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Modularity in services and travel supply chains: Travel Agency perspective

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Abstract

The field of service modularity, unlike product modularity, is widely new area in the research. Therefore, there is not much knowledge about the modular service architecture. Therefore, this research tries to fill the research gap and find the key characteristics of the modular service architecture.

The objective of the thesis is to create more understanding about the service modularity and the modular value chain structure. This research aims to describe the value chain structure from the perspective of the travel agency and link the roles and responsibilities of customer and suppliers to the modular value chain.

To address the issue, comparative study with two companies with different level of modular service architecture is selected. The study is conducted as multiple-case study with semi-structured interviews and secondary data research. To analyze the data a theoretical framework is developed that helps to identify the modular service dimensions and the level of the service modularity.

The findings suggest that the highly modular value chain has three important characteristics. The first one is the wide collaboration with customer and co-creation of service offerings. The second one is the long-term relationship with the suppliers. The final characteristic is the continuous two-way communication with its suppliers and customers that enables the responsive and flexible service structure. These findings are formulated as hypotheses that should be further tested with quantitative methods.

Keywords Service Modularity, Tourism Industry, Supply Chain Management, Interfaces

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1 Introduction

Currently there is a lot of pressure for service companies to be able to offer flexibility and tailor the offerings to fit customers' exact needs with less cost and improved efficiency. This has created the need for better service design that offers customization, lower costs and improved quality. However, there is not much studies about the service architecture and very few about its effects on the company's results. The reasons for this have been considered to be the services' heterogeneity, the personnel having role in delivery as well as in production and services being considered to be products as well as processes. (Voss and Hsuan, 2009.)

There is, however, extensive research about the product design and architecture and its effect on the company balance sheet. Especially, the modularity in the product architecture, through which modular components can be reconfigured to variety of products, has been found to minimize costs while maximizing individual customization (Pine, 1993; Fixson, 2005)). This is called as mass customization and it has enabled companies to combine the mass production with personalization, which usually have been considered as opposites to each other. This has also recently led to an increase in the research about service modularity (Pekkarinen and Ulkuniemi, 2008; Voss and Hsuan, 2009), which has not been almost at all researched subject before 2008 (Bask et al., 2009; Dörbecker and Böhmann, 2013).

The service modularity is seen to have the opportunity to combine the flexibility and efficient service production with increased standardization (Rahikka et al., 2011). The challenge in the service modularity is that it needs to be planned well in advance in the design phase as its production and consumption are parallel processes and rely on the design. This differs greatly from manufacturing of products, which usually utilizes sequential design, production and delivery processes and, therefore, provides better control of each of the processes. However, as the role of services and the importance of the overall customer experience have grown and the gap between products and services has gone down, the need to improve service design has increased greatly. Understanding service architecture, therefore, has been defined as one of the biggest challenges of service science and innovation (IfM & IBM, 2008).

The service modularity is especially important to the tourism industry, which has changed drastically through technological advancements. The tourism industry is slowly becoming the

most important industry worldwide and its growth has doubled during the last 30 years (Walker, 2009). The tourism industry is extremely important also in Europe and it represents currently 8,2% of the European GDP, creates 30 million job positions just in Europe and it is expected to grow even further in the upcoming years. Just in year 2012 it created over 10% of the new work positions in Europe. (WTTC, 2013). There has, however, become more pressure on strategy renewal and innovative approach, as the competition has increased and become more global. The services can currently be acquired anywhere from the world and this has led many travel companies in trouble, as they have not been able to adapt to the changes.

In the past, tourism industry has had a very stable structure with central service assembler. However, the technological advancements have diversified the roles and given new opportunities for the upstream supply chain members to go directly to the customers without the intervention of the intermediaries (Pellegrin-Romaggio and Leszczynska, 2013). For example, airlines can currently offer also accommodation options and package holidays, meaning that the customer can go directly to the upstream value chain members without the intervention of the third party services, which in this context refers to tourism agencies.

The recent consumer study shows that for example only 5 % of resort hotels and 3 % of non-resort hotels are booked through travel agency and over 60 % of these booking are made directly through the supplier (Tunney, 2012). The supplier websites have also grown a lot recently to offer wider variety of content and services. However, the Travel Week's consumer survey (Tunney, 2012) found out also what drives the suppliers to still continue and even strengthen the collaboration with travel agencies. The consumers that book through travel agencies tend to travel more, spend more money and even stay almost 50 % longer time. This shows that there are clear advantages for travel agencies but that as the percentages get lower they need to become more aware of their customer segments and service design elements.

