



# Preparing for the near future

## *Risks and Strategy in Digital Transformation Processes*

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## Contact information

Confidential



## Preface

This thesis marks the end of my time as a student. It is written in order to graduate from my master in Innovation Management of the study Business Administration at the University of Twente in Enschede. As the cover already reveals, is this thesis written for TNT Post Billing & Document Solutions. This organization is special in the sense that every Dutch individual knows the name TNT, but has little knowledge about the lines of business in which it is active besides processing mail and handling parcels. This is one of the reasons why this organization appealed to me when I was looking for a graduating assignment. Another aspect that makes this organization so interesting for scientific reasons is that, as an organization that has physical postal services as a core activity, TNT Post is greatly affected by the digitalization of society. This made the research important and also very challenging.

Over the last six months this research was done to help TNT Post Billing & Document Solutions in approaching the near future in a world that is digitalizing at a fast rate. It was a challenging and enervating project where I have learned a lot about the subject, but also about the organization. I, therefore, hope that the recommendations made in this thesis will be of great value to the organization. Battling the future is not easy, but I would like to think this thesis might help in making it a bit easier.

Before I invite you to read this thesis I would first like to take the opportunity to thanks some of the people who helped me in these last few months. First of all I would like to thank Jan den Dekker, who offered me the opportunity to do my thesis at TNT Post and guided me through the process of graduating at TNT Post with great interest and unlimited support. Second, I want to thank both of my supervisors at the university, Rick Middel and Christiaan Katsma, for their valuable feedback and useful insights. My family also deserves a special thanks for the support they have given me during the process. Mom, dad and Juliet, graduating was not always easy, but because of your understanding and listing ear it was fun and interesting to do. Last, I want to thank all my friends and co-interns for their advice, good conversations and for making my graduation process into a success.

Now it is time to invite you to read my thesis. I hope you will find it to be instructive, insightful and that you will enjoy reading it.

Maurits van Geenhuizen



## Management summary

Due to confidentiality this part of the research has been excluded

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## Chapter 1: TNT Post Billing & Document Solutions

The following company description will give insight in the structure of the organization and where this research takes place. It describes the basic history of TNT NV and the position of Cendris, which is a 100% subsidiary of TNT Post. Also TNT Post Billing & Document Solutions (hereafter TNT Post BDS) is discussed here, as a part of this large, multinational, organization.

### 1.1 TNT NV

Today, TNT NV, through its two divisions Express and Mail, is in the business of transferring goods and documents around the world. With its activities, TNT is part of the global transportation and distribution industry; a vast industry whose market size is estimated to be over US dollars (US\$) 3,500 billion (as at 31 December 2007 approximately €2,400 billion). TNT serves more than 200 countries and employs around 161,500 people (group.tnt.com, 2008). As can be seen in the below standing figure, the share of TNT NV follows the tendencies of the AEX stock exchange. However, TNT NV for the last six months still performs better than the total market (figure 1).



Figure 1: Share prices of TNT NV against the AEX index (1/5/2008 – 1/5/2009) (Source: Website TNT NV)

In the Netherlands it all began in 1799, when the Dutch postal services were reorganised into a single national enterprise. This formed the basis of PTT Post. As for TNT, its roots lay in Australia. In 1946, Ken Thomas started his own company, Thomas Nationwide Transport, that grew into a global enterprise, even operating its own fleet of aircrafts. Much of the growth came from take-overs and interests acquired in other companies. This also happened with PTT Post, the takeover was completed in 1996. TPG (TNT Post Group) separated from KPN in 1998 and in October 1998, Royal TPG Post officially changed its name in Royal TNT Post (group.tnt.com, 2008).

As said before, TNT's activities are divided between two operational divisions, Post and Express. An overview of the whole group is presented in figure 2 (p.17). TNT Post, which has a royal title, has

the primary task to collect, sort and distribute mail in the Netherlands. However, it also offers a wide range of other products and services. See TNT Post's website for more details: [www.tntpost.com](http://www.tntpost.com). TNT's Express division is among the world's largest express operators and the number one in Europe. Worldwide, it delivers 4.4 million parcels, documents and pieces of freight a week to more than 200 countries TNT Express operates world wide in the delivery sector ([group.tnt.com](http://group.tnt.com), 2008).

The postal market in the Netherlands can be divided into four parts. The B2B market together with the B2C market form the greatest part of the business. These markets include all the mail transactions. The remaining markets of C2B and C2C are most known by the common consumer, but represent a relative small part of the total business. Only during the holiday season will these markets grow temporarily, mainly due to the processing of Christmas cards and other holiday greetings. The separation of the markets and their percentages are shown in table 1.

	Business	Consumer	
<b>Business</b>	B2B	B2C	94%
<b>Consumer</b>	C2B	C2C	6%

*Table 1: Markets of TNT Post NV (Website TNT Post)*

Because this research takes place at TNT Post BDS, the Express division will not be discussed in further detail. TNT Post, however, is part of this research and is therefore described in more detail. As can be seen in figure 2 TNT Post consists of four subdivisions. First, the TNT Post division is the main postal operator in The Netherlands, processing 17 million postal items each day which are addressed to more than 7 million addresses in the Netherlands. European Mail Networks is responsible for the acquisition, development, operations and expansion of addressed and unaddressed postal networks in the most important European countries. The third subdivision, Spring, is a global joint venture for cross national postal services for businesses. This is a joint venture between TNT, The Royal Mail (UK) and Singapore Post (Website TNT Post, 2008). The last subdivision is Cendris and since the research takes place there, in the next paragraph a more extensive description will be given.

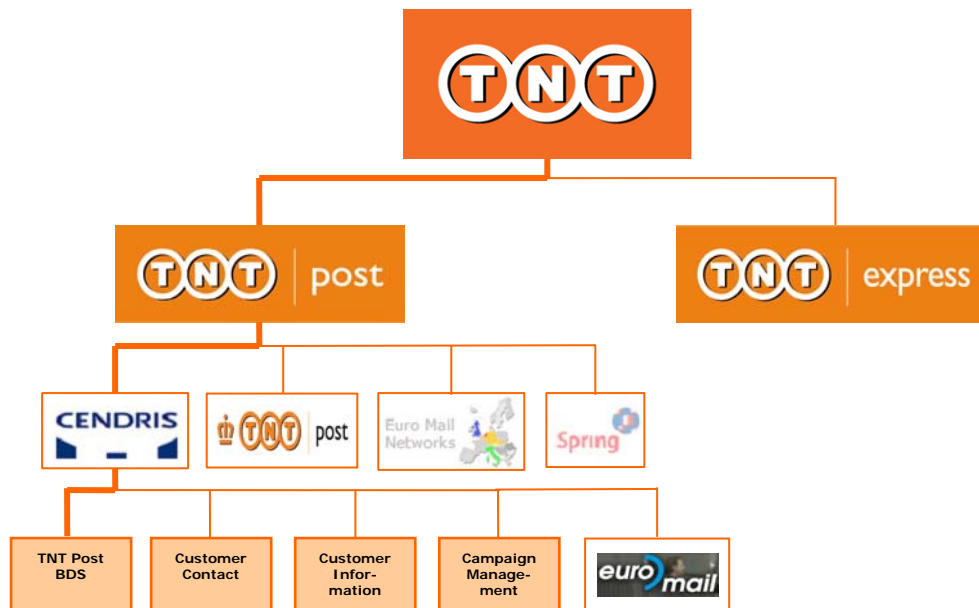


Figure 2: Structure of TNT NV (Website TNT NV)

## 1.2 Cendris

Cendris is market leader in handling data and document streams. It provides services in building sustainable customer relations and optimizing internal data and document processes. In short Cendris is an expert in controlling all the communication channels, from the 'old' traditional media to the modern use of internet en e-mail. It can help organizations in getting the right message to the right target group or person.

To do this Cendris is divided in again five divisions. These are described in short below:

- TNT Post Billing & Document Solutions: offers services for printing, digital presentation and fulfilment of transaction mail and direct mail (see paragraph 1.2.1)
- Customer Information: assists organizations in the search for consumer and business information, database management, data analysis and marketing consultancy to facilitate the pursuit of (profitable) consumers.
- Customer Contact: offers services for inbound and outbound communication by telephone, e-mail and fax. For example, in order to help the increase in response to marketing campaigns.
- Campaign Management: combines the key services offered by Cendris. It offers a multi-channel platform from which (prospective) clients can be reached effectively.
- Euro Mail: a full service print- en mail organization. It has three main activities, namely: the preparation, process and distribution of direct mail and transaction mail and the execution of fulfilment projects (website Euro Mail, 2008).

The second and third bullet represent the divisions that have direct communication with consumers. The other three bullets primarily communicate with organizations. Since TNT Post BDS serves as the



principal in this research, the next paragraph will elaborate more on this business unit.

### 1.2.1 TNT Post Billing & Document Solutions

TNT Post BDS helps customers initiate and continue the dialogue with their customers and prospects. TNT Post BDS is specialised in one-off and ongoing printing of personalised document flows. This could be transaction mail flows, such as bank statements, invoices, pay slips or policies. For transaction mail hardcopy is no longer the only option: a range of communication channels and formats are being used concurrently and interchangeably, both offline and online (figure 3).

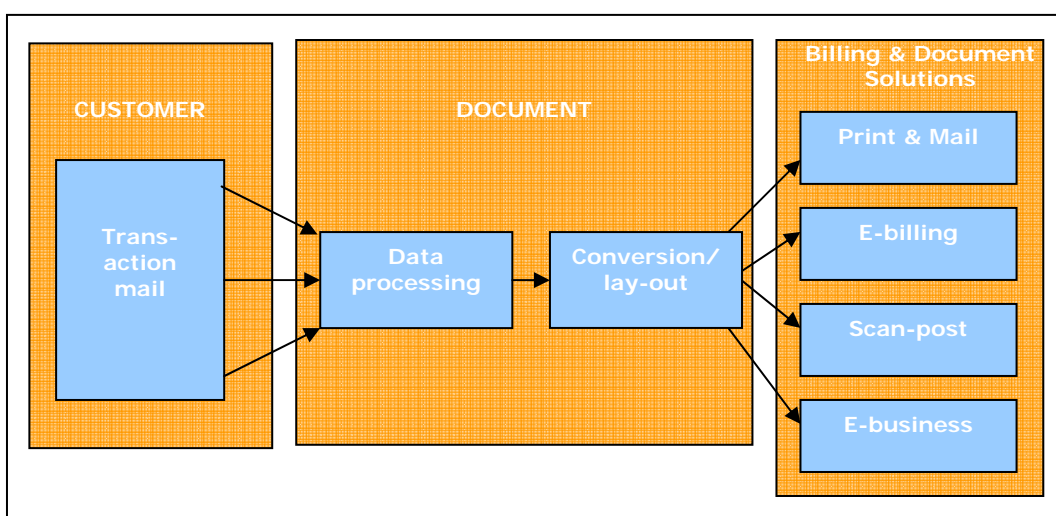


Figure 3: Work process of TNT Post Billing & Document Solutions (Website Cendris)

Organizations outsource their document flows to TNT Post BDS. Next to the output of large volumes in print and digital solutions, TNT Post BDS also analyses documents streams, identifies bottlenecks and translate this into smart, cost saving solutions. Of all its customers, 80% is an AEX listed organization. Since TNT Post BDS is active in a commodity market, the competition is tough and it has to fight to preserve its market share in the transaction mail market and gain market share in the digital products market of this industry. This last mentioned market is up and coming and has gained much attention over the last years, due to the digitalization of the world. Important competitors for TNT Post BDS are other postal distributors like Network VSP. Sandd and DHL Global Mail, but in future developments especially organizations specialized in developing digital postal products like e-invoicing may pose a serious threat to TNT Post BDS. Besides competitive forces, also suppliers are influencing the organization, due to rising costs and lower production volumes in the physical production processes. More on these influential factors will be written in the remaining of this thesis.

Since January 15th 2008, TNT Post BDS is merged with the divisions "New business development", "Electronisch Zakendoen", and "Move to Solutions" of TNT Post. Since May 21st 2008, the company listens to the name TNT Post Billing & Document Solutions, which replaces the former name Cendris Document Presentment. Hierarchical TNT Post BDS is placed under Cendris, but it was chosen to

attach the label of TNT to the new formed division because the name TNT has a better international reputation. A new name was required to suit the new proposition, whereby more focus lies on digital solutions for billing and document flows. This is a strategic step to fulfil the market tendency and thereby the customers' needs and expectations regarding to digital solutions for document flows. To illustrate this, the mobile phone providers, who want to present invoices online, are first movers in the digital invoicing environment and more will follow in later stages of the product life cycle. Health-insurance organizations who want to present the client insurance-policy online instead of physical mailings can do this from January 1<sup>st</sup> 2009, because of new legislation (Legislation bill, July 7, 2007). This is an example of political acts trying to stimulate digital product development. For TNT Post BDS this potentially means a degrading volume in physical production. Digital products of TNT Post BDS can and will be able to replace this physical production. Annually the digitalization rate of TNT Post BDS lies between 4-5% of the total production. More on this in the latter of this thesis.

At the moment four key product areas are identified within TNT Post BDS. The following figure shows these areas (figure 4) and were also mentioned in the previous figure. All these areas represent the new vision on the products that TNT Post BDS is offering. As can be seen three out of the four puzzle pieces are about digital products. This shows that the organization is anticipating on a changing market.



*Figure 4: Overview of the transaction mail product types*

Within the organization about 230 people are employed (exact number of FTE is depending on the number of temporary workers). These are spread over the factories and offices in Utrecht and The Hague, Apeldoorn and Heerlen. In 2008, TNT Post BDS reported €40.9 million in revenues, which is less than the year before when there was revenue of €44.5 million. This decline is caused by market circumstances and economic decline. Also the effects of digitalization are a factor in this downfall of income.

