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Simply that Complex

An Explorative Study on Buyers' Influence on Productization on the Pharmacy Market in Sweden

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ABSTRACT In today's highly technological society, companies are under intense pressure to digitize not only their offerings, but also the organization itself. Companies buying information technology are expecting delivery and implementation to be faster as well as to more easily understand offered solutions. Previous research has studied the phenomenon of productization, a process identified as adding value by making the complex more easily understood. The research on productization, while exploring the paradoxes on the supplying side, lacks perspective from the buying side. This is the research gap which this thesis aims to fill. By conducting a qualitative, multiple-case study on two case companies acting on the Swedish pharmacy market, this study explores and develops the research area of productization through the perspective of the buyer. 16 interviewees in total have provided valuable information that has been processed through an analytical framework in order to identify the structure of value chains' and purchasing organizations' influence on productization. The conclusion was that buyers did not agree that software could be made that simple, further complicating the simplification of information technology.

KEYWORDS productization, software, buyer relationships, network structure, purchasing organization

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1. INTRODUCTION

"The barrier to change is not too little caring; it is too much complexity. To turn caring into action, we need to see a problem, see a solution, and see the impact – but complexity blocks all three steps."

- Bill Gates (2007)

In today's increasingly digitized society, enormous amounts of data are created, exchanged and stored. More and more information is becoming dependent on the accessibility of technology and quality of applied software systems - especially in the retailing industry. Driving this increased flow of information is the constant development of available technology, improving it as it becomes better, faster and stronger. For organizations, this digitization is highly noticeable in their information technology systems that are no longer only expected to carry out one task, but to also connect with the rest of the organization's technological ecosystem.

Information technology systems have traditionally been custom-made to fit the specifics of an organization. However, the pressure from management to cut cost by cutting IT spending is high in organizations today, and the easiest way to cut spending is to buy standardized systems (Akella et al. 2009). This has consequences for the small and medium software suppliers who previously have carried out their business by customizing the orders.

With experience of working in small software development firms in Stockholm, the one common complaint internally was that customers never seemed to know what they were ordering. In addition, where is the fun and innovation in just providing a standardized system? The move towards standardized IT systems is something that has made selling small scale solutions too expensive. So what are the smaller firms supposed to do?

1.1 INTRODUCING PRODUCTIZATION

Looking at the giants in the software business might provide inspiration for a solution to the question posed above. Microsoft and IBM did not make their money by selling tailor-made, labor intensive systems; they productized their expertise and turned complex software solutions into simple products (Alajoutsijärvi et al. 2000). If you can turn something as

complex as software into something as simple as a product, why aren't more companies doing it?

The process of productization is a nascent research area, where a majority of the articles published on the topic have been published after the burst of the IT bubble in the early 2000 (Harkonen et al. 2015). The definition of productization that is identified in the review article on productization was: “the process of analyzing a need, defining and combining suitable elements, tangible and/or intangible, into a product-like defined set of deliverables that is standardized, repeatable and comprehendible” (Ibid pp.70).

Simply put, productization is the act of turning something complex into something simple. However, it is not without its struggles. There are conflicting logics taking place between the part of the company that must communicate the simplicity and value of IT for customers, and the part that must focus on cost reductions (Alajoutsijärvi et al. 2000) in order to achieve a deliverable that is standardized and repeatable. Add on the challenge of assembling a new set of capabilities and competencies (Leon, Davies 2008) and it’s no wonder that much attention has been directed to the supplying side of productization.

Redirecting to the beginning of this chapter: the amounts of data that organizations in all industries are expected to handle are immense, and would thus benefit from making the complex simple by productizing (Harkonen et al. 2015, Valminen, Toivonen 2012, Hemple et al. 2015). So if the solution for software buyers is to buy productized solutions, how are these buyers influencing productization? Oddly enough, this has been left unexplored - until now.

1.2 Purpose and Research Questions

Driven by a research gap caused by the lack of studies done in the field of customer influence on productization, the purpose of this study is to explore and develop the research area of productization by adding a buyer’s perspective to it. With this purpose in mind, the following two research questions have been formulated:

RESEARCH QUESTION 1: How does the structure of network value chains influence productization?

RESEARCH QUESTION 2: How does the purchasing organization affect productization?

To bridge the identified gap, this study will be set in the pharmacy retail industry in Sweden. With the market split even between a few actors which was caused by a recent deregulation of

a government monopoly and with complicated as well as special regulation regarding the secrecy of data handled, this industry makes an interesting case for studying buyer's influence.

1.3 DELIMITATIONS

Since the primary focus of this thesis is to study how buyers influence the process of productization, a qualitative, multiple-case study on two case companies have been carried out in order to answer the research questions stated in the previous section. The cases are recounted from the buyers' perspectives, with complementary viewpoints from semi-internal actors involved in the process. This limits the study to the external influences that exists for productization rather than studying the phenomenon itself.

As previously stated, the scope of the study is limited to two case companies in the Swedish pharmacy retail industry. Using only two case companies limits the in-depth analysis that could have been achieved, however it gives valuable insights to what factors might be interesting for future researchers to study more in-depth.

Furthermore, there is a plethora of products, services, software, and technologies that can be the subject for productization. The study is thus focused primarily on the practices carried out and events occurred in conjunction with the implementation of the pharmacies' e-platforms. The industry selected is one that involves strict regulations and discretion in the handling of medical data, which might not reflect other industries where data handling is less strict. However, with upcoming changes in the general data handling regulations, strict control for data will soon be binding in other industries as well.

Lastly, the analysis of the empirics in the cases is based and centered on two established frameworks for analyzing buyer-seller relationships and network structures. This has been done in order to more accurately provide answers to the research questions posed.

1.4 THESIS OUTLINE

This thesis consists of eight chapters as illustrated in figure 1. The first chapter, of which this section ends, introduced the topic, study purpose, research questions and delimitations as well as an overview of the thesis content.

The second chapter is a pilot study, presented to provide the reader with additional background information to the research subject and the complexities of information

technology in organizations today. It also adds to the understanding of the chosen scope of the main study.

The third chapter will present and discuss the methodology chosen to carry out the study. It contains the choice of research design, data collection and a discussion on how quality of the study has been ensured.

The following chapter will discuss previously relevant research in three parts. The first part is a literature review of productization theories and two nearby research areas important for this study: procurement and buyer-seller relationships in business to business markets. This part ends with the identification of a research gap. The second part of the chapter consists of a description of the analytical frameworks used to shed light on the problem. It will describe important concepts and terminology later used in the analysis. Finally, the chapter ends with a short analysis of the problem of productization by combining previous literature with the frameworks.

The fifth chapter contains the empirical findings of the study, recounted through two cases: Pharmacy A and Pharmacy B. In the subsequent fifth chapter an analysis of the cases is presented through the use of the framework (described in chapter three).

The answers to the research questions will then be presented in the seventh chapter and in the eight chapter a discussion on main contributions, practical implications and limitations as well as suggestions for future research is constituted.

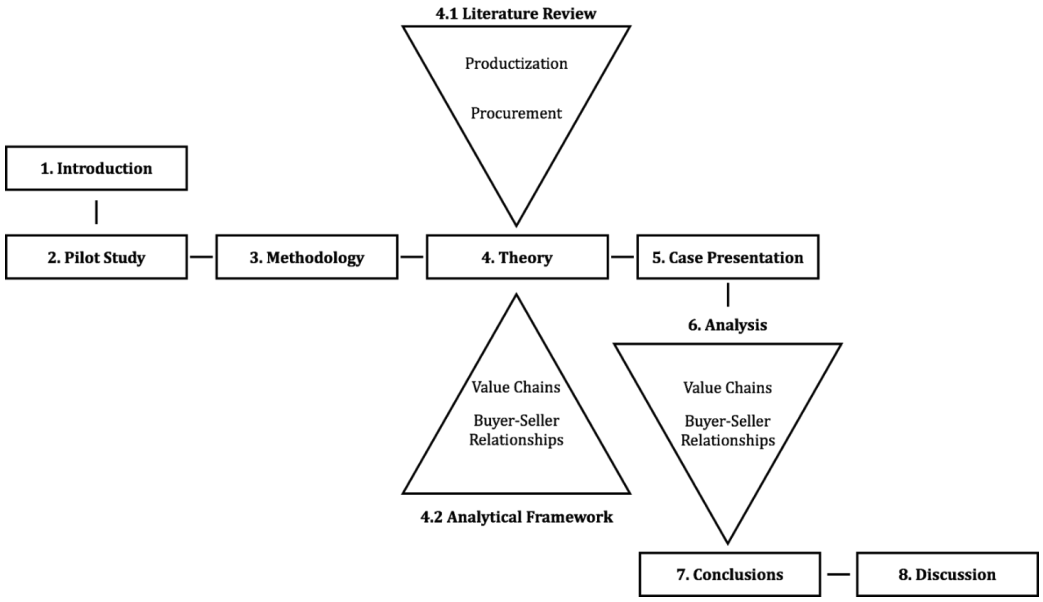

Figure 1. Thesis outline

2. PILOT STUDY

To start off the research, a pilot study was applied as an opportunity to practice and identify possible warning signals prior to launching the main research (Silverman 2013). In this chapter the aim (2.1), design (2.2), findings (2.3), conclusions (2.4) and implications (2.5) of the pilot study will be presented.

2.1 AIM OF THE PILOT

The need of a pilot arose when the lack of research on the area of productization was realized. Since the purpose of the study is to explore and develop the research area of productization, the primary aim of the pilot study was to find a relevant angle from both a practical and theoretical perspective. The hopes were to be able to narrow the scope of the main study and propose compatible research questions in order to have the research perceived as valuable. Furthermore, as previous academic literature has mainly focused on productization from a supplier's perspective, a strength in investigating it from a buyer's perspective was identified and thereby explored. This allowed for us to gain a better understanding of the current state of software procurement and structure of network value chains on the pharmacy market. In addition, we were able to touch upon the subject of productization, carefully exploring the scope of the phenomenon, which provided us with valuable findings that helped shape the design of the main study and purpose of the study as a whole.

2.2 THE DESIGN OF THE PILOT

As stated, investigating the phenomenon of productization from a buyer's perspective was the starting point of the pilot. This lead to an interest in approaching retailing companies to propose meetings for interviews which generated four occasions when we met with representatives of different consumer goods organizations. However, we did not want to exclude the supplier's perspective completely so in order to gain a general impression of the IT procuring value chain, one interviewee representing the software industry was also met with. These five interviews lasted between 30 and 60 minutes each.

Furthermore, the interviewees also had varying roles within their companies, representing different departments (see table 1) and adding to a greater understanding of the buyer-seller relationships relating to complex software. With this aspect, the interview areas' relevance could be tested for both suppliers and buyers as well as the semi-structured interview method practiced. Since the interviewees were generally asked the same type of questions, a compilation with both shared and non-shared answers could be facilitated. The questions

involved touched upon the areas of the changes on the IT market, the aspects to selling or procuring software and evaluation of seller or procurers, what influences the process, performance criteria as well as the perception of productization (see appendix 1).

PILOT	INDUSTRY	DEPARTMENT
Interviewee 1	*Software*	*Operations*
Interviewee 2	*Retail*	*Operations*
Interviewee 3	*Retail*	*Procurement*
Interviewee 4	*Retail*	*IT*
Interviewee 5	*Retail*	*IT*

Table 1. List of pilot study interviewees

2.3 FINDINGS

Below are the findings from the interviews outlined and described in terms of the complexity that IT involves, its changing nature and how the procuring role in the buying company is affected as well as the increasing importance of software and information technology with the aspects of productization. These themes are presented with the main goal to provide the reader with background information of the changing software business and to highlight the pressure suppliers face to productize their offerings

2.3.1 THE COMPLEX MATTER OF IT

If it was not obvious from the outset of the study, then the pilot confirmed that IT is a complex area. All interviewees highlighted the great complexity surrounding IT, and expressed mutual concern about the misconception operations within a company often has about it. Operations were at times accused for not understanding how complicated the underlying processes can be. IT systems are incredibly technical which is a feature that makes them hard to integrate in an otherwise not so technical organization. The key factor to handling this complexity according to all interviewees is to have access to the right competence.

Other factors to take into consideration when it comes to IT are: flexibility, cost and time. These factors determine the need for expertise. One example given was that when there is a higher need for flexibility, cost reductions and speed of delivery that the expertise and

competence required would be higher as well. On one hand, IT purchases are short-term considered a costly activity albeit extremely valuable from a long-term perspective. This stood in contrast to the human factors and skill-levels of the personnel actually working with the systems. Whereas skilled workers in the buying company's operations are favoring tailor-made systems, this typically leads to a dependency of key persons, which long-term might hurt since it is trickier upgrading a customized system. All in all: IT procurement is a complex matter.

"If the operations do not understand the IT systems everything will fail because they will try to change it and create some sort of hybrid product."

"There is always a lack of competence and the question will always be about how much you are willing to pay for it."

"The most important thing is the competence to use the tools, that's often where the investments go wrong. Some have an inaccurate belief that everything will solve itself."