Due to these changes the nature of the competitive advantage for travel agencies has also changed. In the past, marketing and distribution were considered as the most crucial part to differentiate the offering. However, now the importance of tourism supply chain has grown as it presents significant opportunity for customization in the late part of the value chain and creation of differentiated service bundles. In addition, the mass production has changed to

mass customization, as customers do not want to be only purchasers but to be able to co-create the offerings with travel agency (Pellegrin-Romaggio and Leszczynska, 2013).

The best way to seen to achieve mass customization, in which the service assembly is linked to customization of service, has been linked to service modularity. However, due to the little research on the subject, the way to construct the modular structure on services has not been found. In addition, there is only little empirical research on the service modularity and even less about its effects on the overall success of the company. (Dörbecker and Böhmann, 2013)

1.1 Research objectives

Several authors have acknowledged the importance of the service modularity in responding to the changing customer needs but it is still at the same time rather unexplored area. Researchers have found a clear gap in the definition of the modular service architecture and this has seen as a disadvantage in the modular service development. Followed by their research about modular service architecture, Voss and Hsuan (2009) proposed an empirical comparative study about companies, which differ in their service architecture. They though this as a big step towards a greater understanding of the modular service architecture.

This research's objective is to follow Voss and Hsuan's proposal and develop greater understanding of the modular service architecture with a comparative study of two companies. The research focus is on the service modularity on the tourism industry. The travel agencies have the vocal role in the research and they are considered to be the central assemblers in the tourism value chain. The research analyzes the whole travel value chain but the analysis is done from the viewpoint of the central assembler. The aim of the research is to give a complete and dynamic view on modularity in travel industry and how it affects the construction of the travelling service offering The research also focuses on the roles and responsibilities of the different members of the value chain (e.g. suppliers and customers) and their interfaces (connection points). The aim is to provide the overall picture of the development of modular services in the tourism industry, and how the development of modular services differs from the development of non-modular services.

The core idea of the study is to understand the key effects of modularity in the tourism industry's service architecture, processes and organization. Modularity has become one the key solutions for many industries, which are currently facing the dilemma of providing quick solutions for customers' needs while keeping the costs down (Zhang et al, 2009). This has also affected tourism industry, as the consumers require more flexibility and responsiveness from travel agencies (Pellegrin-Romaggio and Leszczynska, 2013). However, the knowledge and understanding of the requirements for modularity and its overall impact on the organizational design, processes and customer experience have still not reached the sufficient level. On one side, modularity enables the mass customization of services and responds better to the customers' needs but, on the other side, modularity might actually decrease the opportunity for differentiation and the service provider's participation level in the actual service provision. Therefore, it is important to develop understanding of the service modularity in order for the companies to understand the impact it can have for their business and their whole organizational structure.

The research is conducted as a multiple-case study, in which two selected case companies are compared by utilizing theoretical framework about modular service architecture. The case companies are travel agencies and they present different approaches towards modular service architecture, as one of them offers modular services and the other one non-modular services. The research is based on primary and secondary data of the case companies. The primary data is acquired from semi-structured interviews with the two case companies and the secondary data is obtained from the company websites, print material and research articles. The research is also complemented with secondary data gathered from other travel agencies' websites and articles.

As the case companies offer many types of travel services that differ a lot in regard of their target market, supply chain structure and the customer behavior, the research takes a deeper look on the European city travel in a business to consumer market. The European city travel was selected, as almost all the travel agencies have it in their service offering and it does usually have limited amount of service elements. The selection of a service offering helps to standardize some of the variables and get more in-depth look of the modularity in a relatively homogenous environment. The research about the particular service offering is utilized to validate whether the general findings about the value chain are in line in a similar context.

The key focuses of the research are:

(1) Developing a theoretical framework to describe the value chain and the level of modularity of the value chain elements

(2) The development of modular service offering and the impact of the modularity in organization, processes, services and customer interface

(3) The value chain differences for a modular and non-modular service offering

The main research question:

"How modularity affects the assembly of travel service offering and what are the roles and responsibilities of the tourism value chain's members?"