For the year 2009 the mission and vision are as follows:

#### *Vision*

The transaction mail market is experiencing strong movement: for physical to digital. In this market there is space for a party which offers efficient solutions and help customers in the transition from physical to digital. In the information exchange of our customers great chances lay in the order-to-cash (outgoing transaction flows) and purchase-to-pay (ingoining transaction flows) circuits.

#### *Mission*

TNT Post Billing & Document Solutions wants to be the best organization in Europe in the areas of print, e-billing, scanpost and electronic business.

#### Principles:

- Customer satisfaction is leading
- A healthy profit for our shareholders
- Proud and motivated employees
- Taking responsibility for the world around us

## Chapter 2: Problem statement & Methodology

Now the structure of the organization has been explained, a closer look can be taken at the research that is to be conducted. In this chapter multiple aspects of the research will be elaborated on. First the problem definition will determine what problem is going to be the topic of this research. Thereafter, the research objective will be defined. Also the research questions that have to be answered in this research are formulated. The figure that follows the research questions will explain the research design and last the report structure will be explained.

*“Electronic mail could replace 25% of snail mail by 2000”*  
TIME Magazine, 1998

### 2.1 Problem definition

The quote above was and still is overenthusiastic. Physical mail remains the most important kind of mail, but the future may well be different (Presentation L. Jimenez, 2006). In a world that is more and more focussed on digital services, the transition of physical mail seems inevitable. In the case of this research, mail products all fall in the categories of transaction mail and direct mail. The change that can be noticed for some years now is often called *The Digital Economy* or e-business (Kling et al., 1999; Wassenaar et al., 2004; Lynn, 1998; Chaffey, 2002). This can be categorized as industries and forms of IT-enabled business activities that are likely to be significant sources of economic growth in the next decade (Kling et al., 1999, p.17). According to Kling et al. (1999) this includes the IT industry itself, electronic commerce between businesses, the digital delivery of goods and services, and the IT supported retail sale of tangible goods. The introduction of this *Digital Economy* has led to significant change and uncertainty in markets and also in a lot of organizations. Often these changes are technological in their nature and are introduced in organizations for many reasons (Preece, 1997, p.39). For example financial and economic objectives like increase of profitability, business and technical objectives like an increase in flexibility and social and organizational objectives like control and skill.

From a market perspective changes by the digital economy are clearly visible. The main aspects of the market are economic state, ICT use of organizations (e-business) and last the influence of consumers. According to the annual ICT analysis of the Dutch CBS (Centraal Bureau voor de Statistiek) empirical analyses of economic growth identify multiple effects of ICT (OESO, 2004; Van Ark en Inklaar, 2005). These two studies see ICT as an important booster of, among others, the labour productivity. Due to the growing economy from 2004 on, the whole ICT sector has grown. In 2005 ICT investments had risen to more than 13.5 billion Euros. Also, in 2006 the GNP of ICT investments was 6.3 percent. ICT influences the government in regulating and deregulating the market in order to stimulate the ICT use in the economy and organizations. Especially the ICT industry, e.g. computer manufacturers, has the attention of the Dutch government (CBS report,

2007). All these efforts stimulate the use of e-business in organizations and facilitate the shift from the traditional way of doing business to doing business online.

Working towards the organizational level of the influence of e-business, first the general postal sector in The Netherlands has to be discussed. All postal services can be defined as follows: "Services involving the clearance, sorting, transport and delivery of postal items". Postal items are defined as "An item addressed in the final form in which it is to be carried by the universal service provider". In addition to items of correspondence such items also include e.g. books, catalogues, newspapers, periodicals and postal packages containing merchandise with or without commercial value" (EU directive 2002/39/EC, 2002)<sup>1</sup>. In this industry a lot is changing because of the upcoming e-business. Since the introduction of the Internet, the number of postage that is physically sent is declining, as can be seen in figure 5. This figure may be somewhat outdated, but it still shows the trends that are occurring in the postal sector. Reason for this decline is the increased use of electronic mail and other electronic services like SMS and MMS (Nader et al., 2008). Although mail volumes are declining, the total market for postal products is growing. The main explanation for this is the growing competition in the marketplace, which is liberalized more and more, especially in The Netherlands (Nader et al., 2008). Other explanations may be the development of new innovative products and markets, like the digital products in the postal sector, which obviously are an attempt to cope with the growing rate of e-business use.

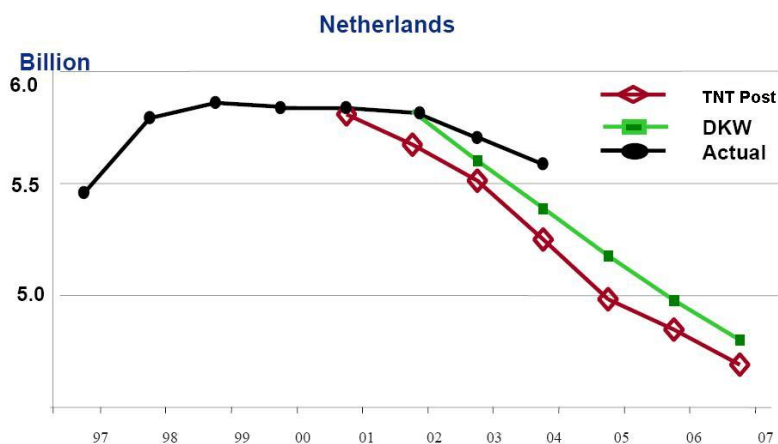


Figure 5: Volume decline postal sector (predicted vs. actual) (Presentation Luis Jimenez, 2006)

To illustrate the direction the postal sector is going the following conclusions can be drawn from trends in the market. Please note that this is not a complete list of trends, but only a selected few of the industry trends. First, as said before, the total postal market continues to grow, but in transaction mail a decline can be noticed in volume (Nader et al., 2008). Also more and more signals, like the transition to electronic billing by telecom providers, show that electronic alternatives

<sup>1</sup> For more information on the definition of the postal sector, please look up the whole directive. Explicitly is not chosen to present the complete definition, since it is quite extensive.

for transaction mail industry become more frequent in the B2B mail traffic (Nader et al., 2008). Another trend is the tarnishing of the industry, because of electronic alternatives. Other players in the market, e.g. specialized IT organizations, become more agile in the delivery of EBPP (Electronic Bill Presentment & Payment) products (Van der Lijn, 2008). This also makes it harder for players in the postal market to determine their direct competitors. Last, the liberalization of the sector and growing legislation makes competition tougher and therefore lowers revenue and margins, while costs keep rising (Van der Lijn, 2008; Interview manager (1), 2008).

The growing use of e-business is visible in both the general market and the postal industry. For specific organizations within this industry this may become a (strategic) problem, because their normal product range of physical products is threatened by possible substitution effects. TNT Post BDS currently is, according to internal sources, affected by this substitution tendency. Substitution can be defined as the act of substituting or putting one person or thing in the place of another; as, the substitution of bank notes for gold and silver as a circulating medium (Website Dictionary.com, 2008). For TNT Post BDS this means the transition from 'physical Transaction Mail and repeating Direct Mail' to 'digital Transaction Mail and repeating Direct Mail'. TNT Post BDS sees this substitution as a strategic issue which has to be researched in further detail. A top-down approach should therefore also be chosen to resolve this issue. The products that are used for this transition process are already developed and put into action. So, the organization is not starting from scratch and the operational and tactical level have already been considered. However, it is still unclear when and how this transition process is going to take place and what this means for the organization from a strategic point of view. At the moment TNT Post in general accounts for a level of digitalization of 5-6% each year, with a maximum of 50% (interview manager (1), 2008). In 2009, TNT Post BDS will try to attract as much volume as possible to keep physical production profitable. Due to the growing digitalization in the coming years, margins of print production will diminish and the transfer to digital products must be made. According to one individual in the organization the transition may already be necessary somewhere in 2009 (interview manager (1), 2008). So, rapid change is coming and the organization on all levels, operational, tactical and above all strategic, should adapt to the new situation.

TNT Post BDS does not view the transition as a problem, but rather as an opportunity to renew their business and to prepare for the future. Knowing this, the question on how to approach the transition and what the impact will be on TNT Post BDS from a strategic point of view is still unclear. It is clear, however, that the need for change is decided by the opportunities and threats that arise from the market and not so much from inside the organization (Interview manager (2), 2008). An example of such an opportunity or threat is the unpredictable behaviour of costumers in shifting from physical to digital production. Taking the previous into account it is clear that TNT Post BDS must prepare for change. It is coming fast and the organization has to be ready before the turning point is reached. This also clarifies the problem that has to be researched in this thesis, namely that TNT Post BDS predicts a radical shift from physical to hybrid or fully digital production, but struggles with the

prediction of how the change is going to affect the organization from a market perspective. In offering a tool to prepare for the future scenario planning appears to be useful (Chermack, 2005, p.60). Chermack (2005) says: 'In a world that changes too rapidly for prediction to be accurate, scenarios are gaining credibility as effective tools to prepare for an uncertain future.' (Chermack, 2005, p.60). This is also supported by Börjeson et al. (2006). So, the appropriate 'vehicle' for preparing for the near future is the creation of scenarios.

Considering the previous, this thesis is done to help TNT Post BDS face the near future, when the transition to e-business is going to take place. This must be approached from the strategic level, since this is the specific request of the organization. Because of this focus special attention should be paid to the changes that occur in the strategy because of the transition to e-business. Strategy in this context is also known as e-strategy and this is also included in the scope of this research.

## 2.2 Research objective

The above stated problem definition is the basis for doing this research. To clarify the goal of this research an objective has to be stated in which the intention of this research is presented. Therefore, the research conducted in this thesis has the following objective:

*Prepare TNT Post Billing & Document Solutions for the transition to e-business, by determining the risks and strategic effects in different scenarios*

## 2.3 Research questions

Having read the above standing, it is now possible to formulate research questions. The main research question is as follows:

*What must TNT Post Billing & Document Solutions do to prepare for the transition to e-business in the near future?*

This central question can be answered by posing research questions.

Research questions:

- 1 *What risks and strategic effects are involved in the transition to e-business for TNT Post Billing & Document Solutions?*
- 2 *What scenarios can be developed in the preparation for the transition to e-business in the near future for TNT Post Billing & Document Solutions?*

## 2.4 Research design

The following graphic research design (figure 6) shows the path of writing this graduation paper.

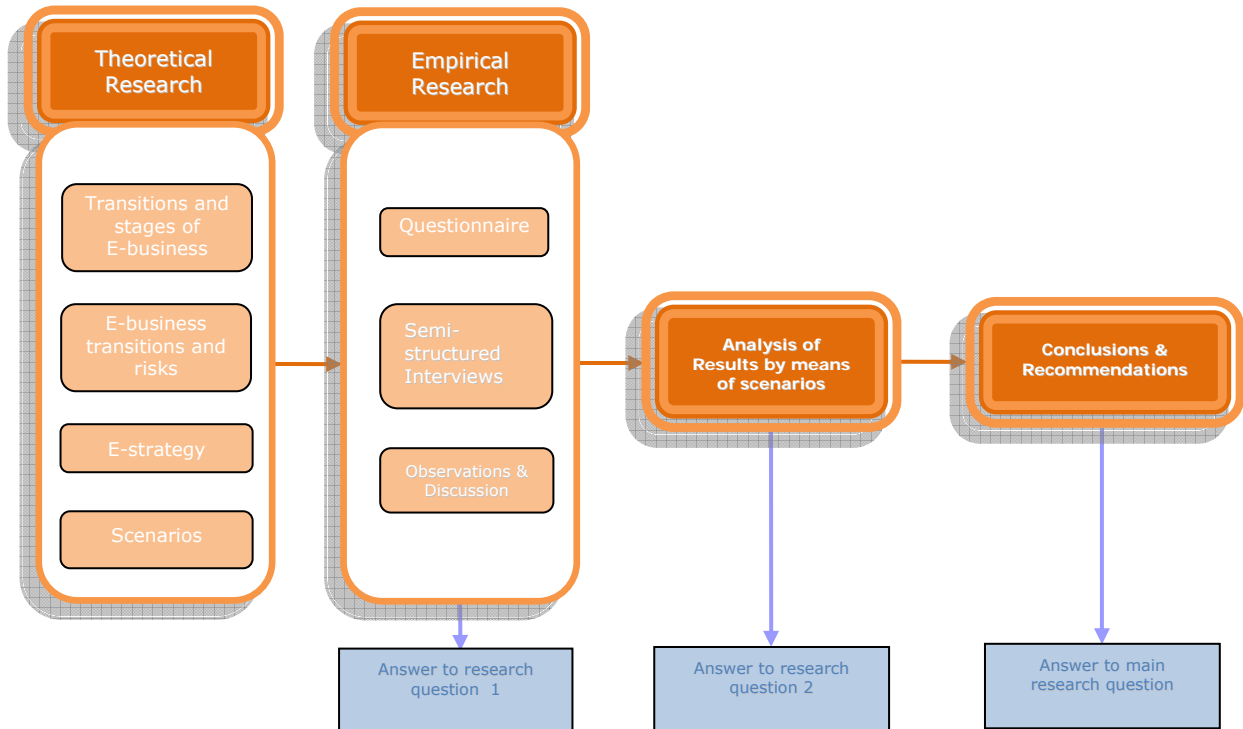


Figure 6: Research design

## 2.5 Report structure

In this paragraph the report structure for the research report is presented. This research report will contain the standard necessary parts of a report, like a preface, introduction, table of content, references and appendixes. The chapters will be organized as follows. The first chapter gives an introduction to the organization where this research takes place. The second chapter, this current chapter, states the problem that is the subject of this research. Here also the research questions will be introduced. The next chapter contains the theoretical framework, which is a substantial part of the whole research. In chapter four the methodology is presented. In chapter five the results of the questionnaire and interviews are given. Chapter six is used to form the scenarios, based on the previous chapters. One of the last chapters, number seven, is the presentation of the conclusions and recommendations. The last substantial part of the research will be the discussion in which the process will be reflected and some suggestions are made for further research.





