A new service development process for a logistic service provider

Albracht, B.C.

Award date: 2012
A New Service Development process
for a Logistic Service Provider

By

B.C. Albracht

BSc Industrial Engineering and Innovation Sciences
Student identity number 0589682

In partial fulfilment of the requirements for the degree of

Master of Science
in Innovation Management

Supervisors:
Dr. Ing J.P.M. Wouters, TU/e, ITEM,
Dr. J.A. Keizer, TU/e, ITEM,
Ir. S. A. Wouters, UTi Worldwide, Global Director Product Marketing.
TUE. School of Industrial Engineering.

Series Master Theses Innovation Management

Subject headings: NSD, Innovation Management, Logistics providers, Case study
Abstract
This report presents the result of the master thesis project on developing new services within a Logistics Service Provider, UTi. UTi wants to stay competitive, benefit from the solutions it derives for individual clients by replicating them in the market and thereby create efficiencies. The successful management of the new service development process is described by literature to relate to more successful new services. Productization of client specific solutions as well as the development of new services from scratch is best managed through an NSD process. Tasks of development as well as 21 success factors for NSD in LSPs were identified in literature. Seven case studies were conducted to study the current practices of new service development (NSD) within UTi. After a comparison of the current practices and literature a number of design criteria were specified. A design for NSD within UTi was created and recommendations for the improvement of NSD were given. The study contributes to literature by providing insight in the development processes of a LSP.
## Contents

Abstract ................................................................................................................................................... 3  
List of Figures ........................................................................................................................................... 6  
List of Tables ............................................................................................................................................ 6  
Abbreviations .......................................................................................................................................... 6  
Management summary ........................................................................................................................... 8  
Preface ................................................................................................................................................... 10  
1. Research Context .................................................................................................................................. 11  
   1.1 Introduction .................................................................................................................................. 11  
   1.2 Logistic Service Providers ........................................................................................................... 11  
   1.3 Company Introduction ............................................................................................................... 12  
   1.4 Organizing Service development ............................................................................................... 14  
   1.5 Research context ....................................................................................................................... 15  
   1.6 Research Questions .................................................................................................................... 16  
   1.7 Outline of this research .............................................................................................................. 16  
2. Research Plan ...................................................................................................................................... 17  
   2.1 Research Design ........................................................................................................................ 17  
   2.2 Solution approach ...................................................................................................................... 17  
   2.3 Methodology ................................................................................................................................ 18  
3. Analysis of literature ............................................................................................................................ 23  
   3.1 The LSP context to service innovation ....................................................................................... 23  
   3.2 Productization ........................................................................................................................... 24  
   3.3 Towards a model suitable for LSPs ............................................................................................ 25  
   3.4 Conceptual Model ..................................................................................................................... 28  
4. Case analysis ....................................................................................................................................... 32  
   4.1 The cases .................................................................................................................................... 32  
   4.2 Case Analysis ............................................................................................................................ 32  
   4.3 Analysis of organizational factors .............................................................................................. 38  
   4.4 Observations ............................................................................................................................. 43  
5. Solution Design ................................................................................................................................... 47  
   5.1 Design criteria ........................................................................................................................... 47  
   5.2 Detailed solution design ............................................................................................................. 48  
   5.3 Recommendations ...................................................................................................................... 53
6. Conclusions ................................................................................................................................. 56
   6.1 Conclusions on the research questions .................................................................................. 56
   6.2 Implications for theory .......................................................................................................... 56
   6.3 Implications for practice ....................................................................................................... 57
   6.4 Limitations & Further Research ........................................................................................... 57
References ............................................................................................................................................. 59
Appendices ............................................................................................................................................ 63
Appendix A ............................................................................................................................................ 63
   Services that become solutions ..................................................................................................... 63
   The benefits of adding value ......................................................................................................... 63
Appendix B: Organizational Chart of UTi ............................................................................................. 64
Appendix C: Review of service development models ........................................................................ 65
Appendix D: Success factors per organizational factor ..................................................................... 66
Appendix E: Within case-studies ....................................................................................................... 69
Appendix F: Checklists ....................................................................................................................... 80
List of Figures

Figure 1: Typical logistics process managed by a 3PL ................................................................. 12
Figure 2: Revenues 2004-2012 ..................................................................................................... 12
Figure 3: Client led vs. Firm based service development ............................................................. 14
Figure 4: Regulative cycle ............................................................................................................. 17
Figure 5: Solution approach ......................................................................................................... 18
Figure 6: Multiple embedded case design method ...................................................................... 19
Figure 7: New Service Development Process Cycle of Johnson et al. (2000) ............................. 27
Figure 8: Conceptual model ......................................................................................................... 29
Figure 9: Solution design ............................................................................................................ 49
Figure 10: Productization decision tree ...................................................................................... 49

List of Tables

Table 1: Cases & selection criteria ................................................................................................ 20
Table 2: Success factors of NSD grouped per organizational factor (L) = derived from LSP literature. 28
Table 3: Schematic overview of execution of development tasks .............................................. 33
Table 4: Summary of success factors ........................................................................................... 38

Abbreviations

2PL Second party logistic service provider: carriers;
3PL Third-party logistic service provider;
4PL Fourth party logistic service provider: logistic consultant;
APAC Asia & Pacific Region;
Client-led Product development project based on an already provided solution;
CL&D Contract Logistics and Distribution;
CS- Solution Client specific solution development project. New solution for a single client;
DC Distribution Center;
FF Freight Forwarding;
FCL Full Container Load freight;
LCL Less than Container Load freight;
LSP Logistic Service Provider;
Firm-based Product development project not based on an already provided solution;
EMENA Europe, Middle East and Northern Africa Region;
OEM Original Equipment Manufacturer;
SOP Standard operating procedure;
RFx Request for x, can be a request for proposal or request for information;
SDi Supply chain design and innovation department;
Management summary
This Master thesis report is the result of my graduation project conducted at UTi Worldwide Inc.. This study investigates the new serviced development (NSD) process of UTi, a logistics service provider (LSP). Busse and Wallenburg (2010) have argued that LSP specific innovation management research is justified and that it is practically relevant.

Modern service economies are very dynamic in nature; customers demand high value, low cost and their preferences change rapidly over time (Iversen and Wren, 1998) The dynamic nature of service economies is recognized within the logistics services industry. Increasing competition through deregulation and globalization and increasingly complex client demands have urged LSPs to become more innovative (Busse and Wallenburg, 2008). New service development thus has become a major point of interest for LSPs.

UTi has known rapid growth over the last decade, many acquisitions have been made and the client-centric strategy of UTi has driven increasing amounts of revenues and profits. UTi has been able to develop many innovative but client specific innovations over time. UTi wants to be able to create service products that provide competitive advantage and efficiencies. The objective of this study is to contribute to both practice and literature by developing a NSD model that is relevant in the context of UTi.

The following research questions was derived:

*How can the New Service Development process be optimally organized in order to ensure that value is offered to groups of new and existing clients?*

A literature review was conducted to build a conceptual model based on insights from LSP and NSD research. The literature review brought about that the transformation of client solution into service products occurs along a process of ‘productization’ which is similar to NSD can be performed by use of NSD process models. The conceptual model presented NSD along two dimensions; the organization of development tasks and the organization of success factors of NSD (see figure).
The conceptual model served as a basis for seven case studies within UTi. The case studies revealed some weaknesses in the current NSD at UTi. Four areas were identified in which the current NSD practices hinder the success of development outcomes. The case studies also gave insights in the effects of the organizational factors and tasks in practice. The objective was to find patterns of NSD in practice to gain insights that could be used to adjust the conceptual model. The effect of the factors in the conceptual model was confirmed. The major differences between the practices of UTi and the conceptual model led to the identification of patterns within NSD of LSPs. Three design criteria were identified: (1) the value of productization using NSD should be determined up front, (2) local development teams need to be supported with guidance, resources and organizational knowledge and (3) quality of execution of tasks needs to be guaranteed throughout the process.

With the design criteria in hand, the following NSD model has been designed for UTi.

| Organizational Level |  |
|----------------------|--
| Portfolio Management |  |
| Organizational Knowledge base |  |
| Innovation Strategy |  |

<table>
<thead>
<tr>
<th>Project Level</th>
<th>Design</th>
<th>Analysis</th>
<th>Development</th>
<th>Market Approach</th>
<th>Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Formulation of objectives</td>
<td>- Business case analysis</td>
<td>- Service Process design</td>
<td>- Sales training</td>
<td>- Periodic Reviews</td>
<td></td>
</tr>
<tr>
<td>- Idea generation</td>
<td>- Authorization</td>
<td>- Service system design</td>
<td>- Operations training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/Productization decision</td>
<td>- Idea screening</td>
<td>- Marketing plan design</td>
<td>- Pilot test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Idea screening</td>
<td>- Concept Development</td>
<td>- Service testing</td>
<td>- Market launch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Concept testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The model specifies a number of tasks and development gates at the project level. An accompanying blueprint should help UTi to give guidance to its local development teams and guarantee the execution of tasks. For productization, a decision tree was derived to decide upon the best approach to service development out of client specific solutions. Additional on the organizational level the importance of portfolio management, innovation strategy and an organizational knowledge base is emphasized as local development teams need additional guidance and support as compared to centralized NSD efforts. A number of suggestions were presented to improve the NSD of UTi. From an academic perspective this research helps to understand the current development processes within LSPs.
Preface

This document presents the result of the graduation project of the master program innovation management at the Eindhoven University of Technology. This master thesis presents my findings during my graduation project at UTi Worldwide Inc. in Long Beach, CA, USA.

This master thesis was a great opportunity for me to apply the knowledge gained in my studies within an international company. The period has been very valuable to my own development as well as it provided me with lots of new insights and great experiences. The report could not have been created without the support of many people that I would like to thank.

First I would like to thank my supervisors at the TU/e for their support and feedback. Second, I would especially like to thank my company supervisor Bas Wouters not only for his support within the project but also for the possibility to execute this project at UTi in Los Angeles which was a great experience on its own. Furthermore I would like to thank my friends for their support and all the colleagues at UTi for their input, support and the great time in the US.

Last but not least I would like to thank my parents that have supported me throughout my youth, in my studies and beyond with advice, love and trust which has been a great support.

Bart Albracht, August 2012
1. Research Context

1.1 Introduction

The most important change in recent history of liberal economies is the transition from an economy based on manufacturing to an economy based on that of service provision (Iversen & Wren, 1998). Modern service economies are very dynamic in nature; customers demand high value, low cost and their preferences change rapidly over time. Companies thus must strive to develop new and better services to stay competitive. Innovation has been acknowledged as a major contributor to a firm’s success, as it can be the source of additional revenues from new services, it helps to save costs or improve processes and it offers the potential for competitive advantage (Grawe, 2009). ‘Innovation’ in this research is defined as a multi stage process in which ideas are transformed into something new, that strengthens the position of the firm in the marketplace (Johnson et al. 2010).

Unfortunately, new service development is difficult and many new services are less than successful. (De Jong et al. 2003) Services sometimes fail to meet the expected value creation for customers or lack in financial performance (Cooper and Edgett, 1996). Meeting customer needs efficiently is the goal of customer centric firms; innovation is a means to do so (Selden and MacMillan, 2006).