Sub questions of the research:

"How is the modularity present in the structure of the tourism supply chain in the case of travel agencies?"

"What is the customer interface in the modular service assembly and what is the customer role in the customization of the offering?"

"How are the supplier contracts and partnerships dealt in a non-modular and modular offering and how does this affect the coordination and control of the entire supply chain?"

"What is the role of the travel agency in the assembly and coordination of the modular service offering?"

1.2 The structure of the thesis

First, in the introduction defines the need and background for this research and why the topic of modularity of the tourism industry was chosen for study. In addition, the research objectives are explained and the research question for which the research tries to answer through the case study of the two Finnish travel agencies. Finally, the chapter is concluded with the most important term definitions of the research.

The second presents the literature review about the most important research related to service modularity and tourism industry. The literature review will present some of the most important frameworks that will be also utilized in the interpretation of the empirical research. In the final section the summary of the literature review is presented and the theoretical frame for the research is presented.

In the third chapter, the methodology, data collection method and limitations of the research will be presented. The multiple-case study methodology is presented and the methodology is also analyzed for its strengths and weaknesses. The methodology will also include the motivation for the multiple-case study methodology and data collection method and the actual research phases. In the fourth and fifth chapter, the empirical findings of the study are presented and analyzed through the theoretical framework. In this phase also the empirical and theoretical contributions are presented.

Finally, in the sixth chapter, the findings are gathered for conclusions and the managerial implications of the research are presented. In the end some suggestions for the future research are presented.

1.3 Definition of terms

Service architecture

Service architecture is a system explaining how the different functionalities are decomposed into individual service elements that provide the overall service (Voss and Hsuan, 2009). The architecture can be considered as either integral or modular depending on the connections between the elements. According to Fixson (2005), the architecture includes six dimensions, which are modularity, component complexity, platform, loosely coupled interfaces, component commonality and the number of components. Fixson also sees architectures having two domains that are process and supply chain.

Service Platform

Service platform is one of the six dimensions of the service architecture (Fixson, 2005). Mikkola (2007) defines a platform to be the vehicle to enable mass customization. In addition, Mikkola considers platform to embody the organization of the components and interfaces that create the service architecture. Robertson and Ulrich (1998) have also defined platform decisions to be complex trade-offs involving different business areas and that the top management should pay special attention for them. The top management attention is important mainly, as the platform decisions affect several company divisions and require the resolution of cross-functional conflict.

Modular service architecture

Modular service architecture enables the sharing of different service components in various service offerings and the customization of the offerings. Moreover, the architecture defines the framework of how the service components can be integrated. (Böhmann et al., 2003)

Modularity

Modularity means a scheme in which components are created independently and can function on their own but whose interfaces are standardized and specified to enable combination and separation (Schilling, 2000). Modularity is utilized, for example, to enable customization, economies-of-scale and scope and outsourcing. (Voss and Hsuan, 2009).

Service modularity

Service modularity refers to service architecture, in which the service components function independently and can be combined to create a service "package". Pekkarinen & Ulkuniemi (2008) have defined that in order to use modularity in services three dimensions should be considered. These dimensions are: modularity in services, modularity in processes and modularity in organization. What is more, Pekkarinen and Ulkuniemi add a fourth dimension, which is customer interface, as they consider customer co-creation critical factor in service delivery.

Interfaces

Voss and Hsuan (2009) have defined interfaces as the linkages that are shared between the different components. The linkages are usually based on some rules in order to govern the connection and interdependency of the elements.

Service Component

Service component is the smallest level that the service will be divided in order for the division to remain meaningful (de Blok et al., 2014).

Service package/bundle

Service package consists of two or more service components that will together create a full service offering for the customer (de Blok et al., 2014).

Mass customization

Mass customization means a production style, in which the products/services are produced so that customization is maximized while costs are minimized (Pellegrin-Romaggio and Leszczynska, 2013). Research has verified that modularity impacts on mass customization (Bask et al., 2010; Tu et al., 2004). This is due to, for example, the flexibility, post-production and customization that can be achieved through modular architecture.

Degree of coupling

Degree of coupling signifies how tight the product/service architecture is when considering the interfaces between the components. If the architecture is loosely coupled, the combinations can be separated to a certain extent to smaller components (Salvador, 2007).