## Chapter 3 : Theoretical framework

In this chapter the literature that is related to the problem, as stated in chapter two, is discussed. Because multiple topics are important for this research the following framework will consist of different theories about different subjects. At the end of this chapter, however, all the literature comes together and can serve as a unified scientific body for the empirical analysis of this research. To prevent the reader from getting lost the following figure will explain the different topics discussed in this chapter (figure 7).

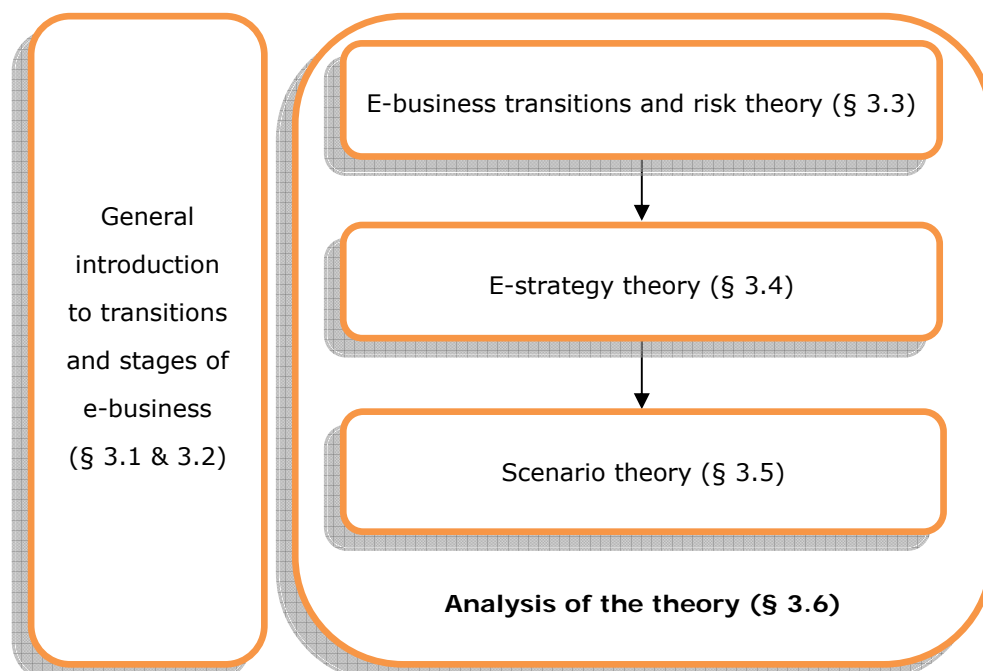


Figure 7: Structure theoretical framework

As can be seen, the theories used in this research are very different from each other. The goal of this chapter is to discuss the different theories and to try to connect them together. This will result in a combined research model that is specifically applicable to this research. Before turning to the core of this research the first two paragraphs give an introduction into transitions and the shift to e-business. After establishing a certain mindset is the actual theory used in this research discussed, as depicted above.

### 3.1 Transitions in businesses

When reviewing literature about transitions many different terms can be found for the same subject, e.g. regime transformation (Van de Poel, 2003), technological revolutions (Perez, 2002), technological transitions (Geels, 2002), system innovation (Elzen et al., 2004; Geels, 2007) and transition management (Rotmans et al., 2001). These theories vary from managing specific transitions to describing transitions from various levels. Therefore, in this research clear choices have to be made regarding the right level of analysis. Depending on which level this research finds

itself the appropriate theory should be chosen. Considering the multiple acting fields of the stated problem in this research, namely macro through micro level, it seems sensible to choose a theory that takes these acting fields into account. This is sensible because factors that influence the change in this research come from various layers of the external environment of the organization. It ranges from market shifts to changing attitudes from individual organizations that are acting outside the primary industry of interest in this research, namely the postal sector. These 'outside' organizations are for example banks and IT firms. In search of a model that explains the multiple layers of transitions, the multi-level perspective (MLP) was chosen. This model of Geels et al. (2007) is a method in which a transition is considered as a change that takes place on different levels (Geels et al., 2007). The MLP can help to describe how transitions work and distinguishes three levels of heuristic, analytical concepts (Rip et al., 1998; Geels, 2002), which are applicable for all business transitions as a result of radical innovations. These three levels can help to identify how the transition to e-business is manifesting itself across all levels. The three levels are:

1. Niche-innovations: These innovations form the micro level where radical novelties emerge. This environment acts as a sort of incubation room for new ideas and is usually unstable (Geels et al., 2007, p.400).
2. Socio-technical regime: According to Geels et al. (2007), this concept is about the shared cognitive routines to stabilize existing trajectories. The results are for example that engineers are blinded outside their field of work and that regulations and standards are used. This makes the regime rigid and less capable for change in the status quo (Geels et al., 2007, pp.399-400).
3. Socio-technical landscape: This forms the exogenous environment where both the niche and regime have no direct control over. Changes in the landscape often happen at a slow rate (decades) (Geels et al., 2007, pp.400).

The following figure presents the traditional transition model, using the concepts of the MLP (figure 8). The MLP argues that transitions come about through interactions between the three levels. Geels et al. (2007) say: *'(a) niche-innovations build up internal momentum, through learning processes, price/performance improvements, and support from powerful groups, (b) changes at the landscape level create pressure on the regime and (c) destabilisation of the regime creates windows of opportunity for niche-innovations. The alignment of these processes enables the breakthrough of novelties in mainstream markets where they compete with the existing regime.'*

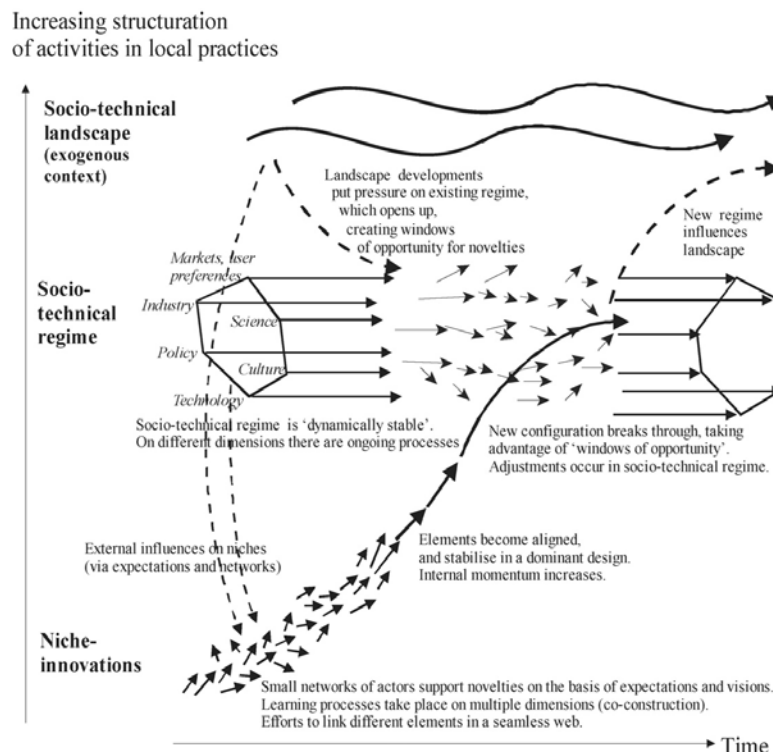


Figure 8: Multi-level perspective on transitions (adapted from Geels, 2002, p. 401).

However, this approach and figure 8 has been much debated in the scientific world. It is considered too narrow and not applicable to all situations. Therefore renewed pathways for transitions were developed by Geels et al. (2007). Four pathways were designed to visualize different kinds of transitions. The four graphs of transitions can be found in appendix I. The first path is the transformation path, which is a disruptive transition. The second is the de-alignment and re-alignment path. Geels et al. (2007) describe this path as: *'If landscape change is divergent, large and sudden ('avalanche change'), then increasing regime problems may cause regime actors to lose faith. This leads to de-alignment and erosion of the regime. If niche-innovations are not sufficiently developed, then there is no clear substitute. This creates space for the emergence of multiple niche-innovations that co-exist and compete for attention and resources. Eventually, one niche-innovation becomes dominant, forming the core for re-alignment of a new regime.'* The third path is technological substitution. Here strong landscape pressures will force a breakthrough from niche-innovations, causing a regime change. Last, the fourth path is the reconfiguration path where innovations from niches are transferred to regimes and then cause further alterations in the configuration of the existing regime, causing it to adapt and create a new architecture. Referring to transitions in organizations it can be concluded that transitions do not always come from within or from outside the organization. It therefore makes it more difficult for an organization to anticipate on change, since approaches to different kinds of transition may imply the use of different methods (Genus et al., 2008).

The theory of Geels (2007) has given a tool to explain transitions in different ways. Using this model it becomes possible to determine which kind of transition could fit this research. Therefore it will not contribute to the core of this research, but is only used to create a body of knowledge before diving deep into the matter of a transition in a specific instance. Before turning to this instance a second foundation is laid by explaining the concept of e-business and how it evolves.

### 3.2 Getting to the e of e-business

A subject which is related to transitions is the introduction of e-business in organizations. In the problem definition of this research a definition of e-business was already given. Still, it remains rather unclear what is meant by the introduction of e-business in an organization. To make it more comprehensive, Earl (2000) has identified six stages for the introduction of the 'E-' in business (figure 9).

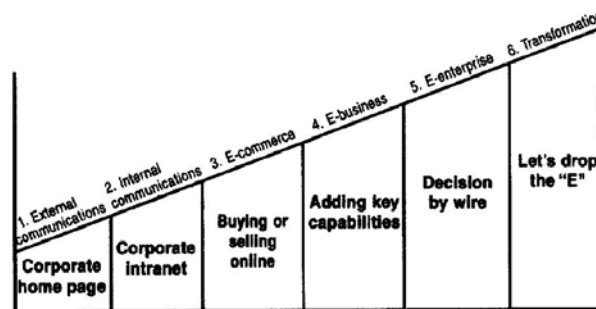


Figure 9: Stages in the use of e-business (adapted from Earl, 2000, p.33)

In identifying in which stage an organization finds itself it will be able to identify upcoming issues more easily and to say whether the organization is truly engaging in e-business (Earl, 2000, p.38). If an organization is really in another stage, it may not be ready for the transition. Unfortunately no guidelines are given to assess the stage the organization is in. But by estimating this, it can be said in which stage the organization is thought to find itself. The estimates for this are depicted in figure 9. According to Earl (2000) leadership is an important factor in getting from one stage to the next. Especially from stage four on this top-down approach via leadership is required, but strategy and business development may also well come from the lower regions of the organization (Earl, 2000, p.38). This means that initiating stages of transitioning to e-business can come from anywhere in the organization, but that at later stages the focus must be laid higher up in the organization to coordinate and develop the 'e-' in e-business.

The shift of an organization to the e-commerce stage and further is essentially moving from a brick-and-mortar organization (traditional organization with physical presence) to a clicks-and-mortar organization (physical presence and web presence). This beholds a shift from traditional production methods to a more electronic environment, where e-business is integrated to a certain extend in the organization (Barnes et al., 2004, p.199). It is important to notice that organizations that shift to e-

business should be prepared to accept change on a continuous basis, since e-business is never a stable proposition and will always change (Jackson et al., 2003, p.499). Butler et al. (1999) state that this continuous change is as, the network technologies that support this are built on silicon – i.e. sand – and “as the sand shifts so does an e-business”. So the introduction of e-business in an organization is bound to cause a lot of change. Having said that organizations must question whether they are prepared to make those changes and if there is a real need for them to introduce e-business. All too often organizations engage in e-business, because managers have heard that it is the new way of doing business (Jackson et al., 2003). However, it may not always be necessary to do so and therefore organizations should question whether it is favourable to introduce e-business (Jackson et al., 2003). To do this the benefits have to outweigh the downsides. Measuring this is not easy since a lot of factors influence this decision, e.g. investment costs, lay offs due to digitalization or tendencies of the market. Of course deciding whether to transition to e-business, is often not in complete control of the organization. Linking back to the kinds of transition paths it may well be possible that changes, from niches or the landscape, force organizations to introduce change. When this is the case, what aspects are crucial in an organization during such a transition?

The use of this paragraph is to show that an organization does not shift from being a traditional organization to an e-business (or further). It takes a development in stages before entering the e-business stage. The combination with transitions is easily made. Transitions are necessary to adopt 'e-' alternatives in an organization. This brings the chapter to the next level where the link between transitions and e-business must be made.

### **3.3 E-business transitions and risks**

In the previous two paragraphs general concepts concerning this research have been introduced. Having done this, a general body of knowledge has been created. It is now possible to turn to the core theories in this theoretical chapter.

The first link between transitions and e-business can easily be made, because in the previous paragraph the question was raised which aspects are relevant for the transition of an organization to an e-business. Identifying the aspects is mostly done on a single item basis, which means that the effect of only one topic is studied. This makes it impossible to compare interrelated effects with other items. The only author who tried to compare items with each other is Scott (2004). The studying of more than one item is valuable, because it can lead to better and more complete answers to questions about the topic of e-business transitions. Therefore, in this attempt to link transitions to e-business, her findings are used as the main source of information. The main reason for the high dependence on this article is because Scott (2004) provides a practical and logical model, which can be applied directly to an organization, unlike many models of other authors. In her article she distinguishes socio-technical multilevel dimensions as items, which together represent the perceived e-business risk (figure 10).

These items are: Task, Structure, Actor and Technology. These items are originally from Lyytinen et al. (1998), who described these dimensions in accordance with the article of Leavitt (1964). In this separation of components or dimensions “actors cover all stakeholders including users, managers, and designers; structure denotes project organization and other prevailing institutional arrangements; technology means development tools and methods as well as hardware and software platforms; and task signifies expected outcomes in terms of goals and deliverables.” (Lyytinen et al., 1998, p.238).