The dynamic nature of service economies is recognized within the logistics services industry. Increasing competition through deregulation and globalization and increasingly complex client demands has urged LSPs to become more innovative (Busse and Wallenburg, 2008). New service development thus has become a major point of interest. The remainder of this chapter will further introduce the research context and research questions.

1.2 Logistic Service Providers

Logistics service providers (LSPs) provide a variety of logistics and transportation services to clients. Three types of LSPs exist: Carriers (2PL), Third party logistics providers (3PL) and Fourth party logistics providers (4PL). The carriers provide the actual shipping of the goods. 3PLs have a more complicated task as they typically provide integrated operations, warehousing and freight forwarding services that can be scaled and customized to client needs and often include value-added services such as pick-and-pack, labeling or track-and-trace. A specific type of 3PL is the non-asset based 3PL. These firms provide the same services as regular 3PLs but do not own any physical assets; these are owned by clients or by carriers. The main task of these service providers is to leverage their expertise and abilities. 4PLs are firms that provide supply chain consultancy services. Although the distinction between these LSPs can be made, many LSPs provide a combination of these tasks. For example, some carriers provide end to end freight forwarding, warehousing and consultancy services to their clients. In this report the term LSP will refer to a firm that provides at least 3PL services.
LSPs have a very central role within the supply chain as their services impact the client, the client’s clients and suppliers, subcontractors and sometimes other LSPs. Especially 3PLs are in contact with many of the parties in a clients’ supply chain. For example, a 3PL can be handling the incoming flow of goods from supplier to a clients’ distribution center that is run by a competitive 3PL, from the warehouse to the manufacturing site by means of a carrier and to the client’s clients (Figure 1).

Some have argued that the role of a 3PL is not simply one of providing logistics services but one of ‘orchestrator’ of the client’s supply chain (Zacharia et al. 2011). The role of 3PLs has increased over the years as 3PLs provide a number of benefits to a firm. Outsourcing to a 3PL minimizes the firms’ costs and increases their capabilities as 3PLs grow in their capability they can offer transportation services at lower cost than the firm can itself and provide a wider range of resources and services. Furthermore as 3PLs have several clients their network can be used to leverage these relationships to provide more (cost) efficient services.

1.3 Company Introduction

In this Master thesis research project the new service development process of UTi Worldwide will be the subject of interest. UTi Worldwide was founded in 1926 in Germany and has over the latter years grown significantly and is now one of the ten largest 3PL companies. In 1993 the company was acquired by a group of managers with a large amount of experience in the logistics industry. From 1994 onwards a number of takeovers and the launch of one of the first truly end-to-end information systems led to a significant growth. Between 1994 and today the revenues have grown from $300 million up to $5 billion. Figure 2 shows this line of growth between 2004-2012 with the effects of the worldwide economic crises hampering the growth in the latter years. As UTi has grown so rapidly there has been less of a focus on processes and systems. There is not much consistency in the systems and processes that are used. The firm has now come to a phase in which it is implementing global standard systems and processes to ensure quality and reliability throughout the organization.
UTi started as a freight forwarder and grew into an international, non-asset based third party logistics services provider (3PL) that also provides supply chain consulting services (4PL). As UTi is non-asset based it does not own any trucks, boats or planes nor does UTi own any warehouses or machinery. These are either rented or owned by the client or carrier of UTi. From UTi’s offices in over 60 countries, the 19,000 employees design and operate integrated logistical solutions for their clients. UTi typically provides services to customers with complex international shipping needs in which it uses its expansive global network, proprietary software, relationships with transportation carriers, and general expertise to provide world class supply-chain management services. The services of UTi are often customized to client needs and consist of a combination of a number of services. Integrated solutions are created for the clients.

**Service offering**

As a third party logistics provider, UTi provides a range of UTi’s services that can be roughly categorized in four types of services:

- **Freight forwarding (FF):** Arranging transport of freight for clients. The transport by ocean or air is arranged and customs brokerage service is provided to ensure customs clearance. In this track-and-trace services are provided to provide visibility of shipments across the globe.
- **Contract logistics (CL):** Contract logistics refers to the service of handling the logistical operations within a warehouse, such as receiving, storing and shipping. UTi also offers value added contract logistics such as pick-and-pack, light manufacturing, vendor managed inventory, packaging, electronics testing and much more. An overview of services can be found in appendix A.
- **Distribution (D):** To complement the FF services with door-to-door delivery, distribution services are offered. Distribution services mainly relate to freight trucking.
- **Supply chain consulting:** UTi also provides supply chain consulting services. In this UTi creates client value through offering clients logistics expertise and advisory.

UTi’s strategy is around becoming a client centric company. Having no assets means being more agile, flexible and having less risk in economic downturns. UTi’s strengths lie in the provision of services that are configured to client needs. In the process of delivering services to a client knowledge of the client is obtained and through the customization of services loyalty generated. In contrast to several of its competitors, knowledge of its sales force and solution engineers is generally not limited to a specific type of freight service or certain business unit. They are able to create integrated solutions by combining multiple services and developing new and innovative services and solutions if needed. A high number of unique and innovative solutions have been designed for clients.

**Structure**

Being a 3PL it has multiple advantages to be spatially close to clients and have a global network. Being close to clients helps to understand their needs (Flint et al. 2005) while a global network extends the reach and thereby attractiveness of a 3PL (Busse & Wallenburg, 2009).

UTi’s offices are spread all over the globe and many employees are located decentralized. UTi has a matrix organization: functions are organized vertically as well as across four regions; EMENA (Europe,
Middle East and Northern Africa), APAC (Asia & Pacific), Africa and the Americas that are further divided into several divisions often based on countries or locations. Apart from the regional division the organization is structured by functions and verticals. The main organizational departments are: sales and marketing, operations, CL&D, HR, Finance and support. Nine industry verticals have been created to support the communication between and within support, sales and operations concerned with clients in these industries. UTi’s structure is thus fairly complex and because of the geographical structure internal communication is very important. A graphical representation of UTi’s structure is shown in the organizational diagram in Appendix B.

1.4 Organizing Service development

The supply chain design and innovation (SDi) team as part of the sales organization (Appendix A) is responsible for creating integrated solutions for clients. In several cases these solutions form the basis for the creation of new service products.

Recently, UTi has started to put a global marketing team into place to, among other things, drive a more efficient approach to sales and support innovation. A product marketing manager has been appointed that aims to capitalize on (new) service products. Clearly defined service products can be help to proactively approach clients with solutions to their needs and thereby take a more efficient approach to sales.

Service Development approaches

Typically innovation within UTi takes two approaches; ‘client-led (1-infinitiy)’ and ‘firm based (0-infinitiy)’. ‘Client-led’ development means that the development project is based on a solution that has been developed for a specific client’s problem or a client request for such a solution. A client led development project uses a solution that is or has been designed for a client (0-1) as input for the development of a service product that can be offered to the whole market (1-infinitiy). ‘Firm based’ refers to innovation that is the result of ideas for new service products from within the firm. A ‘firm based’ development project is more similar to traditional new service development (NSD) and is concerned with the process from idea to launch without a solution as input (0-infinitiy) (Figure 3). Although some employees refer to the ‘solution development’ as being service development; there is a major difference. Where solution development aims to develop a solution for a single specific client, service development aims to develop a service that can be offered to the market as a whole, without client specific idiosyncrasies but with the possibility to customize the service delivery.

Figure 3: Client led vs. Firm based service development
1.5 Research context

As stated in the introduction, service providers must strive to develop new and improved services to remain competitive in the marketplace. Innovation has been acknowledged as a major contributor to a firm’s success. For LSPs the need to innovate has increased over the latter years as deregulation and globalization have increased competitive pressures (Busse and Wallenburg, 2008). UTi strives to increase its competitive advantage by capitalizing on its logistical expertise and client knowledge. It wants to do so by offering and selling new service products that meet the needs of groups of clients.

In the last decades, service research has increased considerably but the body concerning service development within LSP is still limited (Lin and Pekkarinen, 2011). Industry specific studies are especially relevant for LSPs because their activity and performance differs considerably from other service providers (Busse, 2010). In NSD, the value of formal development processes has been recognized. Formal development processes have seen to result in more successful new services (Johne and Storey, 1998; Froehle and Roth, 2006). Formal procedural service development models for LSPs do not exist (Busse and Wallenburg, 2011) but “formal processes seem to be key in developing supply chain or product innovations of LSPs that clients will value” (p 274, Flint et al. 2008).

UTi has been able to grow rapidly over the last decade and would like to continue this high growth. Innovative client specific solutions have benefitted clients but this value is not always made available to the market. The ‘client-led’ development of service products out of these solutions has not been a high priority. By creating products, services can be delivered more efficiently than by creating the same solutions over and over again in a relationship oriented manner. Many solutions however only benefit a single or small group of clients.

The newly designed global marketing team noticed these issues and has asked to research this field. The following problem statement forms the point of departure for this research:

Service development processes at UTi do not ensure that innovative logistics service products provide value to groups of new and existing clients efficiently.

In order to remain competitive and to be able to offer new services efficiently, UTi needs to improve its new service development process. Based on the problem statement and interviews with managers the following assignment is derived:

Design a new service development process that ensures that new service products can efficiently provide value to groups of new and existing clients.
1.6 Research Questions

UTi has difficulties in managing the innovation practices in such a way that new services offer high level of value that is set by management to not one, but groups of customers.

In order to fulfill the assignment (chapter 3) and contribute to the academic literature the following central research questions is derived:

How can the New Service Development process be optimally organized within UTi in order to ensure that value is offered to groups of new and existing clients?

In order to answer the central research question the following sub questions are defined:

1. How can new service development processes in Logistics Service Providers best be modeled based on literature?
2. What practices are currently deployed within UTi for new service development and what are its associated bottlenecks?

On the basis of these two research questions the last question will be answered:

3. What are relevant design criteria and what would a redesign look like?

1.7 Outline of this research

This report is structured as follows. Chapter 2 will describe the research plan and methodology. The methodology that will be described forms the outline for the rest of the report. In chapter 3 the literature considering the subject at hand will be reviewed which will conclude in the creation of a conceptual model that is used as input for the analysis in chapter 4 and the design in chapter 5. Chapters 4 will describe an empirical analysis of the service development process of UTi based on a number of case studies. Chapter 5 will present a solution design based on the literature and the outcomes of the analysis and a number of recommendations. Chapter 6 will present a reflection of this research project.
2. Research Plan

Research Design

In this research a business problem solving method is used that is design focused and theory based, to improve the performance of a business process, in this case the development of service products. This type of research can be classified as a design science as design science aims at developing valid knowledge, which can be used by professionals to design solutions (Van Aken et al. 2004). The used methodology is that of the regulative cycle of Van Aken et al. (2004).

In the regulative cycle a business problem is solved and evaluated to assess the applicability of the design (Figure 4). In this research the first three phases of the regulative cycle are performed. The latter two stages, intervention and evaluation could not be completed due to time and organizational constraints.

2.1 Solution approach

As described in the research model, the problem can be solved by means of analysis and diagnosis out of which a (re)design can be created. This involves 4 steps (Figure 5).

1. **Theoretical orientation**: By analyzing the literature on the subject of research, a conceptual model can be derived. This conceptual model describes the design of NSD from a theoretical perspective.

