ISP) and Small and Medium Enterprises (SME's). VoIP technology allows communication flows, whether spoken or written, to be transmitted over the internet instead of the Public Switched Telephone Network (PSTN). VoIP converts standard telephone voice signals into compressed data packets that can be sent over IP. VoIP can be used with either a telephone or PC as the user terminal. This gives different modes of operation: PC to PC, PC to telephone, telephone to PC and telephone to telephone (via the Internet) (Leppänen, 2001). With the increasing accessibility of the internet on different devices like e.g. tablets and Smart TV's, this technology gives great possibilities for integrated messaging, speech and video communication. The boundary of a phone number or accessibility for one device at a time is broken with this technology. You can always be attainable on the same number, and on different devices. The ability to reach personnel in the B2B market is of great importance, due to different factors such as globalization and freelancers, which force employers to set new standards to service providers.

Nowadays there are newly established technologies that are far better improvements for consumers to communicate. This is for instance the Voice over LTE technology (VoLTE). This, in essence, is a more enhanced voice quality for users. However, these technologies are not implemented to the fullest due to lack of interest, knowledge and compatibility of both suppliers and consumers.

The main focus of this research will be to explore which impact new generations of technologies have on the B2B market in the telecom industry. Observing what happened in the past can give insights for SpeakUp in how to learn from former developments. Analyzing the current state the industry is in, as well as SpeakUp as a company is in itself, can help in optimizing current operational activities and identify opportunities. Thereafter it is momentous to learn when the business partners of SpeakUp adopt a new generation of a technology in order to better predict the timing of a future release of a product or service and give specific advice on how to successfully implement innovations and emerging technologies to gain most benefits as possible from it.

2 Research goal

The goal of this study is to research which impact next generation communication media have on the B2B market.

2.1 Research question

The following research question can be derived from the research goal in order to give a specific answer for the analyzed problem statement.

How to project the timing of adoption for technological innovations in the B2B market of a telecom operator in the Netherlands?

2.1.1 Sub-questions

Based on the research question, five sub-questions have been formulated which contribute to further concrete the research goal.

- What were past developments in the telecom industry?
- What situation is the telecom industry currently in?
- What are the operations of a telecom operator such as SpeakUp?
- When should new generations of technologies be released?
- How to anticipate on the adoption of future generations of technologies?

3 Theoretical framework

SpeakUp is an innovative SME in the industry. Cooperation with other organizations increases the innovation performance of an organization, especially for SMEs as they encounter liabilities of e.g. limited financial resources and manpower (Pullen et al. 2012). SpeakUp is not a manufacturer of technologies such as VoIP, but provides these services to their customers using partnerships.

In this study the main perspective will be set along with the resource based view theory by Barney (2001) the diffusion of innovations theory by Rogers (2003), business models by Osterwalder et al. (2005) and the hype cycles by Gartner (Fenn & Raskino, 2003). As it will become evident, these theories should cover the most important parts of the research question and its corresponding subquestions.

3.1 Diffusion of Innovations

To fully understand the diffusion of innovations theory by Rogers (2003), it is important to define its key concepts and stages.

Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system. Diffusion is a special type of communication concerned with the spread of messages that are perceived as new ideal. Communication is a process in which participants create and share information with one another in order to reach a mutual understanding. Diffusion has a special character because of the newness of the idea in the message content. Thus some degree of uncertainty and perceived risk is involved in the diffusion process. An individual can reduce this degree of uncertainty by obtaining information. Information is a difference in matter energy that affects uncertainty in a situation where a choice exists among a set of alternatives (Rogers, 2003).

The main elements in the diffusion of new ideas are: an innovation that is communicated through certain channels over time among the members of a social system.

3.1.1 Innovation

Rogers (2003) defines innovation as an idea, practice, or object perceived as new by an individual or other unit of adoption. Innovation is concerned with the process of commercializing or extracting value from ideas; this is in contrast with inventions, which need not be directly associated with commercialization (Rogers, 1998). Most of the new ideas discussed by Rogers (2003) are technological innovations. A technology is a design for instrumental action that reduces the uncertainty in cause-effect relationships involved in achieving a desired outcome. Most technologies have two components:

- Hardware; consisting of the tool that embodies the technology as a material or physical object.
- Software; consisting of the knowledge base for the tool.

The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. The definition of adoption is the uptake of the program or innovation by the targeted audience (Oldenburg and Glanz, 2008). There are five attributes of innovations:

- 1. Relative advantage; is the degree to which an innovation is perceived as better than the idea it supersedes.
- 2. Compatibility; is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.
- 3. Complexity; is the degree to which an innovation is perceived as different to understand and use.
- 4. Trialibility; is the degree to which an innovation may be experimented with on a limited basis.
- 5. Observability; is the degree to which the results of an innovation are visible to others.

3.1.2 Communication

Rogers (2003) defines a communication channel as the means by which messages get from one individual to another. Mass media channels are more effective in creating knowledge of innovations, whereas inter-personal channels are more effective in forming and changing attitudes toward a new idea, and thus in influencing the decision to adopt or reject a new idea. Namely, most individuals evaluate an innovation through the subjective evaluations of near peers who have adopted the innovation and not on the basis of scientific research by experts. These near peers thus serve as role model, whose innovation behavior tends to be imitated by others in their system.

3.1.3 Innovativeness

According to Rogers (2003), innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system. The innovativeness of these units is set up by five adopter categories, which represent ideal types:

- 1. Innovators; are venturesome and play a gatekeeping role in the flow of new ideas into a system due whereas they import the new idea from outside of the system's boundaries into the system.
- 2. Early adopters; are a more integral part of the local social system than innovators.
- 3. Early majority; deliberates for some time before completely adopting a new idea.
- 4. Late majority; is a skeptical adopter that needs pressure from its peers to motivate their adoption of a new idea.
- 5. Laggards; are the most traditional users of established ideas and therefore are the last in the social system to adopt an innovation.

This can be depicted in the following image which represents Rogers' bell curve and indicates when an adopter category will adopt a technology in its life cycle. The S-curve suggests that the performance of a technology, slow at first, accelerates over time, finally flattening out to be supplanted by a new technology with its own S-curve.



3.1.4 Social system

A social system is defined by Rogers (2003) as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. The social and communication structure of a system facilitates or impedes the diffusion of innovations in the system.

Opinion leadership is the degree to which an individual is able to influence informally other individuals' attitudes or overt behavior in a desired way with relative frequency to prosper innovation decisions.

Three main types of innovation-decisions are distinguished:

- 1. Optional innovation-decisions; choices to adopt or reject an innovation that are made by an individual independent of the decisions of other members of the system.
- 2. Collective innovation-decisions; choices to adopt or reject an innovation that are made by consensus among the members of a system.
- 3. Authority innovation-decisions; choices to adopt or reject an innovation that are made by relatively few individuals in a system who possess power, status, or technical expertise.

3.1.5 Critical mass

The concept of critical mass is fundamental to understanding a wide range of human behavior because an individual's actions often depend on a perception of how many other individuals are behaving in a particular way. It bears on the relationship between the behavior of individuals and the larger system of which they are part of (Rogers, 2003).

A concept, closely related to the critical mass, is network externalities. Network externalities exist when the utility of a product to a consumer increases as more consumers adopt the new product (Rohlfs, 2001). Network externalities are considered to be direct if utility is directly affected by the number of other users of the same product, as in the case of telecommunication products and services such as fax, phone, and e-mail. They can also be indirect if the utility increases with the

number of users of another, complementary product. (Peres et al., 2010).

The utility of an innovation with externalities is external to the individual, such as the size of the user community for a new interactive telecommunications system.

3.1.6 Innovation decision process

The innovation decision process according to Rogers (2003) is the process through which an individual (or other decision-making unit) passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision. This process is by five steps:

- 1. Knowledge; occurs when a decision-making unit is exposed to an innovation's existence and gains an understanding of how it functions.
- 2. Persuasion; occurs when a decision-making unit forms a favorable or an unfavorable attitude towards the innovation.
- 3. Decision; takes place when a decision-making unit engages in activities that lead to a choice to adopt or reject the innovation.
- 4. Implementation; occurs when a decision-making unit puts a new idea into use.
- 5. Confirmation; takes place when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.



This process can be depicted in the following image.

3.2 Resource Based View

The continuously innovating technologies in the telecom industry are approached by the resource based view. This is mainly done because the entry of new technologies in the market comes from developments within the operating companies. Customers are not aware of a new technology application or wish for a specific direction of the telecom market. This can be seen in the development of for instance internet services through mobile phones, which has been developed by business in their research and development (R&D) departments, and not based on wishes from customers, analyzed from a market research. While this view acknowledges that outside factors affect firm performance, internal resources are the core factors determining firms' sustainable competitive advantage, describing the inside-out perspective (Kim et al., 2008). A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors. Furthermore, a firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy (Barney, 2001).

The resource based view conceptualizes that a firm possessing and exploiting resources and capabilities which are both valuable and rare, a competitive advantage will be gained. This advantage is then improving a short-term performance. In order for improving long-term performance, a sustainable competitive advantage should be gained. This occurs when these resources and capabilities, already valuable and rare, are also both inimitable and non-substitutable.

In this research the definition of firms' resources includes all assets, capabilities, organizational processes, firm attributes, information etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve efficiency and effectiveness (Daft, 1983).

These firm resources can be divided into three categories:

- 1. Physical capital resources; e.g. technology, plant, equipment
- 2. Human capital resources; e.g. relationships, experience, individuals' intellect
- 3. Organizational capital resources; e.g. coordination system, planning, organizational structure

To further understand the attributes of heterogeneous and immobile resources over the market that are prospering sustained competitive advantage, the following aspects of resources are explained (Barney, 2001):

- 1. Value; when they enable a firm to conceive or implement strategies that improve its efficiency and effectiveness.
- 2. Rareness; as long as the number of firms that possess a particular valuable resource is less than the number of firms needed to generate perfect competition dynamics in an industry
- 3. Imperfect imitability; firms that do not possess these resources cannot obtain them, by the following constraints
 - a. Unique historical conditions; a firm with a unique and valuable organizational culture that emerged in the early stages of a firm's history may have an imperfectly imitable advantage over firms founded in another historical period.

- b. Causal ambiguity; the causal explanation of the link between resources controlled by a firm and sustained competitive advantage remains ambiguous.
- c. Social complexity; complex social phenomena which are beyond the ability of firms to systematically manage and influence.
- 4. Substitutability; there have to be no strategically equivalent valuable resources that are rare, or imitable.

The following framework captures the resource based view and clarifies that a firm cannot purchase the resources in an open market in order to create sustained competitive advantage. Instead advantages have to be created by the rare, imperfectly imitable, and non-substitutable resources already controlled by a firm.



3.3 Business Models

A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams (Osterwalder et al., 2005).

Pillar	Business Model Building Block	Description
Product	Value Proposition	Gives an overall view of a company's bundle of products and services
Customer Interference	Target Customer	Describes the segments of customers a company wants to offer value to
	Distribution Channel	Describes the various means of the company to get in touch with its customers
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments
Infrastructure Management	Value Configuration	Describes the arrangement of activities and resources
	Core Competency	Outlines the competencies necessary to execute the company's business model
	Partner Network	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value





Financial Aspects

Cost Structure

Revenue Model

Sums up the monetary consequences of the means employed in the business model Describes the way a company makes money through a variety of revenue flows

3.4 Gartner hype cycles

Businesses need to base their adopted technology according to the relevance and value that this technology will add to their business. To help businesses assess the critical opportunity for adopting a technology, Gartner has developed a hype cycle to evaluate hype against maturity of an innovative product. This hype cycle aims to give businesses a clearer understanding of the right time to adopt a technology (Durham & Warden, 2005). The Gartner hype cycles are used in practice as well as in research. The paper of for instance O'Leary (2008) paper has focused on Gartner and some of the tools that Gartner has developed. He examined how those tools might be used to understand and anticipate research issues in accounting information systems. It was found that different portions of the hype cycle have different information resources and different research and development opportunities. As a result, he also suggested different research strategies for researchers based on the use of the hype cycle.

The Gartner hype cycle is not only dedicated to exploring the right time to adopt a technology but also to ensure its continuity. Businesses will have to strategically plan the long term basis for adopting a technology and guide the technology toward interoperability extending its life cycle.

Gartner hype cycles provide a graphic representation of the maturity and adoption of technologies and applications, and how they are potentially relevant to solving real business problems and exploiting new opportunities (Fenn & Raskino, 2003).