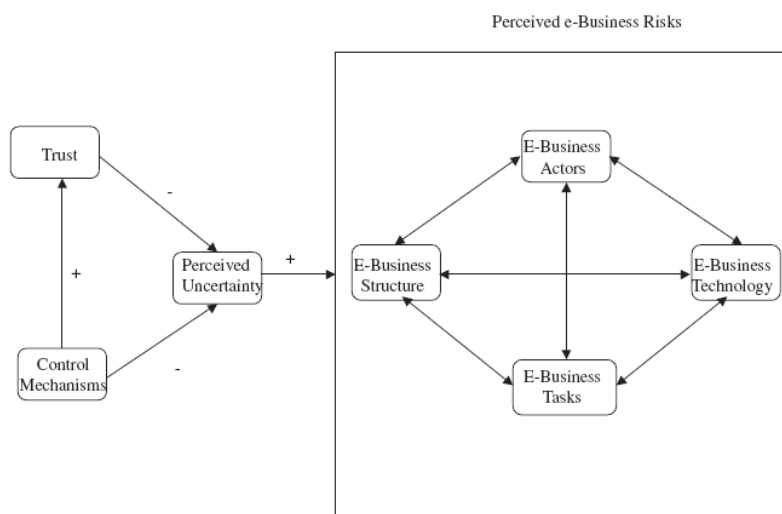


Figure 10: Socio-technical model of perceived e-business risks (adapted from Scott, 2004)

Together these four dimensions represent a way to identify perceived e-business risks (Scott, 2004). In figure 10 three items are situated outside the centre of perceived e-business risks, namely trust, control mechanisms and perceived uncertainty. These are also interrelated in this model. First control mechanisms have a positive effect on trust (+) and a decreasing effect on the perceived uncertainty (-). So when applying control mechanisms the trust of those involved rises and the sense of uncertainty is detained. Also the enhanced trust will be able to diminish uncertainty as well. All in all the lowered perceived uncertainty will lead to the more effectively managing of e-business risks.

The figure presented in figure 10 has been build out into a new model, which is presented in figure 11. This model must be especially focused on e-business transitions, since it is the focus of this research. The control model of e-business risks of Scott (2004) is such a model. According to Scott (2004) uncertainties are strongly related to risk and the greater the uncertainty, the greater the perceived risk (Scott, 2004, p.33). These uncertainties then are influenced by trust and control mechanisms, which have been explained roughly in the previous. An additional reason for using the following model is because it is based on empirical research. This is not done very often, but by creating an empirical basis for a model it gains credibility and validity. This model will be used as a

basis in this research, because it presents transitioning to e-business as a process that depends on multiple factors, which fits the needs of this research.

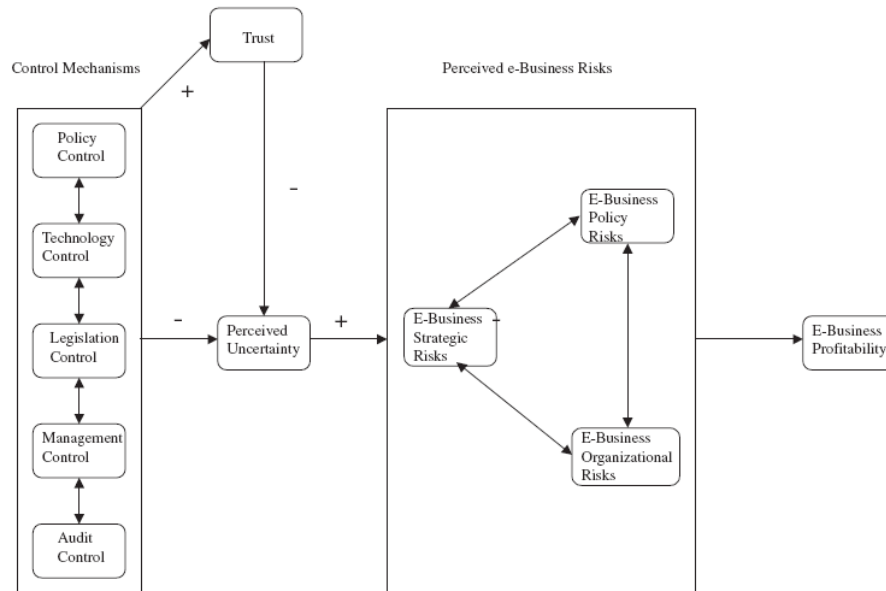


Figure 11: Control model for e-business risks (adapted from Scott, 2004)

In using this model perceived risks can be translated into uncertainties. Through extensive literature review Scott (2004) has identified sixteen risks associated with the transition to e-business. The relation between all aspects of this model allows it to be used in this research. If risks can be identified, so can uncertainties and, in turn, these can be related to control mechanisms. These can be used as sources for different configurations, depending on the risks that are present for the organization. The reason for developing different configurations allows the organization using them to anticipate on solving essential risks and therefore also enabling the organization to act upon opportunities and threats to the organization. It is easy to notice that the presented model looks almost identical to the previous model. The difference is in the way the risks are categorized. On the basis of the socio-technical model new dimensions (strategic, policy and organizational risks) have been created to incorporate all the social technical issues.

But before we get ahead of ourselves it is important to focus on the risks involved in e-business transition. Reviewing literature some general risks involved in applying e-business can be identified. As said before, Scott (2004) has distinct sixteen kinds of risks for e-business. All can be related to socio-technical aspects and are presented in table 2.



E-business risk	Socio-technical dimension	Rationale
Unreliable technology	Technology	Uncertainty from e-business' critical reliance on immature technology, which is vulnerable to denial of service attacks, buggy software, etc.
Lack of expertise in doing e-business	Actor - Technology	Uncertainty from the interaction of immature technology with inexperienced employees
Dependence on customers, suppliers, software vendors, the government, etc.	Actor - Structure	Uncertainty from the interaction of e-business structure with (1) consumers' lack of acceptance; (2) government intervention e.g. taxes; and (3) supplier/vendor lack of cooperation
An inadequate e-business strategy	Actor - Structure	Uncertainty from the interaction of e-business structure with management who neglect strategic vision, goals and plans
Lack of profitability	Task - Actor	Uncertainty from the interaction of e-business tasks with management who sacrifice profitability for growth e.g. free or low pricing
Competitive issues	Actor - Structure	Uncertainty from the interaction of e-business structure with management who do not understand first mover advantage, switching costs, and complementarities
Leadership issues	Actor	Uncertainty from leadership lacking experience and too focused on technology
Reputation issues	Technology - Structure	Uncertainty from lack of alignment between technology and e-business workflow structure such as logistics
Legal issues	Technology - Structure	Uncertainty from lack of alignment between technology and authority such as government regulation
Currency issues	Technology - Structure	Uncertainty from lack of alignment between e-business technology and currency conversion
Culture issues	Task - Actor	Uncertainty from lack of alignment between employees and tasks that would avoid cultural issues e.g. appropriate language
Intellectual property issues	Task - Structure	Uncertainty from lack of alignment between e-business structure and tasks that would avoid intellectual property issues e.g. downloading content

Identity issues	Task - Structure	Uncertainty from lack of alignment between e-business structure and tasks that would avoid identity issues e.g. smart cards
Identification issues	Task - Structure	Uncertainty from lack of alignment between e-business structure and tasks that would avoid identification issues e.g. digital signatures
Security issues	Task - Structure	Uncertainty from lack of alignment between e-business structure and tasks that would avoid security issues e.g. encryption
Privacy issues	Task - Structure	Uncertainty from lack of alignment between e-business structure and tasks that would avoid privacy issues e.g. sale of customer data

Table 2: E-business risks and associated uncertainties (adapted from Scott, 2004, p.42-43)

These risks represent the basis of the model as it is depicted in figure 11. Here three categories of risks are identified, namely strategic risks, organizational risks and policy risks. The following table shows the identified risks subdivided among these three categories. This categorization was done by Scott (2004) after her extensive research.

Strategic risks	Organizational risks	Policy risks
Strategy Competitive Dependence	Reputation Reliability Leadership Culture Expertise Currency Legal	Security Privacy Identify Intellectual property Identity

Table 3: Subdivision risks among risk categories (adapted from Scott, 2004, p.47)

Having a look at table 3 it can be noticed that the profitability risk is not included. The main reason is that it cannot be seen as a risk that falls under one category. Rather, it is more an outcome of a risk. Still according to Scott's (2004) analysis if the profitability risk has to be categorized it can best be considered an organizational risk and not one of the other classifications. Reason for this particular classification is that it was found that organizational risks affect the profitability more than risks in other categories. In particular the risks of reputation, reliability of the technology and leadership have the highest correlation with profitability (Scott, 2004, p.47). Not being able to instantly classify this profitability does not mean that it is not important. Quite the opposite actually. When profitability risks are high it must mean that other risks are also high and present. Reducing profitability risks therefore will also result in the reduction of other, mainly organizational, risks. Because of its importance it will be taken into account in the rest of this research as an organizational risk.

According to Scott (2004) the identification of the above stated risks can help organizations to analyze where problems may occur in applying e-business to the organization (Scott, 2004, p.49). When this identification phase is done other parts of the model can be determined, which in turn may also help the organization in reducing the perceived risks.

Now the perceived risks of e-business have been stated, it is now possible to return to the previous stated chain of events that ultimately results in the determination of control mechanisms. According to Scott (2004) different risks and uncertainties, can lead to different kinds of control mechanisms. So, depending on the risks an organization faces, the model of control should be adapted to the organizational situation. As to the effect of certain combinations Scott (2004) states the following: *"E-business policy risks could be reduced using policy, technology and legislation control mechanisms to increase cognitive trust from customers, who would perceive a reduction in uncertainty and hence lowered risk. Privacy policies, for example, tend to reassure consumers. E-business strategic risks could be reduced using management and audit control mechanisms. E-business organizational risks could be reduced using management control mechanisms."* (Scott, 2004, p.49). Having said this it still remains unclear what the control mechanisms exactly mean for an organization. Unfortunately, the kind of control depends on the situation. This causes Scott (2004) to remain quite vague on what control exactly means. He does give some examples, like for example a privacy policy for policy control, biometrics for technology control, HIPAA for legislation control, the Board of Directors for management control and a security audit for audit control (Scott, 2004, p.49). It is also stated that in many cases, control is relative rather than absolute.

In this research the control mechanisms that are relevant will be identified. Although vaguely described in the literature, the mechanisms are interpreted by the author of this thesis. Below is a description of the vision that is given to the control mechanisms in this research.

Control mechanisms:

- *Policy controls*: rules and directives within an organization;
- *Technology controls*: training and testing of employees who work with new technologies;
- *Legislation controls*: rules and regulations from governmental institutions;
- *Management controls*: involvement of (upper) management in leading the organization, e.g. setting boundaries or targets;
- *Audit controls*: evaluation of a person, organization, system, process, project or product.

Each of these control mechanisms has its own effect on the perceived uncertainty and therefore also on the perceived risk of doing e-business. The goal of all these control mechanisms is to create a unique configuration of control which allows the organization to minimize the perceived risks. With the identification of risks, control mechanisms and levels of trust the creation or adaption of the strategy comes into play, because strategy largely depends on the configuration of the control mechanisms (Scott, 2004; Ederer, 2008). Even more important is the link with opportunities and

threats. The opportunities and threats from the market can be judged, because this becomes possible when identifying the risks and uncertainties involved in doing e-business (Andrews, 1987). Of course, these opportunities and threats have yet to be determined. This determination must be done by individuals who have explicit knowledge of the organization and its surroundings. Because of the empirical nature of the opportunities and threats, these will be presented in chapter six. Now the topic of strategy in an e-business surrounding has not been discussed yet. In the next paragraph strategy in an e-business context is discussed.

### **3.4 Strategic context of e-business transitions**

The involvement of strategy in transitions of e-business is also a very important aspect (Barnes, 2004). In the previous the connection with e-business transitions came forward. When discussing strategy in an e-business context often the term e-strategy is used. This suggests a difference between normal strategy and strategy in an e-business context. In short this difference can be described by the fact that e-strategy is the electronic version of the common strategy (Jutla, 2001). The concept of e-strategy has not been discussed yet, so it is done in this paragraph. To be more concrete, in this paragraph the need for an e-strategy is discussed. Also a brief explanation is given on how to build an e-strategy. Last, the role of an e-strategy in an e-business transition is described.

#### **3.4.1 Need for an e-strategy**

The need for a conventional strategy is considered obvious, but the need for a specific e-strategy is much more debated (Porter, 2001; Jutla, 2001; Kim et al., 2008). The concept of strategy, according to Porter (1979) is: *"Building defences against the competitive forces or finding positions in the industry where the forces are weakest"* (Porter, 1979, p.143). Porter (2001) argues that an e-strategy is needed, but does not have to be radically different from the existing traditional strategy. He also argues that internet alone does not count as a competitive advantage. Rather the internet allows organizations to complement the existing business activities (Porter, 2001, p.2). This leads to the conclusion that strategy should inhabit both the existing business mission and the new mission because of e-business. Typical myths exist in applying some of the strategies of e-business, e.g. the first mover's myth in which switching costs are presumed to be higher when using the internet. The opposite is true according to Porter (2001). He argues that switching costs will be lower, and that buyer can easily switch between providers with only a few mouse clicks (Porter, 2001, pp.7-8). This means that strategic acting on specific e-business changes must be encouraged and that there is a need for considering strategic impact seriously before actually acting on transitioning to e-business. Furthermore, according to Porter (2001), the integration of internet with traditional competitive advantages should win in most industries (Porter, 2001, p.18). In short, an e-strategy must be used, but should not act on its own. Rather, it should be integrated into the existing strategy (Jutla, 2001).

### 3.4.2 Approach to an e-strategy

The question on how to approach such a new strategy now arises. Many different approaches have been discussed over the last decade. In studying all the approaches available, the majority of them cannot be used easily because of lack of fundamental proof (validity and reliability) (Kim et al., 2008, p.203). Only a few researchers have empirically tried to discuss the formation of an e-strategy. One of them is Kim et al. (2008). Kim et al. (2008) have developed a theory on how to build such an e-strategy, with a specific focus on performance (see figure 12).