2. **Empirical Analysis**: By analyzing the current practices and their effects of individual cases and as a whole it can be investigated how the current process design relates to success of outcomes.

3. **Confrontation**: The conceptual model based on theory need to be confronted with the findings from the case studies. These way theoretical findings can be confirmed or disproved.

4. **Design**: Based on the confrontation a design for NSD within LSPs can be created.
2.2 Methodology

As we defined the project approach, problem statement and research questions, the next step is to define the methodology for the empirical analysis in more detail.

2.2.1 Research strategy
The empirical part of this research serves as a means to analyze the current processes and problem at hand. The current service development processes need to be analyzed to be able to make recommendations for improvement. Several research strategies exist to analyze the occurrence of phenomena. According to Yin (2009), case studies are the preferred methods of research for situation in which “why and how questions” about uncontrollable events are to be answered. As this research tries to understand what current service development processes look like, the case study method has been chosen. The case study method tries to illuminate a decision or set of decisions: why they were taken how they were implemented and what they will result (Yin, 2009). Here case studies will be used to analyze different service development processes of UTi in such that out of these case studies and analysis conclusions can be drawn.

2.2.2 Case study design
The case study design depicts the logical sequence that connects the empirical data to a study’s initial research question and ultimately to its conclusions (Yin, 2009). Within the case study research, the exploratory approach is adopted in order to get answers on the research question and in order to stay open for emerging theories. The study is guided by a multiple-embedded case design, based on Yin (2009) and shown in Figure 6. This case design was elected because, by the comparison of different case studies, general conclusions can be drawn on aspects that are of influence on successful development.

![Figure 6: Multiple embedded case design method](image)

**Unit of Analysis**
The unit of analysis is the object that is the focus of interest of the research and thus is the ‘new service ‘product’ development project’. This means that the unit of analysis is the creation of a service product rather than the development of an innovative solution for just one client. As we want to investigate the success of single innovations the single project is the unit of analysis rather than all the service development projects combined.
Case study selection criteria

In this research, a multiple case study approach is chosen. The selection of projects for analysis should be based on projects that produce contrasting results in order to provide insights in the process and illuminate the research question (Yin, 2009). Cases can be selected based on theoretical grounds or by considerations about the inclusions of certain dependent and independent variables. The selection of cases is based on pragmatic grounds as well as the following criteria:

- ‘Firm-based’ vs. ‘Client-led’ approach: In order to be able to analyze the difference between client-led and firm-based cases, three projects that were developed for a client were chosen as well as three projects that originated completely in the firm.
- ‘Successful’ vs. ‘Non-successful’: To understand more about the relation between practices and ‘success’, projects with different levels of success were analyzed.
- Geography & department: In order to ensure that a representative set of projects is chosen cases led by the SDi-team and by other departments of the organization were chosen as well as projects from the different regions to try to account for local differences.

The target is to develop a single model for all service development projects (Firm-based’ and ‘Client-led’) therefore both type of projects have been investigated. To be able to make conclusions about the influence of the current NSD process, the projects’ success is analyzed. Success cannot be analyzed in terms of sales amounts as some projects are not on the market yet where by others the market size or amounts of sales are unknown. Success is therefore defined by the (expected) perceived client value and the relative efforts put in sales and marketing. At the point of selection these metrics were hard to assess and therefore had to be reassessed after the case-studies. The selection of cases was made even more difficult due to the limited time for this research. To be able to analyze all combinations between success and client led and firm based cases client value and sales efforts were assumed to be unrelated. Table 1 presents the selected cases. The Thinkgreen case study is included although it got stopped early on, to gain more insights in the reasons the early phases and to see why this project got put on hold.

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 3</th>
<th>Case 4</th>
<th>Case 5</th>
<th>Case 6</th>
<th>Case 7</th>
<th>Case 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client led / Firm based</td>
<td>Client led</td>
<td>Client led</td>
<td>Client led</td>
<td>Firm based</td>
<td>Firm based</td>
<td>Firm based</td>
</tr>
<tr>
<td>Client Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales &amp; Mkt Efforts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDi / Non-SDi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Cases & selection criteria

Data collection

Different sources of information have been used in this research project by means of the following research methods:

- Semi-structured interviews;
- Analysis of documentation of the process;
- Informal conversations on the cases;
The interview is one of the most important sources of information for a case study (Yin, 2009). After the selection of the cases that would be studied the key informants for the project were identified. The key informants were those team members that did most of the development work and the leader/responsible manager of the project. Informants of each project were identified and asked to participate in the research. These informants were either the managers of the project or the team members that had the most knowledge on the development either through their influential role or developmental knowledge. One to 1.5 hour interviews were planned that took place either in person or via telephone as interviewees were located across the globe. In advance of the interviews a list of questions was created based on the research model. These questions formed a basis for the interview and gave the possibility to elaborate and gain a great variety and clarity of information on the subjects of interest. In preparation the role of the interviewee in the organization and the project was analyzed to understand their point of view better. Each interview was transcribed and a summary of each case study was sent to one of the informants to comment on the information.

In addition, the available project related documents were analyzed. These documents helped to gain a better understanding of the projects ‘progression, the developed services and their value propositions. After the interviews documents and archival records were used to confirm the information on project progress, depth of performed research and quality of development work gained in the interviews. If information remained unclear after the interviews the informants would be asked for additional information and clarification through informal conversations, phone calls and emails.

**Analyzing case study data**

The aim of data analysis is to diagnose the problem at hand and derive general theories. The collection of data has led to a large amount of unstructured data that has to be transformed into meaningful conclusions. To prevent this analysis from being subjective, this analysis will be structured. Here we rely on theoretical propositions for the analysis. The research model will be based on theoretical propositions that are also used to shape the case studies. When analyzing the data these propositions help to focus on the right data and find alternative explanations (Yin, 2009).

The studied cases are described in so-called ‘within case studies’. These describe the events and specific environment of the single cases in respect to the theoretical propositions. The single cases are concurrently analyzed in a ‘cross-case study’. The cross case study will explain the causal links that are present over a number of cases and thereby increase the validity of the findings of the within case studies.

In this research the narrative strategy as well as visual representations is applied for the analysis of the case studies. Narrative strategy involves the creation of detailed stories from the raw data for the within-case analysis. These chronologies help to clarify relations between events over time and across levels. It helps to understand the influence of decision making over time. As these chronologies provide excellent descriptions but are lengthy, visual descriptions will be used to represent a large number of dimensions and can be used to show the sequence of events in a process. The visual representations are also used in the cross-case studies.

**Quality of the research**

The quality of the analysis is influenced by the reliability, controllability, construct validity, internal validity and external validity (Van Aken, 2004). The quality of the research depends on these factors
and high levels of validity are required to make the research developed technological rules of more value.

A research is reliable if the results of the study are independent to the characteristics of that particular study. A reliable study can be replicated by others and lead to similar results. High reliability of the study is sought by means of an increase of the sources of information and a defined model of analysis. Therefore multiple data sources are looked upon. By means of data triangulation, shortcomings of methods are accounted for and data is complemented. As cases are in most cases recorded the evidence is documented. The controllability is improved in this way and by means of a description of the approach and methodology as done in this section. By showing how the study was executed makes it possible to judge the reliability and validity of the research.

The other factors refer to validity, the relation between premises and a conclusion. Construct validity is the extent to which measurements describe what they were meant to describe. By using data triangulation, a review of results and description of data collection procedures this validity can be improved. These methods have been employed as is shown by multiple sources of data, reviews by informants and descriptions of the methodology and techniques.

The internal validity of the research depends on the quality of the conclusions on the relationships of phenomena described in the report. The causal relationships are analyzed by combining findings from different observations. As only 7 cases are studied and the considerable differences between those cases lead to a high level abstraction in the conclusion, the internal validity is limited.

The external validity is achieved when the conclusions of this research can be generalized from its context towards other situations. As this research has been conducted within UTi, a single LSP, the applicability of the conclusions to other LSPs is presumably limited. This is strengthened by the limited number of cases studied. However, the high level analysis of this research has not led to very specific conclusions making it more likely that conclusions can be generalized.
3. Analysis of literature

As discussed in the introduction (Chapter 1), innovation has become more important for LSPs in the latter years as it creates benefits including higher client value, additional revenues, improved processes and ultimately competitive advantage (Busse & Wallenburg, 2011). Better understanding of the service development process in LSPs is thus important to improve the innovation capability of LSPs.

In this analysis of literature the current literature will be examined to derive a reference model that describes the organization of new service development in LSPs. This conceptual model will, later in this research, be confronted with the current practices at UTi and thereby form the basis for a redesign. This chapter is organized as follows:

- First, the specifics of innovation in LSPs are discussed,
- Next, the concept of ‘productization’ will be elaborated upon,
- Third, the organization of NSD processes in generic NSD literature is described,
- Fourth, a number of success factors for service development in LSPs are described
- Finally, the conceptual model is presented based on NSD process literature and the success factors.

3.1 The LSP context to service innovation

Service Innovation

Innovation is described by Johnson et al. (2000) as a multi stage process in which ideas are transformed into products, services or processes that lead to increased value for clients in the marketplace. A new service is defined as something that was not previously available to clients and now aims to present them with new or higher value. A service innovation encompasses changes in the things that the firm offers and/or changes in how these are created and delivered (De Jong et al. 2003). The creation of service products is however not easy and many new products fail to perform (De Jong et al., 2003). Within the LSP industry it is seen that innovation has become ever more important but that the innovation activity of LSPs is rather limited (Wagner, 2008) and that many business lack experience in this field (Wagner & Franklin, 2008)

The business environment of LSPs

Literature describes that innovation of LSPs is different than other service firms because of the specific environment in which LSPs operate (Busse and Wallenburg, 2011). It is thus important that research on innovation in LSPs takes their specific business environment into account as their innovation activity and performance differs from other service providers. Busse and Wallenburg (2011) identified three distinguishing factors:

- Central role of the LSP in the market;
- Demand of client-specific solutions;
- Decentralized structure.

The LSP has a very central role in the supply chain as it gets in touch not only with their own clients but also with the clients of their clients. Innovations are likely to have an impact on multiple actors.
LSPs should have a good understanding of the client’s needs but also the client’s clients’ needs (Flint et al. 2008).

The high demand of client-specific solutions is the result of two factors; (1) the importance of individual clients and (2) the presence of clients in many industries. The close relationship of LSPs and clients makes it easier to understand the wishes of individual clients. However, this may impose a difficulty to abstract from individual customer wishes so that contentment with a role as vicarious agent of the outsourcing company may result (Sauvage, 2003). This role of vicarious agent results in a dependence on innovative ideas of the client and a difficulty to abstract these ideas to the market as a whole.

The decentralized structure of LSPs is the result of the need to be spatially close to the clients. This has the effect that employees are spread out around the globe, and there is a lot of service development in the periphery of the organization. Those that work on development take many different approaches and have not much experience (Flint et al. 2008).

**Implications**

The specific environment of LSPs thus has an effect on the management of service development. Wagner and Franklin (2008) name three challenges to the use of standard NSD models:

1. The rigid nature of standard models for NSD does not fit with the complex and divergent market needs;
2. The need for centralized development does not fit with the decentralized structure of LSPs;
3. The high variety in client needs and high customization of service delivery demands careful consideration of market needs.