Technology Trigger

A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.



Fenn & Raskino (2008) state that the hype cycle starts when a breakthrough, public demonstration, product launch, or some other event generates press and industry interest in some innovation. In the world of information technology, this is often referred to as the technology trigger, where an announcement about a technological development drives sudden interest. The innovation may have been under development for quite a period of time, but at this point it reaches a stage where word of its existence and excitement about its possibilities extends beyond its inventors or developers. More and more people hear of its potential, and a wave of buzz quickly builds as everyone passes on the news.

Peak of Inflated Expectations

Early publicity produces a number of success stories—often accompanied by scores of failures. Some companies take action; many do not.

Fenn & Raskino (2008) state that companies that like to be ahead of the curve seek out the innovation and jump on it before their competitors. The suppliers of the innovation boast about their early prestigious customers, and other companies want to join in so they are not left behind. A bandwagon effect kicks in, and the innovation is pushed to its limits as companies try it out in a range of settings. The stories in the press capture the excitement around the innovation and reinforce the need to become a part of it or be left behind.

Trough of Disillusionment

Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.

Fenn & Raskino (2008) state that as time passes, impatience for results begins to replace the original excitement about potential value. The same stories of early success have been repeated over and over, but now a deeper look often shows those same companies struggling to derive meaningful value. Problems with performance, or slower than expected adoption, or a failure to deliver financial returns in the time anticipated all lead to missed expectations. The media switches to featuring the challenges rather than the opportunities of the innovation.

Slope of Enlightenment

More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

Fenn & Raskino (2008) state that some early adopters overcome the initial hurdles, begin to experience benefits, see the light at the end of the tunnel, and recommit efforts to move forward. Drawing on the experience of early adopters, understanding grows about where the innovation can be used to good effect. Over time, the innovation itself matures as suppliers improve products on the basis of early feedback. Methodologies for applying it successfully are codified, and best practices for its use are socialized.

Plateau of Productivity

Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off. Fenn & Raskino (2008) state that with the real world benefits of the innovation demonstrated and

accepted, growing numbers of organizations feel comfortable with the now greatly reduced levels of risk. A sharp uptick in adoption begins, and penetration accelerates rapidly as a result of productive and useful value.

The key for a company as SpeakUp is to understand what type of adopters their customers are and to what extend they are innovative on basis of Rogers' (2003) diffusion of innovations theory, and combine this knowledge to the available telecom technologies that are going through a certain phase of the Gartner life cycle.

3.5 Scientific relevance

In this chapter, four theories have been described that are of main scientific importance for answering the research question with its sub-questions. The diffusion of innovations theory is of importance to investigate what kind of adopters the partners of SpeakUp are, and in what stage of the technology life cycle SpeakUp has to introduce new products to their partners for them to adopt it. These products and services that are offered are based on the resource based view theory because these new technologies are developed through the technology push principle. The technology push suggests that innovation is driven by science, and thus drives technology and application: scientific discovery triggers the sequence of events which end in diffusion or application of the discovery (Munro & Noori, 1988). The technology push force stems from recognition of a new technological means for enhancing performance (Chau & Tam, 2000). This is the case with technology developments within the telecom industry.

For the analysis of SpeakUp as a company and its operations, the business model theory is used to get a clear view of each building block within this model about the company. This way strengths and weaknesses of the current operations can be defined and adjusted and optimized according to the outcomes of this research. Subsequently the Gartner hype cycle will be used to look at the future developments of the technologies within the telecom industry. Having investigated the adopting process of SpeakUps partners, this hype cycle gives more insight into which technological developments have to be introduced to these partners, at what point in their life cycle, now, and in future cases.

4 Research Design

4.1 Qualitative research

For conducting this research, a qualitative research method will be used. The process of gathering data and information for this analysis will be mainly done by semi-structured interviews and questionnaires. Kvale (1983) defines the qualitative research interview as an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena.

Qualitative research interviews have the following characteristics (Kvale, 1983):

- A low degree of structure imposed by the interviewer
- Prevalence to open questions
- Focus on specific situations and action sequences in the world of the interviewee rather than abstractions and general opinions.

4.2 Industry analysis

Every company is active within a certain industry, which is characterized by its own unique factors influencing the company's activities. For the analysis of the telecom industry, Porter's five forces will be used (Porter, 1979). This is relevant for answering the sub-question: What situation is the telecom industry currently in?

4.2.1 Porter's five forces

Typical steps in industry analysis (Porter, 1979).

Identify the participants and segment into groups, if appropriate:

- Potential entrants
- Suppliers and supplier groups
- Buyers and buyer groups
- Substitutes
- Competitors

This can be visualized in the following figure.

speakup



Threat of new entrants

Potential entrants pose a threat of entry. New entrants to an industry bring new capacity and a desire to gain market share that puts pressure on prices, costs, and the rate of investment necessary to compete. Particularly when new entrants are diversifying from other markets, they can leverage existing capabilities and cash flows to shake competition (Porter, 2008).

Bargaining power of suppliers

The power of suppliers can oppose a threat due to the fact that powerful suppliers capture more of the value for themselves by charging higher prices, limiting quality or services, or shifting costs to industry participants. Powerful suppliers, including suppliers of labor, can squeeze profitability out of an industry that is unable to pass on cost increases in its own prices (Porter, 2008).

Bargaining power of buyers

Powerful customers can capture more value by forcing down prices, demanding better quality or more service (thereby driving up costs), and generally playing industry participants off against one another, all at the expense of industry profitability (Porter, 2008).

Threat of substitute products or services

A substitute performs the same or a similar function as an industry's product by a different means. When the threat of substitutes is high, industry profitability suffers. Substitute products or services limit an industry's profit potential by placing a ceiling on prices. If an industry does not distance itself from substitutes through product performance, marketing or other means, it will suffer in terms of profitability, and often growth potential (Porter, 2008).

Rivalry among existing competitors

Rivalry among existing competitors takes many familiar forms, including price discounting, new product introductions, advertising campaigns, and service improvements. High rivalry limits the profitability of an industry. The degree to which rivalry drives down an industry's profit potential depends, first, on the intensity with which companies compete and, second, on the basis on which they compete (Porter, 2008).

4.3 Firm Analysis

After analyzing the industry, the current situation of SpeakUp itself has to be described in order to know where potential changes in the future have to be made within the company to maintain sustainable competitiveness. This analysis will be done via the business model canvas (Osterwalder & Pigneur, 2010) and additionally the SWOT analysis (Humphrey, 2005). A firm analysis is relevant for answering the sub-question "What are the operations of a telecom operator such as SpeakUp?"

4.3.1 Business model canvas

Business model business blocks are to be kept in mind in the following order when designing or improving the business model of a firm. Due to the fact that a semi-structured interview will be conducted on basis of workshops with multiple respondents at a time, subsequently these questions should roughly be asked when describing each block from Osterwalder & Pigneur (2010) business model canvas. The exact direction of the interview is not completely determined when conducting a semi-structured interview, but it is important that content wise, an answer can be given to prepared questions.

Key of this interview is to uncover and map what the pains are of the current business model and where gains can be accomplished by deducting and improving activities that are causing these pains. To clearly map a standardized interacting business model, the following canvas is provided, by Osterwalder & Pigneur (2010).



To identify the different blocks in this model, the following questions should be asked.

- 1. Customer Segments
 - For whom is value created?
 - Who are the most important customers?
- 2. Value Propositions
 - What value is delivered to the customer?
 - Which customer's problems are helped to be solved?
 - What bundles of products and services are offered to each customer segment?
 - Which customer needs are satisfying?
- 3. Channels
 - Through which channels do the customer segments want to be reached?
 - How are these customer segments reached now?
 - How are the channels integrated?
 - Which one of the channels works best?
 - Which one of the channels is most cost-efficient?
 - How are the channels integrated with customer routines?
- 4. Customer Relationships
 - What type of relationship does each of the customer segments expect to be established and maintained?
 - Which relationships are already established?
 - How are these relationships integrated with the rest of our business model/
 - How costly are the relationships?
- 5. Revenue Streams
 - For what value are customers really willing to pay?
 - For what are customers currently pay?
 - How are customers currently paying?
 - How would customers prefer to pay?
 - How much does each revenue stream contribute to overall revenues?
- 6. Key Resources
 - What key resources do the value propositions require?
 - What key resources do the distribution channels require?
 - What key resources do the customer relationships require?
 - What key resources do the revenue streams require?
- 7. Key Activities
 - What key activities do the value propositions require?
 - What key activities do the distribution channels require?
 - What key activities do the customer relationships require?
 - What key activities do the revenue streams require?
- 8. Key Partnerships
 - Who are the key partners?
 - Who are the key suppliers?
 - Which key resources are acquired from partners?



- Which key activities do partners perform?
- 9. Cost Structure
 - What are the most important costs inherent in the business model?
 - Which key resources are most expensive?
 - Which key activities are most expensive?

As a part of this model, the possible pains of SpeakUps customers will be identified, followed by the gains that can be established by solving these pains. This is a key part of the value proposition block in the Business Model that can give insights for possible future adjustments.

Filling in the business model canvas has been done by organizing two workshops, led by Prof. dr. ir. L.J.M. Nieuwenhuis bound to University of Twente and PBF Innovatie B.V. who is specialized in business model consulting. During these workshops, one or more employees from each department were invited in order to involve every point of view within the company and make a clear and uniform representation on which every employee can agree upon.

4.3.2 SWOT analysis

During these workshops a SWOT analysis has been made in four groups of five employees each, from different departments. Again, in order to make a clear and uniform representation where every employee can agree upon. Via a SWOT analysis, the strengths, weaknesses, opportunities and threats that affect the performance of an organization can be identified (Daft, 2003).

The strengths are those points where a company has a competitive advance in comparison with its competitors. The weaknesses of a company are those points where the company has a competitive disadvantage in comparison with its competitors. In fact, by the analysis of the internal environment of a company, it should be possible to determine the strengths and weaknesses of that company. The SWOT analysis can be seen as a short summary of the internal environment (Avest, 2009)

The opportunities and threats of a company consist of external influences. Opportunities are characteristics of the external environment that have the potential to help the organization to achieve its strategic goals. Threats are characteristics of the external environment that may prevent the organization from achieving its strategic goals (Daft, 2003). External influences are a part the external environment of a company (Avest, 2009).

The SWOT analysis can be summarized as follows (Poppelen, 2009):

- Strengths: Attributes of the organization that are helpful to achieving the objective.
- Weaknesses: Attributes of the organization that are harmful to achieving the objective.
- Opportunities: External conditions that are helpful to achieving the objective.
- Threats: External conditions that are harmful to achieving the objective

The SWOT analysis was specifically based upon the blocks of the business model canvas. The propositions to identify the strengths and weaknesses were scored from -5 to +5, indicating a -5 as a very high weakness and a +5 as a very high strength.



The propositions to identify the opportunities and threats were scored from -2 to +5, indicating a -2 as a low opportunity or threat, and a +5 as a high opportunity or threat. Scores were integrated into averages from different groups, and standard deviations were calculated.

In front of each statement, an abbreviation is placed that indicates which building block is identified with that specific statement. These abbreviations are:

- VP: Value Proposition
- RS: Revenue Stream
- CO: Cost Structure
- KR: Key Resources
- KA: Key Activities
- KP: Key Partners
- CS: Customer Segments
- CH: Channels
- CR: Customer Relationships

Strengths and weaknesses

The following statements are asked in order to identify strengths and weaknesses.

- VP Our Value Propositions are well aligned with customer needs
- VP Our Value Propositions have strong network effects
- VP There are strong synergies between our products and services
- VP Our customers are very satisfied
- RS We benefit from strong margins
- RS Our revenues are predictable
- RS We have recurring Revenue Streams and frequent repeat purchases
- RS Our Revenue Streams are diversified
- RS Our Revenue Streams are sustainable
- RS We collect revenues before we incur expenses
- RS We charge for what customers are really willing to pay for
- RS Our pricing mechanisms capture full willingness to pay
- CO Our costs are predictable
- CO Our Cost Structure is correctly matched to our business model
- CO Our operations are cost-efficient
- CO We benefit from economies of scale
- KR Our Key Resources are difficult for competitors to replicate
- KR Resource needs are predictable
- KR We deploy Key Resources in the right amount at the right time



- KA We efficiently execute Key Activities
- KA Our Key Activities are difficult to copy
- KA Execution quality is high
- KA Balance of in-house versus outsourced execution is ideal
- KP We are focused and work with partners when necessary
- KP We enjoy good working relationships with Key Partners
- CS Customer churn rates are low
- CS Customer base is well segmented
- CS We are continuously acquiring new customers
- CH Our Channels are very efficient
- CH Our Channels are very effective
- CH Channel reach is strong among customers
- CH Customers can easily see our Channels
- CH Channels are strongly integrated
- CH Channels provide economies of scope
- CH Channels are well matched to Customer Segments
- CR Strong Customer Relationships
- CR Relationship quality correctly matches Customer Segments
- CR Relationships bind customers through high switching costs
- CR Our brand is strong

Opportunities

The following statements are asked in order to identify opportunities.