2.3.2 The Changing Nature of IT and its Increasing Importance

Many of the interviewees testify about a changing nature of the IT department in organizations. The ongoing digitization and automation within organizations are making the role of technology critical – not only to the IT department, but for operations as well. Operations are assigned larger budgets, made for accommodate increased spending on technology. There is also a constant pressure to implement the right technology. One consequence of not getting it right is the loss of market shares, industries in general are much faster paced, which requires actors to be flexible in order to respond to the volatile need of customers. This flexibility is at times said to be suffering since buying a standard solution is cheaper and easier to implement, but can lead to reductions in flexibility that could potentially lead to a competitive advantage.

"There's an incredible pressure on IT today - we have changed everything from e-platforms and data systems to CRM and interaction platforms."

"Failing to time the right activities will cost you a lot of money."

The pressure of digitalization was described as leading to a fear of trying to implement systems. The awareness that a system change is going to be time consuming and the possibility that after all the effort and money put into it, results are still not guaranteed creates

an uncertainty within organizations today. A change in the procurement of IT is that today the process always stems from an identified business need rather than from the release of new functions and technology.

2.3.3 The Evolution of IT in Organizations

IT is becoming more and more integrated in organizations and technology is present everywhere. This has in turn led to an increase of new departments, e.g. the marketing department, are taking more IT related decisions in procurement. Partially as a result of themselves handling more technology and becoming more comfortable with it, partially because it is from the operating side of organizations the need for new technology often rises.

Culturally, IT departments have a controlled and structured way of working, whereas especially the marketing department was described as more creative and flexible in culture. This difference in culture is displayed through the various ways the departments procure technology. IT with their technical knowledge can specify functions and technology used, whereas operations usually describe their needs without a clear vision of the final solution.

"At the market department, you see the development costs but fail to see the management costs."

Thus the structures of the intra-organization become an important aspect to study when studying influences on productization from the buyer's point of view, since the pilot indicates that there is a huge difference in understanding of technology and business, and that there is a need to bridge that difference.

"Everything is put in complex systems because of the need for heavier information flow between departments. This requires system support and an infrastructure that allows it."

2.4 Conclusions of the Pilot

The main takeaways from the pilot study is that IT procurement is a complex matter due to the fact that there is a current discrepancy between the different departments of the buying organization, primarily IT and market, regarding their ability to handle software. The interviewees all tend to indicate that having the right competence is therefore more important than having the right tools to work with. Also, there is an intensive pressure on companies to digitize and increase their use of developed technology which means that software and IT are becoming more critical aspects of their business activities.

2.5 Implications for the Main Study

The pilot has had implications on the carrying out of the main study. Based on the findings, the study of the productization phenomenon has been shaped in three ways:

Firstly, since every interviewee has acknowledged the complexity of procuring technology - albeit to a varying extent - a need for an analytical framework with the possibility to fragment this complexity arose. The selection of framework has thus been highly impacted by the pilot. Also, unless contradicted by the empirical findings in the main study, the pilot implicates an underlying assumption that procuring IT is a complex matter.

Secondly, the recognition of IT as making out a crucial and important part of organizations today has led to increased budgeting for IT related issues in other departments than IT. The identified shift of the decision-making locus in organizations is of major importance when approaching the core research of this study as the intention is to investigate productization from a buyer's perspective. This could be an important trigger for productization since the people involved in IT procurement potentially come from units previously unrelated to IT purchases. This finding highlights the need to study the intra-organizational structure of the companies in the main study.

Thirdly, the interviews from the pilot could also refer to mentions of ad agencies being the procurers of IT. To avoid making a complicated area even more complicated, the choice of studying e-platforms was made since that purchase is too strategic and important of a purchase to outsource to a supplier.

3. METHODOLOGY

In this methodology chapter, we have tried to address some of the main issues with qualitative research: the quantity of methodologies available, the contingent nature of the data and the non-random character of case selection (Silverman 2013) by being as explicit as possible for the reader to understand any assumptions made and to the best of our abilities include factors that have influenced choice of data.

The methodology chapter is structured in four parts. The first part (3.1) involves a discussion on methodological choices made. The second part (3.2) presents the results from the pilot study followed by (3.3) a description of the factors important for case selection, and the data collection process. The methodology chapter ends with (3.4) an evaluation of the quality of the study.

3.1 RESEARCH DESIGN

3.1.1 CASE STUDY

This thesis is a qualitative, multiple-case study. According to Yin (2003), case studies are deemed appropriate when the research question is (1) explorative in nature and thus aims to answer questions of how and why, (2) when the research issue is contemporary and (3) placed in a real life context. The three conditions outlined by Yin (2003) fits the purpose of this study: to explore and develop the research of productization. Other methods available that could have been used would have been: surveys, observations, and experiments. However, a survey resembling experimental methods was deemed inappropriate due to the complexity surrounding the issue of productization, the exploratory nature of the research questions and the fact that buyer-seller relationships are traditionally studied in a real-life context.

One argument against case studies is that they provide little basis for scientific generalization (Yin 1994 cited (Dubois, Gadde 2002)). Though, findings according to Weick (1979 cited (Dubois, Gadde 2002)) are proven to be unstable over time and thus encourage researchers to be more specific with interpretations regarding time and context. The context is provided through case research and can therefore be considered a strength (Dubois, Gadde 2002).

The choice of multiple-case over a single case was made due to productization enabling an organization to distribute the same offering to more than one actor. A multiple-case enabled cross-company (within-role) analysis of buyers, suitable for our purpose and enhancing the robustness of the results (Yin 2003). The weakness however is that multiple-case limits in-

depth analysis, and includes the same limitation as for a single case in terms of generalizability of the results (Dubois, Gadde 2002). Thus, the results of this study alone are not grounds for generalizability of buyers' influence on productization.

Lastly, the outlined cases are presented one by one and in chronological order for the reader to gain an understanding of the context in which the study phenomenon plays out. This is in line with the aim of doing qualitative research: to provide contextual understanding (Bryman, Bell 2013). While other ways of presenting were considered, for example by theme, this hindered the understanding of context and background that is necessary to understand the phenomenon.

3.1.2 Research Approach

Three commonly used research approaches are: deductive, inductive, and abductive. Below follows a short description of them as well as an explanation of the systematic combining approach applied to the study.

THE DEDUCTIVE APPROACH uses existing theories from which the researcher formulates hypotheses to be tested to prove, or disapprove, the accuracy of the theory (Bryman, Bell 2013).

THE INDUCTIVE APPROACH has its starting point in empirics and based on empirical evidence formulates new theory (Ibid).

THE ABDUCTIVE APPROACH is a mixture of a deductive and an inductive approach, going back and forth between empirics and existing theories (Dubois, Gadde 2002).

The approach used for this thesis is based on the abductive approach and is what Dubois & Gadde (2002) call "systematic combining". This approach uses a continuous interplay between empirical observations, an analytical framework, cases and theory where pieces from all of the four areas are matched and can direct and redirect the study (see figure 2). The process of systematic combining can be explained as the researchers' exercising two key measures. The first is matching, where the researchers go back and forth between different parts (framework, case, analysis and data sources) with the intention of matching theory and reality (Ibid). The second key measure is the directing and redirecting since new dimensions of the research problem might be discovered along the way. New information can in other words result in redirection of the study (Ibid).

There are obvious similarities in nature to an inductive approach, however the systematic combining aims to develop new theory rather than to create it (Ibid). Furthermore, the chosen research approach is closer to the deductive than the pure abductive approach since going back and forth between the empirical world, the cases and theory allows for theory testing as well as validation and discarding of theories for the analytical framework as the work progresses. The drawback of systematic combining is that it can be likened to a jigsaw puzzle with too many pieces. Some of the pieces are therefore intentionally left out in order to avoid confusion (Ibid). Considering that we were not able to find theory on buyers' influence on productization, an approach where theories from other areas could be tested hopefully allows for an openness to multitude meanings a certain concept can give rise to (Ibid).

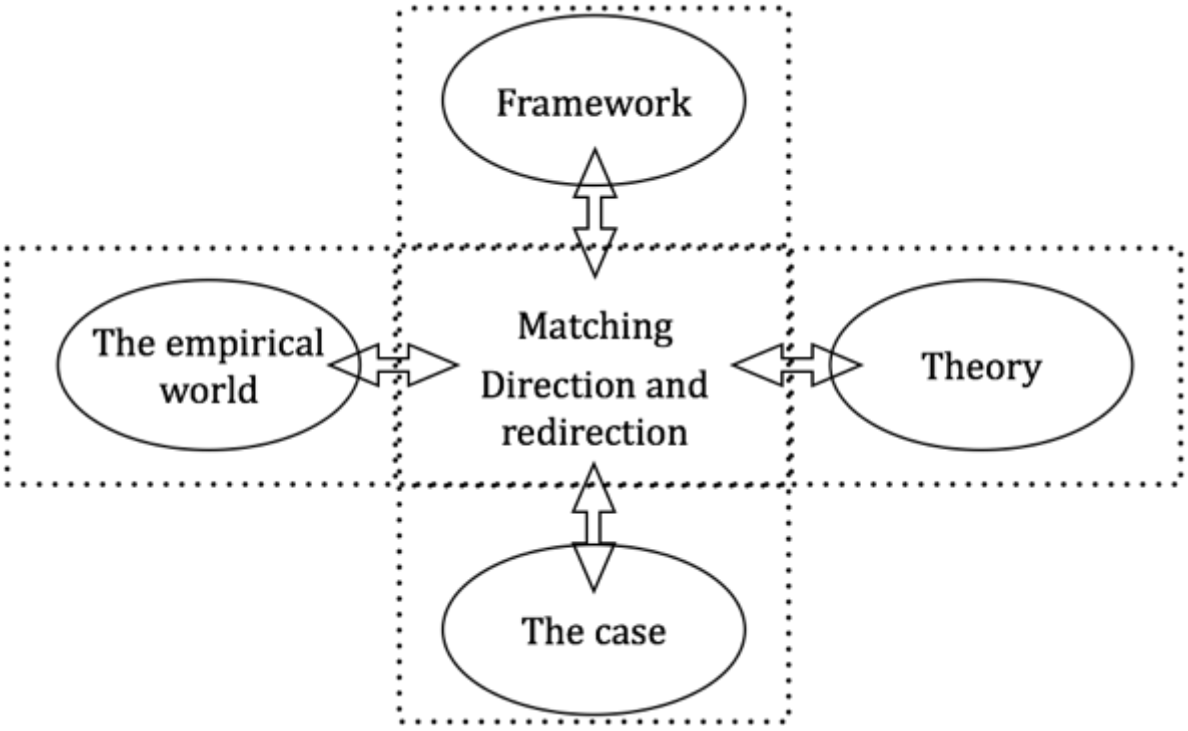

Figure 2. Systematic combining (Dubois, Gadde 2002)

3.2 Data Collection

3.2.1 Selection of the Case Companies

As stated in the chapter intro, cases in qualitative studies are rarely randomly selected. What was important for our research question was to keep the relative size of the firms comparable, since firm size is recognized as a factor influencing purchasing organizations within corporations (e.g. Bocconcelli, Tunisini 2012). The second criterion was that the case

companies were to be in the same industry, since regulations on data security may differ between industries. The difference in regulations would otherwise have had an impact on the selection of suppliers and technology available. The third criterion was that they were to be traditional brick-and-mortar retailers, to favor the ability to study procurement of something so concrete such as e-platforms. The fourth criterion was an outspoken difference in IT strategy, to be able to see differences and similarities in supplier relationships in order to understand how the organization of purchase influences productization. The last criterion was that the industry study should not involve an additional actor besides the buyer, the seller and consultants in the purchasing process.

The pharmacy market in Sweden was selected as research subject because the industry's recent deregulation of a government monopoly in 2009 made the e-platform procurement processes fairly recent, which would be suitable for a study based on qualitative interviews where memories of a process might deteriorate. To a large extent, we were restricted by the workload of the preferred case companies and were only able to meet with those who were available for interviews. In complex buys, it is common for several people to be involved in the decision-making process (e.g. Håkansson et al. 1976) and in our cases additional semi-internal actors such as management consultancy firms were identified to be involved. The views of the consultants have thus been incorporated in the empirical findings and analyzed as part of influencers in the procurement of e-platforms.

3.2.2 Collecting Data Through Interviews

The interview sample consists of 16 interviews, of which five are part of the pilot study and eleven are data collecting semi-structured interviews. The semi-structured interviews lasted between 30 and 75 minutes. Three of the interviews were conducted through phone while the rest were direct meetings. The interviewees have been divided into three categories based on their roles: representatives of the buyer companies, sellers on the supply side, and consultants (see table 2); in order to increase transferability and enable analysis between cases (Flick 2009). Furthermore, the so called snowball technique was applied in this study to gain access to the right people to interview (Jacobsen 2002, cited (Soroye, Nilsson 2010)). This means that by the end of the interview, the person met with was asked for additional contacts within their own or their partnering companies. This would mean that some of the participants of the study were knowing about the participation of others. To mitigate the risk of interviewees not feeling like they could share experiences and additional relevant information, it was clarified in the beginning of each interview session that the purpose of the study was not to detect any

weaknesses, or contradictions of what happened, but to explore a phenomenon through a case study.