According to Wagner and Franklin (2008) an LSP should learn from individual clients and identify market trends and so develop services that can be customized within the delivery of the service.

### 3.2 Productization

**New Service Development**

New service development (NSD) is the process of transforming an idea into a service product that is new for the supplier and bringing it to market (De Jong, 2003). It is concerned with the creation of a service product that provides competitive advantage to the firm. The firm-based development of new services (section 1.4) is traditionally referred to as NSD. The idea of NSD is to design high quality into the service system from the outset to consider and respond to client’s expectations in designing all the elements of the service (Edvarsson, 1997). According to Edvardsson & Olsen (1996) the service development process is aimed at creating the right prerequisites for a client specific service delivery. The service prerequisites are: the service concept, the service system and the service process. The service concept describes what the service is aimed to do, the service system describes the necessary resources for service delivery and the service process is a generic version of the client-specific delivery process. These elements form the service and thereby influence the perceived quality. The NSD process is however not only concerned with developing quality services but also with implementing them and putting them into market. The implementation is by some considered to be the most critical in NSD (Scheuing and Johnson, 1998). The implementation is concerned with
implementing the operations plans, implementing the communication strategy and the market introduction (Scheuing and Johnson, 1998).

**Productization**

Within LSPs, the development of new service products is often a process that is based on the development of a client specific solution, the client-led approach to development as discussed in section 1.4. In contrast to the ‘firm-based’ approach in which a service is derived from scratch as in ‘regular’ NSD, the client-led approach can benefit from a lot of knowledge that has been obtained during solution development. These solutions provide a valuable source of information and already developed capabilities for the development of new service products. The challenge for a LSP that wants to extend these innovations to a broader customer base is that it typically must re-engineer this innovation to ensure that it can be supported by the firm and can be applied in a reliable manner to other clients (Wagner and Franklin, 2008). To benefit from the knowledge and competencies developed for a single client and offer this unique value to other clients the developed solution needs to be ‘productized’ (Valminen and Toivonen, 2009).

Productization is a process in which a service’s content, purpose and price is defined and packaged into a systemized service offering (Valminen and Toivonen, 2009). Productization is about transforming and thereby concretizing a solution into a service product, a standard offering that can be delivered to multiple clients while the outcome is still customizable (Jaakkola, 2011).

For productization three main tasks have to be completed (Jaakkola, 2011):

1. **specifying and standardizing the service offering**: ensuring that the service meets (most) client needs
2. **systemizing and standardizing processes and systems**: create a service that a firm can repeatedly produce with similar quality and high efficiency.
3. **tangibilizing and concretizing the service offering**: be able to offer a communication that concretizes the service offering and enhances its visibility and desirability.

These three tasks are in essence comparable to the tasks of service development. Task 1 is comparable to the development of a service concept; task 2 is comparable to the development of a service system and process as well as with implementing them, while task 3 is comparable with the creation of a marketing plan. According to Valminen and Toivonen (2009), productization is very near to traditional NSD but is more neutral in regard to the newness of the service; it can be applied to offered services as well). Using a formal NSD process for the productization of a solution will result in a productized service product (Valminen and Toivonen, 2009). Thus, **NSD processes can be used for development of new services using both a ‘client-led’ and ‘firm based’ approach**.

### 3.3 Towards a model suitable for LSPs

This paragraph will present the findings in regards to the research question: *How can new service development processes in Logistics Service Providers best be modeled based on literature?*

**New Service Development models**

For many firms service-product development is an informal process and opportunities for innovation are often not recognized, it simply ‘happens’ (Gallouj and Weinstein, 1997). Although many service
firms develop services ‘ad hoc’ and perceive the formalization of the development process as invaluable and more difficult, research has shown that a formal approach to development makes new products more successful (Johne and Storey, 1998; Vermeulen, 2005). Scholars indicate that formal management of the NSD process in LSPs will lead to increased customer value (Flint et al., 2008) and improved results (Wagner, 2008). However, LSPs that are willing to innovate encounter the problem that innovation models have been developed in other industries while no LSP-specific models exist (Wagner & Franklin, 2008).

Several (types of) generic models for NSD have been designed over time. A review of literature has brought about 12 models for NSD that have been designed since 1984. A distinction can be made between activity-stage models and organizational factor models (Stevens and Dimitriades, 2005). Activity stage models focus on the actual development activities that are carried out during product development and break these tasks up into stages. The tasks and stages are deemed to reduce the uncertainty in the process between idea generation and putting a product into market. Organizational factor models focus on the organizational determinants that lead to developing a successful service product. They describe the way organizational factors are to be organized to transform inputs into successful products. These factors provide an understanding of the management of NSD. Stevens and Dimitriades (2005) argue that to manage the NSD process as a whole, both perspectives should be used. Comprehensive models look at the process holistically.

3.3.1 A model describing development in LSPs

The service literature presents multiple NSD models and a review of this literature has brought about 11 models (appendix C). Some of these models are more well-known such as the model of Booz et al. (1982) but none of these models has been regarded to be the ‘standard model for service development’. In section 3.1 it was described that because of the specific business environment of LSPs barriers have arisen for the use of standard NSD models. An investigation of the found models brought about that the generic NSD model of Johnson et al. (2000) (Figure 7) is a model that copes with these barriers as described in LSP literature. The model of Johnson is non-linear and highly iterative making the model less cumbersome and rigid which is one of the barriers for LSPs of most models. The non-linear nature emphasizes interdependence between design and development. The model gives room for learning and new insights at later points in time. Furthermore, the model describes a high number of tasks that are tested in various settings (Froehle and Roth, 2007). Thereby, the model provides a detailed insight in the tasks that are to be performed during NSD. The second barrier, need for central development, is thereby minimized. The description of tasks provides more guidelines for decentralized employees while the grouping of tasks into phases reduces the need for centralized management into a limited number of occasions. Thus, the model provides a roadmap for local development teams but is flexible and needs limited central management. In regards to the third barrier, careful consideration of market needs, the model describes the impact of organizational factors. These organizational factors are mentioned by Johnson et al. (2000) as development “enablers”. Yet the only comment that is made is “The enablers have a positive impact on the NSD cycle time and allow service developers to design the service delivery system so that the new offering matches the need of the customer” (p19, Johnson et al., 2000).

The model of Johnson et al. (2000) copes with the barriers that arise for most NSD models. Besides that, according to Froehle and Roth, (2007), the model of Johnson is derived from models developed
for a variety of industries and tested in diverse settings; industry- or firm-specific idiosyncrasies are not embedded within its structure. These findings indicate that the model of Johnson et al (2000) forms the basis for the answer to the first research question.

The model does not describe the organizational factors in detail while a comprehensive understanding of NSD process is needed as discussed in the beginning of this section. In the next section this dimension of the model, the organizational factors or ‘enablers’, is elaborated upon.

Figure 7: New Service Development Process Cycle of Johnson et al. (2000)

3.3.2 Organizational factors influencing Service Development

Johnson et al (2000) describe three organizational factors, which they call ‘enablers’ in their model of NSD (Tools, Teams and Organizational context). The effective use and management of these enablers supports the development process. To gain more insight in the ‘enablers’ of NSD in LSPs and to be able to construct a comprehensive model, the success factors of NSD are looked into. Many scholars (e.g. Johne and Storey, 1998; De Jong, 2003) have investigated success factors of service development. The concept of innovation in LSPs has been ignored by service innovation researchers for a long time (Flint et al. 2005). In the latter years research has increased and resulted in a larger but dispersed body of LSPs innovation management research (Busse and Wallenburg, 2011).

Multiple success factors have been identified by researchers. These can be classified in many respects. De Jong et al (2003) classified them as follows: factors related to the NSD process; factors creating a supportive innovative climate and external conditions. Since it is impossible or at least very hard to influence the external conditions for the firm itself these success factors cannot be classified as manageable success factors. For this research, success factors that influence the process directly or indirectly through an innovative climate were investigated. Adams et al (2006) investigated multiple classifications of innovation management and aggregated them into following 7 categories:

- inputs,
- knowledge management,
- strategy,
- team structure and culture,
This organizing framework of Adams et al (2006) is used to classify the service development success factors. The LSP literature has been reviewed to find success factors specifically in the light of LSP innovation. A number of 16 success factors have been identified within LSP literature in all of the given categories. LSP literature is still limited, the literature on generic NSD research describes some more factors that were not found within LSP literature. The findings from LSP are complemented with those findings from NSD that are not in contrast to the barriers to innovation as mentioned in section 3.1. The 21 success-factors for service development in LSPs are, grouped per category, shown in Table 2. A more elaborate description of the success factors can be found in appendix D.

<table>
<thead>
<tr>
<th>Organizational factor</th>
<th>Success factors for service development in LSPs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inputs</strong></td>
<td>(1) Resource fit (L)</td>
</tr>
<tr>
<td></td>
<td>(2) Project leaders that are dedicated to the project (L)</td>
</tr>
<tr>
<td></td>
<td>(3) Experienced development employees (L)</td>
</tr>
<tr>
<td><strong>Knowledge Management</strong></td>
<td>(4) Client-idea usage (L)</td>
</tr>
<tr>
<td></td>
<td>(5) Use of organizational knowledge (L)</td>
</tr>
<tr>
<td><strong>Strategy</strong></td>
<td>(6) Strategic fit of the project (L)</td>
</tr>
<tr>
<td></td>
<td>(7) Managerial Support (L)</td>
</tr>
<tr>
<td></td>
<td>(8) Development Rewards</td>
</tr>
<tr>
<td><strong>Team structure and culture</strong></td>
<td>(9) Open Culture (L)</td>
</tr>
<tr>
<td></td>
<td>(10) Involvement of client contact-employees (L)</td>
</tr>
<tr>
<td></td>
<td>(11) Autonomous development team</td>
</tr>
<tr>
<td></td>
<td>(12) Proactive and client focus (L)</td>
</tr>
<tr>
<td></td>
<td>(13) Multifunctional teams</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td>(14) Project management (L)</td>
</tr>
<tr>
<td></td>
<td>(15) Formal NSD process (L)</td>
</tr>
<tr>
<td></td>
<td>(16) Client cooperation (L)</td>
</tr>
<tr>
<td></td>
<td>(17) External cooperation</td>
</tr>
<tr>
<td><strong>Commercialization</strong></td>
<td>(18) Market Research (L)</td>
</tr>
<tr>
<td></td>
<td>(19) Training (L)</td>
</tr>
<tr>
<td><strong>Portfolio Management</strong></td>
<td>(20) Use of Innovation objectives</td>
</tr>
<tr>
<td></td>
<td>(21) Use of risk/return metrics (L)</td>
</tr>
</tbody>
</table>

Table 2: Success factors of NSD grouped per organizational factor (L) = derived from LSP literature

3.4 Conceptual Model

The previous sections gave an elaborate overview of the scientific insights in respect to the development of new logistics service products. This section presents the conceptual model for NSD in LSPs.

For successful NSD within LSPs a number of tasks have to be completed and a number of success factors are to be present. The conceptual model for NSD in LSPs therefore has two dimensions. The first dimension consists of the activities and process-tasks required to develop the new service while the second dimensions describes the organizational factors that influence this development process. NSD in LSPs takes two approaches, client-led and firm-based. Within client-led projects a client
specific solution has to be ‘productized’. The conceptual model can be used for both approaches to NSD as “the tasks for ‘productization’ are in essence the same as those of NSD but NSD is more neutral in regards to the newness of the service” (Valminen and Toivonen, 2009).