- VP Could we generate recurring revenues by converting products into services?
- VP Could we better integrate our products or services?
- VP Which additional customer needs could we satisfy?
- VP What complements to or extensions of our Value Proposition are possible?
- VP What other jobs could we do on behalf of customers?
- RS Can we replace one-time transaction revenues with recurring revenues?
- RS What other elements would customers be willing to pay for?
- RS Do we have cross-selling opportunities either internally or with partners?
- RS What other Revenue Streams could we add or create?
- RS Can we increase prices?
- CO Where can we reduce costs?
- KR Could we use less costly resources to achieve the same result?
- KR Which Key Resources could be better sourced from partners?
- KR Which Key Resources are under-exploited?
- KR Do we have unused intellectual property of value to others?





- KA Could we standardize some Key Activities?
- KA How could we improve efficiency in general?
- KA Would IT support boost efficiency?
- KP Are there outsourcing opportunities?
- KP Could greater collaboration with partners help us focus on our core business?
- KP Are there cross-selling opportunities with partners?
- KP Could partner Channels help us better reach customers?
- KP Could partners complement our Value Proposition?
- CS How can we benefit from a growing market?
- CS Could we serve new Customer Segments?
- CS Could we better serve our customers through finer segmentation?
- CH How could we improve channel efficiency or effectiveness?
- CH Could we integrate our Channels better?
- CH Could we find new complementary partner Channels?
- CH Could we increase margins by directly serving customers?
- CH Could we better align Channels with Customer Segments?
- CR Is there potential to improve customer follow-up?
- CR How could we tighten our relationships with customers?
- CR Could we improve personalization?
- CR How could we increase switching costs?
- CR Have we identified and "fired" unprofitable customers? If not, why not?
- CR Do we need to automate some relationships?

Threats

The following statements are asked in order to identify threats.

- VP Are substitute products and services available?
- VP Are competitors threatening to offer better price or value?
- RS Are our margins threatened by competitors? By technology?
- RS Do we depend excessively on one or more Revenue Streams?
- RS Which Revenue Streams are likely to disappear in the future?
- CO Which costs threaten to become unpredictable?
- CO Which costs threaten to grow more quickly than the revenues they support?
- KR Could we face a disruption in the supply of certain resources?
- KR Is the quality of our resources threatened in any way?
- KA What Key Activities might be disrupted?
- KA Is the quality of our activities threatened in any way?



- KP Are we in danger of losing any partners?
- KP Might our partners collaborate with competitors?
- KP Are we too dependent on certain partners?
- CS Could our market be saturated soon?
- CS Are competitors threatening our market share?
- CS How likely are customers to defect?
- CS How quickly will competition in our market intensify?
- CH Do competitors threaten our Channels?
- CH Are our Channels in danger of becoming irrelevant to customers?
- CR Are any of our Customer Relationships in danger of deteriorating?

4.4 Partner analysis

SpeakUp is offering a solution for customers in the B2B market, for them to improve and optimize communication. SpeakUp does not do this on its own. The company either develops, or in most cases, invests in technologies from their suppliers and integrates these into solutions for further use down the supply stream. Collaboration with key partners is of great importance in this whole, since SpeakUps products and services make their way to the end customer mostly through influence from business partners. There are two types of partners SpeakUp is collaborating with when offering their solutions, namely "white label" partners and "agents". The difference between these two types of partners is that a white label partner buys whatever SpeakUp is offering and resells it under its own brand name. This way the end customer has nothing to do with SpeakUp, and every support or maintenance is handled by the white label partner. Agents on the other hand, are making sure that the end customer gets aware of SpeakUp, and brings these customers in touch with SpeakUp. Agents do not have the risk of buying products from SpeakUp and having to resell them, and therefore handling maintenance issues themselves.

To discover what the customer consider as pains and what could be gained in the service provision, the questions stated in the questionnaire design should be answered. This indication to how a certain dimension is envisioned by the customer will be mapped by a likert scale as made by Likert (1932), through a structured interview, namely questionnaires. Key is to provide statements which will uncover how innovative SpeakUp's partners are, thereby concluding which adopter category they belong to according to the diffusion of innovation theory by Rogers (2003). This is important in order for SpeakUp to know in what phase of the product life cycle they should offer the products and / or services to their partners in order to capture the most optimal adoption rate. This way the sub-question "When should new generations of technologies be released?" can be answered.

Questions in this survey have been based on different factors to capture the most valuable information about innovativeness of the questioned companies. Taking the diffusion of innovativeness theory (Rogers, 2003) into account, in order for a decision making unit to decide

whether they are going to adopt or reject a new technology, "knowledge" and "persuasion" are preceding factors.

- 1. Knowledge; occurs when a decision-making unit is exposed to an innovation's existence and gains an understanding of how it functions.
- 2. Persuasion; occurs when a decision-making unit forms a favorable or an unfavorable attitude towards the innovation.
- 3. Decision; takes place when a decision-making unit engages in activities that lead to a choice to adopt or reject the innovation.

Knowledge can be divided into a receiver variable and a social system variable where the receiver variable are characteristics of the decision making unit and the social system variable are characteristics about the social system the decision making unit is a part of (Rogers, 2003).

Part of the receiver variable could be:

- Personality characteristics (e.g. general attitude towards change)
- Social characteristics (e.g. cosmopolitism)
- Perceived change for innovation

Part of the social system variables could be (mainly discussed with the Porter's five forces, but also in this questionnaire):

- Social system norms
- Tolerance of deviancy
- Communication integration

Persuasion can be divided in following aspects (Rogers, 2003).

- 1. Relative advantage; is the degree to which an innovation is perceived as better than the idea it supersedes.
- 2. Compatibility; is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.
- 3. Complexity; is the degree to which an innovation is perceived as different to understand and use.
- 4. Trialibility; is the degree to which an innovation may be experimented with on a limited basis.
- 5. Observability; is the degree to which the results of an innovation are visible to others.





4.4.1 Variables and units of analysis

Taken these stages of the diffusion of innovations theory together, results in the following methodological implications for this research, where the partners are the members of the social system, i.e. the Dutch telecom industry.

Innovativeness

- Innovativeness of members of a social system \rightarrow Dependent variable
- Characteristics of member
- Members of a social system

- \rightarrow Independent variable
- \rightarrow Unit of analysis

4.4.2 Questionnaire Design

The following questions were asked in Dutch because the respondents were all employed in businesses in the Netherlands. Therefore an English translation will be provided here, while the original questions are disclosed in the appendix. This questionnaire was sent to all partners, both white label as well as agents. The asked questions are constructed in a way to capture the stages from the diffusion of innovations theory, where it starts with general questions about the company and the former introduced innovations and how knowledge about innovations comes to them. Further it is interesting to understand in which cases a partner of SpeakUp will innovate and what may be obstructing factors for not innovating. Lastly the perceived characteristics of a possible future innovation will be questioned as presented by the five categories stated before, although excluding trialibility due to the fact that a company like SpeakUp does not offer a product of service where it is possible to experiment with on a limited basis.

Questions are partly based on the Community Innovation Survey (CIS). This survey is conducted every four years by EU member states to measure progress in the area of innovation. The CIS complements other indicators of innovativeness by providing a regular snapshot of innovation inputs and outputs (Hellebrandt, 2007). The Dutch Central Bureau for Statistics also uses this method of data collection and states: To be able to monitor the realization of these goals, every two years the EU collects extensive information from Member States on private sector innovation. These surveys have been harmonized throughout Europe, and are called the Community Innovation Surveys (CIS) (Innovation and Research & Development, CBS). Since this survey analyses the indicators of innovativeness, an assumption can be made along with the innovation characteristics by Rogers (2003) on which category SpeakUp's partners can be classified in.

General questions about the company

- Name of the company [open question]
- Number of employees [1-9, 10-19, 20-29, 30-49, 50+]
- Main activity of the company (more than one answer possible) [Telecom provider, IT company, Distributor, Other: define]

Innovation activities

To what extent has your organization participated in the following innovation activities during the past 10 years? [answers based on Likert scale; 1: Very often – 5: Never]

- In-house R&D; developing knowledge within your own organization
- External R&D; acquisition of knowledge that has been developed outside of your own organization
- Acquisition of advanced machinery, equipment or software
- Internal or external training for your employees
- Market introductions of new or significantly improved products or services

Information sources

How important were the following information sources for providing information about a particular technology for innovation activities, or contributed to the completion of existing innovation projects? [answers based on Likert scale; 1: Very important – 5: Not important]

- Intern
 - Within your organization or enterprise group
- Market
 - Suppliers
 - Customers
 - Competitors
 - Consultants, commercial labs or private R&D institutes
- Institutional sources
 - Universities or other institutions of higher education
 - Government or public research institutions
- Other sources
 - Conferences, exhibitions



Scientific journals, trade or technical publications

Objectives for your innovations

How important are each of the following objectives for your activities in the development of innovations? [answers based on Likert scale; 1: Very important – 5: Not important]

- Improve quality of products or services
- Increase variety of products or services
- Replace obsolete products or services
- Reduce costs
- Enter new markets or increase market share
- Increase capacity and / or flexibility

Obstructing factors in innovation

How determinant are the following factors in hindering or preventing innovative activities within your organization? [answers based on Likert scale; 1: Very important – 5: Not important]

- Cost issues
 - Lack of budget within the company
 - Lack of finance from sources outside your company
- Knowledge issues
 - Lack of information on technology
 - Lack of information on the markets
 - Lack of qualified staff
 - Difficulty in finding partners for innovation
- Market issues
 - Uncertain demand for innovative goods or services
 - Market is dominated by incumbents
- Conscious reasons
 - No need, because there is no demand for innovations
 - No need, due to previously achieved competitive advantage

Implementing innovations

To what extent do the following statements correspond within your organization when considering and adopting new technologies and innovations? [answers based on Likert scale; 1: Strongly agree – 5: Strongly disagree]

- Relative advantage
 - New technology will save costs
 - New technology will increase profitability
 - > New technology will improve communication with partners / customers
- Costs
 - Costs of entry are higher than the benefits
 - Costs of maintenance and support are high
 - Retraining employees takes too much time / money



- Complexity
 - Skills are too complex for our employees
 - Integration in our current practices is too complex
- Compatibility
 - New technology is not compatible with our values and beliefs
- Top management support
 - Top management is aware of the benefits of new technologies
 - > Top management actively encourages employees to innovate
 - Top management has sufficient budget for new technologies
- Competition
 - We are going to lose customers to competitors if we do not innovate
 - > Innovation is a strategic necessity to remain competitive
- External support
 - Suppliers encourage adoption of new technologies
 - Organizations wish to collaborate in order to innovate
 - > Trade unions stimulate introduction of new technologies
- External pressure
 - Suppliers demand the use of new technologies
 - Customers demand the use of new technologies
- Finally, can you specify what in an optimal situation, where budget is not an impeding factor, is decisive for your company to innovate?

4.4.3 Sampling

The sampling of respondents has been done by purposive sampling of all the 175 partners of SpeakUp. The sampling of customers was done via provision of a database by SpeakUp with partner contact information. This way of making contact is done on purpose because the existing partners have to be targeted and interviewed in order to investigate their current experiences and possible pains where SpeakUp can respond to in the future.

4.4.4 Member check

A member check is when data, analytic categories, interpretations and conclusions are tested with members of those groups from whom the data were originally obtained (Cohen & Crabtree, 2006). The documented data from the questionnaire can be consulted whenever by the respondents because the IGS Survey Software, provided by University of Twente allows the respondents to pause during the process while filling in and re-enter the software through the same hyperlink as when they began to fill in the questionnaire. Also the software provides respondents with their own answers when everything has been filled in so. This is done as a technique for establishing the validity of the data. All documented data that is gained in this research can be viewed by the respondents in order to eliminate potential mistakes.