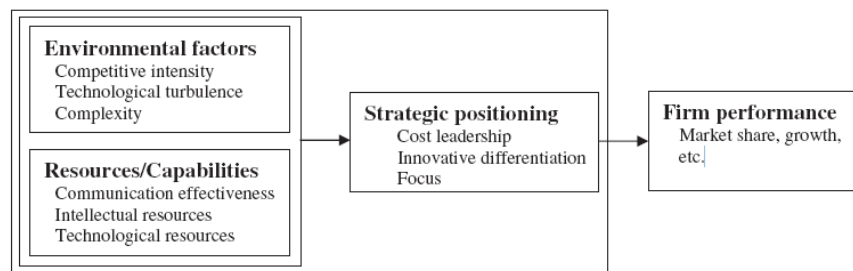


Figure 12: Model for e-strategy (adapted from Kim et al., 2008, p. 205)

They state that there are two perspectives, namely the competitive strategy view (outside-in) and the resource-based view (inside-out) (Kim et al., 2008, p.204). The competitive strategy view, rooted in industrial organization literature, maintains an outside-in perspective where firm performance is determined primarily by environmental factors such as industry structure (Spanos & Lioukas, 2001). Firm performance in this respect is determined by outside factors such as industry structure and organizations can secure positions to exploit that structure (Fahy & Hooley, 2002). The more recent resource-based view argues that firm-specific resources and capabilities are the factors determining firm performance (Spanos & Lioukas, 2001). In addition to this statement organizational resources - which are defined as valuable, rare, difficult to imitate, and difficult to substitute - create distinct strategic advantages. These resources can then be used to improve its market position (Barney, 1992; Hitt, Bierman, Shimizu, & Kochhar, 2001). Strategic fit is a core concept in strategy formulation, and the pursuit of strategic fit has traditionally been viewed as having desirable performance implications and can therefore be put in relation to the two described views (Ginsberg & Venkatraman, 1985; Miles & Snow, 1994). Combining these two perspectives allows Kim et al. (2008) to compose a research model in which the strategic positioning of a firm is described using three strategies, namely cost leadership, innovative differentiation and focus (Kim et al., 2008, p.205). These three strategies are also acknowledged by Jelassi et al. (2008), who have done an extensive three-year research on also this topic of strategic positioning. Their starting point was the viewpoint of Michael Porter, who proposed two generic strategies that build on two distinct types of advantage: a price advantage and a performance advantage (Jelassi, 2008, p.99). In addition to the approach of Porter, Jelassi (2008) added a new strategic position, namely the outpacing (focus) strategy. All three strategies will be explained in the following and are depicted in figure 12.

### *Cost leadership strategy*

In this first type of strategy there are two requirements. First is the lowest cost position, which an organization needs to fulfil. Next to that is the benefit proximity, which is the benefit that customers can achieve. This second requirement is important, because without it competition could offer a better deal, which in turn, forces the organization to offer even lower prices and reduce margins on the products they sell (Jelassi et al., 2008, p.100). There are a number of levers, which help to achieve a cost leadership position. These levers are economies of scale, economies of scope, factor costs and learning effects.

### *Differentiation strategy*

The second type of strategy is focused on offering comparatively more consumer benefit than competitors (Jelassi et al., 2008, p.103). This consumer benefit has a number of elements, both tangible and intangible. Some examples of these elements are product/service quality, convenience, product range, customization, speed of delivery, brand and reputation. All these elements can create a differential strategy, which then may also cause a competitive advantage.

### *Outpacing strategy (focus)*

According to Jelassi et al. (2008) it is Porter who argued that one of the above stated strategies should be chosen and that a combination of the two would lead to a 'stuck in the middle situation', where neither a cost advantage nor a differentiation can be achieved and a trade-off choice has to be made (Jelassi et al., 2008, p.105). The outpacing strategy overcomes this problem and suggests focusing on one aspect, like quality management. An example for this approach is car manufacturer Toyota. On the one hand Toyota has a high perceived customer value due to quality management, which is differentiation. On the other hand this value is used to save costs, because fewer cars have to come back for call-backs and repairs, which give a cost advantage (Jelassi et al., 2008, p.105). There are three factors that can help to eliminate the trade-off problem: the development of new technologies, wastefulness, and economies of scale and learning effects.

Empirical research on these three strategies has given some interesting conclusions, which may be of use when constructing an e-strategy. First of all, the research showed that a cost leadership strategy, which focuses on offering lowest cost price in comparison to competitors, in an electronic context seems to be necessary for e-business regardless of the strategic position taken by the organization (Kim et al., 2008, p.209). This then cannot result in a competitive advantage since every organization, actively performing e-business, has the same starting position. Focus on cost reduction is, however, necessary because it is the basic tool in obtaining market share (Kim et al., 2008, p.209). In the digitalizing environment of organizations markets of electronic products are up and coming. E-business plays a major part in the obtaining of market share in the new digital market, because the new markets are not yet saturated and e-business in this respect is a way to create new business. This must mean that either or both innovative differentiation and focus could lead to a competitive advantage and increased performance. According to the research of Kim et al.

(2008), the findings of their study suggest that e-business firms should develop a unique mixture of the innovative differentiation strategy and the focus strategy by securing technological resources so that they can stay competitive (Kim et al., 2008, p. 210). Of course, also the 'standard' cost leadership strategy should be applied. So, what does an innovative differentiation strategy exactly consist of? Kim et al. (2008) state that it consists of the design of products and services, the business processes and the unique technology for product/service differentiation (Kim et al., 2008, p. 210). Focus strategy on the other hand consists of cost reduction efforts for the target market, price competitiveness in the target market and the innovative process for the target market (Kim et al., 2008, p.211). Apart from that, cost leadership consists of price leadership, production and service cost advantage and operation cost advantage. The difference between cost leadership and focus strategy in the above standing is that the focus strategy tries to be the best in only one segment of the market or a small group of segments. With cost leadership alone it is tried to be the best, as it comes to cost, in all markets where the organization is active.

Besides the positioning strategies described above, which are focused on gaining a competitive advantage, a few other aspects of constructing an e-strategy are of importance and will also be used in this research. These aspects come from articles that lack an empirical basis, but they do present some important factors that have to be included. First of all, the core competences of an organization are of utmost importance (Jutla, 2001). They appeal to the strong aspects of the organization and should therefore not be neglected. Another note is that in constructing an e-strategy two issues are of great importance. First, the e-business on which the e-strategy is focused must be customer centric. This means that the whole organization should be customer oriented and the systems should be designed according to the needs of these customers (Evans, 2001, pp.8-9). The other issue is that technology enabling e-business should be acquired at the right time. Failing to do so may result in less efficiency and higher costs (Evans, 2001, p.12). All these aspects of e-strategy will be judged in this research, based on the observations and conclusions of the researcher.

### **3.4.3 Role of an e-strategy in an e-business transition**

In the preceding it became clear that in order to use e-business the strategy must adapt and be in correspondence with the existing 'old' strategy. This, however, does not answer the question on what role an e-strategy plays in an e-business transition. Already it was stated that the transition to an e-business means dealing with different kinds of risks, uncertainties and control mechanisms. In determining what role e-strategy plays in an e-business transition it can be said that the strategy specifically focusing on the new kind of business for an organization should be prominent. In the literature used for this research it was stated multiple times that a lot of organizations engage in e-business transition, but do not have a clear focus on where they want to end up. Getting this focus automatically means deploying a well thought strategy. Linking this back to the uncertainties and control mechanisms it could be suggested that when formulating an e-strategy the configuration of control mechanisms can be of influence. An example may be that when management control and



audit control are advised, it must mean that e-business strategic risks are high. In relation to e-strategy this could mean that the focus should be laid on the gaining of market share, which is more strategic than solely focusing on cost reductions for the reduction of organizational risks. Obviously, depending on the risk factors should the strategy be adapted to fit the uncertainties and control mechanisms. Of course the opportunities and threats associated with the above stated risk analysis play a crucial role in the creation of an e-strategy. According to Hackbarth et al. (2000) organizations need to adapt the e-strategy in order to capitalize on opportunities and to minimize threats in rapidly changing business environments (Hackbarth et al., 2000, p.4).

In determining why certain authors have been used in this chapter it was of utmost importance that the selected theories could be aligned with the rest of the chapter. Although the subjects discussed in each paragraph are different they can be linked to each other. In the current paragraph multiple authors have been used to build the part of the theoretical framework that is about strategy and especially the electronic strategy. The variety of authors represents the different views that exist concerning this subject. There are, however, two authors who have played a central role in this paragraph. First of all Michael Porter (1979, 1998, 2001), who is considered one of the most influential researchers in the field of strategy. This is also the reason why he could not be missed in this research. The second author who is important to this part of the research is Kim et al. (2008). The article of him was used in this research because of his special focus on the link between performance and positioning in the market. Also the communality in the strategic options between Kim et al (2008) and Porter (1979, 1998, 2001) make the use of both authors viable.

In the next paragraph the last new part of this theoretical framework is presented and discussed. Thereafter, the analysis of the whole chapter will be made.

### **3.5 Coping with e-business transitions**

In the problem definition of this research it was stated that using scenarios is the most suitable option for mapping the behaviour of risks and uncertainties during e-business transition. In this paragraph this method is further explained, so it can be used in the research. First general information on scenarios is given. Then, literature on how to build (strategic) scenarios is discussed. Third, the managerial dangers and opportunities of using scenarios are elaborated on. Together this will result in a part of this framework that allows the researcher to understand how scenarios work and how they can be used in this research. Also, managers can read about what to do and not to do when using scenarios. It will then form a solid basis and informative part of this theoretical framework.

#### **3.5.1 Scenarios**

In today's world changes happen too fast for the prediction to be accurate. Questions then arise on how to predict the future in the most accurate way possible. The answer to this question cannot be answered with absolute certainty, but during the last two decades scenarios gained more and more



credibility as an effective tool to predict the future, alter mental models, test decisions and improve performance (Chermack, 2005, p.60). Because of this enhanced perception as a valuable tool to predict the future it is also chosen to be applied in this research. The words scenario and scenario planning are used simultaneously, but represent the same concept. Scenarios are not predictions, extrapolations, good or bad futures, or science fiction. Instead, they are purposeful stories about how the contextual environment could unfold in time (Van der Heijden et al., 2002). Besides this, scenario planning attempts to compensate for two common errors in decision making, namely under prediction and over prediction of change (Schoemaker, 1995, p. 27). In scientific context, different typologies of scenarios can be found and no consensus can be found (Börjeson et al., 2006, p.724). In this research, however, the typology of Börjeson et al. (2006) is used, because it fits the scope of this research. According to Börjeson et al. (2006) there are three principal questions a user may pose for the future. These are *What will happen?*, *What can happen?* And *How can a specific target be reached?* (Börjeson, 2006, p.725). These three questions represent three categories of scenarios, namely predictive scenarios, explorative scenarios and normative scenarios. With respect to this research explorative scenarios will be build, which again can be subdivided in two types, namely external scenarios and strategic scenarios (see figure 13).

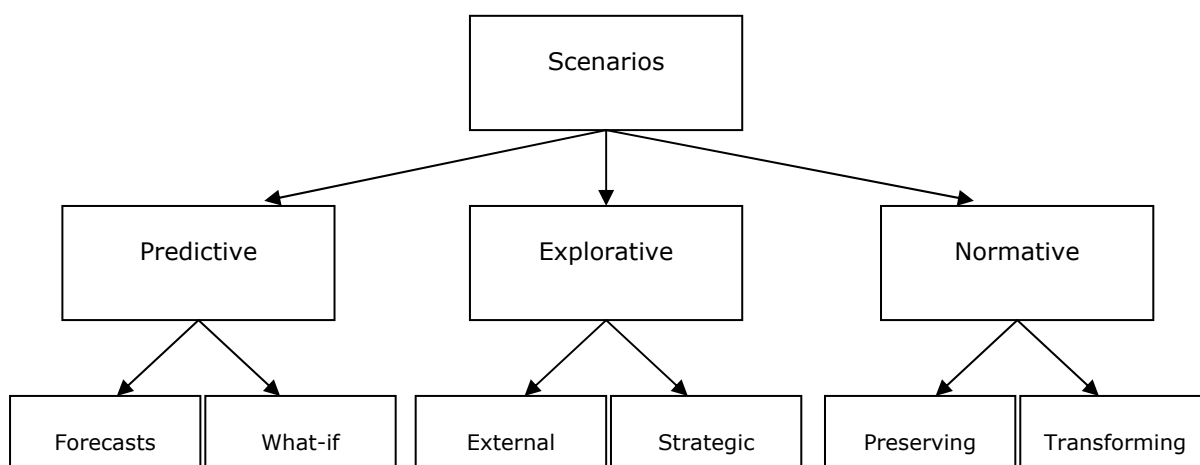


Figure 13: Scenario typology according to Börjeson et al. (2006)

In relation to this research the strategic type should be chosen, because strategic scenarios incorporate internal and external factors influencing the future of, in this case, an organization (Börjeson et al, 2006, p.727). The latter will further explain why and how strategic scenarios should be used and constructed.

### 3.5.2 Constructing scenarios

According to Schoemaker (1995), it is key to understand that when constructing scenarios a distinction should be made between basic (market) trends and key uncertainties (Schoemaker, 1995, p.35). However, a lot more comes into play when constructing scenarios. At first glance, constructing scenarios seems pretty straight forward. However, this is certainly not the case. Over the years many authors have developed frameworks and theoretical constructs in order to make

fitting scenarios depending on the situation (Börjeson et al. (2006); Burt et al. (2006); Schoemaker (1995); Wiek et al. (2006)). Because each scenario is different putting one together is not an easy job. In this research a combination of multiple frameworks is used to develop multiple scenarios. The construct of Wiek et al. (2006) will function as the basis and theory of Burt et al. (2006) is used to fill in this construct. These two authors have been chosen because of their presumed fit with the current research and also the recentness of the articles.