The conceptual model is presented in Figure 8. The organizational factors, the success factors, are derived from literature and support the NSD process as well as an innovative climate for improved service development success in terms of market value and sales and marketing efforts. The conceptual model serves as a framework for the analysis in combination with the research question. This analyses how NSD is performed in practice and if the development tasks and organizational factors indeed lead to the expected success of development outcomes. It is important to know whether the factors in the model are important in successful development, thereby a design for NSD can be determined.

![Figure 8: Conceptual model](image)

**Description of the model**

The first dimension of the model is the ‘activity-dimension’. The model represents a progression in planning and execution activities. The first two stages of the cycle, design and analysis represent the planning phase of the cycle in which decisions on market viability, resources and capabilities are considered. The final two stages, development and launch represent the execution phase in which the actual service delivery system and marketing plans are developed. In each stage of the model the execution of a number of tasks need to be completed to reduce the uncertainty of the success of the outcome. The model is iterative, learning in the process can alter decisions made early in the process, the model is thus not linear. Tasks do not need to be executed sequentially. The tasks of the model that are described in literature to add to the success of outcomes are:
DESIGN PHASE

**Formulation of new service objectives/strategy:** In order to ensure that a development project is efficient and effective, the objectives and strategy of the project need to be determined. Based on the firm’s strategy, the objectives and strategy of the effort itself need to be set to direct the effort in line with the targets of the firm.

**Idea generation:** A high number of ideas are to be generated based on the strategic objectives. As in ‘productization’ an idea is already chosen, we assume that this task is skipped in these projects.

**Idea screening:** Based on the strategic objectives of the firm, the collected ideas can be screened to select the more promising ones. This is a quick analysis and prevents the firm from putting resources into ideas that have little potential in the first place.

**Concept Development:** Ideas need to be transformed into service concepts that serve the needs of the market. Edvardsson & Olson (1996) describes the service concept as a description of the needs of the client and how they are to be satisfied in the form of the content of the service and possibly supporting services. The concept forms the basis for the perceived client value as the other development activities are based on the service concept.

**Concept Testing:** A test is needed to ensure whether potential clients (1) understand the idea of the service, (2) react favourably to it, and (3) feel it offers benefits that answer needs that are not met yet (Murphy and Robinson, 1981).

ANALYSIS PHASE

**Business analysis:** A detailed analysis of the attractiveness of the idea in business terms is needed. The analysis consists of a market assessment, assessment of the strategic fit and a financial analysis.

**Authorization:** The analysis should bring about whether the concept is likely to meet the firm’s ROI requirements and is aligned with the firm’s strategy. A decision is to be made whether resources are committed to the execution of the remainder of the product development process.

DEVELOPMENT

**Service process and system design:** The service concept is in this step turned into an operational entity, an actual product. The development of the service system is concerned with preparation of the resources for service delivery. These resources are to be prepared for the delivery, either by actual development or by their appointment of tasks during delivery. The service process is the prototype for the various client-specific delivery processes. The process and system determine the quality of the service delivery and thereby affect the client value.

**Marketing plan development:** The marketing plan outlines the marketing efforts related to the product. The marketing plan describes how the offering will be communicated to the clients, how it is packaged (priced) and to whom the sales efforts are directed. The marketing plan has an impact on the perception of client value and ultimately the success in the marketplace. The marketing plan should also describe a roadmap of the launch of the service into the market and the objectives in this. A roadmap provides management with a tool to manage sales efforts, targets and plan communications over time.

**Test marketing:** Testing the marketing of the firm will help to understand whether the clients perceive the communicated client value as intended and whether they react favourably to it.

**Training:** Operational employees need to be able to deliver the service while sales teams need to be trained to sell the service.

**Service testing & Pilot run:** The service needs to be tested. As in house testing can only assure partial
functioning of the service. Pilot testing with clients is needed to ensure proper function as well. Testing shows also if the intended client value is perceived as such.

**LAUNCH**

*Full-scale Launch:* As the service and marketing plan are thoroughly tested, employees are trained and it is assured that clients and firm can benefit to the utmost, the company can introduce the service to the entire market. Sales teams can start to sell the service.

*Post Launch Review:* Post launch reviews are needed to check whether objectives are being achieved or that adjustments are needed. Feedback from clients or changing market conditions may require modification of the service.

The quality execution of these tasks is described in literature to help create successful products. The quality execution is influenced by factors of the second dimension of the conceptual model, the organizational factor dimension. This dimension consists of 21 successfactors for NSD in LSPs as described in section 3.3.2. These 21 successfactors were grouped in 7 categories and are represented in the conceptual model in Figure 8 by the 7 categories in the inner circle. Table 2 in section 3.3.2 describes all the successfactors. For these factors accounts just as for the development tasks that it needs to be determined which factors are important for development success in practice. Therefore the following chapter analyzes the current practices.
4. Case analysis

This chapter describes the current new service development at UTi based on a number of case studies within UTi Worldwide. Thereby the second research question will be answered: *What practices are currently deployed within UTi for new service development and what are its associated bottlenecks?*

This chapter is structured as follows: First, a description of the investigated cases is given. Then, the findings of a case analysis in which the current cases are compared to the current literature are given based on the development tasks in section 4.2 and the organizational factors in section 4.3. These sections show which factors relate to development success as described by literature. In section 4.4 the main bottlenecks are identified and the most important factors in this identified.

4.1 The cases

To investigate the current way services are developed at UTi and the organizational factors that influence this process a total of 7 cases is studied. Three ‘client-led’ projects are studied as well as four firm-based projects.

‘Client-led’ projects:

- 
- 
- 

‘Firm-based’ projects:

- 
- 
- 
- 

4.2 Case Analysis

The same set of topics needs to be addressed throughout the case study in order to maintain consistency and compare results (Yin, 2009). The outline of the case studies is based on the conceptual model presented in section 3.4.
The analysis will focus on (the quality of) execution of tasks and the presence and effects of the success factors. First the processes and execution of tasks will be analyzed after which the enablers will be discussed in regards to their presence and effect on success of outcomes.

Every case has been analyzed in a within-case analysis. These within-case studies provide detailed insights in the individual cases and give an understanding of the specific dynamics of these projects. In appendix E the 7 individual within case-studies can be found. This chapter will focus on drawing general conclusions out of these individual cases by means of a cross-case analysis.

4.2.1 Analysis of the development process

Table 3 presents the overview of the findings of the individual cases on the ‘activities-dimension’. The execution of tasks in the development process of the different cases is made insightful by means of this table.

- Column 1&2 present the cases,
- The last two columns indicate again the market value and sales & marketing efforts of the cases.
- The other columns show the results of the case studies:
  - Blank = task is not executed
  - P = Task is partially executed
  - X = Task is executed
  - - = Task was not relevant / project did not (yet) reach this phase

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Client-led</td>
<td>C1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>C3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm-based</td>
<td>F1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>F2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>F3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>F4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 3: Schematic overview of execution of development tasks

Table 3 shows that the execution of development tasks differs. The value of a service seems to be influenced by performing tests while marketing and sales efforts relate to the presence of marketing plans and sales training efforts. Drawing conclusions pure on the execution of tasks is however not possible.

Client-led projects execute only a minimum of the development tasks. Focus of these projects is on the documentation and marketing of the client specific solution.

The table can only present a very abstract view of the execution of tasks. The execution of tasks is not linear as the table might indicate, several iterations are made and tasks are sometimes
performed in a different order. A conclusion that can be drawn with the table at hand is that the execution of tasks differs. The tasks will be individually discussed to gain more insights in the effects of the current execution of tasks.

**Formulation of new service objectives/strategy**

Setting development goals makes projects more efficient. In those cases that goals are not set, projects are longer and new services are put into the market before all development tasks are completed. The extent of documentation for service implementation and delivery and the extent of training and sales efforts remain limited in those cases. Some of the services have partially been created but there are still ongoing efforts to improve the service, it remains unclear what can be expected of these projects. Some development team members have argued the product is finished while others argued that there were still tasks that needed to be completed. Without objectives, projects are less efficient and development time increases. At the same time new services are only partially finished and end up on the shelf rather than that they are actively being sold as support of the current outcome of development differs.

**Idea generation/productization**

Only in 2 of the studied firm based cases there was active idea generation. The other cases had no active idea generation as the emergence of a unique idea was the reason the project started and these were in those cases the reasons the project was initiated. Idea generation only was performed when no idea was present at the start of the project. In productization the ideas are based on clients solutions and therefore the need for idea generation was not present.

**Idea screening**

In those cases that idea generation has taken place idea screening is performed by the managers of the development team. In those cases that the project has not started yet, the manager is one of the idea-generators or already is informed about the idea at an early stage. The idea screening is based on an assessment of the potential, the match with firm strategy and the needed resources. Those ideas with support from management are turned into development projects. For many projects the idea screening stage is the first stage of the development project.

**Concept Development**

In the case of client-led projects the concept is sometimes an exact copy of the client-solution. There is only a very limited number of adjustments to the concept. In firm-led cases where idea generation activities were performed a project team is set up to derive a service concept out of this. Investigation of competitive offerings, incoming RFPs, the firms’ capabilities, industry trends and other research techniques form the main basis for new concepts. The ideas that have arisen as a result from entrepreneurial behaviour from employees and are more likely to be based on experience and perceptions of market needs and trends. These ideas are very valuable as the thorough understanding of market knowledge within the firm is used to come up with very valuable concepts.

**Concept testing**

Even though a product may be based on client needs it is not certain that these needs are translated correctly into service requirements. A test of the market value of the product can help to appoint a target market and further develop the product according to their needs (case x). A solution may be
too limited to function as a market test as only a single client is prompted. In the case of XX only after feedback of several clients was obtained it was realized that the service was overly complex.

**Business analysis**

Business cases help to set goals for the new service and help to determine the value of the service concept in the market and for the firm. The value to the firm is a strong contributor to business case. The strategy of the firm is supported by the development of new services that fit within this strategy and to create a balanced service portfolio. Projects that are promising but fit less with the strategy of the firm are likely to get stopped whereas projects that support the strategy and deliver value of efficiencies are far more likely to pass. The formality and extent of the business case helps to ensure that decisions are fact based and supported decisions are made.

**Authorization**

Authorization is given local managers that in the majority of cases make informal judgments based on their knowledge of development projects. With or without a business analysis, time resources are never formally appointed. Prioritization depends on the executive support and may shift over time, especially in those cases that the resources are appointed by a manager that is in the development team as well. Without a roadmap or goal for development it remains often vague what tasks are to be completed before and possibly after launch. The authorization gained after a business case analysis will provide the necessary finances. Time resources are not specified in hours but gain a priority in an on-going process of communication with the local managers, possibly supported by executive support.

**Service process and system design**

If the productization does not alter the service concept, development focuses on generic documentation of the already used service delivery process and a systemization of the service system that was used. The extent of documentation varies, some services are highly customizable and there is a high reliance on the ability to implement and execute of the employees themselves. The ability to replicate the service on a large scale may remain limited. The extent of documentation is related to the market demand.