5 Results

5.1 History analysis

In order to understand technological substitutions and evolution in the telecom market, earlier innovations have to be analyzed and mapped out. This way the sub-question "What were past developments in the telecom industry?" can be answered. According to the earlier described diffusion of technologies by Rogers (2003), the S-curve hypothesis suggests that the performance of a technology, slow at first, accelerates over time, finally flattening out to be supplanted by a new technology with its own S-curve.

5.1.1 Technological evolution in mobile communications

A study of mobile communications from 1999 to 2006 represents a particularly revelatory case for examining the dynamics of inter-generational transition in the wake of a technological discontinuity – the advanced third generation (3G) technology. From a performance standpoint, the field of mobile communications has seen three main generations from the early 1980s to the present, from voice-centric 1G and 2G platforms to voice and data-centric 3G platforms along with an intermediate 2.5G platform and discussions about a futuristic 4G, which nowadays is already in full effect. The following image depicts how the performance has improved over time (Ansari & Garud, 2009).



What is striking from this image is that instead of a smooth transition from the second to the third generation, the system settled down somewhere in-between, incorporating facets from both generations. To understand how and why this happened Ansari & Garud (2009) looked beyond the

technologies at play broke down various elements of the mobile communications socio-technical system identifying several forces that shaped the transition between 2G and 3G mobile communications technologies. Forces for change were mediated by dampening forces stemming from delays in implementation, developments in collateral technologies and congealing of user preferences around a set of functionalities below what had been projected for the new technology. These forces conspired to change preferences and incentives of the constituents involved even as the transition was unfolding to disrupt the carefully constructed connections that had been framed to spark the intended transition path.

Forces for change

Prospective narratives crafted by focal firms and validated by institutional actors in favor of a proposed new technology generate self-fueling forces for the implementation of the new technology (Ansari & Garud, 2009).

Dampening forces

Delays in the development of co-specialized assets required for the new technology to function retards the diffusion of the new technology and provides an opportunity for the previous technology to catch up (Ansari & Garud, 2009).

Collateral developments

Collateral innovations in related domains can reduce performance gaps between existing and new technological systems, thereby raising the bar for the new technology and retarding its adoption (Ansari & Garud, 2009).

Emergent shifts in preferences and incentives

As the performance gap between the new and old technologies decreases, the incentives of the various participants to make the transition changes dynamically, thereby shaping the transition process and preventing any one technological system from emerging as a clear winner (Ansari & Garud, 2009).

5.2 Industry analysis

In order to answer the sub-question "What situation is the telecom industry currently in?", an industry analysis is done using Porter's five forces.

5.2.1 Porter's five forces

Threat of New Entrants

In the telecommunications industry, the risk of new players entering the market to compete with telco's, e.g. KPN, T-mobile is low because it is a capital-intensive industry and high fixed costs are a barrier to entry. If new competitors were to enter the market, they would lose time establishing a high quality network and infrastructure. Due to the oligopolistic nature of the market, the key players have strong, established bands and a loyal customer base. This makes it difficult for a new company to gain market share. (Aziz, 2011) However in this research it is important to specifically define the

segment of the market that SpeakUp is operating in. For a virtual network operator, it is much easier to enter the market with SpeakUp only having operating skill benefits, management experience and a network which SpeakUp has gained and developed throughout the years. There are low barriers in replicating, and it may be even easier to improve it due to new knowledge of virtual operations and new software from employees that are not bound to another company already. In the market of SpeakUp economies of scale consist from the supplier side. This is why firms increase their subscriber base. Also the distribution channels are not loyal to any company and competitors can easily access them when offering better prices or services while switching costs for customers are low and a customer can easily switch to a competitor that may offer more benefits. So the threat of new entrants for virtual network operators like SpeakUp in the telecommunications industry is high.

Power of Suppliers

Supplier bargaining power is low, as it is diffused between the numerous providers of telecommunications equipment and services when looking at the virtual network operators as SpeakUp in the supplying role. In addition, these providers, e.g. SpeakUp, have little power in deciding which technology is introduced to the market and they are reliant on large telecommunications companies as a means of distribution. For instance, suppliers in the industry made large investments in research and development for VoIP technology because it was believed to be a substitute for mobile communication. However, mobile service providers believed VoIP technology to be a threat because it was a cheaper alternative. As a result, VoIP products did not sell well and suppliers struggled to make up for the large fixed costs associated with the investments. This causes the suppliers to comply with buyers' price negotiations on telecommunications equipment and services (as it is often bought in large volumes) in order to keep sales volumes high (BuddeComm, 2011). However when looking at the suppliers of SpeakUp, their bargaining power is high. This is the case due to the fact that there are only a few fixed line operators and mobile operators, like the large telco's (e.g. KPN, T-Mobile).

Power of Buyers

The bargaining power of buyers is relatively high due to the large selection of products and services which consumers can choose from. Also, because of the widespread nature of basic services within the industry, these products and services are treated as a commodity. This means that consumers seek low prices and want the most value for their money. However, with regards to switching costs, these are minimal for individual consumers but can increase for large businesses. This can become an important factor if the business relies on customized products or services. (Aziz, 2011)

Availability of Substitutes

The threat of substitutes is high, as there are a number of alternative products and services from non-traditional telecom industries which consumers can choose from. These are mainly between different segments in the industry; for instance, cable television and satellite operators are a means of competition, and programs such as Skype offer cheap alternatives to telephone services (Santos, 2011). Internet telephony delivered by ISPs could take a big part out of the core business voice revenues.

Competitive Rivalry

In the telecommunications industry, rivalry among competitors is high. As it is an industry
characterized by a necessity for new technological developments and innovations, companies are constantly competing in the development and delivery of new products and services. Competition to gain market share and a wide customer base is intense; in addition, each competitor is highly likely to remain in operation due to high exit costs. These costs are primarily associated with specialized equipment, as it is an asset that does not have other uses and it is difficult to liquidate. (Aziz, 2011)

Due to low new entrance barriers, competition on the VNO market is fierce now. Bargaining power of both suppliers and customers is high as well, and there are plenty of cheaper or even free substitutes for communicating. This indicates possible threats for SpeakUp.

5.3 Firm analysis [partly confidential]

In order to answer the sub-question "What are the operations of a telecom operator such as SpeakUp?" a firm analysis has been done using the business model canvas and SWOT analysis.

5.3.1 Business model canvas

During the workshops the following results have been found and a representation was made of SpeakUps business model.

Key Partners

- Agents
- ET (mobile network providers)
- Telco (telephone service provider, e.g. KPN, T-Mobile)
- Software providers (Iperity)
- CoLo (colocation center)

Key Activities

- Network operations
- Service desk
- Marketing and sales B2B

Key Resources

- Experts
- "Open" source + modifications (software is essentially open source, but the modifications made with expertise from SpeakUp is so advanced, that replicating or improving it by competitors is very time consuming and therefore can be define as a unique key resource)

Value Proposition

- PBX (private branch exchange is a telephone exchange or switching system) connect to low cost mobile / fixed networks
- Virtual PBX with smart mobile / fixed services

speakup

- Notebook as a communication device
- Traffic analysis

Customer relations

- Support
- Relation management
- Events

Channels

• Face to face interaction

Customer segments

- Virtual network operator (VNO)
- B2B customers
- Telco's

Revenue streams, in percentages of total revenues

- B2B (
- VNO (
- Telco's (

Cost Structure, in percentages of external expenses

- Telco (
- ET ()
- Agents (
- Hardware / software (
- IP networks (
- Colocation centers (
 - Internal expenses
 - Network operations
 - Service desk
 - Marketing & sales B2B

This is filled in the business model canvas and depicted in the following image.





During the workshop possible pains from the customer segments have been identified by asking about the experiences from the employees and brainstorming about new solutions for the future.

Pains



5.3.2 SWOT analysis

Subsequently to the identified pains from customers, a collective SWOT analysis has been made where every building block of the business model canvas has been identified. The following representation can be made from the results of that session.



The following table gives the most important results from the SWOT analysis while the full results can be consulted in the appendix.

	Helpful to achieve the objective	Harmful to achieve the objective
	Strengths	Weaknesses
Internal origin	CONFIDENTIAL	CONFIDENTIAL
	Opportunities	Threats
External origin	CONFIDENTIAL	CONFIDENTIAL

The following statements had the largest standard deviation. This means that in these cases the opinion amongst the employees has the largest discrepancy. For full report of the standard deviations for every statement, the appendix can be consulted.

Strengths / Weaknesses



Opportunities



5.4 Partner analysis

To answer the sub-question "When should new generations of technologies be released?", the results from the questionnaires have to analyzed in order to determine what adoption category the partners of SpeakUp belong to. Having sent the questionnaire to all 175 partners, the response rate was 20% with 35 totally completed questionnaires. Since the partners are either white label or agents, but could fill in more than one option in the main activities the company partakes in, the following distinction has been made between number of employees, activities and partner type.

Number of employees, in number of responses

•	1-9	\rightarrow	23
•	10 – 19	\rightarrow	10
•	20 – 29	\rightarrow	0
•	30 – 49	\rightarrow	1
•	50+	\rightarrow	1

Main activities of the company, in number of responses

•	Telecom provider	\rightarrow	14
•	IT company	\rightarrow	30
•	Distributor	\rightarrow	4
•	Other	\rightarrow	5

Since respondents could fill in more than one activity in the questionnaire and the difference between the types of partnership is more important another category was made to see which partner is an agent and which partner is a white label. For this research it is more important to investigate whether a different type of partner has another characteristic in adopting a new technology so that SpeakUp can anticipate on it. Due to the fact that different partner types could have same main activities, during this research another distinction has been made after the questionnaires were filled in.

Type of partnership, derived from the internal database according to company name

•	Agent	\rightarrow	19
•	White label	\rightarrow	16

5.4.1 SPSS output

T-test

A one sample T-test has been done with SPSS to test whether the responses are significantly skewed left or right from the test value of 3, which represents a neutral attitude from a respondent to a question or statement according to the 5 step Likert scale. So if the t-test shows a significant skewness towards the left, i.e. towards a lower value than 3, the respondents have a positive attitude or agreement towards the presented question or statement. If the t-test shows a significant skewness towards the right, i.e. towards a higher value than 3, the respondents have a negative attitude or disagreement towards the presented question or statement.

This gives the following results, depicted in a table, where the bold red numbers represent a significant value that differs from the tested middle, i.e. value 3, with a significance level of 0.05. Second number on the far right represents the t-test value of the merged categories.

Innovation activities

To what extent has your organization participated in the following innovation activities during the past 10 years? 1: very often, 2: often, 3: average, 4: seldom, 5: never

In-house R&D developing knowledge within your own organization	2,23	
External R&D acquisition of knowledge	3,57	
Acquisition of advanced machinery, equipment or software	3,00	2 943
Internal or external training for your employees	2,74	2,545
Market introductions of new or significantly improved products or services	3,17	

The interpretations that can be made from these results is that, in the general category as "innovation activities" category as a whole, SpeakUp's partners do not show a significant positive nor negative response towards having participated in innovative activities in the past 10 years. Examining the individual constructs however gives a more detailed insight into which statements have a positive or negative response. It can be seen that "in-house R&D" activities have a significant positive response while "external R&D" activities have a significant negative response. This means that SpeakUp's partners do conduct internal research and develop knowledge within their company itself, but do not acquire externally developed knowledge from outside their company often. Other statements in this category pose neither positive nor negative response towards being engaged in often or not.

Information sources

1: very important, 2: important, 3: average, 4: little important, 5: not important

Intern		
Within your organization or enterprise group	2,17	2,171
Market		
Suppliers	2,00	2,707
Customers	2,26	
Competitors	2,91	
Consultants, commercial labs or private R&D institutes	3,66	
Institutional sources		
Universities or other institutions of higher education	3,83	3.800
Government or public research institutions	3,77	
Other sources		
Conferences, exhibitions	2,89	
Scientific journals, trade or technical publications	3,00	2,943

Interpretations that can be made from these results are that, in the general categories, SpeakUp's partners find that internal and market information sources are important in gaining knowledge about new technologies for their innovation activities. The internal information sources from within the company or enterprise group show a stronger positive response. However, this is the case because some constructs about the gathering of information from "consultants, commercial labs or private R&D institutes" have a significant negative response. Learning from their market indicates that the partners gather information from suppliers, e.g. SpeakUp, and customers to whom they sell their products. There is a stronger negative response towards information sources that are institutional (universities and other higher education, government or public research institutions). Other information sources, i.e. conferences, exhibitions and scientific journals, trade or technical publications do not show a significant positive nor negative response. It can be concluded that information about innovations and new technologies flow mainly from within the partners' company or comes from suppliers and customers. The most important information sources are suppliers and customers.