An interview guide with questions categorized within five topics was prepared before the interviews. The topics concerned were: (1) environmental aspects to the IT market, (2) capabilities and resources, (3) process organization, (4) supplier-buyer relationships, and (5) productization (see appendix 2). The order of the questions was however not always followed to a full extent. The purpose of this was to allow the interviewees to more openly speak about the topics and rather give them hints on what we were interested in learning than to formulate each question and ask them in the order they appeared. This approach can have led to interviewees being influenced by the order of the topics, but in return, it also reduces the risk of the interviewees limiting themselves and thus failing to mention critical aspects of topics, problems and possibilities in their particular case.

MAIN STUDY	NETWORK	ROLE	BUYER/CONSULTANT/SELLER
Interviewee 1	*Pharmacy A*	Operations	BUYER
Interviewee 2	*Pharmacy A*	Consultant	CONSULTANT
Interviewee 3	*Pharmacy A*	Consultant	CONSULTANT
Interviewee 4	*Pharmacy A*	Client Manager	SELLER
Interviewee 5	*Pharmacy B*	Procurer	BUYER
Interviewee 6	*Pharmacy B*	Procurer	BUYER
Interviewee 7	*Pharmacy B*	Development	BUYER
Interviewee 8	*Pharmacy B*	Consultant	CONSULTANT
Interviewee 9	*Pharmacy B*	Consultant	CONSULTANT
Interviewee 10	*Pharmacy B*	Client Manager	SELLER
Interviewee 11	*Pharmacy B*	CEO	SELLER

Table 2. List of main study interviewees

3.3 Quality of Study

While the methods for ensuring the quality of quantitative research are well developed, one of the main issues in qualitative research is the lack of quality measurements that exist in quantitative research. According to Bryman & Bell (2013), a way of solving this problem is to adapt the classical quality criteria reliability and validity to a qualitative research design, since there are no established criterion that can solve the problem of quality assessment. In this section, we will thus discuss reliability and validity, adopted for qualitative research. This

means that it is the internal form of reliability and validity that is discussed rather than the external; which is more suited for quantitative studies (Ibid).

An additional criterion sometimes discussed in qualitative studies is generalizability. Due to the controversy regarding this criterion, even in those cases they are conducted through multiple-case studies (Dubois, Gadde 2002), we can thus not argue for the results from the study carrying any generalizability. We would however like to argue that the frameworks used do carry applicability outside of this study and are proven both interesting and useful in order to understand buyers' influence on productization.

3.3.1 Reliability

Reliability is concerned with the study's quality of measurements used (Bryman, Bell 2013). According to Flick (2009), the reliability criteria in qualitative research should concern the dependability of procedures and data. One of the main concerns regards that documentation is done properly through stating the difference between statements by interviewees and those made by the researcher (Ibid). Since a semi-structured interview approach was applied the risk of mixing statements were mitigated by recording the interviews, having both researchers present during all interviews as well as having one researcher conduct the interview while the other focused on taking notes.

Other recommendations by Flick (2009) to increase the reliability of the study is to conduct a pilot study as well as partake in formal interview training. While we were only given the opportunity to participate in one seminar occasion (given in the 2349 Methodology for MSc Thesis in Marketing course at the Stockholm School of Economics) regarding interview training, the pilot study is described in chapter 2.0. Moreover, when writing the literature review and selecting frameworks, only peer-reviewed articles were used as sources, which increases the study's reliability by having an additional hallmark of judging quality of theory.

Lastly, when doing qualitative research and by selecting pieces of data to present on a phenomenon, there is always the risk of the researcher interpreting the material in his/her own way which does not necessarily correspond to what other people interpreting the data would find (Silverman 2013). By using the method of systematic combining (Dubois, Gadde 2002), we allowed ourselves the freedom to constantly go back and forth between the empirical world, the collected data and previously stated theory. While this allows for a change of mind when new discoveries are made, we critically discussed our findings between us and avoided

using viewpoints stated by only one participant to ensure reliability of the study (Bryman, Bell 2013).

3.3.2 VALIDITY

According to Bryman & Bell (2013), internal validity is in many ways the most important criterion of qualitative research since it concerns the degree of which results from a study conveys a valid picture of reality. In other words, it is the way of evaluating if a study has measured what it intended to measure, since the risk of incorrectly interpreting the data collected always will be present (Whittemore et al. 2001).

First and foremost, all the interviews for this study were carried out in Swedish, the native language of everyone participating. While this enabled more fluent interviews and better understanding between interviewer and interviewee, the final presentation is in English. All citations have been translated with the possibility that some meaning has been lost in translation and slight differences in nuances in language use. To mitigate the problem of this compromising the validity, the complete case summaries were sent, written in English, to the interviewees for their consent and with a request to control correctness and completeness, reducing the risk of incorrect interpretations and translations (Flick 2009).

To ensure validity, it is of importance that the interviewees feel safe and comfortable enough to share their experiences around certain events. The majority of the interviews conducted have been carried out during personal meetings with the interviewees in the safe environments of private offices. In addition, this has allowed us to determine if the interviewee has understood the questions asked or appeared to answer them truthfully, which was also possible during the three interviews that were conducted through phone calls, however not to the same extent. Furthermore, all interviews were sound recorded with the permission of the interviewees, allowing us to later go back to the recordings to confirm the collected data.

Another way of enhancing the study's validity (and reliability) is to use different perspectives from different sources when considering the results. In our study, this has been conducted by reviewing previous studies about productization, applying an independent framework through which the analysis has been developed (4.2) as well as conducting a pilot study in order to convey expert opinions and preliminary data (2.0). Furthermore, the research approach by systematic combining allows for constant evaluation and re-evaluation of data gathered (Dubois, Gadde 2002) which was deemed suitable since one of the concerns regarding validity is the congruity between theory developed and observations (Bryman, Bell 2013).

Alternative methods to ensure validity could have included observations of the actual procurement process and a longitudinal study (Ibid). However, the former alternative method was restricted by the access and knowledge of when the situation would occur. This study thus relies upon the interviewees on portraying the procurement process correctly. The latter alternative method was out of the scope for this thesis due to restrictions concerning the aspect of time - the data gathered concerns the years between 2009 and 2016. Though, people involved from different organizations were interviewed and asked about the same events which on the one hand does not reach an equally strong validity as a longitudinal study, but that on the other hand conveys the most possible accurate description of the event.

4. Literature Review and Analytical Framework

This chapter is structured in three parts. The first part (4.1) consists of a literature review: presenting previous research on productization (4.1.1), buyer-seller relationships (4.1.2) and procurement (4.1.3). The literature review will highlight how we plan to contribute to research on productization by identifying the current research gap (4.1.4). The second part (4.2) is a presentation of our analytical frameworks and the concepts and terminology that will be used in the analysis. Lastly, the theory chapter will conclude with our own analysis of productization from the supplying side (4.3). The analysis will use previous literature and productization in combination with the same frameworks that will also be used to analyze the buyers.

4.1 Literature Review

4.1.1 Productization

Harkonen et al. (2015)'s article *Productisation: A Review and Research Agenda* called for further investigations into the area of productization. According to Harkonen et al. (2015) productization is "the process of analyzing a need, defining and combining suitable elements, tangible and/or intangible, into a product-like defined set of deliverables that is standardised, repeatable and comprehendible". This definition is also the one used throughout the thesis when productization is referred to, since it is extracted from the research of 338 peer-reviewed articles on productization (Harkonen et al. 2015).

Four content categories were identified by Harkonen et al. (2015): products, services, software, and technology; and the characteristics of each content category can be found in table 3: "Characteristics of Productization Summarized". As one can note, services and software are identical in terms of recognized characteristics when it comes to productization. The difference between these two content categories in comparison to products and technology is that productization is also a means to improve understanding and to package the service/software into a suitable form for customers. These unique features of services and software that differentiate them from products are nothing new or unexplored in previous literature. In 1977, Shostack (1977)'s article *Breaking Free From Product Marketing* was published, where the author argued that due to the intangibility of services, the latter could not be marketed in the same way as products. Shostack's suggested solution was that services need tangible characteristics attached to them to be understood by and sellable to customers, whereas products need intangible characteristics to make them desirable. This idea was

supported by Levitt (1981) who also argued that services by nature are too intangible and difficult to imagine, and thus they need product-like features to be marketable, all of which are arguments that also can be applied for software.

Recognized characteristics	Productization of			
	Product	Service	Software	Technology
A process/development phase	x	x	x	x
Standardization/systematization/ better definition/reproducibility	x	x	x	
Making tangible	x	x	x	
Making something marketable/ saleable/ready commercially	x	x	x	x
Value creation	x	x	x	x
Improving customer understanding/ demonstrating value		x	x	
Packaging to a form suitable for customers		x	x	
Defining offering based on needs	x	x	x	x
At the frontiers of technological knowledge				x

Table 3. Characteristics of productization summarized (Harkonen et al. 2015)

Shostack (1977) and Levitt (1981)'s articles share additional aspects on service marketing. The advice they put forth is intended for the organization that is going to market the service to customers. This is similar to much of the research on productization today, in that it establishes the benefits of the actual practice of productization for the "productizing" firm. Examples include the area of servitization (defined as "bundling products and services in order to improve value capture" (Vandermerwe, Rada 1988)), extending to organizations that are adding so called value-added services into their offerings to generate more profits (Wise, Baumgartner 1999). This hints to the existence of a profit incentive for firms to productize, a fact also pointed out by Alajoutsijärvi et al. (2000), who speculated that the desire for small and medium-sized software firms to productize might be driven by the example of the most profitable software company at the time (Microsoft). This research stands in contrast to a very recent article published by Raddats et al. (2016), a study conducted to understand the motivations of servitization. This study found that the more complex the product was, such as in the case of system integration, the less motivation to servitize was driven by profitability promises. This could potentially be explained by the research done on productization where the three main benefits are classified as (1) lowering the cost of development (since it reduces the need to create a product from scratch each time), (2) enabling more efficient production,

and (3) reducing the difficulties a buyer might have in perceiving the offering (Valminen, Toivonen 2012).

4.1.2 Buyer-Seller Relationships and Productization

Buyer-seller relationships in an industrial marketing setting is an interesting research area due to the fact that the observed relationships do not fit with economic theories about atomistic markets (IMP Group 2016). Contrary to what economic theory would predict, buyer-seller relationships are usually long-term as well as stable and the process of mutual adaption between buyers and sellers have been studied in literature within industrial relationships (e.g. Andreini et al. (2015)). In addition, researchers belonging to the IMP Group also focus on the network structures created in industrial markets and recognize the dynamics within them (IMP Group 2016). This makes buyer-seller relationships and productization an interesting area to explore, since it is very unlikely that productization happens in a vacuum.

Andreini et al. (2015)'s study on a Nordic bank concluded that when the bank went from offering services to products, they forgot to take into account the value their customers placed on the personal service aspect, and the productization thus led to less satisfied customers. Productization is otherwise often mentioned as something that will improve customers' understanding of the offering and that commercialization capabilities are critical in productization (Davis, Sun 2006). The effect of the deteriorating quality of buyer-seller relationships in the study of the bank was attributed to the conflicting logics and capabilities that are needed to productize and at the same time keep a high level of customer service (Andreini et al. 2015). Some studies have speculated whether productization would lead to more transactional buyer-seller relationships (Alajoutsijärvi et al. 2000) or if it is possible to handle the conflicting logics of being both customer and cost-reduction focused at the same time (Antonacopoulou, Konstantinou 2008). On the other hand, when a firm successfully manages to productize, the adoption of productization makes the firm committed to continual co-development with suppliers, not only through the development phase but also commercialization of the "product" (Hemple et al. 2015).

Though the above mentioned studies include the potential benefits and risks for buyers, they do not actually study the buyer's influence on the relationship and their potential enabling abilities or capabilities that would allow a supplier to productize their offering. Since very little research has been conducted on the buyers' end in productization, an exploration of an area more dedicated to the buying side was called for: procurement.

4.1.3 PROCUREMENT

By studying the procurement of services, Lindberg & Nordin (2008) found that buyers spend a lot of time and effort into objectifying and calculating their service purchases. Lindberg & Nordin (2008) also concluded that this contrasted with the conventional relational-oriented approach that is often recommended for service purchases. Lindberg & Nordin (2008) concluded that there was a need for new procurement strategies when it comes to services and that some product-related strategies might be useful. Their main finding however was that professional procurers are pushing towards so-called stabilized service definitions (in other words: making them more product-like) in order to make transactions easier. This builds upon the theories by e.g. Callon et al. (2002), and Araujo & Spring (2006), i.e. that transactions are impossible unless what is to be exchanged is made into a "thing" on which sellers and buyers only temporarily agree.