In regards to firm based cases projects the development phase is more elaborate. Based on the concept the service requirements are transferred into a service process and service system. System and process design is aimed at preparing the service for sales to a large group of clients. Process design in this is often more limited, as experience in new service implementation and training of employees is high.

**Marketing plan development**

Because of the B2B environment there is only limited external marketing. Only one project makes use of this type of marketing. Sales goals are needed to ensure that sales teams proactively sell the service and that it does not end up on the shelf.

**Training**

Operations teams are trained if needed for the service implementation and delivery. In many cases however operations do not get trained until sales are made. Sales teams not only need to be aware but need to be informed thoroughly to communicate the value to the client and understand the
value to the firm is the service is to be sold proactively. If not, the product remains on the shelf until a client demands the service, efficiency of sales through service development is not achieved.

**Test marketing**
Test marketing has not been observed. The services were accompanied by limited external marketing and the value of test marketing was not observed. Because many sales and marketing efforts occur within a relationship marketing environment there is less emphasis on the marketing message but more on the relationship sales efforts.

**Service testing and pilot run**
In-house service testing occurs in the firm based cases to ensure the functioning of the service that can be tested without clients. A pilot run was only performed in one case. This pilot run helped to gain feedback on the match between client needs and the design of the service before it was brought to market. In the other cases the pilot run was not performed although the first actual sold services provided input for small redesign of the service.

**Launch & Post Launch Review**
Formal launch is only prepared in one case, in the other cases the launch is an on-going process in which improvements are made to the product and commercialization efforts increase. The introduction to the market often takes place while other development tasks are still being completed, the product is put onto market fast while testing and sales training still need to take place.

**Conclusion in regards to the process**
The execution of, and the quality of execution have seen to differ over the projects. The majority of the effects of tasks as described in literate were confirmed. It is hard to make generic statements but the analysis has provided the following conclusions for the effects of development tasks and learning points for the organization:

- Development is an iterative process, iterations are made to increase the value of services over time as new insights are gained.
- Development goals increase the efficiency of the development process.
- Ideas can arise in many ways, the quality of ideas generate within the firm based on information on client needs is high. Service concepts need to be backed by market research and tested with several clients to ensure market fit.
- Business analysis help managers to make fact-based decisions, set new service objectives and appoint resources formally.
- Sales teams need not only to be made aware but to be informed thoroughly about new services to ensure that they are able to proactively sell the service. Proactive sales ensures that the most value is achieved out of the NSD process, clients are offered new value and services do not remain on the shelf.
- Market launch is an ongoing process in which products are put into market early while testing and training activities continue and improvements are made in an iterative process.
4.3 Analysis of organizational factors

Table 4 presents the overview of the findings of the individual cases on the ‘organization factors-dimension’. The table presents an overview of the presence of success factors in the studied projects.

- Column 1 presents the categories in which the success factors are grouped,
- Column 2 presents the success factors as derived from literature,
- The other columns describe the management of success factors in the 7 studied cases
  - - = Not in line with literature
  - +/- = Partially in line with literature
  - + = In line with literature
  - n/a = Not applicable / no information on factor

The tasks will be individually discussed to gain more insights in the importance and effects of the success factors.

<table>
<thead>
<tr>
<th>Enablers:</th>
<th>Success factors</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>Resource fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dedicated project leaders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experienced developers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>Client-idea usage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of Organizational Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td>Strategic Fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managerial Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development Rewards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Structure &amp; Culture</td>
<td>Open Culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Client-contact Employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proactive-Client Focus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multifunctional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>Project Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formal NSD process</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Client Cooperation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other cooperation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercialization</td>
<td>Market Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sales Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portfolio Management</td>
<td>Innovation Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk/Return Balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Summary of success factors

**Inputs**

- **Resource fit**

A low priority results in a low availability of resources and high dependence on slack time. This puts pressure on the team and decreases the motivation to work on development tasks. Projects may come to a hold decreasing the efficiency of the process. Appointing resources needs to be formal. Capabilities and experience need to be appointed to development projects as well to ensure the quality of execution of tasks.
- **Dedicated Project Leaders**

Projects that have a more dedicated leader are likely to be more formal in nature. Having a leader that is committed to the project results in a stronger focus on project management. These project leaders are thereby able to drive the project through the difficult phases of a project with more efficiency. Without these project leaders projects are seen to be less efficient and lengthy.

- **Experienced developers**

Some projects were led by product experts and others by employees with more experience in solution development or commercialization. Experience in development of for example the SDi team has seen to result in more input into the documentation of products while inputs from experts have resulted in high client value as market trends could be analyzed. IT and SDi employees are relatively experienced in developing and implementing new services but are less experienced in bringing a product to market and ensuring that market needs are met. Therefore project teams are multifunctional.

**Knowledge Management**

- **Client-idea usage**

The use of client ideas and information is obvious within the client-led projects. The use of these ideas does not guarantee however that these ideas will provide value to the market as is seen in case C1. The firm-based cases that are the result of ideas that are generated within the firm and are thereby not directly based on ideas of clients but are all based on some form of client or market information. Case XX is found to deliver high value to clients even though the idea did not came from clients, while case XX is based on a strategic idea and the value to the market is unknown. Client ideas provide a valuable source of ideas but it is not guaranteed just as within ideas generated without clients that these ideas will provide value to the market.

- **Use of organizational knowledge**

Organizational knowledge helps to ensure a swifter process and keep projects on track. The use of organizational knowledge is complicated because of the decentralized structure of the organization. In some cases it was observed that valuable knowledge did not get disseminated throughout the whole organization leading to situations in which knowledge was obtained late making the process less efficient.

**Strategy**

- **Strategic fit**

The firms’ strategy ‘client as one’ is broad and supports the development of services that support clients in a broad sense. UTi has addressed a number of industry verticals in which it is willing to expand, and this strategy gives guidelines for development. Furthermore UTi provides a very broad range of services, new services thus can be of value in extending the service offering or on the other side by kannabalizing existing services. A strategic fit is one of the main criteria of NSD projects.

- **Managerial support**

Managerial support is very important for NSD projects. Those projects that are supported by management have gotten more support within the organization making it easier to drive the project. Managerial support not only leads to more resources but also to a higher motivation to work on
these projects. As one employee put it “because XX supported the project, we knew that the project was being appreciated within the organization and that we should put extra effort in it to make it a success”.

- **Rewards**

Rewards creates more motivation for the project within the development team making the process more swift. Many of the projects were the result of the entrepreneurial culture within UTi and the willingness of employees to come with services that would benefit clients. Rewards help to support this culture.

**Team culture and structure**

- **Open team culture**

As development teams have a rather high degree of autonomy and open culture the teams are likely to be more creative and put more effort in the investigation of alternative directions of the project. Thereby it provides support for quality execution of tasks however it may also create less efficiency.

- **Client contact employees**

In many of the projects (C2,C3,F1,F3) client contact employees were involved in the development project. In the other projects there was some input from sales but the input from people that worked with clients on a day to day basis was limited. It depended on the type of service that was being developed how much value client contact employees could bring. In cases C2 & F1 the input from client contact employees provided valuable input on the way the service should be delivered that was not known by other employees. While in other cases such as C3 the input from client contact was only marginal as their work is not really influenced by the service.

- **Proactive Market focus**

Client-led development projects are in nature more reactive than firm based projects. The firm based cases were more proactive in nature and there is a stronger focus on selling the product, the market value of these services is the reason for development while in productized cases the documentation of the service may be a reason for the project. A market focus during development helps to prevent this as in case x.

**Project Management**

- **Project Management**

The lack of extensive project management in some productization projects shows that the development project is not always perceived as a project but more as ongoing efforts to document and market the service. Project management does ensure that development tasks are performed and that projects are more efficient. An efficient project has seen to ensure that the motivation of employees does not decrease over time and thereby does not affect the quality of work negatively.

- **Formal NSD process**
When projects become more formal it is more likely that development tasks are performed with projected quality. Besides the prioritization of projects, the use of project charters can be seen as one of the explicating factors for the completion of development tasks and fast execution

- **Client Cooperation**

Clients have delivered input for the majority of the projects. In the client-led projects the client solution provided a lot of knowledge on client needs. In the firm-based cases analysis of RFPs, conversations with clients during regular business meetings and visits to trade shows provided input for development. The client involvement in these provided and the feedback provided very valuable information for the development team.

- **Other cooperation**

The cooperation with subcontractors (C2), external partners (C1), manufactures (F1) and other parties provided UTi with knowledge or capabilities it does not have itself. This cooperation has had a significant positive effect on the quality of NSD outcomes.

**Commercialization**

- **Market Research**

The use of market research techniques varies, market trend analysis and the use of internal knowledge on markets and client needs was most valuable to the development of new services. Yet market research did not provide in all cases sufficient answers to questions on market demand and needs. The novelty and complexity of services created a difficulty in the understanding of the new service. Service testing and iterative development was needed to ensure a market fit.

- **Sales training**

Sales training is essential to the ability to offer the service proactively. The use of extensive product sales training structures helps to ensure that the decentralized development teams are ware and knowledgeable about the service.

**Portfolio management**

- **Innovation objectives & risk/return balance**

A difficulty within portfolio management is the identification of new service ideas within the organization. Productization processes are not always identified as NSD from the beginning creating a situation in which it is only late realized that there is a need for these projects to be analyzed on an organizational level.

**Conclusion in regards to the organizational factors**

The cross case analysis provided insight in the presence and effects of success factors during NSD at UTi. In the majority of factors the effects as described in literate were confirmed. The following conclusions can be drawn in regards to the effects of the organizational factors:

- A lack of sufficient resources for development puts pressure on the team to put the service on the market early on and skip tasks as motivation to work on the projects
decreases. Capabilities and experienced need to be provided to assure quality of execution of tasks

- The use of client ideas does not guarantee that services will be valued by the market.
- Managerial support leads to motivated employees as well as additional resources.
- Rewards for entrepreneurial and innovative behavior supports this behavior.
- Open team culture is used to stimulate entrepreneurial behavior during development, employees are allowed to work on ideas.
- Without proactive market focus new services are likely to be of limited value as they are not much more than documentation of client solutions and remain on the shelf.
- Some client-led development projects are not perceived as such but as ongoing documentation and sales efforts.
- A formal approach to development helps to ensure that development tasks are executed.
- The value of cooperation with clients varies but cooperation with external parties is seen to add much value.

4.4 Observations

Based on the analysis of the process and organizational factors a number of observations can be made in regards to the confrontation between the conceptual model and current NSD practices at UTi. The effects of the factors and tasks in practice in these areas lead to the following observations or, points of improvement:

*This section is not included in the public version*
5. Solution Design

The main research question is answered in this research by means of three sub questions. The first two have been answered so far:

1. **How can new service development processes in Logistics Service Providers best be modeled based on literature?**

In chapter 3 the analysis of literature brought about a conceptual model. The conceptual model describes functional requirements of NSD in LSPs in terms of a number of development tasks that need to be performed as well as a number of success factors that ought to be present.

2. **What practices are currently deployed within UTi for new service development and what are its associated bottlenecks?**

Chapter 4 describes the analysis of the current practices for NSD at UTi in terms of the activities that are being executed as well as the presence of organizational factors. Section 4.4 specifies the bottlenecks of the current NSD processes.

This chapter describes the solution design that is created for the development of new service products. The main research question will be answered. In section 5.1 a number of design criteria will be defined. The actual solution design is presented in section 5.2.