Objectives for your innovations

How important	are each of	the following	objectives for	vour activities
now important		the following		your activities

in the development of innovations? 1: very important, 2: important, 3: average, 4: little important, 5: not important

Improve quality of products or services	1,40	
Increase variety of products or services	2,29	
Replace obsolete products or services	2,23	
Reduce costs	2,17	2,000

Enter new markets or increase market share	1,97
Increase capacity and / or flexibility	1,94

Interpretations that can be made from these results are that SpeakUp's partners find all the above objectives toward innovating important with an overall significant average of 2. However the individual construct of improving quality of products or services posed a much stronger positive response towards the importance of the objective whether to innovate. It can be concluded that for adopting a new innovation or technology, the partners of SpeakUp find it important for the technology to solve the above stated objectives.

Obstructing factors in innovation

1: very important, 2: important, 3: average, 4: little important, 5: not important

Cost issues

2,69	2,900
3,11	
3,14	
3,06	3.021
2,86	3,021
3,03	
2,66	
2,60	2,629
3,49	
3,43	3,457
	2,69 3,11 3,14 3,06 2,86 3,03 2,66 2,60 3,49 3,43

Interpretations that can be made from these results are that neither cost nor knowledge issues have a significant positive or negative result towards being obstructing factors for innovating. Partners however indicate a significantly positive response towards market issues as an important factor for obstructing their adoption of innovations. Both the uncertain demand for innovative goods or services as well as the domination in the market by incumbents is being shown as significantly important. Even though the discriminations are not that large, it does indicate significance in this case and the following. Partners furthermore score significantly negative towards own conscious reasons for not innovating. It can be concluded that partners do not identify themselves as having gained competitive advantage in the past or that they do not need to innovate because there is no demand for it. Rather there is an issue about the uncertain demand from customers and the market already being dominated by some incumbent firms. In addition, there is no significant indication whether partners have issues towards financing innovations or a lack of information / qualified staff / partners.

speakup

Implementing innovations

To what extent do the following statements correspond within your organ	ization	
when considering and adopting new technologies and innovations?		
1: completely agree, 2: agree, 3: neutral, 4: disagree, 5: completely disagree		
Relative advantage	2.22	
New technology will save costs	2,23	
New technology will increase profitability	2,11	2,124
New technology will improve communication with partners / customers	2,03	
Costs		
Costs of entry are higher than the benefits	3,17	
Costs of maintenance and support are high	3,29	3,162
Retraining employees takes too much time / money	3,03	
Complexity		
Skills are too complex for our employees	3,63	
Integration in our current practices is too complex	3,54	3,586
Compatibility		
New technology is not compatible with our values and beliefs	3,74	3,743
Top management support		
Top management is aware of the benefits of new technologies	1,86	
Top management actively encourages employees to innovate	2,00	2,152
Top management has sufficient budget for new technologies	2,60	
Competition		
We are going to lose customers to competitors if we do not innovate	2,06	1 0/2
Innovation is a strategic necessity to remain competitive	1,83	1,343
External support		
Suppliers encourage adoption of new technologies	2,43	
Organizations wish to collaborate in order to innovate	2,57	2,781
Trade unions stimulate introduction of new technologies	3,34	
External pressure		
Suppliers demand the use of new technologies	2,77	_
Customers demand the use of new technologies	2,29	2,529

Interpretations that can be made from these results are as follows. Costs do not pose a significantly positive nor negative response towards considering the adoption of new technologies and innovations. Partners indicate that they have a significant negative response towards the agreement in a new innovation having high costs of maintenance and support. The creation of relative advantage by an innovation, along with all its individual constructs in this category is significantly agreed upon when considering a future technology. Partners do disagree with statements that state that future innovation may be too complex for employees and integration or incompatibility with company's values and believes. Top management support, along with all its individual constructs is also significantly agreed upon when considering a new innovation. This implies that top management is aware of benefits of new technologies, actively encourages employees to innovate and has

sufficient budget to finance these technologies. Since this questionnaire is mainly filled in by owners of the companies or another member of the top management, this category can pose internal validity problems, as these managers may be biased when answering this question. Furthermore the respondents significantly agree upon the statements about the threat of competition if they do not innovate. Both the loss of customers to competition as well as the recognition of strategic necessity of innovation is agreed upon. Partners also respond significantly positive towards external support from suppliers and other organizations to collaborate with in order to innovate. This external support from trade unions has neither significantly positive nor negative been responded to. Lastly, the partners significantly react positive to the experience of external pressure from customers as they demand the use of new technologies. The external pressure from suppliers is neither significantly positive nor negative responded to. The most important conclusion for SpeakUp is that the partners do recognize that they have to innovate to remain competitive, and the top management of these companies is aware of it.

Open question

The results from the last open question "Finally, can you specify what in an optimal situation, where budget is not an impeding factor, is decisive for your company to innovate?" were left out because too few respondents had filled in this question to draw any conclusions from it.

Mann-Whitney U test

Given the fact that the results are not normally distributed but skewed, a non-parametric test has to be conducted instead of a parametric test. The goal is to examine whether the different partner types, i.e. white Label and agents, have a significantly different outcome for both the individual constructs as well as the transformed constructs into merged categories.

The Mann-Whitney U test is conducted to test whether the distribution can be assumed the same between the two partner types of SpeakUp, or the distribution is significantly different.

Firstly the output is displayed of the merged categories; showing a significant result of 0.017, with a significance level of 0.05, between the results whether the respondents company has been engaged in innovative activities during the last ten years.

As plotted by the graph, white label partners have been significantly more often engaged in innovative activities than agents.

speakup



Next the output is displayed of the individual constructs; showing a significant result of 0.008, with a significance level of 0.05, between whether a respondent has introduced new or improved products or services to the market. Plotted by the graph it can be seen that white label partners have significantly introduced a new or improved product or service more often to the market than agents.



When analyzing the results from the questionnaire without the distinction between the two partner types, it can be seen that both the merged construct of "innovation activities during the past 10 years" as well as the individual construct of "market introductions of new or significantly



improved products or services" have an insignificant result of respectively 2.943 and 3.17, with a significance level of 0.05.

Agents have a significant result of 3.6 for "market introductions of new or significantly improved products or services" in the past 10 years; thus a negative response towards this question. White label partners have an insignificant result of 2.7 for the same construct, thus having a slight positive response towards this question, but insignificant to draw a conclusion of skewness with a significance level of 0.05.

Agents have an insignificant result of 3.2 for "innovation activities during the past 10 years" in general; thus a slight negative response towards this question, but insignificant to draw a conclusion of skewness with a significance level of 0.05. White label partners have a significant result of 2.65 for the same construct, thus have a positive response towards this question. It can be concluded that white label partners have skewness towards the left, i.e. positive response towards having innovated in the past 10 years.

5.4.2 Adoption category

Having analyzed these results from the questionnaire, according to the t-test result it can be concluded that the partners of SpeakUp did engage in innovative activities. Here a distinction can be made that white label partners did significantly engage more in innovative activities. Other results did not show a significant difference between the two partner types in their way of gathering information about new technologies, objectives to innovate, obstructing factors for innovating and their consideration of adopting new innovations.

The questionnaire can be divided into the following sections:

- General questions about the company
- Innovation activities
- Information sources
- Objectives for your innovations
- Obstructing factors in innovation
- Implementing innovations

The sections about past innovation activities, objectives for innovation and implementing innovation are detrimental in assuming which adoption category SpeakUp's partners belong to, along with obstructing factors in innovation. This is done by comparing partners' characteristics with the categories that Rogers (2003) provides. The following descriptions are provided by Rogers (2003) according to each category.

Innovators

Venturesomeness is almost an obsession with innovators. Their interest in new ideas leads them out of a local circle of peer networks and into more cosmopolite social relationships. Communication patterns and friendships among a clique of innovators are common, even though these individuals may be quite geographically distanced. Being an innovator has several prerequisites. Control of substantial financial resources is helpful in absorbing the possible losses from an unprofitable

innovation. The ability to understand and apply complex technical knowledge is also needed. The innovator must be able to cope with a high degree of uncertainty about an innovation at the time he or she adopts. The salient value of the innovator is venturesomeness, due to a desire for the rash, the daring, and the risky (Rogers, 2003).

Early adopters

Early adopters are a more integrated park of the local social system than are innovators. Whereas innovators are cosmopolites, early adopters are localites. This category, more than any other, has the highest degree of opinion leadership in most systems. Potential adopters look to early adopters for advice and information about an innovation. The early adopter is considered by many to be "the individual to check with" before adopting a new idea. This adopter category is generally sought by change agents as a local missionary for speeding the diffusion process. Because early adopters are not too far ahead of the average individual in innovativeness, they serve as a role model for many other members of a social system. Early adopters help trigger the critical mass when they adopt an innovation (Rogers, 2003).

Early majority

The early majority adopt new ideas just before the average member of a system. Members of this category interact frequently with their peers but seldom hold positions of opinion leadership in a system. Their unique location between the very early and the relatively late to adopt makes them an important link in the diffusion process. They provide interconnectedness in the system's interpersonal networks. The early majority are one of the most numerous adopter categories, making up one third of all members of a system (Rogers, 2003).

Late majority

The late majority adopt new ideas just after the average member of a system. Like the early majority, the late majority make up of one third of the members of a system. Adoption may be both an economic necessity for the late majority and the result of increasing peer pressures. Innovations are approached with a skeptical and cautious air, and the late majority do not adopt until most others in their system have already done so. The pressure of peers is necessary to motivate adoption. Their relatively scarce resources mean that most of the uncertainty about a new idea must be removed before the late majority feel that it is safe to adopt (Rogers, 2003).

Laggards

Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. Laggards are the most localite of all adopter categories in their outlook. Many are near isolates in the social networks of their system. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done previously, and these individuals interact primarily with others who also have relatively traditional values. Their innovation-decision process is relatively lengthy, with adoption and use lagging far behind awareness knowledge of a new idea (Rogers, 2003).

According to all the results and implications made in chapter 5.4.1, this implies that in order to provide SpeakUp with specific practical advice, it can be argued that an assumption is made that the partners of SpeakUp, both white label as well as agents will be classified as an early majority in



adopting new technologies. According to Rogers' (2003) diffusion of innovation theory this implies that SpeakUp's partners deliberate for some time before completely adopting a new idea. As seen by the classifications by Rogers' (2003), it can be concluded that SpeakUp's partners are not venturesome and have a desire for the rash, the daring, and the risky that comes with being able to cope with high degrees of uncertainty. The description of an early adopter also does not match the results of the survey. Since a lot of results are not largely discriminated from the neutral middle, this would not indicate a role as "the individual to check with" for others in the social system. Comparing the late majority's description with the results of the survey, these partners do not indicate skepticism towards innovations, because they certainly do recognize its benefits and needs. Lastly the laggards category is even later in adopting than the late majority and is even more suspicious. This leaves to conclude that assuming SpeakUp's partners as the early majority would be the most optimal conclusion out of these results, which can be justified by the slight positive responses to the different sections in the survey.

5.5 Current technologies

To help businesses assess the critical opportunity for adopting a technology, Gartner has developed a hype cycle to evaluate hype against maturity of an innovative product. This hype cycle aims to give businesses a clearer understanding of the right time to adopt a technology (Durham & Warden, 2005).

5.5.1 Gartner hype cycle

Depending on what kind of adopter category your serve as a supplier or buy as a client, technologies in a different stage of the cycle must be considered. Garter publishes every July which technologies are located in what stage of the hype cycle for that year. Using knowledge from the hype cycles the sub-question "How to anticipate on the adoption of future generations of technologies?" can be answered. The following image shows the indicators of the hype cycle stages (Fenn & Raskino, 2008).



On the rise

Fenn & Raskino (2003) state that the most common indicator that an innovation is past the trigger is that it becomes available for purchase from a commercial vendor rather than a lab. Other indicators that an innovation is past the trigger but has not yet reached the peak include:

- Only a handful of suppliers are selling the innovation (often only one or two).
- The suppliers are funded by seed rounds of venture capital.
- An established provider brings a radically innovative product to market (such as Apple's iPad or Microsoft's Kinect).
- The innovation requires significant customization to work in an operational environment. The customization is performed primarily by the supplier.
- The price is high relative to the cost of production and to the cost of related, but more established, products.
- Suppliers are not yet able to provide references or case studies.