An interesting finding in previous research is that mature procurers are more likely to be better in articulating and specifying needs into product specific requirements, a strategy that has been proven to be a disadvantage for suppliers, particularly in knowledge-intensive services (Pemer, Skjølsvik 2016, O'Mahoney et al. 2013). When the procurers specified the purchase too much (consultancy service), they ended up turning knowledge into a commodity [1] and the commoditized organization (the consultancy) became frustrated, perceiving their services as not being valued highly enough. Organizations where mature procurers are more likely to be found are those with the resources to formalize processes between units when procuring (Matthyssens et al. 2016). Formalization done through increased functional collaboration is a strategy recognized as moving the organization towards more strategic sourcing (Hughes, Ertel 2016).

So, on one hand, the literature points to the necessity of stabilizing services and turning them into a product that can be traded, but on the other hand, stabilizing can be done to the point where the product becomes a commodity. There is also an ambiguity towards who is doing this stabilizing: in the studies by Lindberg & Nordin (2008), Pemer & Skjølsvik (2016), and O'Mahoney et al. (2013) it was the procurers, whereas in the productization literature it is seen as the responsibility of the supplier (or the seller) to stabilize their service well enough so

[1] "A commodity is a basic good used in commerce that is interchangeable with other commodities of the same type" (Investopedia). Commoditization and productization might at first sound similar, but turning something into a commodity would mean not being able to distinguish it from other products in the same category, whereas productization is aimed at turning something into a product which might still be distinguishable from other products.

that it can be commercialized and sold. In a study on procurement of ICT service in a Dutch railway company, stabilizing a service required input from several stakeholders, both internal and external, during the earlier stages of procurement (Gelderman et al. 2015). In the same case, stabilization occurred much more due to the influence of external rather than internal stakeholders, since the project team alone did not possess the necessary sourcing skills to specify the product.

In summary, the maturity of the buyers seems to have an influence on the need to productize, or even suggesting that mature buyers are commoditizing deliberately, in order to reduce costs.

4.1.4 Research Gap

As identified, previous research of productization has focused on the benefits and the value created for the supplying side, or the "productizing" organization. To the best of our knowledge, no attempt has been done towards studying the actual influence of the buying side on productization, at least no more than the perceived needed by suppliers to use productization as a tool to more easily communicate the offering to customers (e.g. Valminen, Toivonen 2012). Additionally, there are conflicting studies that point to productization being good for buyer-seller relationships (Hemple et al. 2015), and productization as lowering the perceived quality of said relationships (Andreini et al. 2015).

To the best of our knowledge, the buyers' influence on productization is an uncharted research area. In addition, there seems to exist an ambiguity towards whether productization is beneficial for the suppliers in all cases, since it runs the risk of ruining buyer-seller relationships if not done correctly (e.g. Andreini et al. 2015). The literature on procurement recognizes the benefits of productization (stabilizing a service to enable transactions (Lindberg, Nordin 2008, Callon et al. 2002, Araujo, Spring 2006)), while also recognizing the risks of commodification by professional procurers as a method to reduce costs (Pemer, Skjølsvik 2016, O'Mahoney et al. 2013).

Since we have identified a gap for research on productization from the buyers' perspectives and their surroundings, and that there also seems to be a fine line between turning abstract services into products or services into commodities, we intend to add to the research on productization by answering the following two questions:

RESEARCH QUESTION 1: How does the structure of network value chains influence productization?

RESEARCH QUESTION 2: How does the purchasing organization affect productization?

4.2 Analytical Framework

In order to address the research gap in the area of productization, we will base our analysis on two theoretical frameworks. Firstly, Gereffi et al. (2005)'s framework on governance patterns in global value chains will be presented, outlining the different global value chains and the three variables that play key roles in determining them. Secondly, a framework by Ford et al. (2003) will be presented to help manage the different types of situations that can arise in buyer-seller relationships as well as the influence tactics that are used by buyers and sellers respectively to steer the relationship in a desirable direction.

4.2.1 Global Value Chains

Gereffi et al. (2005) are recognized for their work on global value chains and provide a widely popular framework in academia to use since it brings into focus relations between buyers, sellers and institutional context. The framework has been applied in this study to help answer the first research question: how the structure of network value chains influences productization. Three variables are key to understanding how global value chains are governed and changed. These are: complexity of transactions, ability to codify transactions, and capabilities in the supply-base. From these variables, five types of global value chain governance types emerge: hierarchy, captive, relational, modular and market.

COMPLEXITY OF TRANSACTIONS refers to the complexity of information and knowledge transfer required to fulfill a transaction, particularly considering the product and process specifications.

ABILITY TO CODIFY TRANSACTIONS refers to the extent the information and knowledge can be codified, and thus transmitted without transaction-specific investments between the parties.

CAPABILITIES IN THE SUPPLY-BASE refers to the capabilities of actual and potential suppliers, in relation to the requirements of the transaction.

Furthermore, a short explanation of market, modular, relational, captive and hierarchical governance value chains are provided below.

MARKET. The characteristics of a market governance value chain are that transactions are easily codified, product specifications are simple, and suppliers have the capability to create the product with relatively little input from the buyers. In market exchange, buyers respond to specifications and prices set by sellers. Transactions can be carried out with relatively little coordination due to the information exchanged being of low complexity.

MODULAR. Modular value chains arise when technical standards simplify interactions and when suppliers have the competence to supply full packages. This reduces the buyers' need to monitor and control the supplier. The difference between market and modular value chains is that the communication exchanged between buyers and sellers is about more than price, due to the nature of the complex product exchanged. Similar to market exchanges, the cost of switching to new partners is low.

RELATIONAL. When product specifications cannot be codified, transactions are complex, and supplier capabilities are high, it is likely that a relational value chain emerges. Highly competent suppliers provide a strong incentive for lead firms to outsource in order to gain access to complementary competencies. The information exchanged between buyer and supplier is usually by frequent face-to-face interaction and the cost of switching to new partners is high.

CAPTIVE. When the ability to codify and complexity of transactions are high, but supplier capabilities are low, the value chain tends to lean towards the captive governance type. This can be done by lead firms that want to "lock-in" their suppliers in order to exclude competitors from reaping the benefits that the investments in the supplier would mean to another firm. This lets the lead firm control opportunism by providing enough resources to make an exit unattractive for the supplier.

HIERARCHICAL. When lead firms are forced to develop and manufacture products in-house because product specifications cannot be codified, the product is complex and there is a lack of competent suppliers, the value chain is referred to as hierarchical. In other words: there is no need for outside competence.

Gereffi et al. (2005) found support for five (out of eight possible) global value chains to determine the governance type of global value chains based on the three variables explained above. The determinants for specific value chains emergence are depicted in table 4.

Governance type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low
Modular	High	High	High	
Relational	Low	High	High	
Captive	High	High	High	
Hierarchy	High	High	High	High

Table 4. Key determinants of global value chain governance types (Gereffi et al. 2005)

4.2.2 Suppliers and Customers' Influence Tactics

In order to answer the research question of how buyer-seller interactions are affecting productization and how the people involved in the purchase on the buying side could be influencing the process, the framework on customer and supplier uncertainties and influence tactics by Ford et al. (2003) will be applied. The purpose of the framework is to highlight the business relationships as well as the uncertainties and influence tactics that are applied on both sides of the relationship in an industrial marketing setting. First, the customer uncertainties and abilities will be presented, followed by the same aspects on the supplier side. The categorization of uncertainties and abilities of customer and supplier are pictured in figure 3.

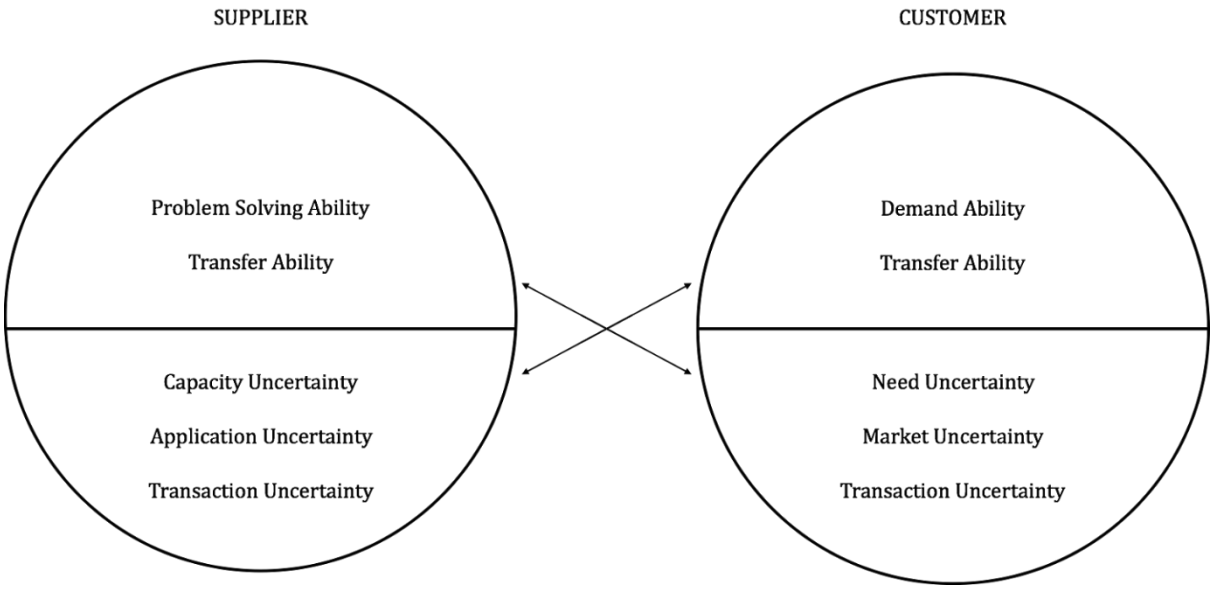

Figure 3. Supplier and customer uncertainties and abilities (Ford et al. 2003)

4.2.2.1 Customer Uncertainties

There are three types of situations that cause uncertainties for the customer: need uncertainty, market uncertainty, and transaction uncertainties.

NEED UNCERTAINTY is when the customer has difficulties in specifying their requirements. This is likely the situation when the requirements involved are new and complicated, as in the case of complex technologies. Factors that decrease the need uncertainties are outcome and product standardization. A customer with high need uncertainty will likely use specialists in the decision-making unit, have more frequent contact with the suppliers, and prefer to interact with suppliers with short cultural and spatial distance.

MARKET UNCERTAINTY is expressed through a confusion of the supplier market presented. There could be several, possible ways to meet the requirements specified by the customer. Such a customer would want to scan the market among several suppliers and would prefer not to be tied up to one single supplier since this restricts the possibility to access different types of offerings. This market uncertainty situation is particularly common in markets where technology is changing rapidly and the timing thus becomes an important factor for the customer. A customer with high market uncertainty would consider having a greater number of suppliers, and perceive both actual and potential suppliers to be source alternatives.

TRANSACTION UNCERTAINTY is present in situations where the customer has doubts on whether what is ordered actually will be delivered. A customer with high transaction uncertainty will likely act closely to their suppliers and can either change between a couple of parallel suppliers or concentrate on working closely with a single relationship where the customer seeks to improve the offering of the supplier. Decision-makers in the buying firm will then be concerned about delivery questions when having a perceived high transaction uncertainty, and have more contact with the supplier before making the final decision.

It is important to note that the framework is to be used to capture a particular situation, since uncertainties fluctuate over time. Factors that decrease uncertainties are when markets become more stable and customers more familiar with suppliers' offerings, or when technologies become standardized and their use of them understood. In reverse, new actors on the market and changes in customer preferences are increasing the uncertainties. Customers have two strategies however to influence their suppliers to move in the direction they wish: demand ability and transfer ability.

4.2.2.2 Customers' Influence Tactics

DEMAND ABILITY enables the customer to advise its suppliers on the offering that the latter should develop. This ability is a powerful influence against suppliers with a high perceived application uncertainty (explained in 4.2.2.3).

TRANSFER ABILITY refers to the skills of transferring information on volume and timing. This skill is important for suppliers with high transaction uncertainty, since it reduces the uncertainties of whether the supplier will be paid for the effort.

In stable supplier markets, suppliers will look for customers with high transfer abilities, however, when the markets are uncertain, the suppliers are likely to overlook bad transfer abilities and value the demand ability.

4.2.2.3 Supplier Uncertainties

Supplier uncertainties enable customers to influence the relationship with their suppliers. There are three situations in which these uncertainties might arise: capacity uncertainty, application uncertainty, and transaction uncertainty.

CAPACITY UNCERTAINTY is the uncertainty of future orders. When cost of development or the fixed costs are high, as in the case of the software industry, a supplier would be likely to seek out stable relationships with customers to receive higher order volumes, even if that means that the supplier has to lower the price significantly.

APPLICATION UNCERTAINTY is the uncertainty in how an offering is best used by a customer. This could be due to the need being hard to determine, or when it changes rapidly. Suppliers with high uncertainties will likely want close relationships with their customers to be able to scan needs, and have to be skilled in communicating those observed needs to the decision-makers within the customers' organization.

TRANSACTION UNCERTAINTY arises in situations when the supplier is unsure of whether the customers actually need what they say they want, or when the order quantities are uncertain. When the supplier has to invest large amounts of resources into development before payment, the transaction uncertainty is usually extremely high for the supplying company.