Supply chain management

Supply chain management is the integration of the central business activities from the suppliers to the final customers in order to provide the right products, services and information at the right time that add value for consumers (Lambert et al., 1998).

Tourism supply chain management

Tourism supply chain is a network of tourist organizations that range from the suppliers of particular services (accommodation, transport etc.) to the distribution channels that provide the travel package to the customer (Zhang et al., 2009). Important intermediaries in this channel are the travel agencies that market these services to the customers and bundle the travel packages (Topolšek et al., 2014).

Dynamic assembly

Dynamic assembly means a capacity to assemble and disassemble available networks with needed resources and activate and deactivate the supply chains that are within the networks (de Blok et al., 2010).

2 The literature review

The literature review provides the definition and examination of the main two topics that are tourism supply chain and service modularity. It will also present the main theoretical findings and frameworks related to these topics and analyze the research gaps. The chapter will be divided in three main sections, which are tourism industry, service modularity and service modularity in the travel service offering. In the final section, there will be a brief summary of the three sections and a theoretical framework, which will be utilized in the analysis of the findings.

The research focus is on the services in the business to consumer market. Axelsson and Wynstra (2002) have defined services as being objects in an exchange, in which value creation occurs through interactive, processual and experimental relationship between the customer and provider of the service. The services usually contain both tangible and intangible element and they differ tremendously on the level of required knowledge (Pekkarinen and Ulkuniemi, 2008). For example, consulting services requires demanding cognitive skill set whereas car wash has lower requirements. The differences among services can also been distinguished, for example, in the level of standardization and the number of service features.

The consumers are all the time expecting more flexibility, effectiveness and cost efficiency for the services. This, especially, affects the service development and increases the need for more developed mechanisms to improve and standardize the service production. (Pekkarinen and Ulkuniemi, 2008). This can be also seen partly as "servitization", in which the services are becoming more like products. Modularity is seen as a way to standardize the service production and, therefore, increase the customer value and further grow the company market share and profitability (Pekkarinen and Ulkuniemi, 2008).

2.1 Tourism Industry

Tourism is a booming industry, which has grown significantly in the last decades. Based on WTTC (World Travel & Tourism Council) the total contribution of travel and tourism presented 9% of the world's GDP and it employed over 260 million people (2013). This means

that it grew faster than any other major industry, such as manufacturing or financial services. In Europe tourism presents around 8, 2% and in Finland 6, 5% of the GDP and its importance is expected to grow in the upcoming years.

Huybers & Bennett (2003) claim that there are three factors that have had an effect on the expansion of tourism are: higher efficiency of the global transport, lower transport costs and improved standard of living among the world population. The other factors that have been considered as contributors to the tourism growth include globalization and ICT technologies that have brought more transparency and competitiveness to the industry (Buhalis & O'Conner, 2005). Despite the recent growth and greater role in the world economy, tourism industry and especially the tourism supply chain are still much less researched subjects than, for example, the manufacturing industries. Tourism industry is, however, growing its importance in the developed and developing world and, therefore, broader understanding of it and the tourism supply chain is required. (Topolšek et al., 2014.)

The tourism industry has changed tremendously during the last decade. The developed ICT (information and communication technology) has had significant effect on tourism organizations and e-tourism has digitalized almost all of the business processes of the tourism supply chain (Buhalis & O'Connor, 2005). The current ICT technology has also enabled companies to increase their competitiveness by providing intranet for internal use, extranet for increased collaboration with partner companies and internet for more responsive and flexible communication with customers and other stakeholders (Buhalis, 2003).

The change in the industry is, however, not only technological but also the consumers' behavior and needs towards travel services have changed. According to Buhalis & O'Connor (2005), tourism agencies have needed to become more customer-centric and change from rigid travel packages to customizable and dynamic packaging. Pellegrin-Romaggio and Leszczynska (2013) consider modularity being the option to respond to these new needs, as it offers flexibility and responsiveness while keeping the costs in control. They also note that modularity can lead to mass customization – maximizing customization while keeping the costs minimized.

To better understand the tourism industry structure, Zhang et al. (2009) has defined some of the most important elements that define tourism industry. First, tourism industry is focused on coordination, as the tourism products are service/product components (e.g. accommodation and transportation) bundled together. This also affects the tourism products to be very complex, as they include various heterogeneous components. Secondly, the tourism industry is very information-intensive, as the consumers can only rely on the presentation of the given information and need to travel to the destinations in order to consume the products. Finally, the industry is also very uncertain and dynamic compared to several other industries, as it faces fierce competition and high variations in the demand.