The construction of a scenario consists of six aspects: functions, goal formation, procedure, results, operating agents, and strategic agents (Wiek et al., 2006, p.745). The first aspect is the function of the scenario. The concept of probabilistic functionalism is founded by Egon Brunswik (Hammond et al., 2001). According to this definition of a function, a scenario construction is embedded in a structured set of methods and the function of scenario construction is determined by the overall goal, input, expected output, etc. of an integrated decision process (Wiek et al., 2006, p.746). Following this definition, the function of scenario construction in this research is to build organizational knowledge about the upcoming transition. The second aspect is goal formation and this is simply aimed at setting prerequisite goals to allow the whole procedure to result in useful information. In this research the goal is to come with multiple scenarios that allow the management of the organization to gain knowledge on possible outcomes of the digitalization effect, which is in fact a transition as described in the model of Rotmans et al. (2001). The third aspect is the so-called procedure, which comprises an iterative sequence of steps/methods (Wiek et al., 2006, p.746). In this research the steps that have to be identified come from Burt et al. (2006).

Burt et al. (2006) postulate that scenarios can serve to understand the external (often changing) environment. As Wack (1985) put it: *"The future is no longer stable it has become a moving target. No single 'right' projection can be deduced from past behaviour. Therefore, we need to accept uncertainty, try to understand it, and make it part of our reasoning"* (Wack, 1985, p.73). This quote implies that when the future is unstable it is best to look for possible future outcomes by creating scenarios. The most common way to start is to do a PESTEL analysis of the macro environment of the organization. Burt et al. (2006) however suggest that this is not the proper way to start since the PESTEL framework only shows information that is mostly common knowledge within the organization. Therefore they suggest an alternative approach, in which steps are formulated that will allow the researcher to build a procedure for constructing scenarios. These steps are clarified in the following.

#### *Step 1: Identifying areas of concern (similar to traditional PESTEL approach)*

The first step in constructing a scenario is to identify key areas of concern. In this approach it is done by identifying the main opportunities and threats. Although this step is an alternative for the PESTEL analysis it is argued that is not a complete replacement for this analysis. Still, with the use of the Burt et al. (2006) model, PESTEL can function as a tool to create a general overview of the external context of an organization. This is also confirmed by Schoemaker (1995), who states that

an organization is not an island. Therefore, when assessing possible futures, the environment of an organization is a good starting point for constructing scenarios (Schoemaker, 1995, p.36). It is for this reason that, by identifying the opportunities and threats in the organizational environment, it becomes possible to identify the areas of concern.

#### *Step 2: Brainstorming for key uncertainties*

The second step is a brainstorming exercise in which the participants are tasked with an in-depth re-examining of the environmental variables captured during the previous step. In this current research this is done in another way, namely by doing preliminary interviews with the key individuals within the organization affected by the transformation (mainly MT-members) and gathering theoretical articles.

#### *Step 3: Clustering key uncertainties*

The third step is to cluster all interrelated factors, as opposed to simple word associations under the PESTEL headings. Clustering is the activity of grouping causally related uncertainties, capturing the (emergent) understanding of the linkages and relationships among them (Burt et al., 2006, p.63). These clusters will help to reduce the extensive range of issues and to rename them under an all-embracing theme. The clusters can then be placed in an impact/predictability matrix (see figure 14).

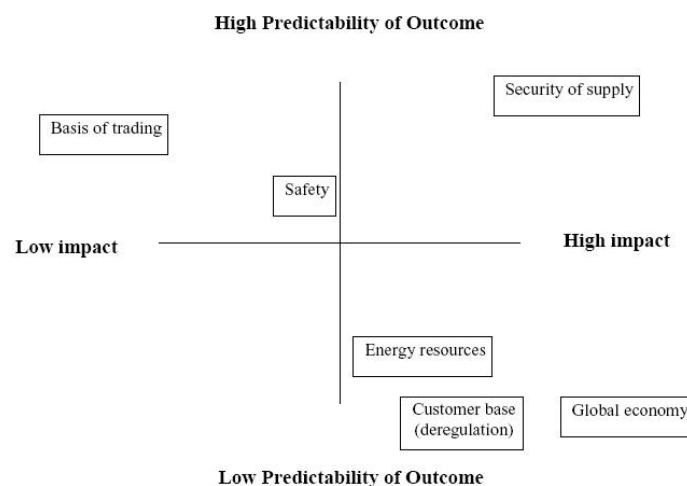


Figure 14: Example of an impact/predictability matrix (adapted from Burt et al., 2006)

#### *Step 4: Prioritizing uncertainties*

Here some hierarchy is created with the clustered, and classified, uncertainties. By ranking them it becomes possible to identify the biggest potential impact uncertainties for the organization.

#### *Step 5: Developing scenarios*

The fifth step is to develop scenarios based on the analysis of the previous steps. This step is a short one since the actual substance of a scenario will be determined in the next step.

*Step 6: Articulating and fleshing out scenarios*

In this step every scenario is explored in depth. So-called storylines are developed and the image of the scenario becomes alive and is support to tell a story about what could happen in this scenario. In this research it is the researcher's goal to base these storylines on factual information and quantitative and qualitative organizational data. This step has an extra function according to Burt et al. (2006). They say: *"This step of the scenario methodology overcomes the silo-nature of PEST—that is, the functional and non-integrative nature of this taxonomy— and extends the participant's understanding of the causal logic of linkages and relationships among variables. Focusing on the dynamic interaction of contextual variables provides a deep understanding of the environmental context and the ways in which the current context may plausibly change as the future unfolds."* (Burt et al., 2006, p.69).

*Step 7: Identifying structural insights and potential discontinuities*

During this step the above stated scenarios are used to extract possible new competitive advantages in the future. It allows organizations to develop strategic responses and actions to be able to cope with the future.

*Step 8: System behaviour*

The final step in the scenario methodology is the application system-modelling approaches to better understand the dynamics of the key variables identified in each scenario. This extensive process involves connecting all the variables in a diagram. According to Burt et al. (2004) this last step functions as a graphic explanation of the variables and how they relate to each other in a vicious circle. Van der Heijden et al. (2002) have described this process in more detail. Since this falls outside the primary scope of this research it will not be explained here.

With these eight steps not all the aspects of constructing a scenario are covered. The next aspect is results, in which outcomes can be judged by different categories. These categories are complexity, consistency, probability and desirability. These four categories allow the user of the scenarios to interpret the result found and question whether this is the result that was envisioned. One of the last aspects is the use of operating agents. These are experts or laymen, who review the scenarios in order to maintain the original goal of the scenarios. Last, strategic agents are present in scenario construction. The strategic agents are mainly involved in the framing elements of the scenario construction process. They direct the project through goal formation and use the results in the contextual process that follows scenario construction (Wiek et al., 2006, p.748).

### 3.5.3 Dangers and obstacles of scenarios

Now it is clear what steps have to be taken in constructing scenarios it is important to consider some dangers and obstacles when working with scenarios. These dangers and obstacles have to be avoided in order to apply scenarios as a future model. Please note that these dangers and obstacles can, sometimes, also be seen as pointers. These may help to prevent crucial errors and could assist

in getting more reliable information out of them.

First off, the article of Godet et al. (1996) discusses some very important issues when using scenarios. Most important is the notion that scenarios are never true. They are based on historic and present states. Therefore they can only show possible and desirable futures. Also these authors state that a scenario can only be credible when it is relevant, coherent, likely and transparent. Another pointer of this article is that the speed of (technological) change determines the long term vision, e.g. the faster the change, the further you must look into the future. Also, scenarios predict change, but in order to act in the line of a certain scenario the organization must be prepared, as Godet et al. (1996) put it: "we must sow the seeds of change today if we wish to harvest them tomorrow" (Godet et al., 1996, p.165). Last they have noticed two common mistakes with errors in forecasts as a result. First, the overestimation of the pace of change. And second, the underestimation of inertial factors (structures and behaviours). These two mistakes can result in inaccurate predictions. According to Rumelt (1995) especially the inertia in organizations causes a lot of problems during transitions and forecasts (Rumelt, 1995, p.10-11).

Additional to the above standing Schoemaker (1995) identified an additional obstruction in constructing scenarios. Schoemaker (1995) says that the lookout for confirming evidence may cause a bias (Schoemaker, 1995, p.38). This means that other plausible options could be ignored or neglected because of the vision of the person constructing the scenarios. A solution to this possible problem might be to involve more people into the formulation process. Feedback in this process may shed more light on alternative options. It is stated that this bias may be very difficult to detect, let alone to be solved (Schoemaker, 1995, p.38).

The last remark to the obstacles of using scenarios is that in the last two decades much research has been done. This has added great value to the understanding of scenarios and the value of them in general. The downside however is that because so much research has been done it became impossible to include all aspects of scenario construction in this research. Despite this lack of completeness enough information has been provided to be able to construct multiple scenarios for the transition to e-business. This, however, has no direct consequences for the viability of this research, but may lead to an invitation to do further research in the future. Then, other aspects of scenarios are highlighted and used. These may then result in a different point of view to some of the conclusion that will be drawn from this research.

Concluding this paragraph some reasoning has to be done to explain why certain authors have been chosen for this research. The three major authors in this paragraph are Börjeson et al. (2006), Wiek et al. (2006) and Burt et al. (2004). Together these three have formed the basis for explaining how scenarios are constructed. The choice for these authors was a result from a literature review of the available literature about scenarios. Of course also other theories about predicting the future could

have been chosen, but as stated before scenarios have gained credibility as the right tool to predict the future. Also the years in which the articles have been published were a criterion to choose them.

### 3.6 Chapter analysis

In the previous paragraphs a selection of different theories has been discussed. In this last paragraph of this chapter an analysis is given of how the previous is connected to each other and how it is going to be used in this research. This analysis is necessary to put the theories selected into perspective with the proposed research. Clarifying the way how the theories are used will contribute to the ability of the researcher to translate abstract theories into operational concepts that can be tested in the latter of this research.

#### 3.6.1 Theory analysis

Before estimating the impact of the chosen theories on this research, there were some theories that introduced readers into the matter of transitions and stages of e-business. Here is the place and time to determine whether the theories mean for this research. First different transitions were discussed and four kinds of transitions were identified. Since it is the organizations belief that they are dealing with a transition it is necessary to see whether this can be confirmed. So, which kind of transition fits the problem definition according to this approach? Looking at the problem in this research it can be noticed that a new technology is posing a radical innovation in a very traditional sector. Traditional in the sense that postal services and printing have been the standard for a few centuries. With the introduction of digital alternatives it is bound to initiate a radical change. Linking this notion back to the four pathways, it is the technological substitution transition model that fits the current change to e-business. The introduction of internet and therefore also e-business to all three levels causes a radical disruption. Especially on organizational levels that change is radical. The figure 15 visualizes this shift. In this depicted change the specific shock is the sudden transition of multiple organizations to a new standard. This will cause some degree of disruption in the socio-technical regime, but will stabilize eventually. Also can be seen that the change, of in this case digital alternative for transaction mail, originate from an insignificant niche. This niche has grown over time till it is seen as mature and then initiated the beginning of the substitution process.

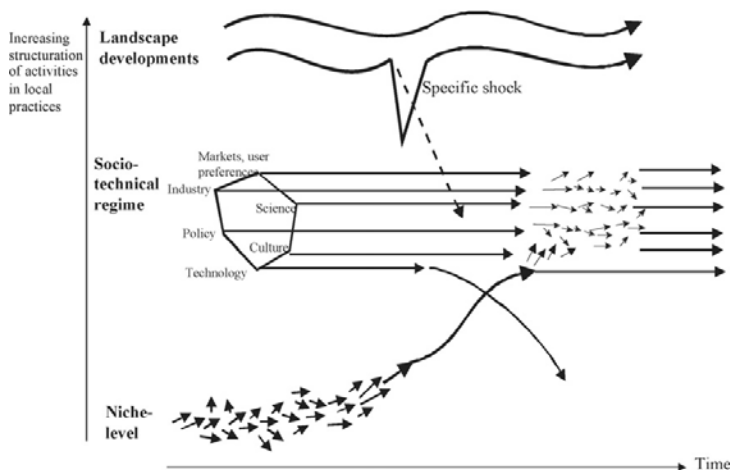


Figure 15: Technological substitution pathway  
(adapted from Geels, 2002, p. 410).

The following part is the identification of the stage of e-business. This is done in this part of the research because it belongs to the informative part of this theoretical framework. The identification of the e-business stage allows all that are involved in this research to put the transition into perspective. Basically, TNT Post BDS finds itself in one of the six stages as identified by Earl (2000). Since the organization is not new with digital products and in fact has an extensive portfolio of digital products, it is unlikely that it is located in one of the first stages of e-business. Assessing the current state of it, it can be said that the organization is positioned somewhere between stage three and four. The main reasons for this are that the organization does have a website, intranet and offers digital products, but is currently seeking for capabilities to transform themselves into an e-business. The fact that they are still developing and adjusting the online products leads to the assessment that they are in between two stages. However, a note must be made to the model of Earl (2000) since his model assumes that the organization is selling directly over the internet. This is not the case at TNT Post BDS, where products are sold via personal contact on a business-to-business basis. The products they sell, however, are digital and are placed beside the physical core print products. Knowing that TNT Post BDS finds itself between stages three and four gives an mindset of what problems can occur. Mainly this implies external factors, since the evolution to further stages is dependant on the needs and demands of the market. Later, when the market is maturing and the biggest shift has taken place, internal aspects in stages five and six become relevant. It should be noticed that internal and external factors do not exclude one another, but the focus can shift between the stages. The fact that stages four, five and six are more internal is shown by the statement of Earl (2000), who states that leadership becomes more relevant in the later stages of e-business. Making the assessment of the e-business stage more relevant for this research, the link has to be made to the next section, namely the relation between risks and strategic implications. Regarding the identified stage of e-business, it can be said that risks have to be sought that apply to the external factors.