4.2.2.4 Suppliers' Influence Tactics

Suppliers can influence the customers' uncertainties by either increasing or reducing perceived needs. A reduction in market uncertainty would be useful for companies seeking to develop standardized products and calm the customer by ensuring the quality of the outcome.

An example of this would be ensuring that all products ordered are developed in the same way. Furthermore, a supplier could also try to influence customers' need uncertainty by pointing out the complexity of a product, therefore increasing it by claiming that the product is not as complex as perceived. There are two influence tactics that suppliers can demonstrate: problem-solving ability or transfer ability.

THE PROBLEM-SOLVING ABILITY enables the supplier to correctly assess the needs of a customer and develop an offering to provide a solution. This ability is particularly useful in markets where customers' need and market uncertainties are high, meaning the supplier can charge a higher price than in the case of supplying a product that the consumer is able to choose for themselves. The problem-solving ability typically requires investment in sales and customer support, and in organizational flexibility.

TRANSFER ABILITY can influence consumers with high transaction uncertainties, but who also know what they need and what is available on the market. The transfer ability is the ability to provide a solution for a customer quickly, easily, and consistently. This might require investments on the supplier's side to reduce operations costs, which lowers flexibility, but on the other hand creates a higher consistency in the delivery and quality of the product.

4.3 Combining Productization and the Analytical Framework

4.3.1 Productization and Value Chain Governance

Gereffi et al. (2005)'s framework has been chosen to analyze the relations between buyers, sellers, and the institutional context. The idea with the framework originally is that it can be used to highlight the benefits and risks of outsourcing (Gereffi et al. 2005). Outsourcing IT is a common practice, and trend, among organizations and is something that both case companies in this study have done. Since productization could be used for handling outsourced services, and the software industry is an industry where this is a common behavior, it is deemed an appropriate framework to study the ideal governance relation for a supplier that wishes to productize.

Assuming that one of the benefits of productization would be to facilitate the understanding of the offering for the buyer (Valminen, Toivonen 2012), and to create a repeatable "product" in delivery (Harkonen et al. 2015) this would mean that transaction-specific investments, at least in the case of software, could be easily transmitted between parties and the ability to codify transactions would be *high*. The previous literature on productization also points to the fact

that it is the supplier's capabilities that ideally are *high*, from understanding the value for customers to organizing the workforce (Davis, Sun 2006), and that the managerial focus of the supply base should be to facilitate the transaction. The last factor is the complexity of transactions, which in the cases analyzed is the transaction of complex system software. For this study it will be assumed that the complexity of transactions cannot be called low, since the one thing highlighted from the pilot study [see 2.2.1] is that this is a complex matter.

Mapping it out would mean that the governance relationships of productized software in business to business market would be displayed as a *modular relationship*. This is if the purpose of productization has been met: to codify a complex transaction. In an industry with value chain modularity, suppliers and customers can be linked and de-linked and the network would be fluid and flexible (Gereffi et al. 2005) which would suggest that a standard exists in the network. There are situations that would drive a modular value chain back to a relational though. When new technologies emerge or when there is a drive to bundle value chain activities in new ways (Gereffi et al. 2005). The latter is one of the main benefits of productization, creating a competitive value offering (Feller et al. 2008). For a supplier who wishes to productize it would thus be beneficial with *relational* governance chains in the industry, since it otherwise would likely already exist a standard and the resistance of buyers to switch to a new standard could be high.

4.3.2 Analyzing Supplier Uncertainties and Abilities in Productization

From the definition of productization – "the process of analyzing a need and combining suitable elements, tangible and/or intangible into a product-like defined set of deliverables that is standardized, repeatable and comprehendible" (Harkonen et al. 2015) – the last part would require a high transfer ability from the supplier's side. This is also in line with previous findings (e.g. Davis, Sun 2006), of business development capabilities being key to commercialization of technology products and services.

The transfer ability stands as a contrast to the problem-solving ability according to Ford et al. (2003), since transfer ability demands investments that would raise the reliability of the outcome (e.g. standardization), but would lower the organizational flexibility, whereas one of the key components of the problem-solving ability is flexibility. The part of the problem-solving ability that productization in theory would help strengthen is "improve customer value and understanding" (Harkonen et al. 2015).

The analytical framework by Ford et al. (2003) is thus useful in that it points to the paradox of productization: that the definition itself puts pressure on suppliers to be good at two confliction abilities.

Furthermore, breaking down the first part of the definition (*process of analyzing a need)* the framework would suggest that there is an application uncertainty and the recommended solution according to the framework would be for suppliers to develop close customer relationships so that they can observe the changes from the within. Alternatively have a higher capability of understanding the effect of changes in the customers' industry and the specific implications this understanding would have – which would reduce application uncertainty.

4.3.3 Conclusions of the Theoretical Analysis of Productization

The two frameworks highlight different aspects of productization. The first is that in an industry with standards, an organization would have to contest arms-length relationships, where buyers and suppliers are easily linked and de-linked from each other. The second is that Ford et al (2003)'s framework suggests that productization would be a resource intensive process, where conflicting abilities (problem-solving and transfer ability) would have to be developed and managed gives some interesting insights. The framework by Gereffi et al. (2005) also identifies the opportunity to productize in markets where technology is changing and there are new ways to bundle products and services. It is this market opportunity to productize that this study intends to explore further, by identifying the buyers' role in creating or hindering this opportunity.

Figure 4 illustrates how the frameworks are used in the analysis, where Gereffi et al. (2005) will be useful for analyzing the industry context and Ford et al. (2003) to analyze the buyer's part by: identifying the uncertainties and abilities that are used, and how these abilities are enabling or hindering productization.

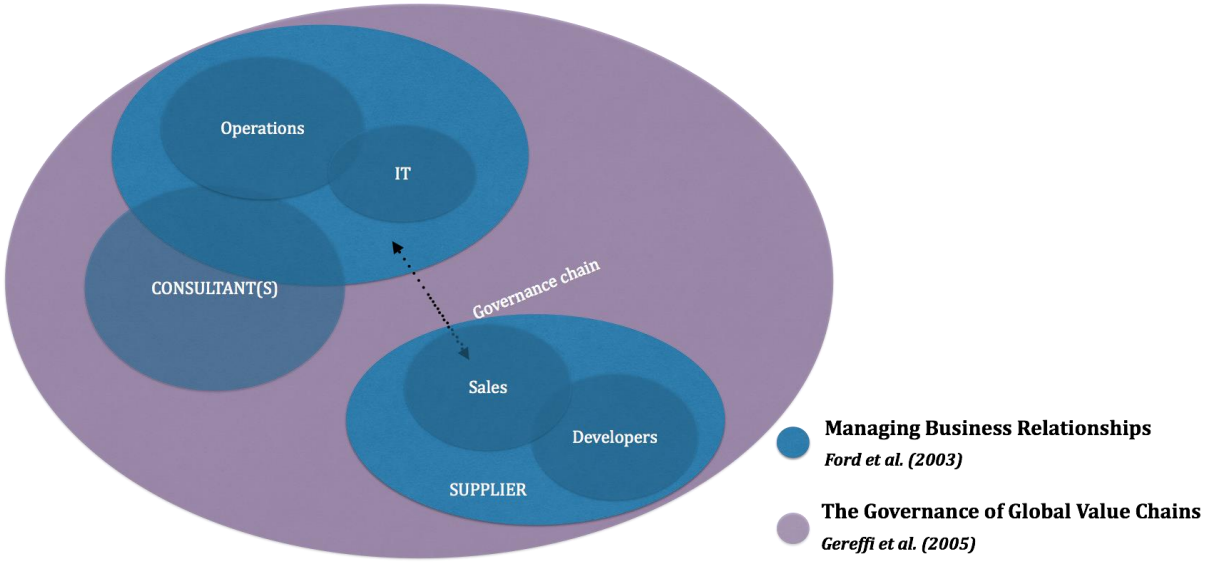

Figure 4. The frameworks of Ford et al. (2003) and Gereffi et al. (2005) applied

5. Empirical Findings

This chapter accounts for the empirical findings generated from interviews conducted for the main study. The chapter starts off with a description of the Swedish Pharmacy market (5.1) followed by the two cases: Pharmacy A (5.2) and Pharmacy B (5.3).

5.1 The Swedish Pharmacy Market

In 2009, the almost 40-year-old monopoly in the pharmacy retail industry controlled by the Swedish state was put to an end. A reform in the regulation of the market released the legal, state-owned ownership and more or less enabled any private firm to join the pharmacy sector as well as allowed common retail stores to legally sell non-prescription drugs. The existing 945 pharmacy stores that at the time made up the pharmacy market in Sweden were then divided into eight different clusters of which new entrants would become responsible for. The Swedish state still owns one of these clusters.

The purpose of this reform was to introduce competition as a mean to improve efficiency of pharmacy retailing (Björnerstedt, Verboven 2015). The new private players were free to build their organizational structure from scratch which has resulted in that today, in the year of 2016, there are companies offering pharmaceutical products and services on the Swedish market with varying success. Two of these pharmacies acting upon very different business strategies, both externally and internally, have been mapped out and are presented below. They have made journeys to transition from a regulated market into what not only in terms of competition looks different from the previous pharmacy industry, but which also has caused a shift in consumer expectations and a pressure to transition to operate as an organization in an increasingly digital world.

“There has been a change to the approach on how to work with and view system development. There is now a need for a more agile approach towards consumers, both for sellers of software and actors on the market, as well as their consultants.”

“Today, the expectation of functionality [for an e-platform] is the same no matter if it is an order for drainpipes at work or when you buy a jacket online at home.”

5.2 PHARMACY A

5.2.1 BACKGROUND

Pharmacy A makes out an important player in the Swedish pharmacy industry. Their history of being the only actor on the market has given them the possibilities to gain great first mover advantages in many areas of the business operation which is something they capitalized on in 2009 when the pharmacy market was loosened and became open to free competition. However, the company's stand on the market as well as existing relationships to suppliers and partners have not exclusively been beneficial to them when facing competitors which have had the chance to start from scratch and apply a strategy that is completely adapted to the market's rapidly changing nature. A comprehensive load of work had to be done in the effort to keep Pharmacy A up to date with the right systems and technology as well as restructuring the operation from within in order to create a perfect fit on the market and for the company to be able to stand the competition.

"We had to evaluate a lot of different scenarios and ask ourselves if the best choice would be to keep existing solutions and develop it or to start from scratch with a standard product."

"The coordination officer [at Pharmacy A] made clear to us that she was the one exclusively in charge of the existing e-platform. We were caught in the web of it all and had some very strained meetings."

5.2.2 GAINING FIRST MOVER ADVANTAGE BY RELEASING AN E-PLATFORM

After the deregulation of the Swedish pharmacy market, Pharmacy A found themselves in a novel market landscape; with new competitors emerging and a changing digital landscape. In order to keep up with the changing environment, a brief was sent out to suppliers in various industries, from pure digital agencies to management consultancies. In order to overcome the many difficulties with managing the digital transformation that the company was about to embark on, Consultancy A won the brief and was hired in 2011. One of their main tasks were to review the existing e-platform that Pharmacy A operated, which at the time primarily served as a provider of information, and turn it into a successful e-commerce business. However, the consultants came to the conclusion that an update of the whole underlying IT system that the development of a new e-platform requires would take too much time and make Pharmacy A fall behind on the competition. The fear of other pharmacy chains becoming the first ones to offer complete pharmaceutical services online and locking in the majority of the customers pushed them into releasing a new e-commerce on the existing

platform in order to gain first mover advantage. However, because Pharmacy A was the first company to offer this type of services online, the consumers were not mature enough to make it an immediate success.

"I still don't know if it was right or wrong not changing platforms to start with. We had the right intentions, but it was a bit early."

5.2.3 A Standstill Caused by IT

By 2013, the neglect of IT and the internal technology systems came to a critical point. Any effort trying to implement new changes to the operations were held up due to the IT department's inability to perform. They were suffering from acting upon standard solutions that were lacking upgrades with new releases as well as deficient support and security arrangements. The operations were out of phase and put in an unsustainable situation which caused a standstill of the entire company. Pharmacy A then opted for change by letting an extensive revision commence, evaluating all the products and platforms available to their disposal. After a great screening of relevant suppliers, the company was left with three platform developers that could answer to their needs. Wanting to reduce the IT related complexity within the organization, these suppliers were then asked in turn to team up with their own preferred system supplier. During the procurement, the suppliers were rated in the network of these teams. There was a constant ongoing dialogue between Pharmacy A and the actors as it was of high importance that the complex demand list of requirements could be made understood by all parts involved.

"Products that are used in the way they are intended to work very well. But there is often a desire to change and tailor a standardized system which makes it customized and that puts you back in the situation where you cannot upgrade anything and it all becomes a vicious cycle."

5.2.4 The Collaboration Between IT and Operations

To find the perfect supplier fit for Pharmacy A, the IT department and operations worked closely as a whole which was new to the otherwise fragmented company. Together they decided on starting from scratch with a standardized system because of the possibilities to keep the technology up to date with upgrading enablement.