5.1 Design criteria

In this section the third research question is answered:

3. **What are relevant design criteria?**

The success factors and development tasks in the conceptual model are in general supported by the analysis of practice, their effects on success are confirmed. The analysis brought about four observations. If the four observations are compared to the conceptual model, three factors arise. These three factors are not fully addressed in the conceptual model but are found as patterns in the current NSD practices. The conceptual model needs to be redesigned on these three points to ensure that a design of NSD in the LSP context is valuable in practice:

1. **Productization**

The productization of client-solutions in practice takes a different approach to the development of new services than through NSD. The focus of productization is on the systemizing and standardizing processes and systems and the tangibilizing and concretizing of the service offering. Productization is aimed at readying a client-specific solution for the sales and implementation at other clients. The productization project is not often perceived to be a development project but is either seen as part of the solution development project or as an effort to document knowledge and provide sales with information about the firm’s capabilities. Productization efforts that only consider documentation and marketing plan development need considerable fewer resources than those productization efforts that follow an entire new service development process. Solutions of which the service
concept is not altered during productization follow a different process than those solutions of which the service concept is altered. *Within the NSD process a decision should be made whether a solution needs to be productized or that a solution only needs to be documented and marketed.*

2. **Project development guidance**

Formal development processes help to ensure that tasks are executed. Projects are less efficient if guidance is not provided through setting of goals, dedicated project management or a lack of capabilities. Organizational knowledge is hard to transfer within a decentralized organization, not only identifying this knowledge on a central level is hard but disseminating this knowledge to local teams is a challenge. *Local development teams need to be supported with guidance in development, resources and organizational knowledge.*

3. **Quality of execution of tasks**

Development is an iterative process and within the productization of services the need for development tasks is not always recognized. Business cases that are more elaborate and formally constructed help to ensure that decisions are based on facts rather than managerial preferences and commitment. *Quality of execution of tasks needs to be assured throughout the process.*

5.2 **Detailed solution design**

Based on the design criteria a design is made to answer the central research question:

*How can the New Service Development process be optimally organized within UTi in order to ensure that value is offered to groups of new and existing clients?*

The NSD process for UTi is shown in Figure 9. The model can be used for both client-led development as firm-based development. The model consists of 2 levels:

1. Project level
2. Organizational level

The project level will help UTi to manage individual projects but the organizational level is indispensable for successful NSD. As development occurs local, the organizational level is needed to reap the benefits of a portfolio of NSD projects.
Project level

On the project level a number of development tasks need to be executed. Every project needs to pass the development phased and the development tasks need to be executed. In the case of client-led projects first a decision has to be made whether to productize the solution using an NSD process or to productize the solution by merely systemizing the service and putting it into market.

- **Within the NSD process a decision should be made whether a solution needs to be productized or that a solution only needs to be documented and marketed.**

The cases have shown that in many client-led projects, the development chooses to merely document or systemize the client specific solution and to make it available to other clients. In this the focus is on sales training on the solution and ensuring that the solution can be replicated. This approach is less complicated and demanding than an NSD process. To determine whether it is worthwhile to start a NSD process a decision tree is created (Figure 10). Using this decision tree at the start of a client-led project can help to identify the needed tasks during development.
In case the most value to the firm lies within the systemization of the solution and the market launch of this service a leaner version of the NSD process model is to be applied.

- **The quality of execution of tasks needs to be assured**

Two gates have been incorporated in the model. In these gates the project is assessed with at the end a decision whether the project and thereby investments can be continued or that it needs to be stopped or that additional efforts need to take place before the next phase of development is entered.

By putting gates in the development process, decision makers can assess whether development tasks are executed in a quality fashion and whether the project is worth investing. To prevent the process from being bureaucratic only two gates are placed. By placing a gate in/after the analysis phase the value of the service concept can be checked, hereby assuring that the market value is known. The gate after development ensures that the service and a marketing plan are developed before the product is put onto the market, thereby structuring the market approach. The market launch itself is an on-going process of continuous training, testing, reviews and improvements. The value of gates here is not present.

- **Local development need to be supported with guidance in development**

The most important part of the model on the project level is to describe the underlying activities within the stage in more detail. The detailed description of tasks is accompanied by a number of checklists (Appendix E) that describe a high number of factors that are to be considered during development. As the nature of development projects varies the needed tasks and their relative importance varies. To prevent overly bureaucratic work, the checklists describe a number of considerations instead of deliverables. As the importance of these considerations is likely to vary over different projects, the checklist is flexible but has to be accompanied by good project management and the use of gates.

**Formulation of objectives**

For a new service development objectives need to be set at the beginning of the project. Objectives direct the new service effort and imbue it with effectiveness and efficiency. A new service objective has to be an outgrowth of the innovation strategy of the firm and marketing objectives.

**Idea generation**

Ideas for service products are generated at various places within the firm. These ideas may have resulted from client solutions, strategically guided idea generation sessions, entrepreneurial behaviour of employees or external sources. The different sources for ideas are linked to the presence of some of the enablers. Firm-based projects are for example more likely to fit with strategy. The main criteria for the idea generation task are:

- Employees are to be encouraged to listen to and capture ideas of clients;
- The product ideas of delivered solutions are to be captured;
- Ideas of clients and employees are to be collected actively;
- Resources should be invested into the generation of ideas to increase the pool for potential service products;
- Idea generation activities are to be supported by a strategy or goal;
- Goals for the service product need to be generically defined.

**Idea Screening**

The ideas that are generated are to be collected and recorded so that an overview is created of all development activities within the firm. This improves communication and information sharing on the topic, supporting the project as whole and generating inputs. A central entity can then ensure that project management is performed and a formal process is used. The assembled ideas are to be subjected to a first and relatively crude sorting procedure that separates the more promising from the less meritorious ideas. By performing portfolio management resources can be used more efficiently. The main criteria for this task are:

- Records of all service ideas are to be created by the product marketing team.
- Ideas are to be sorted and prioritized at least periodically.
- After the prioritization a project leader/development team is to be appointed.
- Deliverables for the business case are to be described, planning to be made.

**Concept Development and Testing**

This task includes the development of a full-fledged concept of the service idea. The concept describes the utility of the service to the client and its benefits. The service concept is a description of the needs of the client and how they are to be satisfied in the form of the content of the service and possibly supporting services. The reactions of clients are to be examined in a concept test. The main criteria for this task are:

- Define target market;
- Client needs are defined; input from client, experts, client contact personnel and market research brings about valuable information;
- The content of the service, the service specification, is based on these client needs;
- The adaptability of the content of the service to individual client needs, the level of customization is to be defined;
- A multiple of clients is prompted in the concept test to confirm the need in the market.

**Business analysis & Authorization**

A business case needs to be developed to assess the value to the firm. It consists of a comprehensive scrutiny of the business implications of the concept. This encompasses a complete market assessment, strategic analysis and financial analysis. A roadmap for the remaining development of the augmented service offering is created. Authorization is decided upon and resources are appointed.

- Business analysis are made for all projects;
- The market assessment is based on multiple sources of information;
- Strategic analysis describes the value to the firm and the fit with corporate strategy;
- Financial and time investments are estimated
- The risk of product success is to be assessed;
- Roadmap for the remainder of the project is made;
- Project authorization is based on the outcomes of the business case not on gut feel.
- Financial and time resource commitments must be made and kept.
Process and System Development & Testing
The development of the service system is concerned with preparation of the resources for service delivery. These resources can be categorized in 4 groups: employees, organisation and control, clients and technical resources (Edvarsson & Olson, 1996). These resources are to be made ready for the delivery, either by actual development or by descriptions of the tasks during delivery. The service process is the prototype for the various client specific delivery processes and must be mapped to be able to develop for quality and productivity before actual delivery. In some cases the service implementation process has to be defined as well.

- Before process and system development the level of standardization needs to be defined;
- The level of detail in descriptions and documentation needs to be considered in regards to the knowledge and capabilities that are available in the organization, the demand in the market and efforts that are planned in regards to training of employees;
- The client needs are to be used to derive the service process, the client experience is dependent on the design of the service delivery process;
- After development the service system and process need to be tested to ensure proper functioning and the match with market needs;
- Based on the service process and system a training plan needs to be developed to train employees in service implementation and delivery.

Marketing plan Development & Sales Training
The marketing plan outlines the marketing efforts related to the product. The marketing plan should describe the marketing mix in terms of the 7Ps: Product, Place, Promotion, Price, People, Process and Physical evidence. In order to be able to make decisions on how the 7Ps are used, the target market, client segments, and competitors need to be analysed and objectives need to be set. As relationships are very important to the sales and marketing within an LSP, training of employees is very important. The marketing plan should describe how the organization is to be trained to sell the service.

- Marketing plans, marketing strategies and launch plans are to be written;
- Marketing objectives should be placed in a timeframe, a roadmap;
- Internal marketing should not only be aimed at the sales teams, all employees can be marketers;
- A sales training plan should describe who is to be trained on the product.

Market Launch and Post-Launch Review
Market Launch can be a formal occasion but is more often an on-going process. In both cases it is important to manage this process to ensure that marketing objectives are met and sales training is done as planned. Post-Launch reviews are needed to be able to improve the offering if needed or to act upon changes in the market or the firm.

- The (post)launch process needs to be managed
- Product owners are to be appointed to ensure that product management takes place.
- Periodic reviews are to be scheduled to look for improvements and learn from the experiences.
The implementation of the above descriptions of tasks and the checklists in all development projects helps to ensure that employees are aware of their tasks and relative importance. Project management can easily monitor development work as checklists are used.

**Organizational level**

- **Local development teams need to be supported with guidance in development, resources and learning**

On a project level the NSD process can be organized by use of a formal NSD process as described previously in this section. To benefit from this process, the process needs to be supported on an organizational level. To be able to formulate objectives for development, an *innovation strategy* should be present on an organizational level. Local development teams benefit from this innovation strategy as it helps to guide and manage development projects locally. By performing *portfolio management* in combination with the stage gates on the project level resources can be assured for promising projects. *Learning* on the organizational level can help inexperienced development teams gain access to development experience on the project level.

**5.3 Recommendations**

Chapter 4 showed that a number of success factors were not in line with the conceptual model. Four barriers were observed in the current NSD processes.

These four observations are perceived to be barriers to successful NSD in most projects. This section provides a number of recommendations to reduce these barriers.

*The recommendations are not included in this public version.*
6. Conclusions

In this section, we will look back onto the research project. First we will return to the research questions. After discussing the research question, the implications of the research for theory and practice will be discussed. Finally the limitations of this research project and directions for future research are presented.

6.1 Conclusions on the research questions

This research aimed to answer three research questions

1. How can new service development processes in Logistics Service Providers be described based on literature?
2. What practices are currently deployed within UTi for new service development and what are its associated bottlenecks?
3. What are relevant design criteria and how would a redesign look like?

In chapter 3, Analysis of literature, we described the current literature on service development in LSPs. Based on this literature a conceptual model was derived that describes NSD based on literature with the characteristics of LSPs in mind. In chapter 4, we looked into the current service development practices of UTi and found that... In chapter 5, Solution design, we focused on creating a high level model as well as a more detailed description as a redesigned service development process for UTi. A number of checklists were derived to assist development teams in the future. Finally a number of recommendations for the organization of service development at UTi were presented.