Talking about external factors the connection is easily made with opportunities and threats, since these represent the external dimension for the organization. In order to capitalize the opportunities and minimize the threats it is key to know what influences them. As shown before the risks of doing e-business is part of a model which determines influences on opportunities and threats. In the previous sixteen risks were identified and explained. These risks will form the basis of what will be the newly compiled model, as it is used for this research. Before creating this new model it is important to explain why the model of Scott (2004) is relevant for this research. This is necessary because the risks of this model will be used as the core to develop an answer to all the research questions. The choice to take Scott (2004) as the leading author in this theoretical framework was made on the basis that the article was empirically tested. It is not hard to find articles that suggest directions where problems or impact factors may be concealed. However, these are rarely tested on a large scale and are therefore less reliable when applying them to a real life organization. Also the connections that are made in this article with influential factors, such as control mechanisms, makes it more relevant for this research. Mainly because when the risks have been identified it becomes

possible to suggest courses of actions to influence these risks. This may, in time, also have its impact on the capitalizing of opportunities and minimizing of threats. Briefly coming back on the sixteen risks, it is possible that not all risks are relevant for this research. The main reason for this is the external focus of this study. Therefore it becomes necessary to test whether some risks must be excluded, because of their lack of relevance. This will be done by developing a questionnaire, which will be further explained in the following chapter. Excluding risks will have no impact on the stated model of Scott (2004), because with the remaining risks it is still possible to determine further implications on the model, like what control mechanism to use. When having made the selection, the remaining risks are to be assessed upon their impact in different circumstances. This assessment will also come from the questionnaire data as well as the additional interviews. It is key to understand that all the risks identified are relevant to the organization and not in general. Also the relevant risks can be grouped together, which makes it easier to determine the configurations of control mechanisms needed to minimize risk, but also perceived uncertainty and determine trust levels of individuals in the organization.

Having determined the need for risk analysis in this research allows the link to be made with strategy. In the theoretical framework this link had already been established, but now it is key to look how this theory about strategy is going to be used in this specific research. The goal is to use the theory of strategy to give strategic advice at the end of this research. In constructing an e-business strategy the six constructs of an innovative differentiation strategy and focus strategy are of great importance. Of course the constructs of the cost leadership strategy may not be forgotten, because they may not form a competitive advantage, but they do have to be incorporated into the strategy of an e-business. Making the connection with the previous paragraph on e-business transitions it can be said that the model of Kim et al. (2008) can be used to determine the kind of strategic positioning, when the risks are identified. The environmental factors and the resources and capabilities are represented in the risks of Scott (2004). This allows the results of a risk analysis to be interpreted as the outside-in and inside-out approach of the model of Kim et al. (2008). This in turn can, then, be used to make statements on the strategic position an organization should strive for. Additional to the model of Scott (2004) strategy is also determined by competences of the organization. The strengths and weaknesses of the organization come forward when determining the competences the organization has and is lacking. Advice can then be generated about which competences are most important and which have to be developed to be able to apply the e-strategy effectively to the organization. One important remark has to be made here when it concerns making statements about strategy. The organization has specific values, like customer focus, which have been taken into account. Not doing so will result in recommendations that are not useable for the organization.

After discussed the use of theories about e-business and strategy only one topic remains, scenario construction. The construction of scenarios in this research is an important part of the theoretical framework. In the previous an extended review had been given on what scenarios are and how they



can be constructed. In this part of the analysis it is explain how this theory is going to be used in this specific research. The first thing that has to be noticed in the theory of scenarios is that it is very structured. Several steps guide you in developing one or multiple scenarios. The above stated explanation of the theory is all according to the authors referred to. In this research, however, the concept of scenarios is used in a somewhat different matter. The main goal of scenarios in this context is to facilitate a description of the findings. So, scenarios in this research are seen as a vehicle to describe possible futures. Normally, scenarios are created to describe different possibilities in the future. Here the approach is also different, because scenarios are going to be created according to the dimensions of Rogers (2003) about adopters of diffusion of innovation. Rogers (2003) distinguishes five categories in which adopters of innovations fall, namely innovators, early movers, early majority, late majority and laggards (Rogers, 2003, p. 282-284). Each of these dimensions has its own characteristics, which are usually applied on individuals. In this research only a number of dimensions are chosen to describe the transfer to hybrid or digital alternatives on physical printing products and are not directed at individuals, but rather on organizations who adopt the innovations. The number of dimensions depends on the number of scenarios that is possible to describe. When actually constructing the scenarios eight steps were postulated according to the theory. Each of these steps can be linked to a part of this research. The first step of identifying key areas of concern will be fulfilled by inventorying the most important opportunities and threats to the organization. The second step will be satisfied by using a questionnaire to test the risks of e-business. The clustering, which is the next step, will be done by using the categorization of the relevant risks according to the model of Scott (2004). Step four will be done by dividing the relevant risks into categories according to their predicted time of relevance to the organization. The fifth step is pretty clear, developing the scenarios will be done here. The following step then allows the created scenario's to be filled in more according to the research model, which will be presented in the next paragraph. The last step that will be used in this research is the seventh step, in which strategic consequences of the predicted scenarios will be inventoried and discussed. The eight step of the scenario construction is not applied in this research because of its extensive nature and it is time consuming work, which has not been accounted for in a graduation research. Besides the steps it was said in the theory that other aspects also have to be accounted for. In this research these aspects will be dealt with by judging the results in the conclusion of the scenario chapter and by involving management team members in the process of scenario building and reviewing. Choosing a different approach to the creation of scenarios can have its effects on the appropriateness of the use of scenario theory. However, this is not seen as a problem in this research. The fit with the current research still remains; because the dimensions to which findings are linked only represent a tool to make the connection possible between the findings are the fulfilment of the scenarios. The methodology of creating scenarios still withholds with this, somewhat different, approach.

### 3.6.2 The combined research model

In the last paragraph of this chapter, it can be said that a lot of factors influence the construction of an e-strategy and scenario. It has been shown that, with the transition to e-business, the strategy must be adapted. Also, the relation was made clear between the positioning strategy in e-business and the control model for e-business risks (Scott, 2004). Due to the similarities between these two models, it is here argued that the two can be combined into one model, where the effects on opportunities and threats can also be taken into account. This combined model can be used to test sequential effects, when the risks have been identified. In relation to the end result of this research, the scenarios, it can be said that the effects mentioned in the last sentence could differ in different scenarios. It depends on which term the transition is going to take effect per scenario.

In the following figure all presented models have been combined into one new model, which is going to be used in the remaining part of this research. The purpose of this model is dual. On the one hand is it supposed to function as tool to formulate conclusions of this research. On the other hand, the model perhaps offers a tool for future use in other instances. This, however, should be studied in further detail in future research. For now figure 16 represents the combined model for this specific research.

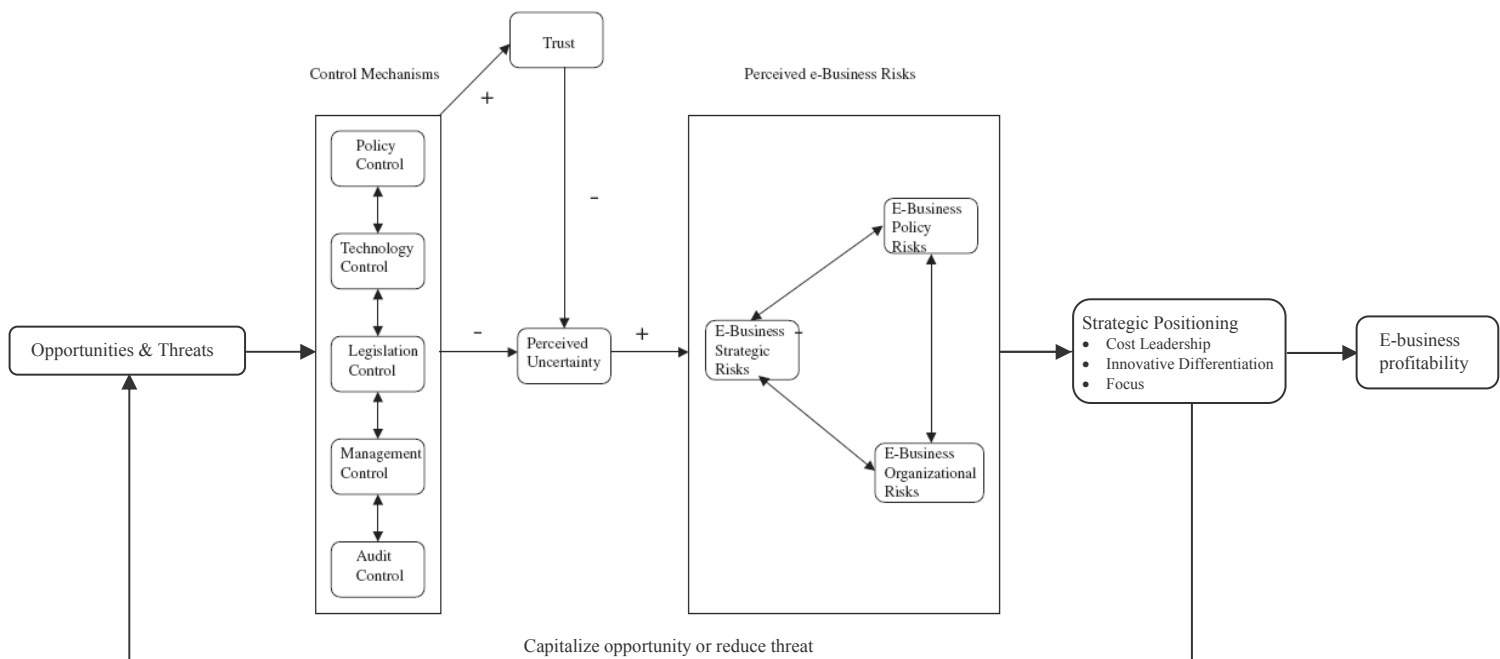


Figure 16: Combined model for dealing with transition to e-business

In the combined model the basis is laid by taking the model of Scott (2004). In the previous part the connection was made between the risks and the strategic positioning options. This leaves the opportunities and threats unanswered. Therefore they are placed inside the sequence of events leading to e-business profitability. This model works as follows. First the risks have to be identified. Having done this allows the rest of the model to be filled in. Depending on the categories of risks

that are important, the control mechanisms can be determined. Also the strategic positioning can be chosen in combination with market developments and the current strategy of the organization. All this information, thus the risks, control mechanisms and strategic positioning, can help to determine the actions that have to be taken in order to capitalize opportunities and reduce risks. These then in turn create new opportunities and risks and also call for adaptation of control mechanisms, risks and strategic positioning. This closes the chain of events leads to higher e-business profitability. In the previous of this analysis all theories were discussed with respect to their applicability to this research. The scenarios that are going to be built on this analysis highly depend on the different aspects, which are put together in the combined model. These aspects were already described in the previous, but are for more clarity, depicted in the following table. All the aspects can be seen as building blocks for the scenarios.

### Elements of the scenarios

Discuss relevant risks for TNT Post BDS  
 Identification of risk groups (policy, organizational or strategic risks)  
 Identify most important uncertainties related to risks for TNT Post BDS  
 Control mechanism configurations  
 Effects of the model on trust levels  
 Strategy type determination

- Cost leadership
- Focus
- Differentiation

Review of the identified top 4 of opportunities and threats

*Table 4: Research components of the scenarios (based upon the theoretical research)*

Taking the above presented figure as a basis for each scenario, in combination with the kind of scenario, e.g. early majority, allows the research to differentiate the results per scenario. This differentiation will hopefully lead to differentiated conclusions, which the organization can use for its own advantage in strategy formation, customer approach and the fulfilment of its organizational goals.

Now, all parts of the theoretic framework and combined model have been explained and connected to each other. In the next chapter the methodology of this research is described. This will make the empirical part of this research possible.

## Chapter 4: Research methodology

This chapter will explain the methodologies that are going to be used to test the statements made in the previous chapter. By following a predetermined trajectory it will be able to answer all the research questions. This research will be dual. On the one side a literature study is conducted. This however cannot answer all the research questions, so by doing a questionnaire, interviews and observations, the gathering of information can be completed for this research. These methodologies are selected for this research because, according to Babbie (2004), in case of an exploratory research, which is the case here, interview and surveys are greatly used. The main reason for this is that these methods allow the researcher to collect original data and are excellent for measuring attitudes and orientations by individuals (Babbie, 2004, p.243). As for observations Babbie (2004) states that this method can help to give the researcher a comprehensive perspective on the case studied. Also it is often used to study social processes over time (Babbie, 2004, p.282). In this case observations can help this research, because digitalization is a fast changing process. Thus, the opinions and attitudes of people may change. This change is valuable to take into account. Also, all three methodologies are a perfect fit for qualitative research (Babbie, 2004, p.242).

In the following paragraphs, the methodologies are explained. Also, the path that will be followed in order to obtain the information necessary to answer all the questions is described. First, a conceptual research model will be given. Second, the subjects for this study are named. Third, the data collection methods are elaborated on. Last, a short piece will be given about the scenario development in this thesis.

### 4.1 Conceptual research model

The relations between the variables are visualized in the following conceptual model (figure 17).