Following these events, Pharmacy A realized that in order for them to streamline the operation IT had to be brought in-house. The physical distance to the suppliers had caused a

lot of unnecessary overhead costs where the need for discussion and dialogue had been highly time consuming. Reaching the insight that some knowledge and skills cannot be transferred because of its high density of key-person dependency pushed the action of bringing outsourced IT inside the company. As operations and IT then were able to collaborate even more closely – enabling operations to order required technology in-house – they started producing more just-in-time deliveries. Agility and flexibility is stressed as a key factor to survive in today's digital landscape.

"The competence is more important than the tools because the tools are somewhat comparable. Having a representative from the supplier in-house makes the decision-making a lot easier."

5.2.5 Changes in the Supply Market

When Pharmacy A hired Supplier A to help in developing the e-platform, Supplier A had available ready-made products and solutions in stock. This is something that the selling organization is moving away from today, instead adapting the consultancy-model. Partially, this is explained as driven by the fact that the solutions are unfit, and in most cases, it is more beneficial to start from scratch anyways according to Pharmacy A's supplier. Pharmacy A concludes that the similarities in culture, that being agile, are important, but that it at times can cause dissatisfaction and disagreements on what is and what is not included in the cost. However, through working long-term with Supplier A, turning them into trustworthy partners, those disagreements are less of an issue today than they were in the beginning of the relationship. Therefore, Pharmacy A consciously budget and leave open spots in the development teams for outsourced competence to fill.

"We solve a lot of problems by including the right people in our team which provides us with specialized competence."

5.3 Pharmacy B

5.3.1 Background

One of the eight clusters of which the previously state-owned pharmacy monopoly was divided into was sold to Pharmacy B, a company founded in 2009 which has since also had an influential role on the Swedish pharmacy market. In conjunction with the released monopoly, the internal IT systems installed in the stores were for a limited period of time rented out to the procuring companies in order for them to be able to transition to their own business systems somewhat smoothly.

When Pharmacy B entered the market, they had no 'IT backpack' with old systems they could use so they immediately decided to outsource IT, development and all operational management. This then became the core strategy of the company and has ever since the transition been Pharmacy B's main approach of how to run business. Abiding to the strategy means that they aim to handle as little core business operations in-house as possible and rather outsource activities whenever suitable. To Pharmacy B, this creates a great dependency on their suppliers and the need for them to buy what is referred to as 'packaged solutions', where everything from development to maintenance is included. The strategy to buy functions and services is then directed by what the operations need.

"We didn't have anything when we first started - it was a blank sheet when we were going to build IT."

"We do not make any detailed, technical specifications when we outsource - it is the suppliers that provide solutions to solve our needs."

"We don't develop anything ourselves - we do not wish to own or demand specific requirements on software, but want to use the products as they are."

5.3.2 The Rise of a New Pharmaceutically Oriented Consultancy

When the monopoly was on the verge of being dissolved, an almost 40 year period of time had passed since the market last had seen free competition in the pharmacy industry. During this time, there had not been any need for suppliers to develop any pharmaceutically oriented IT systems as the Swedish state-owned company had had their own for several years. However, as new actors on the pharmacy market entered, there were demands on them to change IT systems within two years from the one that the old company had provided. Pharmacy B's consultancy were one of those tasked to deal with this newly arisen need, and

were the ones who ultimately developed a new IT system that specifically targets retailers with pharmaceutical offerings. With high demands on security and adaptability taken into consideration, a fully developed POS solution accommodating the careful management of prescription drugs was released on the re-regulated pharmacy market by the year of 2010.

When the two-year transition period came to an end by 2010, Pharmacy B had implemented the new standardized pharmaceutical solution and was one of the originating consulting firm's most important customers. As Pharmacy B has continued to use outsourcing as their main strategy, the two companies are to this day still working together and have been able to grow with each other and form a strong partnership. Another great benefit generated by this kind of arrangement is the increased opportunity to focus on what Pharmacy B wants to accomplish, rather than how they want to do it since they lack the technological competencies necessary.

"They are dynamic and knowing. Together we can grow more than what we would have been able to do internally".

"The whole idea is to have partnerships. When it comes to the most important, business critical services we have chosen to only work with a few partners. They are not just suppliers, these partners share our visions."

"We try to focus our demands on 'what' to do, not 'how'. When we procure services we seldom provide requirement specifications but instead ask the suppliers what their product will mean to us. (...) We are open to solutions and want to choose our suppliers based on who has the most competitive edge and is able to grow."

5.3.3 Launching a New E-Platform

"We were operating the external web, and when [Pharmacy B] realized the potential of online sales a couple of years ago [2014], that is when we procured the e-platform to be able to compete."

In 2013, Pharmacy B wanted to complete the pharmacy supply chain and thus decided to invest in an e-platform. In the process of finding the right supplier, a screening of possible actors on the market had been done of which three at the end were left. One of these was the previously mentioned consulting firm who even though they had partnered with Pharmacy B within other business areas were not guaranteed to work with them again. Correspondingly to their strategy reasoning, Pharmacy B is always looking to find the best fit for the company. Simultaneously, there is no such thing as an "honorable contract", according to one of the

interviewed consultants, meaning that the consulting firm can be one company's main competitor in a project one day and then work with them the next. However, the fact that the firm at the time was controlling all of Pharmacy B's other operational systems gave them an advantage and was thus chosen along with another software supplier to assemble the e-platform. Due to the complexity of launching an e-platform this "safe choice" of choosing an already trusted supplier by Pharmacy B is understandable and in line with their expressed desire to work with partners and not invest in simple solutions, as mentioned above.

"We had a governance model to Pharmacy B, they felt safe with us continuing on it. We also managed their external web and even though that is not equivalent to an e-platform, we still had the history."

"To have the right expertise is incredibly important when you're constructing an e-platform - competence is everything."

The e-platform for Pharmacy B was in 2014 launched by the earlier mentioned consulting firm. The procurement of the e-platform had taken more than a year from start to finish and the implementation prior to the launch had been problematic, which was reflected by a six-month-period involving "complex development". This is however a common trait when launching an e-platform, according to one of the interviewed consultants. Regarding pharmacies, the cost of managing pharmaceutical products is expensive due to the high security involved with prescription drugs, but what is generally applicable to all e-platforms is that the complexity of the underlying processes in the system is easily underrated. Many companies also do not realize that the incorporation of an e-platform may not have the desired financial effects - if they are expecting any effects at all.

"Today, it's a must for everyone to have an e-platform. Though, people often want an e-platform without knowing what they want to accomplish with it."

"It's very complex because far from everyone has understood the hidden processes. All e-platforms are not profitable."

5.3.4 The Persistence of Pharmacy B's Strategy in the Future

When asked about Pharmacy B's strategy of maximizing outsourcing in combination with minimizing in-house activities and their thoughts on its persistence in the future, many of the interviewees are positive. The identified advantages range from greater abilities to grow and develop the company to financial benefits as well as enabling more focus on what the IT

supplier actually can deliver and not so much how it is delivered. One of Pharmacy B's representatives (BB1) thinks that this is the direction the market is heading, but the reason Pharmacy B is so far ahead is because they had the privilege of starting their business from scratch. A considerable barrier preventing more companies to outsource their IT department is namely the fact that many are burdened with an excessive legacy, meaning that their systems have been so modified that they are completely dependent on key people in the company.

"Many companies do outsource, but the instructions are often so controlled that the supplier is told exactly what to do and not properly let in."

"In 2016, IT is just a commodity that everyone thinks should just work."

Furthermore, with Pharmacy B's strategy of engaging in partnerships, the company is more likely to find an optimal solution which is that one solution that solves everything. Though, an immaturity among the suppliers has been identified as relatively few offer the kind of service packaging strategy that Pharmacy B is interested in procuring which causes them to choose their suppliers based on culture and environment primarily. However, these suppliers are expected to increase since the importance of implementing the tools offered with the right competence is becoming more central among companies. At Pharmacy B, the operations are present during the discussions between suppliers and IT because the user interface and functionality is critical to them.

When asking a software supplier what they prefer for kind of relationship to their procurer, you get the answer that a partnership is always better than a typical buyer-supplier relationship. Since IT systems are such complex products, it is better being a partner with greater possibilities of being able to implement your products efficiently if the customer trusts you. The ideal procurer is the customer who includes the management team or board of directors during the negotiations because of the grounded nature of the procurement. Neither the tools nor the right expertise should be prioritized over the other when it comes to digitalization - the software supplier rather views it as a question of culture and innovation.

"The customer listens to you, but they don't really get it. They cannot picture what their everyday work will look like, it is too complex and too much information so they will just have to trust you."

6. ANALYSIS

The analysis chapter is structured into seven sections. The first three (6.1 -6.3) analyze the case with Pharmacy A through the analytical framework developed in chapter 4 (4.2). The following three (6.4 -6.6) are dedicated to analyzing Pharmacy B's case. Lastly, the analytical chapter is concluded with a longer analysis (6.7) comparing the two cases.

6.1 CHANGING GLOBAL VALUE CHAINS: PHARMACY A

6.1.1 PHARMACY A 2013-2016

Seeing that the decision to bring IT in-house again due to large overhead costs and the distance from suppliers signals that the ***complexity of transactions*** were high, that ***ability to codify transactions*** were low and that ***capabilities in the supply-base*** also were low, since they did not fulfill the requirements of the transaction to a satisfactory price. Applying this to Gereffi's model indicates that Pharmacy A's value chain was of a hierarchy governance type.

Pharmacy A's representative critiqued current suppliers on the market selling add-ons to e-platforms (e.g. search engines)

"Once you start working with a product you realize that it is not that simple."

Complex software technology never is that simple. ***Complexity*** is thus high in Pharmacy A's case. Pharmacy A additionally expresses that some abilities are impossible to codify and prefers to work closely with individuals:

"You become a part of our team"

Pharmacy A is thus not interested in standardize knowledge and the ***ability to codify*** is in this way kept low. The preference of bringing specialized competence in-house is also a sign to the ***capabilities that suppliers*** bring are high. There has thereby been identified a switch in Pharmacy A's value chain to a relational governance type. The change in Pharmacy A's value chain preferences are summarized in table 5.

Pharmacy A - Global Value Chain

Year	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	Governance Type
2013	High	Low	Low	Hierarchy
2016	High	Low	High	Relational

Table 5. Pharmacy A's global value chains in 2013 and 2016

6.2 Customers' Uncertainties and Influencing Tactics: Pharmacy A

6.2.1 Pharmacy A 2011

When the journey towards becoming a more digital company for Pharmacy A started in 2011, the organization displayed a ***high need uncertainty***. There were no detailed specifications in the brief suppliers received on how to meet the needs of Pharmacy A. This lack of being able to specify is typical for organizations industries with rapidly evolving technology (Ford et al. 2003). At the same time, the uncertainty of what the best solution would be was not determined:

"They had no idea on what kind of organization they wanted to work with"

This is a sign of Pharmacy A expressing a ***high market uncertainty*** in being unsure of what the best solution would be. In addition, the ***transaction uncertainty*** was high, since potential suppliers were unsure of whether Pharmacy A actually needed what they say they did. Later, this also came to a conflict with the current coordination officer being very protective of the existing e-platform.

In line with what the framework by Ford et al. (2003) would predict, Pharmacy A went for a supplier high in ***problem-solving abilities*** – a management consultancy firm.

6.2.2 Pharmacy A 2013-2016

In 2013, Pharmacy A came to a stand-still because the technology was simply too old to work with. Both the IT department and operations were struggling with the old technology and could not continue evolving the business any further. This time around, the need was more clear; to update the old technology. Pharmacy A further reduced the ***need uncertainty*** by collaborating between departments. IT and operations together evaluated the solutions on the market, deciding on the choice of a standard solution. This enabled Pharmacy A to also reduce its ***market uncertainty*** and the suppliers all came from the same industry category, offering similar solutions. Pharmacy A further reduced the ***market uncertainty*** by involving several suppliers in the process (Ford et al. 2003) – albeit, it was decided by the lead supplying company on who to team with. Pharmacy A's decision to focus on a standardized system solution reduced their ***transaction uncertainty,*** which meant they had a better perceived control of the final outcome.

Around the same time, previously outsourced IT was brought back in order to streamline the operation. Complaints about distance would signal that a company has a higher degree of ***transaction uncertainty*** (Ford et al. 2003) which in Pharmacy A's case was reduced by bringing IT home. This is also signaling that Pharmacy A did not experience their suppliers' ***transfer ability*** to be sufficient at the time, and by having an in-house ordering system, outside suppliers are likely facing even higher demands on the ***transfer abilities*** in procurement of digital solutions. Pharmacy A's situational change is summarized in table 6.