6.2 Implications for theory

The literature review showed that the topic of ‘innovation’ is important for logistics service providers today as competition increases and clients increasingly demand more sophisticated services. This case study provides evidence that formal innovation has not been a major concern of LSPs but rises in attention. Literature on logistic service provider innovation management has increased over the latter years but is not very integrated and comprehensive studies describing LSPs’ innovation processes and systems is far from abundant. This research helps to understand the current development processes within LSPs. Apparently, development takes two approaches; client-led development in which a client solution is ‘productized’ and firm-led development in which development starts ‘traditionally’ with an idea that is transformed into an offering. Development is, at least within some firms, not very formal and can be seen to be an effort that has to strive for attention of local, non-dedicated development teams. Product development is important to LSPs that want to compete. Development needs to be structured to ensure that the high amount of client knowledge of LSPs can be turned into offerings that are proactively offering value to the market as a whole. This research contributes to the existing LSP literature by investigating the applicability of a generic NSD model (of Johnson et al. 2000) in a LSP context. The applicability of a generic NSD model for ‘productization’ is investigated as well which provides insights for both LSP and non-LSP literature. Furthermore, this research has investigated how success factors for development as
described in LSP literature and NSD literature relate to development success and how they compare to one-another.

6.3 Implications for practice

This research provides UTi with a basis to improve its current service development processes. Although the solution design focuses on the tasks within the development process itself the recommendations provide a direction to improvement of the entire service development ‘system’ within UTi.

*The remainder of this section is not included in this public version*

6.4 Limitations & Further Research

This research has focused on the organization of service development within a logistic service provider. A number of limitations of this research can be identified. A common concern about the use of case studies is that they provide limited basis for scientific generalization (Yin, 2009). Seven cases have been studied from within different business units and levels of the firm increasing the internal validity. Yet, the limited availability of, and thus use of, quantitative data within the research made it hard to support the qualitative results with figures.

This research was a design study, this means that a solution design was created for the specific situation of service development at UTi. The data and research context are specific to UTi, therefore, the applicability of this research within other companies is limited. According to Van Aken (2004), the outcomes of the present situation need to be compared to the future situation after the design has been implemented to be able to draw theoretical conclusions. These steps could confirm or contradict the applied theories but as they are not executed yet the research findings are not assessed yet. So both, generalizability as the validity of the proposed design are subjects for discussion.

New service development was only investigated within a single Logistics Service Provider. Further research should thus be conducted to investigate the findings within other LSPs. Second, further research should investigate whether the made recommendations benefit the organization and can be confirmed. Other LSPs may have more professionalized development, their development could be compared to investigate the applicability of NSD models and the found best practices in LSPs. Third, ‘productization’ has to be investigated not per se within LSPs but within other service firms as well. The process of ‘productization’ has not been empirically tested on many occasions but may provide an new way of creating value that is less risky and demands less resources. No theoretical argumentation is provided about the trend in industry to ‘productize’ solutions instead of developing services from the ground up. Because of the familiarity with the solution and the limited resources that are needed for ‘productization’ these projects are often preferred by management. In future research the value of ‘productization’ in comparison to traditional NSD has to be compared as this may shed a different light on (portfolio) management of both types of projects. Because ‘productization’ is not studied extensively within literature the amount of research in this field and especially in regards to the success factors of product development are interesting to investigate.
References


Wallenburg, C. (2009) Innovation is logistics outsourcing relationships: proactive improvement by logistics service providers as a driver of customer loyalty, *Journal of supply chain management, Vol. 45 no.2 , pp 75-93*


Appendices

Appendix A

Contract Logistics & Distribution: Value-Added services

UTi provides professional CL&D services that extend beyond the standard receiving, storing and shipping of products. Our value-added services add efficiencies and cost savings, meaning direct value to your supply chain.

Services that become solutions

Whether you need dedicated warehousing, multi-client warehousing, managed transportation services or outsourced manufacturing support, our value-added services include everything from kitting to specialty packaging to Kan-ban programs and transportation management.

We provide a wide range of value-added services to augment our logistics solutions including:

- Materials management
- In-plant logistics
- Pick and pack, kitting, labeling
- Pre-delivery inspection and testing
- Electronics testing/configuration
- Display build and setup
- Specialty packaging/repack
- Clamshell, blister pack, etc.
- Parts cleaning and repair
- Collateral and Point of Purchase (POP) support
- Garment on Hanger (GOH)
- Vendor Managed Inventory (VMI)
- Supplier compliance
- Maintenance
- Containment
- Grounds maintenance
- EDI and document scanning
- Light manufacturing
- Contract manufacturing
- Sequencing and line-side delivery
- Shuttle runs
- Returns processing/management

The benefits of adding value

When UTi manages value-added services and multiple components of your supply chain, you receive greater flexibility to react to various factors including market volatility, special orders, inventory obsolescence and packaging changes. Our responsive and dedicated team of professionals is here to provide you with the best service possible by refining and reconfiguring solutions as you grow and change. Let us be your partner as we work together to drive cost and complexity out of the supply chain.
Appendix B: Organizational Chart of UTi
# Appendix C: Review of service development models

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Models</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation of objectives</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea generation</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea screening</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept Development</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Concept testing</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business analysis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project authorization</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service design</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process and system design</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing program design</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test marketing</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel training</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services Testing</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Launch</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specifics:**

- **Incorporation of organizational factors**
  - X
  - X
  - X

- **Description of interactions**
  - X
  - X

- **Nonlinear nature**
  - X
  - X
  - X
  - X

- **Iterative nature (feedback loops)**
  - X
  - X
  - X
  - X
  - X

Appendix D: Success factors per organizational factor

**INPUTS**

*Resources:* Time and money are required resources for the development process (Wagner, 2008). Limited resources may lead to less motivation. In the early stages motivation and resources are needed to generate ideas, while in later stages the resources are needed to ensure high quality execution of tasks before the launch of the new product.

*Dedicated Leads:* Dedicated managers can focus on the development project and ensure good project management. They are likely to be ambassadors of the project internally and encourage the other team members. Dedicated leads help to improve the outcome of logistics innovation (Richey et al. 2005).

*Human Resources (Lin et al. 2006):* The development team should have experience in the tasks at hand and have the capabilities to perform those tasks. This will improve the quality of execution of tasks. Experts and development champions can help to move the project across hurdles in the process.

**KNOWLEDGE MANAGEMENT**

*Client ideas:* Clients are a very important source of innovative ideas and knowledge about clients can be a valuable source for idea generation (Flint et al. 2005, 2008). The close relationship of LSPs and clients (§3.1) makes it possible to gain a lot of information on the client and their environment. The use of client information can help to ensure that client needs are met.

*Organizational knowledge:* The knowledge that is stored within the organization can form a valuable source of information for development. Chapman et al (2003) advocated a holistic approach to knowledge sharing as a value to development. The decentralized structure of LSPs (§3.1) demands effective knowledge sharing for more efficient and higher quality processes. Many studies of innovation in LSPs argue that within innovation processes the LSP develops knowledge and that this organizational knowledge is an important source for ongoing innovation (Flint et al. 2005).

**STRATEGY**

*Strategic fit:* New services should be designed to fit in with the strategy of the firm. Ideally the new service makes builds on the existing resources of the firm ensuring capabilities and fit with the current clients. For LSPs successful projects are likely to extend the business of the LSP and increase the offering (Evangelista & Sweeney, 2006).

*Managerial support* can help by to emphasize the need for development (Flint et al. 2005). Management can encourage employees and support them in their development activities. Besides motivating employees, managerial support helps to support an innovative culture.

*Rewards:* Johne and Storey (1998) describe that if employees are rewarded for their development work, they are likely to improve their work quality and effectiveness.

**TEAM STRUCTURE AND CULTURE**

*Open Culture:* A culture in which people can openly express their opinions will assist in creating behavior that is beneficial to the project (Payanides, 2007). Open culture supports creative behavior and sharing of information.

*Autonomy:* If development teams can execute their development work autonomous, can take their own approaches to their work and be independent. They are likely to be more creative and create...
products that are in line with client needs is they are more aware of the environment (De Jong et al. 2003).

**Proactive market focus:** The team should be focused on proactively creating value for the client rather than creating value for the firm (Wallenburg, 2009). The central role of the LSP in the supply chain and the high client specific demand (§3.1) drive this success factor. Proactive innovation creates significant more client value and loyalty than reactive service provision (Blocker et al. 2011). By having a market focus market information and trends will be obtained with more ease (De Jong, 2003).

**Client contact employees:** The involvement of customer contact employees in the development team helps as well to gain understanding of client needs, derive concepts and test services (Flint et al. 2005). Their involvement however may pose difficulties as they can only dedicate a small amount of time to innovation as day to day activities have to continue.

**Multifunctional teams:** Multifunctional teams relates to the overall effectiveness of developing new services (Fröhle et al. 2000). Multifunctional teams have greater ability to execute tasks as they offer unique combinations of competencies thereby creating unique capabilities and experience.

**PROJECT MANAGEMENT**

**Project management:** Wagner (2008) describes the need for good project management. Management helps to ensure that tasks are completed efficiently.

**Formal process:** Flint et al (2008) argue for a formal development process to structure efforts. A clear description of tasks can be used to communicate what is expected of employees while the process and rules help to provide direction. Project management and processes provide the guidelines to stimulate effectiveness and quality of execution.

**Client involvement:** Client involvement is extremely important to pick up information on their needs directly. In the design this helps to identify the service while in the implementation stage this helps to assure the translation of needs into specifications more precise (Alam, 2002). Chapman et al. (2003) suggest that LSPs should collaborate with clients in the development process to learn about the client, create trust and assess the value of outcomes.

**Cooperation with others:** Another way to obtain new capabilities, experience and knowledge is by collaborating with suppliers, competitors and other external parties. Additional to this is the spread of risks (De Jong, 2003).

**COMMERCIALIZATION**

**Market research:** is important as direct customer interaction, monitoring of the environment, appraisals and complaints as well as customer buying and secondary data analysis can lead to valuable insights about innovative potential and client value (Flint et al. 2008). This potential is harder to uncover due to the closeness to clients (§3.1) and tendency to be reactive of the LSP. The importance of good market research is thus high and even more enforced by the central role of the LSP in the supply chain (§3.1). The emphasis should be on customer knowledge over that on technology or competitors (Flint et al 2005). But, competitive offerings are easily copied and can be valuable to the design of new services (Chapman et al. 2003).

**Sales training:** Research of Grawe (2009) has shown that the amounts sales of a LSP innovation are linked to the use of an integrated sales force. This indicates that the impact of an innovation can be managed effectively by use of well-trained sales teams.
PORTFOLIO MANAGEMENT

Innovation objectives: Johne and Storey (1998) stress that clear goals need to be set for the NSD program. It prevents a waste of resources and keeps everyone that is involved on track with the project.

Risk/reward: In case of LSPs it is emphasized that innovations are needed that provide value to the client in a proactive manner (Deepen et al. 2008). This indicates that higher risk projects are likely to provide more client value. Sequential risk/reward analysis helps to assess whether the efforts are likely to benefit the client and firm.
Appendix E: Within case-studies
This appendix is not included in this public version
Appendix F: Checklists
This appendix is not included in this public version