Due to the highly sensitive industry structure, the tourism industry is very sensitive to changes in the environment. Pellegrin-Romaggio and Leszczynska (2013) have, thus, claimed that the tourism industry has been going through some dramatic changes and responsiveness and flexibility have become the sources of competitive advantage. This means that the service companies are required to respond immediately to the needs of consumers, control their service capacity and resources and have flexible structure in order to be able to dynamically activate and deactivate the supply chains.

2.1.1 Tourism network

The tourism industry relies in a large extent to its network. According to Buhalis and O'Connor (2005), there are not, in fact, even many industries that are as dependent on partnerships as tourism industry. The creation and delivery of the travel services are dependent on the partnerships and collaboration between organizations that are ranging from accommodation to entertainment (Buhalis & O'Connor, 2005) and may be located geographically very distant locations. Besides, the customers are experiencing all the bundled travel services as integrated experience, which requires the tourism organizations not to only cooperate but to share information and integrate part of the functions to seamlessly serve the customers.

Pellegrin-Romaggio and Leszczynska (2013) consider the tourism network as a separate concept from the tourism supply chain, even though, the tourism supply chain is part of the network. They see the network as relatively stable that can include various travel

organizations and actors. The network of potential resources can contain various supply chains that are dynamically activated when a travel package is being assembled. The supply chains, therefore, are more dynamically structured and temporary in nature and can be activated and deactivated according to the need.

The coordinator of the network is the central assembler, who in this research is mainly considered to be the travel agency. However, the highly dynamic structure of the tourism industry enables the roles to be changed in the tourism network. This means that also, for example, the transport company or accommodation provider can take the central position and assemble the service offering in the network. This has increased the competition even more but also the need for collaboration and increased integration between the network organizations. Co-opetition, which means collaboration between competitors, has also become more general in the industry, as the horizontal integration has increased. (Pellegrin-Romaggio and Leszczynska, 2013; Zhan et al., 2009; Buhalis & O'Connor, 2005).

2.1.2 Tourism Supply Chain Management

Tourism supply chain (TSC) is not very researched topic in the tourism area (Sinclair & Stabler, 1997). The research interested in tourism has mainly focused on the distribution and commercialization strategies, even though the first research about the tourism supply chain came already in the beginning of 1990's (Pellegrin-Romaggio and Leszczynska, 2013). It was not until Tapper and Font (2004) before TSC was finally defined and differentiated from other supply chains. However, the supply side of tourism has recently got considerably more attention, as its role has been strongly notified in creation of the competitive advantage. The modernization of the tourism industry through technological advancements has made the tourism supply chain considerably more transparent in the eyes of the customers and increased competition, which is why managing it has become more important for the tourism agencies (Zhang et al., 2009).

To define the tourism supply chain, Zhang et al. (2009) has described the tourism supply chain (TSC) management as the coordination of the destination operations to satisfy the customers' needs, and ensure that all the organizations within the TSC, from supply to distribution, will meet with their objectives. This requires that the supply chain value members need to be well connected and willing to share and work together to achieve the

overall goals set to the entire supply chain. Zhang et al. (2009) also claims that the customers do not see the supply chain's value members separately but consider the tourism "packages" as integrated service architectures with well-functioning service value chains. This means that one value chain member's failure might indicate the failure of the entire chain. Therefore, the members of the supply chain need to collaborate in a well-functioning manner and not just act as independent entities.

Overall, the travel industry's organizational structure is extremely dynamic. Pellegrin-Romaggio and Leszczynska (2013) state that there are two main types of organizational structures for tourism supply chain. Firstly, it can be built by utilizing integrated organizational structure. This type of vertically integrated supply chain between the service provider and its suppliers is motivated by the goal of reduction of transaction costs, which provides lower prices, access to top destinations, and reduction of coordination problems (Topolsek et al., 2014). Secondly, it can be constructed by using reticular organizational structure, which popularity has grown recently. The reticular organizational structure means distribution networks and alliances that are formed from various organizations with not as standardized and rigid structures as in integrated organization. This means that there are vertical as well as horizontal integration between the value chain members and the supply chain has more flexibility and can better respond to changes. (Pelleggrin-Romaggio and Leszczynska, 2013).