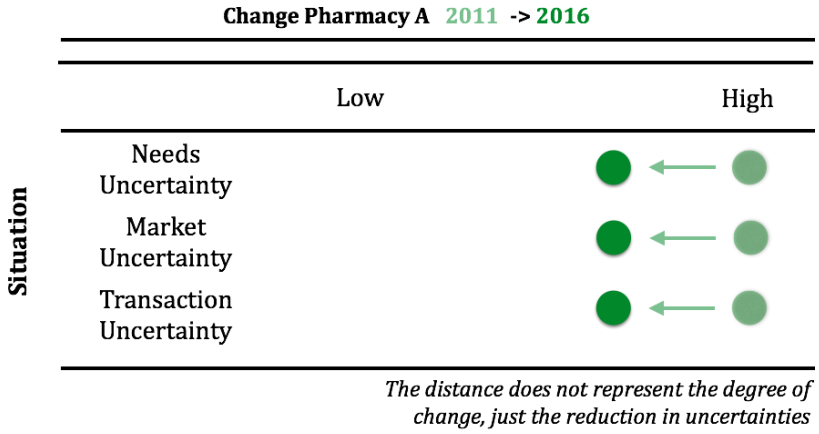

Table 6. Pharmacy A's customer uncertainties from 2011 to 2016

6.2.3 Pharmacy A's Abilities

Using customer abilities is a way of influencing suppliers in the direction the customer wants to (Ford et al. 2003). Pharmacy A did not use either ***demand ability*** or ***transfer ability*** to influence their suppliers:

"We never exactly specified what the result would be."

This is in line with Pharmacy A's move towards a more agile approach, however, it would not ease a supplier's ***application uncertainty***, ***capacity uncertainty*** or ***transaction uncertainty*** (Ford et al. 2003).

6.2.4 Responding to Pharmacy A's Changing Needs

Even though the ***need uncertainty*** and ***market uncertainty*** would point to less ***problem-solving abilities*** in the supplier base, Pharmacy A's supplier is undergoing an organization transformation from selling ready-made products and solutions, towards a consultancy model. In Pharmacy A's case, it would make sense, since Pharmacy A in the case does not use any particular ability to reduce the uncertainties of the suppliers.

6.3 Summarizing Pharmacy A

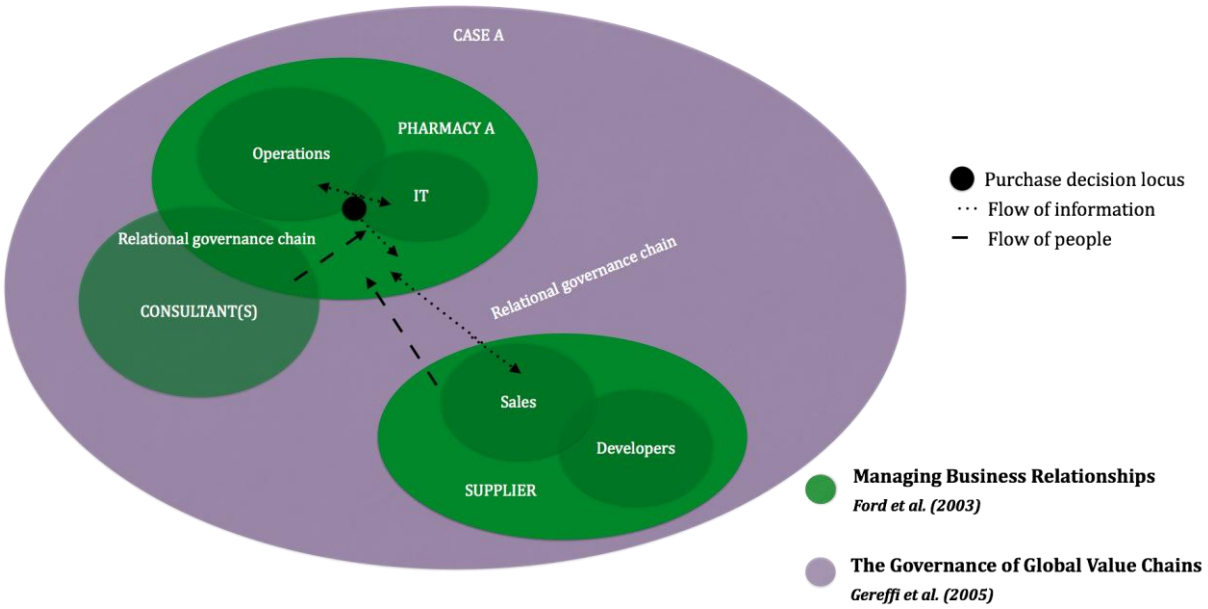

Figure 5. The frameworks of Ford et al. (2003) and Gereffi et al. (2005) applied on Pharmacy A

Within Pharmacy A, the purchase decision is a collaboration between IT and operations. Furthermore, Pharmacy A have been identified to have relational governance chains, both to consultants and suppliers. Information moves between the companies in the form of people.

6.4 Changing Global Value Chains: Pharmacy B

6.4.1 Pharmacy B 2013-2016

One underlying assumption of this study is that the IT dealt with is **complex** and that it has not changed during the years between 2013 and 2016. As software supplier B stated:

"The customer listens to you, but they don't really get it. They cannot picture what their everyday work will look like, it is too complex and too much information so they will just have to trust you."

When procuring the e-platform in 2013, the process took one year. This signals that the ***ability to codify transactions*** were low, even though the ***capabilities in the supply-base*** were seen as high between Pharmacy B and Consultancy B, since Consultancy B eventually ended up with the project even without previous experience. This indicates that Pharmacy B in 2013 had a ***relational*** governance type of value chain.

Today, Pharmacy B's demand on suppliers is that suppliers should offer complete bundled packaged services by standardizing software and thus be able to ***codify transactions***. This

would push the value chain towards a ***modular*** governance type which according to (Gereffi, Humphrey & Sturgeon 2005) is a likely event when suppliers can offer turn-key services and full-packages service. In other words, when suppliers are able to productize an offer. Fine (1998, cited Gereffi et al. 2005) provides an example when this process is hindered: on the mechanical systems market, the information is simply too complex to codify which inhibits the rise of an industry standard, keeping the complexity of transactions high between buyers and sellers.

Since Pharmacy B has no desire to acquire their own IT department, but instead aims to use outsourcing as their main strategy, they only work with those suppliers in which they perceive the ***capabilities*** to be high. However, it is important to note that even though Pharmacy B has seen a change in the supplier base towards working with their preferred business model, suppliers are generally still "immature" according to them, as relatively few offer the kind of service packaging strategy that they are interested in procuring. Therefore, the nature of their value chain has remained of relational governance type since 2013.

Pharmacy B - Global Value Chain

Year	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	Governance Type
2013	High	Low	High	Relational
2016	High	Low	High	Relational

Table 7. Pharmacy B's global value chains in 2013 and 2016

6.5 Customers' Uncertainties and Influencing Tactics: Pharmacy B

6.5.1 Pharmacy B 2010

In 2010, there was no other IT systems adapted for the pharmaceutical industry in Sweden except for the one that came from the monopoly. The market was thus completely open to meet the high ***need*** and ***market uncertainties*** and as in the case of Pharmacy A, Pharmacy B partnered up with a supplier high in ***problem-solving abilities*** – a management consultancy firm. Furthermore, the fact that Pharmacy B developed a close relationship in which it sought to improve the offering of its suppliers indicates an undertaken strategy by customers with high ***transaction uncertainty*** (Ford et al. 2003).

6.5.2 Pharmacy B 2013-2016

Ford et al. (2003) explicitly states: "A customer with high need uncertainty is likely to 'get into bed' with a company which it already has a relationship with". When developing the e-platform, Pharmacy B chose to go for the supplier with which they already had a relationship with, even though this supplier had no experience in developing an e-platform.

"We had a governance model to Pharmacy B, they felt safe with us continuing on it. We also managed their external web and even though that is not equivalent to an e-platform, we still had the history."

In addition, by applying the strategy of not choosing to specify technical details, Pharmacy B deliberately keeps the ***need uncertainty*** high. They are also open to the possibility that a "solution for everything" can be provided by a range of different suppliers and they see their suppliers as so-called "source alternatives" (Ford et al. 2003), differentiated only by culture and visions. This perception of similarities in the supply-base points to high ***market uncertainty***, even if this uncertainty is also deliberately kept high by the procurers in Pharmacy B. Lastly, when sourcing for new suppliers, Pharmacy B has a high ***transaction uncertainty*** as they prefer to work with a few selected suppliers and seeing them as partners. Again, this is a strategy that is pursued by Pharmacy B as they let their suppliers innovate for them, and thus "grow together". Pharmacy B's situations in 2010 and 2016 are summarized in table 8.

Pharmacy B 2010 -> 2016

Situation	Low	High
Needs Uncertainty		●
Market Uncertainty		●
Transaction Uncertainty		●

Table 8. Pharmacy B's customer uncertainties from 2010 to 2016

6.5.3 Pharmacy B's Abilities

Pharmacy B's strategy of enabling their suppliers to find the best solution for them is well intended. It reduces their ***demand ability*** as an influence on their suppliers which otherwise

would have helped a supplier with ***application uncertainty*** by letting them know their need. In addition, by leaving information on volume, pricing and logistics up to the supplier to solve, the influence of Pharmacy B's ***transfer ability*** is reduced - an ability that is important for suppliers with ***transaction uncertainty*** (Ford et al. 2003).

6.5.4 Responding to Pharmacy B's Needs

The high ***need*** and ***market uncertainties*** put more pressure on the ***problem-solving ability*** of the supplier (Ford et al. 2003), which was also the case in the beginning of Pharmacy B's relationship with Consultancy B. The question is if signaling these needs leads to a loss of relevant suppliers, since Pharmacy B explicitly looks for suppliers with highly standardized, reliant and efficient solutions – thus looking for ***transfer abilities*** in a partner. The mismatch that occurs when new suppliers become unsure of the need, as they strive to lower their ***application uncertainty***, could lead to the perception that representatives from Pharmacy B attest; that suppliers are still very immature. Pharmacy B then constantly goes back to trusted partners who once have proved their ***problem-solving abilities***.

6.6 Summarizing Pharmacy B

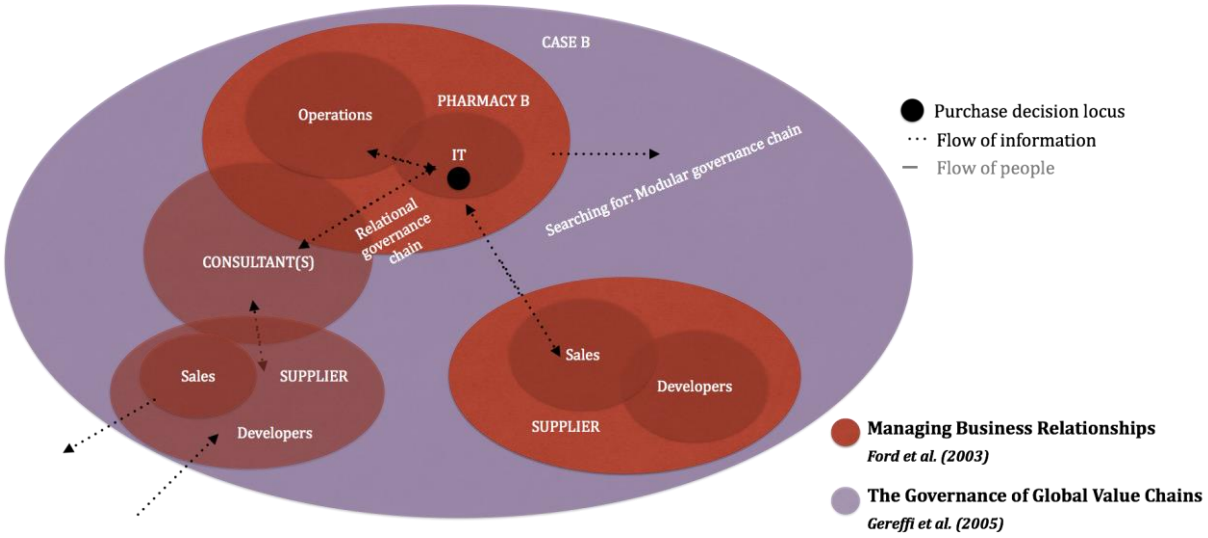

Figure 6. The frameworks of Ford et al. (2003) and Gereffi et al. (2005) applied on Pharmacy B

In Pharmacy B, the purchase decision of new development is formally located in the IT department, but with input from operations. The governance type of value chains with existing suppliers is ***relational***, although Pharmacy B clearly expresses that in looking for

new suppliers they are looking for a ***modular*** relationship. Information flows between the companies can at times be codified, but relationships are still an important part.

"The core strategy of Pharmacy B has been to buy complete functionalities and only work with a few, big suppliers."

6.7 Connecting Theory with Case A and Case B

6.7.1 Global Value Chains

Value chains with a relational governance type would mean that suppliers are autonomous, have high capabilities as well as abilities to process the need of the lead firm - the ideal situation for a supplier wishing to productize. Based on the theoretical analysis in chapter 4 (4.2.1), a relational value chain would be the desirable governance type, since the supplying part would not have to face the competitive environment that a modular supplier network would display (Gereffi et al 2005).