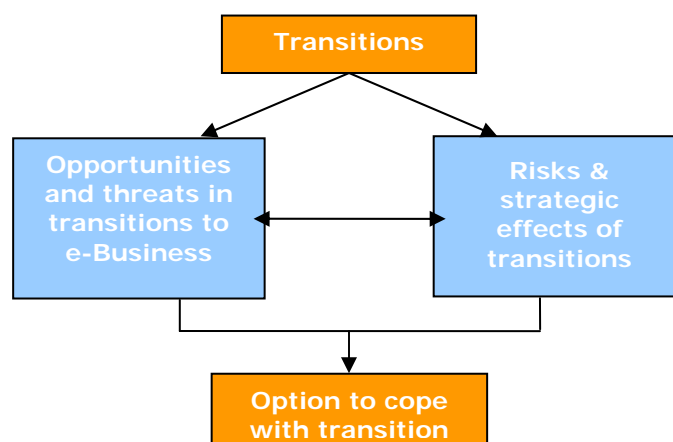


Figure 17: Conceptual research model

The arrows used in this figure represent the relations that exist between the different topics in this research. First, the transitions or to be precise upcoming transitions to e-business is split into two

key topics, namely the opportunities and threats in this transition process and the strategic effects it has on the organization. These two are also interrelated since the opportunities and threats affect the strategy development and vice versa. The ultimate goal is to develop, based on the two blue blocks, an option for the organization to cope with this specific transition. The reason for explaining the relations between the blocks is useful when determining how the organization should cope with the transition. In short, the empirical part of this research is to determine what opportunities and threats are present in the transition to e-business for TNT Post BDS, which is the unit of analysis, and what e-strategy will be most suitable for the organization. This will then be used to create scenarios, which was the chosen method to predict possible futures.

## **4.2 Units of observation**

The purpose of this research is exploration. According to Babbie (2004) exploratory studies are typically done for the purpose of satisfying the researchers' desire for better understanding (Babbie, 2004, p.88). In this case the researcher and the organization want to get a better understanding of the transition process that is going to take place. To research this problem multiple kinds of subjects have to be consulted in order to get a satisfying, valid and reliable outcome. In this research three subjects can deliver valuable information, namely:

1. Members of the general management team (MT) of Cendris and TNT Post BDS
2. Members of the operations management team (positioned under general MT)
3. External experts

All these subjects have to be consulted in this research. This will be done by observation, questionnaire and interviews to test the theoretical framework. Please note that the subjects will be selected on the basis of their knowledge about this subject of their (future) involvement in the theme of this research. For the most part these subjects will be individuals which are high positioned in the organization.

## **4.3 Data collection methods**

In this research multiple methods of data collection will be used. Since this is a qualitative study, no actual quantitative data analysis will be done. Occasionally some numerical data will be used, like percentages, but this data will not be subjected to any kind of statistical analysis. The qualitative data collection will consist of qualitative observations, a questionnaire and a set of semi-structured interviews. This will be explained in the next three paragraphs.

### **4.3.1 Questionnaire**

During the explanation of theory in the previous chapter a list of risks came forward which could influence the way of doing e-business. Reviewing these risks raises some questions about whether or not some of the risks are applicable in this current research. The goal of the questionnaire is to obtain information about the relevance, timing and predictability of all the e-business risks. Additionally, open questions in this survey are posed to gain knowledge about attitudes towards a

special e-strategy and available/necessary competences.

To measure the importance, and thus the relevance, of each risk a Likert scale will be used. The respondent must choose one option of five on the Likert scale (Babbie, 2004, p.169). The definition of this scale is, according to Babbie (2004), as follows: 'A type of composite measure developed by Rensis Likert in an attempt to improve the levels of measurement in social research through the use of standardized response categories in survey questionnaires to determine the relative intensity of different items.' (Babbie, 2004, p.170). To measure the timing of each risk three options are given which correspond with the internal expectation rate of change (source: preliminary interviews). Last, the predictability of each risk is asked by simply questioning whether it is predictable or not.

An example of one item used in the questionnaire for this research is depicted in the following.

**"The risk of using and inadequate strategy for e-business poses a threat for the organization"**

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Also please respond to the following.

*Timeframe in which this risk is likely to be relevant:*

☐ ½ year – 1 year    ☐ 1 year – 2 years    ☐ > 2 years

*Course of events around this risk are:*

☐ Predictable    ☐ Unpredictable

Figure 18: Example question questionnaire

The questionnaire will be send to all Management Team (MT) members (N=15). These individuals have the best vision on which risks are relevant and which are not. After collecting all questionnaires the answers given will be analyzed in a qualitative manner. The relevant risks will be questioned in more depth and detail during the interviews. The methodology of these interviews will be elaborated on in the next paragraph. Returning to the questionnaire, beside the judging of the risks the opportunity is also taken to ask additional open questions. These will help to develop the questions for the interviews. An example of such a question is whether in approaching the future there might be a need for a separate e-strategy. The total questionnaire, as it is send to the MT members, is given in appendix II. Before continuing to the next part it is necessary to note that the number of respondents is relatively limited, but since no statistical analysis is done it will not be an issue for this research. The qualitative results of the questionnaire are still valuable. Valuable, because they represent the opinions of key decision makers in the organizations. These key decision makers can

be divided into two groups, the management team of operations and the management team of the total organization. Both are important because the effects of digitalization will take effect in both management teams.

Before turning to the following method it is sensible to take a short look at the validity and reliability of this current method. Validity in general is all about the question whether the questionnaire or survey measures what it intends to measure. The intention of the questionnaire is to test which risks are relevant to the organization and what attitudes exist towards applying a separate e-strategy and what competences are present and lacking in the organization. Usually the validity of questionnaires is relatively weak and strong on reliability. The main explanation for this is that respondents seldom have one opinion, e.g. strongly agree, on one matter. Rather, the opinions of individuals are much more variable considering the interpretation of items (Babbie, 2004, p.275). For this questionnaire it means that in order to create a higher level of validity the items must be explained clearly to prevent confusion or room for multiple interpretations. To this end a short description is given for each risk, including an example. The reliability on the other hand is said to be strong with questionnaires. By offering only a select number of options the researcher eliminates the risk of making false unreliable interpretations (Babbie, 2004, p.275). Furthermore it is stated by Babbie (2004) that applying multiple methods enlarges both the validity and reliability of a research. For this reason also other methods are chosen for this research.

#### **4.3.2 Interviews**

In this research the interviews are semi-structured, which means that questions are formulated and the structure is predetermined, but during the interview there is room for additional unexpected questions. According to Kvale (2007) this kind of interview seeks to obtain descriptions of the interviewees' lived world with respect to interpretation of the meaning of the described phenomena (Kvale, 2007, p.10-11). The semi-structured interviews will be held according to the interview rules as described in Kvale (2007) and Emans (1985). These rules imply working with an interview protocol (see appendix IV). As for the validity and reliability, it can be said that reliability depends on the interviewee and the consistent preparation of the interviewer (Kvale, 2007, p.122). Validity on the other hand should be judged afterwards when the results are compared to what was first intended to measure (Kvale, 2007, p.122). If this corresponds, it is assumed to be valid. In this research the intent is to measure risks involved in doing e-business in order to assess opportunities and risks and to discuss strategic implications of the identified risks, which may differ in each of the scenarios. As the interviews are a result of the risk relevance assessment that is made by the questionnaire, it is not possible to state the questions for the interviews in this section. However, when the results of the questionnaire have been interpreted the final interview protocol will be presented in appendix III. Although a complete list of questions is not available in this phase of the research the structure which will be used in the interview can be described.

In developing the protocol the results of the questionnaire function as a basis. Meaning that the relevant risks need more clarification and remarkable results are questioned in more detail. As a

result the interview will begin with a general introduction to the research and the interview itself. Also shortly discussing the results of the questionnaire. The interviewee is at the same time presented with the opportunity to ask questions before actually doing the interview. Hereafter, the actual interview is done. The first part of the actual interview is focussed on the relevant risks, which have been found relevant after the questionnaire. These are discussed in more detail. With more detail is meant that it is asked to the interviewee to what degree he or she recognized this risk within the organization and in which way this risk manifests itself. Also it is asked whether possible solution can be thought of to reduce these risks. This final question of the first part can help to determine which control mechanisms might be important or relevant. The second part of the actual interview will be focused on the strategic dimension of this research. The point of discussing strategies is to find out whether different strategies must be used in different time frames (different scenarios). The last section of the interview will consist of the question which competences are present and need to be developed in order to comply with the changing environment. The interview comes to an end after answering this question.

The analysis of the qualitative data has an inductive form. First case-oriented analyses are held (Huberman et al., 1994). This is done by transcribing the recorded interviews. Of course this is going to be done separate from each other to avoid biases from other interviews. First the total interview is globally transcribed on paper, and then the data is organized per risk as described in the theoretical framework. The recorded interview is then played for a second time to make sure the data transcription is complete. After finishing all interviews, the qualitative data generated is related to the found theory during the creation of the scenarios. In the scenario chapter (6) also the assessment of the opportunities and threats will be made. This assessment will be based on general conclusions from the questionnaire, interview and observation results.

Sampling of the units of observation is done on a non-probable basis and is purposive (Babbie, 2004, p.183). The function of these interviews is to determine the effects that are caused by the different uncertainties and strategic effect, because of the transition to e-business at the organization. All analyses and interpretations are qualitative in their nature (Babbie, 2004, p.370). The total number of interviews that will be held is five ( $N=5$ ). These interviews will be held with management of TNT Post BDS and Cendris. The individuals are selected based upon the direct involvement in the digitalization process. Also, these managers are the ones who are in charge of making definite decisions about the direction the organization is going to take and have a full overview of both the digital and physical developments, internally and externally. In selecting these respondents the combination between digital focused and physical focused individuals was leading in order to prevent biases from occurring. In this selection also the differentiation between operations MT and general MT was taken into account.

The reliability and validity are quite important in research. According to Babbie (2004) every method of research has its own positive sides and downsides. Because in this research only qualitative



research is used it becomes even more important to understand what the effects will be on the reliability and validity of the whole research. This understanding is key because the flaws and gaps of the qualitative research cannot be compensated by quantitative research. To further close these gaps also the validity and reliability for interviews are shortly discussed. Since the method of interviews is also a sort of survey (just like the questionnaire) the same validity and reliability issues are present. However, there are some differences because an interview is face-to-face and therefore is more subjective to reliability issues due to multiple interpretations and perception biases. As for validity it is said that it tends to be weak. This is made stronger by the questionnaire. The respondents already were familiar with the risks and therefore were more aware what was intended with the interview.

### 4.3.3 Observations

The third methodology in this research is doing observations. The reason for this additional method is to capture unwritten or unknown information that does not come forward in the interviews. More concrete the observations are deducted from unstructured conversations with individuals within the organization, information from the intranet and presentations (TNT Talk). These observations can be defined as participant observations (Babbie, 2004, p. 284), since the researcher actively is involved in the organization where this research takes place. In this kind of observation it is very important to pay attention to the unobtrusiveness of the researcher. It may be possible for the researcher to become too involved, leading to biased statements. The other side of the coin may also be that the research is less involved than he or she should be. This then may lead to losing touch with the specific subject at hand and also wrong conclusions (Babbie, 2004, p. 286). The ultimate goal of the observations is to assess whether, in the end, the results of this research fit the organizations' need. For example, the question whether the scenarios are a valuable addition to the organization.

Qualitative field research seems to provide measures with greater validity than do survey measurements (Babbie, 2004, p.307). "Being there" is a powerful technique for gaining insights into the nature of human affairs in all their rich complexity. Another strength of qualitative research is that it can provide a basis for further research, both quantitative and qualitative. Last, validity of qualitative research prevails over quantitative research, when it is applied to create an understanding of a phenomenon. According to Babbie (2004) this understanding leads to superior validity of field research, as compared to quantitative surveys and experiments (Babbie, 2004, p. 308). With respect to the reliability of qualitative research, the use of field research and in-depth interviews has a potential problem with reliability. Biases are the most common threat the reliability. Due to opinions and views of the researcher the outcomes may well differ if the same research is done by different researchers (Babbie, 2004, p.308). For example, if a researcher reports that the members of a political club are fairly conservative; such a judgement is unavoidably linked to the researcher's own politics. It is therefore important for the researcher to check his independence in relation to the subject of research. To further prevent this bias from happening, comparing results from different interviews and observations with each other can help to determine the most shared

view. Assessing the validity and reliability for the whole research it can be said that by using all the different methods the weaknesses of one method is levelled by the strengths of another method.

#### **4.4 Scenario development**

Despite the extensive elaboration on scenario development in the previous chapter the process of scenarios development has not yet been explained. Here, the process of scenario development, specifically for this research, is elaborated on. The goal of scenario building in this thesis is to offer a practical and tangible result of this research. Of course the theoretical findings are useful, but by applying them into, in this case, scenarios it more useful for the organization. To be able to create the different scenarios information must be gathered. This information will come from multiple sources: the theoretical framework, the questionnaire, the interviews and observations. In forming the scenarios the gathered information will be used to fill in the scenarios. How these scenarios are going to look like is described in the latter of this research. The result will be an informative part from which the organization can learn and anticipate on possible futures. The number of scenarios that are going to be developed depend on the periods in which the results of all the methods are applicable. This may result in one or more scenarios.

The actual scenarios will be determined by the researcher of this research. To validate the made scenarios a presentation will be held for the general management board of TNT Post BDS. Their comments will be used to improve the scenarios. Also provisional feedback is sought by discussing the progress of the scenarios with the supervisor at TNT Post BDS. Together, these two feedback groups allow the researcher to determine whether the scenarios are applicable and valid for this specific organization. External validity for the scenarios will not be an issue, since it is written explicitly for TNT Post BDS. As for the reliability of the scenarios it remains to be seen as to what degree individuals value the scenarios. By gathering feedback before the final version reliability should be stronger due to compliance with the organizations' expectations.



## Chapter 5: Empirical results

Due to confidentiality this part of the research has been excluded

## Chapter 6: Scenarios

Due to confidentiality this part of the research has been excluded

## **Chapter 7: Conclusion & recommendations**

Due to confidentiality this part of the research has been excluded

## Chapter 8: Discussion

Due to confidentiality this part of the research has been excluded

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## Interviews

Manager (1), interview held on October 2, 2008

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Manager (3), interview held on February 27, 2009

Manager (4), interview held on March 5, 2009

Manager (5), interview held on March 16, 2009

Manager (6), interview held on March 13, 2009

Manager (7), interview held on March 13, 2009

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## Appendices

Due to confidentiality this part of the research has been excluded