In Figure 1 the most important service elements in the tourism supply chain can be seen. The components have been gathered from the research of Pellegrin-Romaggio and Leszczynska (2013) and Tapper and Font (2004). This network presents the tourism supply chain participants from the destination services to the end-user. Figure 1 does not include any linkages, as they depend on each supply chain structure and objectives.

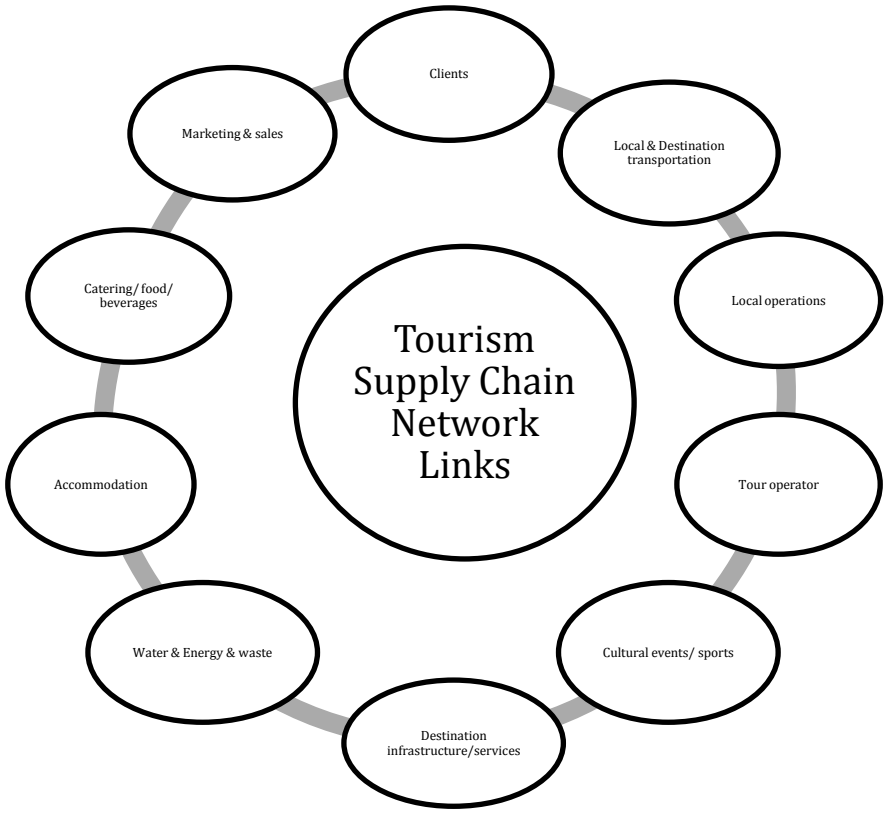

FIGURE 1: TOURISM SUPPLY CHAIN MEMBERS (PELLEGRIN-ROMAGGIO AND LESZCZYNSKA, 2013; TAPPER AND FONT, 2004)

The central element in the traditional tourism supply chain is the travel agency, which leads the coordination efforts of the entire supply chain. According to Singh (2008), the travel agencies' purpose is to sell specific components or entire travel packages to the end customers. These components include services, such as, transport services, accommodation and tours. This means that their activities include both planning, booking, organizing and documenting all the travel activities with the client (Singh, 2008) and designing, combining, coordinating and controlling the tourism supply chain (Pellegrin-Romaggio and Leszczynska, 2013). This requires tight collaboration with the down- and upstream members of the supply chain and their coordination to fulfill the set objectives.

As the travel agencies usually manage the entire tourism supply chains their purpose in the channel is to provide products, services and information for the consumers and other stakeholder groups (Lambert et al., 1998). In order to manage the entire supply chain, the travel agencies also need to have coordination and collaboration among all the supply chain members (Zhang et al., 2009). Therefore, the travel agencies require intraorganizational and interorganizational skills (Gimenez, 2006). Zhang et al. (2009) have drawn the structure of

the tourism supply chain can be seen in Figure 2. In this research the tour operator and travel agency is considered as the same actor, even though, there might be another intermediary between the value chain members and the travel agency that could be, for example, local travel agent or marketing company. As the coordination might demand a lot of operative efforts, the local coordination might be given to a trustworthy agent, which is seen in the structure as the travel agent. The agent, however, might not have any power in combining the travel packages but rather it does work for the travel agencies. Figure 2 only describes supply chains with travel agency as the central assembler.