The following technologies are in that stage according to Osmond (2013)

- Cloud MDM Hub Services
- OneAPI
- Open-Source Telecom Operations Management Systems
- Social IT Management
- OSS/BSS Customer Experience Management
- Web Real-Time Communications
- Mobile Virtual Worlds
- Bring-Your-Own-Device Services

At the Peak

Fenn & Raskino (2003) state that an innovation is at the peak when indicators include:

- The trade and business press run frequent stories about the innovation and how early adopters are using it.
- A popular name catches on in place of the original, more-academic or specialist engineering terminology; for example, the wireless networking technology called 802.11g became "Wi-Fi."
- Analysts, bloggers and the press speculate about the future impact and transformational power of the innovation.
- Simple, exaggerated, nonspecific declarative marketing slogans appear, such as "I have cloud power" and "cloud is the answer."
- A surge of suppliers (often 30 or more) offer variations on the innovation.
- Suppliers with products in related markets align their positioning and their marketing with the theme of the innovation.
- Suppliers can provide one or two references of early adopters.
- Investors aggressively hunt down a representative supplier for their portfolio. Some earlystage venture capitalists may sell at this point.



- Toward the end of the peak, one or two early leading suppliers are bought by established companies in expensive, high-profile acquisitions.

The following technologies are in that stage according to Osmond (2013)

- Context Delivery Architecture
- Convergent Communications Advertising Platforms (CCAPs)
- Hybrid Mobile Development
- Behavioral Economics
- Big Data
- Mobile Cloud
- Network Functions Virtualization
- Social Network Analysis
- Cloud Management Platforms
- Communications Service Providers as Cloud Services Brokerages
- Hybrid Cloud Computing
- Context-Enriched Services
- Network Intelligence
- Personal Cloud

Sliding Into the Trough

Fenn & Raskino (2003) state that an innovation is, or will soon be, in the trough when indicators include:

- The tenor of press articles turns negative, featuring the challenges and failures around the innovation. Terms like "DOA (dead or alive)," "failure" and "backlash" are used in headlines.
- There is general cynicism about the transformational potential of the innovation.
- Supplier consolidation starts, including buyouts by larger companies and investors.
- Second- and third-round funding by investors is required to sustain suppliers.
- The same few case studies and references for successful adopters are used by suppliers.

The following technologies are in that stage according to Osmond (2013)

- OpenFlow
- Browser Client OS
- Master Data Management
- Mobile CDN
- Mobile Unified Communications
- Telecom Analytics
- Machine-to-Machine Communication Services
- Real-Time Infrastructure
- Cloud UC (UCaaS)
- Service-Oriented Architecture in OSS/BSS and SDP
- Cloud Computing
- Next-Generation Service Delivery Platforms



- End-User Experience Monitoring
- Cloud/Web Platforms
- Content Integration
- Open-Source Virtualization Platforms
- Web Experience Analytics
- Infrastructure as a Service (IaaS)
- Rich Communication Suite

Climbing the Slope

According to Fenn & Raskino (2003), indications that the innovation is moving up the slope include:

- Suppliers of the innovation offer second- or third-generation products that work with little or no consulting from the supplier.
- For technology innovations, suppliers offer product suites that incorporate the innovation into a broader range of tools.
- Consulting and industry organizations publish methodologies for how to adopt the innovation.
- Press articles focus on the maturing capabilities and market dynamics of the suppliers.
- New success stories and references start to proliferate.
- Reliable figures regarding costs, value and time to value become available.

The following technologies are in that stage according to Osmond (2013)

- Web-Oriented Architecture
- Open-Source Communications
- Software as a Service (SaaS)
- Mobile Device Management

Entering the Plateau

Indicators that a technology has reached the plateau according to Fenn & Raskino (2003), include:

- Trade journals and websites start to focus on best-practice articles about how to deploy the innovation.
- Clear leaders emerge from the many suppliers that joined the market during the Slope of Enlightenment.
- Investment activities focus on acquisitions and IPOs.
- Many examples of successful deployments can be found in multiple industries.
- The terminology around the innovation becomes part of everyday speech, such as Googling, texting and blogging.

The following technologies are in that stage according to Osmond (2013)

- Mobile Data Protection
- Mobile Social Networks
- Web Analytics



• Business Impact Analysis

Following image depicts these technologies in the hype cycle along with the expectation of when the technology will reach the plateau profitability, i.e. mainstream adoption, according to Osmond (2013).



6 CONCLUSION

Having analyzed past developments in the telecom industry, the situation the telecom industry is currently in, current operations and business model of SpeakUp with its strengths and weaknesses, the innovativeness of SpeakUp's partners and the hype cycles of the technologies that are now in development in the telecom industry, an answer can be given to all the sub-questions, leading to an advice on the general research question "How to project the timing of adoption for technological innovations in the B2B market of a telecom operator in the Netherlands?".

6.1 Answering sub-questions

In order to give an advice towards the research goal of this thesis and its research question for SpeakUp, firstly the following answers should be given to the sub-questions.

6.1.1 What were past developments in the telecom industry?

In the past developments in the mobile communications technologies, there was a notable evolution of a technological generation. Between the second and third generation of the mobile communication technology there was not an expected transition between the substitutions of technological generations. In the interim, many operators decided to focus on upgrading the previous generation 2G technologies to what came to be known as 2.5G, a hybrid that had elements of both 2G and 3G. These operators included those who had obtained a 3G license and viewed 2.5G as a "stepping stone" to 3G (Brodsky, 1998) as well as those who did not get a 3G license and viewed 2.5G as an end in itself (Ansari & Garud, 2009). Instead of a smooth transition from the second to the third generation, the system settled down somewhere in-between, incorporating facets from both generations in the form of 2.5G.

What can be learned from this past development is that forces for change were mediated by dampening forces stemming from delays in implementation, developments in collateral technologies and congealing of user preferences around a set of functionalities below what had been projected for the new technology. These forces conspired to change preferences and incentives of the constituents involved even as the transition was unfolding to disrupt the carefully constructed connections that had been framed to spark the intended transition path.

When framing the market that SpeakUp is operating the following development is noticeable. Traditional operators were bypassed by virtual operators providing services based on software implemented switching systems. Speakup was an early adopter of the technology ten years ago. This way, they obtained a first mover advantage.

6.1.2 What situation is the telecom industry currently in?

In the telecommunications industry, and mainly the market of virtual network operators the risk of new players entering the market is high. Established telco companies like KPN and T-Mobile already have a high quality network and infrastructure along with a loyal customer base, which is

difficult to duplicate or time consuming to match due to the costly acquisition of licenses and already present operating skills of established companies, so for them entry barriers would be high, with low risk from possible entry. For them it is a capital-intensive industry and high fixed costs are a barrier to entry. However in the market of SpeakUp economies of scale consist from the supplier side. This is why firms increase their subscriber base. Also the distribution channels are not loyal to any company and competitors can easily access them when offering better prices or services while switching costs for customers are low and a customer can easily switch to a competitor that may offer more benefits.

The power of a supplier such as SpeakUp in the telecom industry is low, as it is diffused between the numerous providers of telecommunications equipment and services. In addition, these providers have little power in deciding which technology is introduced to the market and they are reliant on large telecommunications companies as a means of distribution. This causes the suppliers such as SpeakUp to comply with buyers' price negotiations on telecommunications equipment and services (as it is often bought in large volumes) in order to keep sales volumes high. When looking at the suppliers of SpeakUp, their bargaining power is high. This is the case due to the fact that there are only a few fixed line operators and mobile operators, like the large telco's (e.g. KPN, T-Mobile).

The bargaining power of buyers is relatively high due to the large selection of products and services which consumers can choose from. Also, because of the widespread nature of basic services within the industry, these products and services are treated as a commodity. This means that consumers seek low prices and want the most value for their money. However, with regards to switching costs, these are minimal for individual consumers but can increase for large businesses, which is the case for SpeakUp, as it operates in the B2B market. This can be an important factor if the business relies on customized products or services like the Compass software that SpeakUp offers for easier communication.

The threat of substitutes is high, as there are a number of alternative products and services from non-traditional telecom industries which consumers can choose from. These are mainly distributed between different segments in the industry; for instance, cable television and satellite operators are a means of competition, and programs such as Skype offer cheap alternatives to telephone services (Santos, 2011). Internet telephony delivered by ISPs could take a big part out of the core business voice revenues.

In the telecommunications industry, rivalry among competitors is high. As it is an industry characterized by a necessity for new technological developments and innovations, companies are constantly competing in the development and delivery of new products and services. Competition to gain market share and a wide customer base is intense; in addition, each competitor is highly likely to remain in operation due to high exit costs. These costs are primarily associated with specialized equipment, as it is an asset that does not have other uses and it is difficult to liquidate (Aziz, 2011).

Due to low new entrance barriers, competition on the VNO market is fierce now. Bargaining power of both suppliers and customers is high as well, and there are plenty of cheaper or even free substitutes for communicating. This indicates possible threats for SpeakUp, since their first mover advantage is not of great value anymore.

6.1.3 What are the operations of a telecom operator such as SpeakUp? [partly confidential]

The main customer segments of SpeakUp that are responsible for the bulk of the company's revenues are virtual network operators (VNO's), B2B customers and telephone service providers. Virtual network operators can be classified as white label partners, but due to the fact that VNO's do in fact buy SpeakUp's products and services first before reselling it with their own brand name, they can be assigned in the customer base. This is unlike agents, who are classified as key partners along with mobile network providers, telephone service provider, software providers and colocation centers. These partners collaborate with-, instead of buy from SpeakUp, like the customer segment companies do. It can be noticed that telecom service providers are assigned to both segments because they both offer services to SpeakUp, as well as pay for the service that SpeakUp offers their services.

SpeakUp offers their products and services to the customer base through face to face channels, meaning that the salesmen of SpeakUp have personal contact with their customers before anything is bought. After this a relationship is maintained through relationship management, support activities and events. The key resources that are used in order to develop and maintain the products and services that SpeakUp is offering are the employees with a unique expertise and a modified open source software that has been adjusted by these expert to SpeakUp's specific configurations. Key activities that keep the company running as it does are network operations, the service desk and the B2B sales and marketing activities.

After analyzing the strengths and weaknesses of SpeakUp's business model it can be concluded that strong points of the company's operations are



6.1.4 When should new generations of technologies be released?

Having investigated the innovativeness of the partners of SpeakUp, it can be concluded that white label partners have been significantly more engaged in innovative activities than agents in the past 10 years. However if you take all the results from the questionnaire with its categories about the information gathering about new technologies, objective to innovate, obstructing factors for innovating and the consideration for adopting new technologies, the adopter category would not differ for both types of partners.

In order to give an advice in practice for SpeakUp, in chapter 5.4.2 an assumption has been made when comparing the characteristics of SpeakUp's partners with the described adoption categories by Rogers (2003). This assumption was that the results of the survey measure up to the description of a firm that is an early majority.

The early majority adopt new ideas just before the average member of a system. Members of this category interact frequently with their peers but seldom hold positions of opinion leadership in a system. Their unique location between the very early and the relatively late to adopt makes them an important link in the diffusion process. They provide interconnectedness in the system's interpersonal networks. The early majority are one of the most numerous adopter categories, making up one third of all members of a system (Rogers, 2003).

Taking into account that this is arguably an assumption in order to answer this sub-question for SpeakUp, and no real scientific proof has been provided for the generalizability of this statement, a follow-up study is recommended. In order to provide evidence for this assumption, the entire social system of the telecom industry that SpeakUp operates in has to be questioned. This way a benchmark can be made based on results from other companies that SpeakUp may or may not already collaborate with. Now, only current business partners were questioned. Due to the limitations of time and resources of a master thesis, this was not possible during this research. When analyzing the entire social system with its and users, not only business partners, a comparison can be made along with results of this research, providing a scientifically validated result.

The following conclusions build on the assumption made by the researcher and without guaranteed external validity. Since the partners of SpeakUp are interested in new technologies and do see the strategic importance of innovating, but are not too eager in adopting a new technology before they had the opportunity to interact with peers, it is key for SpeakUp to offer products which are not at the very start of their life cycle. Currently trying to be a first mover of technology with the current business partners without changing own operations with face to face channels will not convince partners to adopt the technology any earlier. Therefore SpeakUp has to search for technologies which are on the S-curve in the early majority section on the image below, as that represents the market share of a product's life cycle that the early majority is likely to adopt.



Since white label partners indicated that they significantly did introduce more new products to the market and this can be generalized according to these results, SpeakUp can offer white label partners' products and services that are earlier in their life cycle.