In both Pharmacy A and Pharmacy B's cases, these type of relational value chains not only exist, but are also desirable on the customers' ends. Both pharmacies are explicitly saying that they look for partners as well as key suppliers and value similarities in culture and shared visions. Looking at Pharmacy B, their intermediate supplier productized as early as 2010, when they identified the need of a new IT system that specifically targets retailers with pharmaceutical offerings which they today sell to the entire pharmacy retail industry.

In the case of Pharmacy A, the supplier is moving away from productized solutions. Similar to Pharmacy B, Pharmacy A prefers a relational governance chain with their key suppliers. So why was the supplier of Pharmacy B able to productize while for Pharmacy A the supplier is moving in the other direction, given that they both have relational governance chains?

One difference between the cases is how information flows between the companies. Pharmacy A moves information by moving actual people between organizations, whereas Pharmacy B is content with being partners without the people actual moving from one organization to the other. This would suggest that the ability to codify transactions is slightly higher for Pharmacy B than for Pharmacy A. So even though both pharmacies are displaying relational value chains, the ability (or more accurately, the *willingness*) of the buyer to codify transactions is an important factor to consider for suppliers wishing to productize. Even in relational governance chains, the willingness might play a part, since having to move people

between organizations would decrease the resources for the supplying organization - a reduction of resources in an organization that might need more of them (Leon, Davies 2008).

Lastly, since Gereffi et al (2005)'s framework is intended to analyze network structures, the relational value chains identified could also be due to the actors in this industry being few and even in size. If one does not acknowledge the standards created by the other, or prohibits the other from using it, the profit available to a potential supplier wishing to productizes diminishes and might discourage the necessary investments.

6.7.2 Suppliers' Uncertainties and Customers' Abilities

From the theoretical analysis in chapter 4 (4.2.1) the framework by Ford et al. (2003) was used to examine productization from the supplying side. The framework highlighted the paradox of productization: to have both good problem-solving abilities to allow for flexibility, and good transfer abilities to deliver quickly, easily, and efficiently. Add on the assumption that application uncertainty, capacity and transaction uncertainties would be high (i.e. not knowing the need and be unsure of if the resource investment would be worth it) for suppliers before they productized and it would be up to the consumers to offer some comfort. The most powerful ability the customer could use in this case would be their demand ability (Ford et al. 2003).

The use of demand ability could not be detected in the case for either Pharmacy A or Pharmacy B. On the contrary, the pharmacies have taken active decisions not to specify on the how, the exact outcome or on technical details, in respect of their suppliers' competencies. The demand ability of the customers in this case would thus not reduce the uncertainties of the suppliers, thus leaving suppliers with the need to use their problem-solving ability to reduce their own uncertainties. This is also something displayed in the cases, through the involvement of a third actor - the management consultants. If we assume that the task of management consultancies is to solve problems within organizations, this would lead to a strong problem-solving ability. By having partners (consultants) efficient on problem-solving ability, the abilities sought after from other suppliers are more likely to be transfer abilities. This puts further pressure on suppliers to productize, but could potentially lead to a reduction of the access these suppliers get to use their problem-solving abilities to solve the first step of productization (analyzing the need). In addition, being needed solely for their transfer abilities could deter the development of the partnership desired by both Pharmacy A and Pharmacy B, or as one of the suppliers put it:

"The day a buyer says 'I'll pay you, do as I say', creativity dies."

Focusing on the transfer abilities of suppliers has the additional drawback which has not yet been addressed and that was a point made by Leon and Davis (2008): managing the paradox of productization might only be a reality for large corporations with resources to invest. In the end, the capacity uncertainty of the supplier might not be that easily reduced due to the high costs of development in software (Ford et al. 2003).

Additionally, suppliers might feel the same pressure to be flexible and agile as most other organizations today (Christopher 2000), so the need for suppliers in reality is to feel empowered to use their problem-solving ability which is potentially hindered, as problem-solving abilities are brought into companies in the form of management consultants.

The above reasoning would explain why Pharmacy B's suppliers have been able to productize. The productizing company is sharing the same owner as the management consultancy that has a close relationship with Pharmacy B. A way that buyers then influence productization is by bringing in semi-internal actors, reducing the need for problem-solving abilities, but at the same time hindering the one ability that suppliers need to reduce their own uncertainties.

6.7.3 Customers' Uncertainties

A similarity between the cases is that customer uncertainties are high for both Pharmacy A and Pharmacy B. The former reduces some of this uncertainty by collaborating between intra-organizational functions, while the latter have IT procuring experts (instead of an IT unit) that collaborates with operations. Pharmacy A and Pharmacy B are thus both having what in research is typically indication of mature and strategic buyers: cross-functional collaborations (Schiele 2007). This would also be in line with Luzzini et al. (2015)'s finding that in high technological uncertain situations procurers get more strategic.

Counter intuitively, this sign of mature purchasing does not equal low customer uncertainties. Instead, the uncertainties are deliberately kept high, by the understanding that you cannot specify everything to the smallest detail and still have a good partnership (that would be a sign of a captive relationship according to Gereffi et al. (2005)). Other studies in knowledge-intensive industries have seen that more mature and professional buyers are prone to commoditizing services, and gain a disproportionate amount of power by doing so (Pemer, Skjølsvik 2016, O'Mahoney, et al. 2013, Maloni, Benton 2000). What might be seen in these

cases is the awareness of this power imbalance and because of it, buyers are intentionally keeping their uncertainties high (even though Pharmacy A does reduce uncertainties by becoming more mature in their buying). Although admirable, this does little to solve the paradox of productization, since high customer uncertainties further complicate the matter by having suppliers focusing on conflicting organizational logics (e.g. customer centered and cost-reduction focused (Alajoutsijärvi et al. 2000)). Making the problem even more complex to solve, the organizations most suited to handle organizational conflicting logics seems to be those in which there is a lack of a professional identity (Smets et al. 2015). It seems that when it comes to productization, it is simply that complex.

7. CONCLUSIONS

The purpose of this thesis was to address the research gap on buyers' influence on productization by answering the following two research questions:

RESEARCH QUESTION 1: How does the structure of network value chains influence productization?

RESEARCH QUESTION 2: How does the purchasing organization affect productization?

7.1 HOW DOES THE STRUCTURE OF NETWORK VALUE CHAINS INFLUENCE PRODUCTIZATION?

If an industry has a set technological standard, inter-organizational relationships are most likely characterized of linked and delinked relations where buyers can easily switch between suppliers (Gereffi et al. 2005). However, with introduction of new technology, the previous standards in the industry can be questioned and new standards arise. Since one of the advantages of productization is that it creates a standard (Harkonen et al. 2015), it is advantageous for supplying firms to enter markets with relational governance structures. The risk however is that the governance structures are relational because of buyers' unwillingness to codify transactions, which in the industry studied would likely impact the entire industry and create a barrier for productization, even if other organizations in the industry network wanted it.

7.2 HOW DOES THE PURCHASING ORGANIZATION AFFECT PRODUCTIZATION?

A more strategic organization of purchase leads to higher demands on the supplier to be more efficient and standardize delivery and thus have great transfer abilities, which is in line with previous research on professional procurers in knowledge-intense industries (Pemer, Skjølsvik 2016, O'Mahoney et al. 2013). Interestingly enough, even though more mature buyers did in one case reduce customer uncertainties by a small amount, it cannot be stated that the reduction was significant enough to change their uncertainties from high to low. More mature purchasers would in theory be better at using their demand ability, but that in itself would lead to a paradox where the value chain becomes captive rather than relational.

By bringing in management consultants in a purchase, the need for problem-solving abilities is likely reduced, putting further pressure on suppliers to improve their transfer abilities. If suppliers themselves feel the need to use their problem-solving abilities to lower their own uncertainties, then the consultants would act as a barrier for a supplier wishing to productize. In the end, a lack of reduction in uncertainties on the buyers' side is stressing the paradox of productization.

8. Main Contributions, Practical Implications & Limitations and Future Research

This study set out to explore how productization in the software industry is affected by the structure of business networks and the purchasing organization's effect on productization. We bring a fresh perspective to the discussion on productization by empirically grounded insights into how actors in the buying organizations are, sometimes unconsciously, influencing the opportunities of productization. Based on our findings, several contributions are made that will be presented below.

8.1 Theoretical Contribution

Driven by a research gap, this study aimed to contribute to the research on productization by highlighting the importance of studying the buying side. By using buyer-seller research tools for analysis we would argue that we contribute to research by giving a more nuanced perspective on a process that is undertaken by the supplying organization, but where necessary collaboration between buyers and sellers is the key to solve the paradox of productization. In addition, we also contribute to the research on the emerging research on the power of professional procurers by showing that they both are a necessary part in productization by creating optimal network structures and that dominant buyers especially can be a part of influencing productization.

This study have also begun to explore the buyer's side of productization, and the results from the analysis show that this is an area that could use some more investigation.

8.2 Practical Implications

While the challenges of productization unlikely are any news to either buyers or sellers of software, the findings of this study have some practical implications.

First the understanding that productization can be a time- and resource-consuming process for suppliers that have to manage conflicting logics within the firm. Even if the uncertainties of consumers are kept high intentionally, due to the perceived competence and capabilities in the supply base, it might end up creating an additional barrier to productization because of the stress it takes to be both problem-solving and having high transfer abilities. This is important for buyers to recognize since they have the potential to help or hinder productization from happening.

Secondly, with formalization of purchasing, and the knowledge that mature procurers are better at commodification, there is a risk of loss of creativity and trust, if the pressure to create

products for a low price becomes too high. Which would lead suppliers to not do it since the risk of the resource investment might not pay off. Professional purchasers have to be careful not to inhibit the creation of solutions and focus too much on costs.

Thirdly, there is a conflict on who reaps the benefits of productization. While a buying organization can invest in suppliers to productize, they will also take a chance on possibly creating a standard for the entire industry, which their competitors can reap the benefits of by paying a lower price for the same product. An awareness of who is responsible for risk and potential frame agreements that distributes profits from the investment productization could be a potential solution.

8.3 Limitations and Future Research

The findings of this study are descriptive due to the study's explorative form. The generalizability of this study is limited, however, the framework used has proven useful to analyze productization and future studies could further test the framework's strength in additional industries and organizations to highlight the buyers' influence in productization.

Secondly, while this study begins to explore the buyers' influence, it does not predict the strength or degree of that influence. Future studies could address this limitation by also looking at areas such as power distribution and studying the buyers' organization more in-depth to understand the buyers' influence on productization.

This study was a multiple-case done on the pharmacy retail industry in Sweden. The two cases are done on traditional brick-and-mortar retailers. Future studies could also investigate the impact of pure online players on productization.

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APPENDICES

APPENDIX I: PILOT STUDY INTERVIEW TEMPLATE

The questions involved touched upon the areas of the changes on the IT market, the aspects to selling or procuring software and evaluation of seller or procurers, what influences the process, performance criteria as well as the perception of productization

1. How would you describe your role at your company?
    a. What are your main tasks?
    b. Which department do you mainly work with?
2. What have been the most noticeable changes on the IT market during the last couple of years?
    a. What has that meant to the company?

    Presumption:

    b. What digital changes have you identified?
3. What difficulties when dealing with software do you experience?
4. What does a procurement process in your company look like?
    a. How is the first contact initiated?
    b. Which departments are involved?
5. How do you determine which seller/customer is best suited?
    a. What factors are important?
    b. To what extent does the customer drive the relevance of the offer?
    c. What are the performance criteria?
    d. What kind of information/demands do you expect from a good seller/customer?
6. There has been identified a trend among companies supplying digital products to standardize and productize their service offerings.
    a. What is your general attitude towards this market change?
    b. What does productization mean to your company? What are the advantages and disadvantages to you?

APPENDIX II: MAIN STUDY INTERVIEW TEMPLATE

1. Environment – Disrupted Markets
    a. What have been the most noticeable changes on the IT market during the last couple of years? What has that meant to the company?

Presumption:

    b. From your point of view, what kind of pressure to be digitized do companies experience today?

Seller:

    c. How do these companies express when they approach you? How is it otherwise noticeable?

Buyer:

    d. How do you respond to these growing needs? How do you express this to your suppliers?

2. Capabilities and Resources
    a. What is the main focus when companies are being digitized?
    b. How important are the tools with which this can be executed in comparison to the competence?

Seller:

    c. How do you digitally work in order to individualize and customize the products for your customers? Has this changed?

3. Process Organization
    a. What did the process look like when Pharmacy A/B developed/procured their e-platform? From initial contact to problem identification and final order of software.
    b. What happened relationally when the procurement was completed?

4. Buyer-Seller Relationships
    a. How has the role of the buyer changed during the last couple of years?
    b. A lot of the work that consultants do is based on needs. To what extent is the customer involved and what influence do they have on what needs to be prioritized?

   c. Which organizations department on the customer side placed the final order?

5. Productization
   a. There has been identified a trend among companies supplying digital products to standardize and productize their service offerings. What is your general attitude towards this market change?
   b. What does productization mean to your company? What are the advantages and disadvantages to you?
   c. Does the phenomenon of productization ease the procurement process? To what extent do you request customized buyer-seller relationships?
   d. How do you think this phenomenon will develop and change the market in the future?