6.1.5 How to anticipate on the adoption of future generations of technologies?

Following statements are also argued upon the assumption made that the partners of SpeakUp can be categorized as the early majority. In order to justify these statements, a follow-up study is recommended in order to guarantee external validity. Based on the results provided by this research and its limitations due to a lack of time and resources of a master thesis, a conclusion has been made upon the description of adoption categories by Rogers' (2003). This way a practical answer can be given to SpeakUp for this sub-question. The reader should be aware of these limitations.

To help businesses assess the critical opportunity for adopting a technology, Gartner has developed a hype cycle to evaluate hype against maturity of an innovative product. This hype cycle aims to give businesses a clearer understanding of the right time to adopt a technology (Durham & Warden, 2005). Gartner publishes each July the technologies in the telecom industry that are passing the hype cycle at what stage. Since it is determined in this research that the partners of SpeakUp belong to the early majority adopter category, it is now relevant to interlink Rogers' bell curve of adoption to Gartners hype cycle in order for SpeakUp to anticipate on which technologies will be adopted in the future in the telecom industry. This way SpeakUp can decide which technologies it will invest in to offer to their partners. The following image shows the adoption curve and hype cycle merged (Fischer, 2009). The logic of this image is as follows. Innovators are organizations adopting new technologies before it is in the peak of Gartners' hype cycle. Early adopters are likely to adopt the new technologies when they are going over the slope of enlightenment, while the late majority and laggards are likely to a new technology when it is already on the plateau of productivity and beyond.



According to the logic of this image, it can be argued that the early majority will adopt technologies that are climbing the slope of enlightenment before entering the plateau of profitability. These stages are described as follows.

Slope of Enlightenment

More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious. Osmond (2013) published in July 2013 the following technologies in this stage.

Climbing the Slope

- Web-Oriented Architecture
- Open-Source Communications
- Software as a Service (SaaS)
- Mobile Device Management

Plateau of Productivity

Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off. Osmond (2013) published in July 2013 the following technologies in this stage.

Entering the Plateau

- Mobile Data Protection
- Mobile Social Networks
- Web Analytics
- Business Impact Analysis

6.2 Advice [partly confidential]

Taking all the results of this research into account, the research question "How to project the timing of adoption for technological innovations in the B2B market of a telecom operator in the Netherlands?" can be answered and an advice can be formed for SpeakUp.

The most important aspect of this thesis for the company is that the partners of SpeakUp, to whom products and services are offered, have been categorized into an adopter category. It should be cautioned that results are based on a 20% response rate to a total of 175 partners, so the external validity, the extent to which results can be generalized, is not very high. Although the internal validity cannot be guaranteed with questions about top management support, since the respondents may be biased due to the fact that mostly managers filled in the questionnaire, discrepancies in these results would not interfere with the assigned adopter category. This categorization is not based on a benchmark of the social system as a whole, i.e. telecom industry, but on the results of current business partners and the comparison of their characteristics with the descriptions of Rogers' (2003) adoption categories. This is why a follow-up study is recommended in order to guarantee external validity. The reader should be aware of this when considering the advice from this research.

When anticipating on future developments and projecting the adoption of technologies by SpeakUp's partners, SpeakUp has to keep in mind that they are serving early majority customers that are aware of the strategic necessity of innovating according to the made assumptions from the questionnaire. Taking this into account, these partners are likely to adopt technologies that are climbing the slope of enlightenment before entering the plateau of productivity, as described by Gartner. Fenn and Raskino (2003) state that an indication of when a technology has entered the plateau of productivity, is when clear leaders emerge from the many suppliers that joined the market during the slope of enlightenment. This suggests that it is beneficial for companies to enter the market during this slope of enlightenment reliable figures regarding costs, value and time to value become available as well as consulting and industry organizations have published methodologies for how to adopt the innovation. This reinforces the categorization of Rogers' (2003) that states the need of the early majority to deliberate for some time before completely adopting a new idea.

In order to be a step ahead of the competition, it is advised that SpeakUp already looks at the stage in front of the slope of enlightenment. This stage is the through of disillusion, described by Gartner as follows.

Trough of Disillusionment

Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters. Osmond (2013) published in July 2013 the following technologies in this stage.

Sliding Into the Trough

- OpenFlow
- Browser Client OS
- Master Data Management
- Mobile CDN
- Mobile Unified Communications
- Telecom Analytics
- Machine-to-Machine Communication Services
- Real-Time Infrastructure
- Cloud UC (UCaaS)
- Service-Oriented Architecture in OSS/BSS and SDP
- Cloud Computing
- Next-Generation Service Delivery Platforms
- End-User Experience Monitoring
- Cloud/Web Platforms
- Content Integration
- Open-Source Virtualization Platforms
- Web Experience Analytics
- Infrastructure as a Service (laaS)

• Rich Communication Suite

These technologies should not be offered to the current partners yet according to the adoption categorization by Rogers (2003) and the link to Gartners' hype cycle. Although SpeakUp is a company with unique key resources as it was concluded during the SWOT analysis. As became clear, these key resources are mostly intangible human capital resources like knowledge and experience from employees and build up networks and relationships. By making the company's operations

SpeakUp can make strategic decisions in the future to focus on developing and optimizing the technologies that are going through the trough of disillusionment or even earlier in the hype cycle at that time. Having every unique human capital key resource focused on a joint strategically short as well as long term path, is an important step in optimizing the operations of SpeakUp. This way SpeakUp can specify these technologies to own configurations and offer customers a customized and unique product or service. When this technology is climbing the slope of enlightenment and eventually entering the plateau of productivity, SpeakUp will have a product or service to offer that the early majority has decided upon with peer interaction. SpeakUp would by then already have gained a lot of knowledge and experience with the technology before it is offered.

SpeakUp is a company that already has proven in the past to be able to deal with a first mover position, being good early adopters with the VoIP technology and gain competitive advantage from it ten years ago as a start-up. The results and assumptions made in this research show that trying to be a first mover in providing the current business partners would not be beneficial. However these business partners do recognize the strategic necessity that they have to innovate to sustain competitiveness, and the top management of these companies is well aware of this as indicated by the results of the questionnaire. Other customer segments have not been researched and it is recommended to also gain additional knowledge from e.g. end users, possible other business partners and other customer segments in general for meeting their wishes, possibly again with a first mover strategy and deploying technologies that are positioned earlier in the hype cycle than the slope of enlightenment.

7 APPENDICES

7.1 Innovatie enquête voor partners van SpeakUp

SpeakUp draagt actief bij aan innovatie op het vlak van telecommunicatie. Dat doen we niet alleen, daarvoor is de samenwerking met onze partners van groot belang. SpeakUp is in samenwerking met Universiteit Twente daarom geïnteresseerd in het innovatieve karakter van uw bedrijf en in hoeverre verschillende factoren daar een invloed op hebben.

Zo kunnen wij in de toekomst gerichter nieuwe oplossingen bieden aan u als partner.

Met deze enquête hebben wij het doel gesteld om informatie te verzamelen over geïntroduceerde innovaties binnen uw onderneming, en innovatieve activiteiten gedurende de **afgelopen 10 jaar**.

Een innovatie is de introductie van nieuwe of sterk verbeterde producten, processen, organisatie- of marketing methoden door uw onderneming. De innovatie moet nieuw zijn voor uw onderneming, maar het zou kunnen zijn dat deze oorspronkelijk ontwikkeld is door andere bedrijven.

Het invullen van de vragenlijst neemt ongeveer 10, tot maximaal 20 minuten in beslag.

Er zijn 22 vragen in deze enquête

Algemene vragen over het bedrijf

Naam van het bedrijf *

Vul uw antwoord hier in:

Aantal werknemers *

Kies a.u.b. een van de volgende mogelijkheden:

- O1-9
- 010-19
- 🔘 20 29
- 0 30 49
- O 50+

Voornaamste activiteit van het bedrijf *

Selecteer alle mogelijkheden:

- Elecom aanbieder
- ICT bedrijf
- Installateur
- Andere:

Innovatieactiviteiten



In welke mate heeft uw organisatie deelgenomen in de volgende innovatieactiviteiten gedurende de afgelopen 10 jaar? *

Kies het toepasselijk antwoord voor elk onderdeel:

	erg vaak	vaak	gemiddeld	zelden	nooit
In-house R&D het ontwikkelen van kennis binnen uw eigen organisatie	0	0	0	0	0
Externe R&D aankoop van kennis dat ontwikkeld is buiten uw organisatie	0	0	0	0	0
Aankoop van geavanceerde machines, apparatuur of software	0	0	0	0	0
Interne of externe opleidingen of trainingen voor uw personeel	0	0	0	0	0
Marktintroducties van nieuwe of sterk verbeterde producten of diensten	0	0	0	0	0

Informatiebronnen

Hoe belangrijk waren de volgende informatiebronnen voor het verstrekken van informatie over een bepaalde technologie voor uw innovatie activiteiten, of droegen bij aan de voltooiing van bestaande innovatieprojecten?

Intern *

Kies het toepasselijk antwoord voor elk onderdeel:

	erg belangrijk	belangrijk	gemiddeld	weinig belangrijk	niet belangrijk
Binnen uw onderneming of	0	0	0	0	0



	erg belangrijk	belangrijl	k gemid	ldeld	, I	weinig pelang	rijk	niet bela	Ingrijk
ondernemingsgr	оер								
Markt *									
Kies het toepass	elijk antwoord vo	oor elk onderdee	l:						
Leveranciers				0	0	0	0	0	
Klanten				0	0	0	0	0	
Concurrenten				0	0	0	0	0	
Consultants, con	nmerciële labora	toria of private R	&D instituter	0	Ο	0	0	0	
Institutionele br	onnen *								
Kies het toepass	elijk antwoord vo	oor elk onderdee	l:						
Universiteiten of	f andere instellin	gen van hoger or	nderwijs 🔿	0	0	0	0		
Overheid of pub	lieke onderzoeks	instellingen	0	0	0	0	0		
Overige bronne	n *								
Kies het toepass	elijk antwoord vo	oor elk onderdee	l:						
Conferenties, be	urzen, conferent	ies		С		C) (0	
Wetenschappeli	jke tijdschriften,	handel- of techn	ische publicat	ties () () (0	
Doelstellingen v	an uw innovatie	5							
Hoe belangrijk z innovaties?	ijn elk van de vo	lgende doelstell	ingen voor uv	v acti	viteite	n in he	et ontv	vikkeleı	n van
Anwoorden in n	nate van belang.	*							
Kies het toepassel	lijk antwoord voor e	lk onderdeel:							
	erg belangrijk	belangrijk	gemidde	eld	w be	einig elangri	jk	niet belai	ngrijk
Kwaliteit									
verbeteren van producten of	0	0	0		0			0	
Verscheidenheid	1								
verhogen van producten of	0	0	0		0			0	
ulensten Verouderde	0	0	0		0			0	



	erg belangrijk	belangrijk	gemiddeld	weinig belangrijk	niet belangrijk
producten of diensten vervangen					
Verlagen van kosten	0	0	0	0	0
Nieuwe markten betreden of marktaandeel vergroten	0	0	0	0	0
Capaciteit en / of flexibiliteit verhogen	0	0	0	0	0

Hinderende factoren bij innovaties

Hoe belangrijk zijn de volgende factoren bij het belemmeren of voorkomen van innovatieve activiteiten binnen uw organisatie?

Antwoorden in mate van belang.

Kosten factoren *

Kies het toepasselijk antwoord voor elk onderdeel:

	erg belangrijk	belangrijk	gemiddeld	weinig belangrijk	niet belangrijk
Gebrek aan budget binnen de onderneming	0	0	0	0	0
Gebrek aan financiering uit bronnen buiten uw onderneming	0	0	0	0	0

Kennis factoren *

Kies het toepasselijk antwoord voor elk onderdeel:

Gebrek aan informatie over de technologie	0	0	\circ	0	0
Gebrek aan informatie over de markten	0	0	0	\circ	\circ
Gebrek aan gekwalificeerd personeel	0	0	0	0	Ο
Moeite bij het vinden van partners voor innovatie	es 🔿	0	0	0	0



Markt factoren *

Kies het toepasselijk antwoord voor elk onderdeel:

Onzekere vraag naar innovatieve producten of diensten 🔘 Markt is gedomineerd door gevestigde ondernemingen 🤘	0 0	0 0	0 0	0 0	
Bewuste redenen *					
Kies het toepasselijk antwoord voor elk onderdeel:					

Geen noodzaak omdat er geen vraag is naar innovaties	0	0	0	0	0
Geen noodzaak dankzij eerder behaald concurrentievoordee		0	0	0	0

Implementatie van innovaties

In hoeverre komen de volgende stellingen overeen binnen uw organisatie bij het overwegen en aannemen van nieuwe technologieën en innovaties?

Antwoorden in mate van overeenstemming Relatief voordeel *

Kies het toepasselijk antwoord voor elk onderdeel:

	helemaal mee eens	mee eens	neutraal	mee oneens	helemaal mee oneens
Nieuwe technologie zal kosten besparen	0	0	0	0	0
Nieuwe technologie zal winstgevendheid vergroten	0	0	0	0	0
Nieuwe technologie zal communicatie verbeteren met partners / klanten Kosten *	0	0	0	0	0

Kies het toepasselijk antwoord voor elk onderdeel:

Kosten van invoering zijn hoger dan de voordelen	0	0	0	0	0
Kosten van onderhoud en ondersteuning zijn hoog	0	0	0	0	0
Het bijscholen van werknemers kost teveel tijd / gelo	0	0	0	0	0



Complexiteit *

Kies het toepasselijk antwoord voor elk onderdeel:							
Vaardigheden zijn te complex voor onze werknemers O Integratie in onze huidige werkmethoden is te complex O	00	00	00	00			
Verenigbaarheid *							
Kies het toepasselijk antwoord voor elk onderdeel:							
Nieuwe technologie is niet verenigbaar met onze waarden er overtuigingen	n		0	0	0	0	0
Top management support *							
Kies het toepasselijk antwoord voor elk onderdeel:							
Topmanagement is bewust van de voordelen van nieuwe teo Topmanagement stimuleert medewerkers actief om te innov Topmanagement heeft voldoende budget voor nieuwe techr	chnolo veren nologie	gieën eën	0000	000	0000	0000	0000
Concurrentie *							
Kies het toepasselijk antwoord voor elk onderdeel:							
Wij gaan klanten verliezen aan concurrenten als we niet inno Innoveren is strategisch noodzakelijk om concurrerend te bli	overen jven	00	00	00	00	00	
Externe ondersteuning *							
Kies het toepasselijk antwoord voor elk onderdeel:							
Leveranciers stimuleren invoering van nieuwe technologieën Organisaties willen samenwerken om te innoveren Vakbonden stimuleren invoering van nieuwe technologieën	0000	000	000	000	000		
Externe druk *							
Kies het toepasselijk antwoord voor elk onderdeel:							
Leveranciers vereisen het gebruik van nieuwe technologieën Klanten vereisen het gebruik van nieuwe technologieën	0	000	00	00	00		



Kunt u tot slot aangeven wat er in een optimale situatie, waarbij budget geen belemmerende factor is, beslissend is voor uw bedrijf om te innoveren?

Vul uw antwoord hier in:

Bedankt voor uw medewerking!

Verstuur uw enquête Bedankt voor uw deelname aan deze enquête.

speak<mark>up</mark>

7	2	CIMOT	analycic	Inarth	confidant	iall
_						

Stre	ength/Weakness					
BB	Question	1	2	3	4 avg	stdev
VP	Our Value Propositions are well aligned with customer needs					
VP	Our Value Propositions have strong network effects					
VP	There are strong synergies between our products and services					
VP	Our customers are very satisfied					
RS	We benefit from strong margins					
RS	Our revenues are predictable					
RS	We have recurring Revenue Streams and frequent repeat purchase					
RS	Our Revenue Streams are diversified					
RS	Our Revenue Streams are sustainable					
RS	We collect revenues before we incur expenses					
RS	We charge for what customers are really willing to pay for					
RS	Our pricing mechanisms capture full willingness to pay					
со	Our costs are predictable					
со	Our Cost Structure is correctly matched to our business model					
со	Our operations are cost-efficient					
со	We benefit from economies of scale					
KR	Our Key Resources are difficult for competitors to replicate					
KR	Resource needs are predictable					
KR	We deploy Key Resources in the right amount at the right time		С	DNF	IDENTI/	AL
KA	We efficiently execute Key Activities					
KA	Our Key Activities are difficult to copy					
KA	Execution quality is high					
KA	Balance of in-house versus outsourced execution is ideal					
KP	We are focused and work with partners when necessary					
KP	We enjoy good working relationships with Key Partners					
CS	Customer churn rates are low					
CS	Customer base is well segmented					
CS	We are continuously acquiring new customers					
СН	Our Channels are very efficient					
СН	Our Channels are very effective					
CH	Channel reach is strong among customers					
СН	Customers can easily see our Channels					
СН	Channels are strongly integrated					
СН	Channels provide economies of scope					
СН	Channels are well matched to Customer Segments					
CR	Strong Customer Relationships					
CR	Relationship quality correctly matches Customer Segments					
CR	Relationships bind customers through high switching costs					
CR	Our brand is strong					

speak<mark>up</mark>

Opportunities	
BB Question	1234avg stde
VP Could we generate recurring revenues by converting products into services?	
VP Could we better integrate our products or services?	
VP Which additional customer needs could we satisfy?	
VP What complements to or extensions of our Value Proposition are possible?	
VP What other jobs could we do on behalf of customers?	
RS Can we replace one-time transaction revenues with recurring revenues?	
RS What other elements would customers be willing to pay for?	
R\$ Do we have cross-selling opportunities either internally or with partners?	
RS What other Revenue Streams could we add or create?	
RS Can we increase prices?	
CO Where can we reduce costs?	
KR Could we use less costly resources to achieve the same result?	
KR Which Key Resources could be better sourced from partners?	
KR Which Key Resources are under-exploited?	
KR Do we have unused intellectual property of value to others?	
KA Could we standardize some Key Activities?	
KA How could we improve efficiency in general?	
KA Would IT support boost efficiency?	CONFIDENTIAL
KP Are there outsourcing opportunities?	
KP Could greater collaboration with partners help us focus on our core business?	
KP Are there cross-selling opportunities with partners?	
KP Could partner Channels help us better reach customers?	
KP Could partners complement our Value Proposition?	
CS How can we benefit from a growing market?	
CS Could we serve new Customer Segments?	
CS Could we better serve our customers through finer segmentation?	
CH How could we improve channel efficiency or effectiveness?	
CH Could we integrate our Channels better?	
CH Could we find new complementary partner Channels?	
CH Could we increase margins by directly serving customers?	
CH Could we better align Channels with Customer Segments?	
CR Is there potential to improve customer follow-up?	
CR How could we tighten our relationships with customers?	
CR Could we improve personalization?	
CR How could we increase switching costs?	
CR Have we identified and "fired" unprofitable customers? If not, why not?	
CR Do we need to automate some relationships?	

speakup

Threaths				
BB Question	1 2	3	4 avg	stde
VP Are substitute products and services available?				
VP Are competitors threatening to offer better price or value?				
RS Are our margins threatened by competitors? By technology?				
RS Do we depend excessively on one or more Revenue Streams?				
RS Which Revenue Streams are likely to disappear in the future?				
CO Which costs threaten to become unpredictable?				
CO Which costs threaten to grow more quickly than the revenues they support				
KR Could we face a disruption in the supply of certain resources?				
KR Is the quality of our resources threatened in any way?				
KA What Key Activities might be disrupted?	CO	NF	IDENT	IAL
KA Is the quality of our activities threatened in any way?				
KP Are we in danger of losing any partners?				
KP Might our partners collaborate with competitors?				
KP Are we too dependent on certain partners?				
CS Could our market be saturated soon?				
CS Are competitors threatening our market share?				
CS How likely are customers to defect?				
CS How quickly will competition in our market intensify?				
CH Do competitors threaten our Channels?				
CH Are our Channels in danger of becoming irrelevant to customers?				
CR Are any of our Customer Relationships in danger of deteriorating?				
8 BIBLIOGRAPHY

- Ahlqvist, T., Bäck, A., Halonen, M., Heinonen, S. (2008). "Social media road maps exploring the futures triggered by social media". *VTT Tiedotteita Valtion Teknillinen Tutkimuskeskus* (2454): 13
- Ansari, S., & Garud, R. (2009). Inter-generational transitions in socio-technical systems: The case of mobile communications. *Research Policy*, 38(2), 382-392.
- Avest, J. (2009). Market opportunity analysis and partner selection in the offshore construction market.
- Aziz, N. (2011). Telecommunications in Portugal: An Analysis of Portugal Telecom. *Bachelor of Commerce | Best Business Research Papers Vol. 5*
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management*, 27(6), 643-650.
- Brodsky, I. (1998). 3G Harangue. Wireless Review, November 15 (23), pp. 40-41.
- BuddeComm (2011), Portugal Telecoms, IP Networks, Digital Media and Forecasts
- Chau, P. Y., & Tam, K. Y. (2000). Organizational adoption of open systems: a 'technology-push, need pull'perspective. *Information & Management*, 37(5), 229-239.
- Cohen, D., & Crabtree, B. (2006). *Qualitative research guidelines project*. Robert Wood Jonhson Foundation.
- Daft, R. (1983). Organization theory and design. New York: West.
- Daft, R. L. (2003). Management. New York: Thomson.
- Durham, S. & Warden S. C. (2005). Using Innovation Diffusion Theory as an Enabler to Adopt Technology for Competitive Advantage in SMMEs: A South African Perspective. *ICT Research Forum 2005*, Cape Peninsula University of Technology

Fenn, J. & Raskino, M. (2003). Understanding Gartner's Hype Cycles. Gartner

- Fenn, J., & Raskino, M. (2008). *Mastering the hype cycle: how to choose the right innovation at the right time.* Harvard Business Press.
- Fisher, M. (2009). Nanotechnology: the next silver bullet? Pharmaceutical Technology Europe

Goodman, L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics*, 32(1), 148-170.

Hellebrandt, T. (2007). Community innovation survey. Virtual Micro Data Laboratory Data Brief.



UNIVERSITY OF TWENTE.

- Humphrey, A. (2005). SWOT analysis for management consulting. SRI Alumni Newsletter (SRI International).
- Innovation and Research & Development. Retrieved 29-04-'14 from, http://www.cbs.nl/en GB/menu/themas/bedrijven/methoden/dataverzameling/korte onderzoeksbeschrijvingen/innovation-and-r-and-d-onderzoeksbeschrijving-2011.htm
- Kim, Y.J., Song, J., Koo, C. (2008). Exploring the effect of strategic positioning on firm performance in the e-business context. *International Journal of Information Management*, 28: 203-214.
- Kvale, S. (1983) 'The qualitative research interview: a phenomenological and a hermeneutical mode of understanding', *Journal of Phenomenological Psychology*, 14: 171–96.

Leppänen, M. (2001). Voice Over IP. Helsinki University of Technology.

- Likert, R. (1932). A Technique for the Measurement of Attitudes, Archives of Psychology, No. 140.
- Munro, H., & Noori, H. (1988). Measuring commitment to new manufacturing technology: integrating technology push and market pull concepts. *IEEE Transactions on Engineering Management*, 35 (2). pp. 63-77
- O'Leary, D. E. (2008). Gartner's hype cycle and information system research issues. *International Journal of Accounting Information Systems*, 9(4), 240-252.
- Oldenburg, B., & Glanz, K. (2008). Diffusion of innovations. *Health Behavior and Health Education Theory, Research and Practice*, 313-333.
- Osmond, N. (2013). Hype Cycle for the Telecommunications Industry, 2013. Gartner
- Osterwalder, A., & Pigneur, Y. (2010). Business model generation–a handbook for visionaires, game changers, and challengers. *NewYerk Wiley*.
- Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the association for Information Systems*, *16*(1), 125.

Poppelen, M. (2009). Competitive strategy for an Indian natural stone trader.

- Porter, M. E. (1979). How competitive forces shape strategy (pp. 21-38). Harvard Business Review.
- Porter, M. E. (2008). The five competitive forces that shape strategy. *If you read nothing else on strategy, read thesebest-selling articles.*, 25.
- Rogers, E. M. (2003). Diffusion of innovations 5th edn. Simon & Schuster, New York.
- Rogers, M. (1998). *The definition and measurement of innovation*. Melbourne: Melbourne Institute of Applied Economic and Social Research.



UNIVERSITY OF TWENTE.

Rohlfs, J. (2001). Bandwagon effects in high-technology industries. Cambridge, MA: MIT Press.

Santos, V. (2011). Competition and Oligopoly in Telecommunications Industry in the EU.