In addition to the structure, Figure 2 describes also the value chain members' roles and the information and service flows of the entire chain. The travel agency (=tour operator) has the central role in the chain, as it combines the service elements into service packages and distributes them to the customers. It also is the intermediary in the information flow and, therefore, acts as the customer touch point for the suppliers that do not have direct communication with the customer. Figure 2, however, is a general depict of the tourism supply chain and, therefore, cannot be utilized to describe any specific travel agency. It does not, for example, consider customer as active participant in the supply chain, even though, the research has emphasized customer participation in services (de Blok et al., 2010; Pekkarinen & Ulkuniemi, 2008). In addition, it only illustrates the integrated supply chain structure, as it does not acknowledge the potential horizontal linkages between the value chain members.

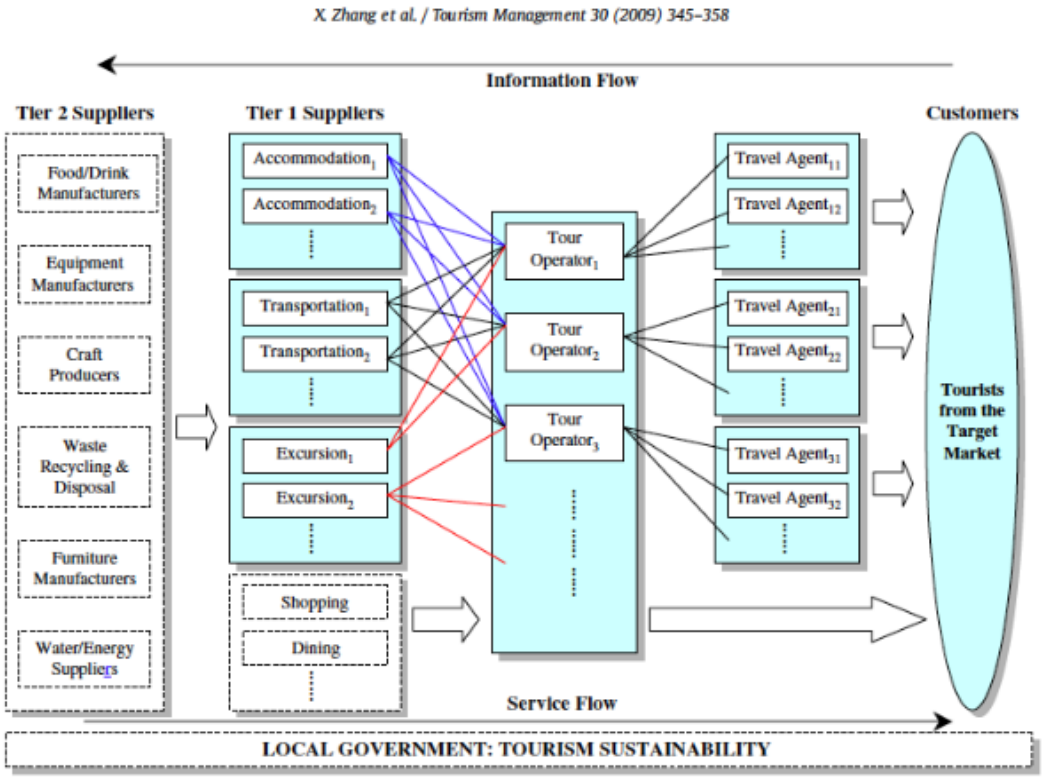

FIGURE 2: TOURISM SUPPLY CHAIN (ZHANG ET AL., 2009)

Figure 2 also illustrates the fact that the tourism supply chain members are very interdependent in creating the service offering. According to Zhang et al. (2009), the tourism value chain members need to, therefore, not to just think of their own operations but that of others as well. Moreover, the tourism industry is very dynamic, which means that the supply chain members have usually many partners and they can be part of large amount of tourism supply chains at the same time. This further increases the need for the value chain members' collaboration and drives the industry structure towards modularity, which offers standardized interfaces between the value chain members.

2.1.3 Dynamic capabilities of the tourism supply chain

In addition to the collaboration, Pellegrin-Romaggio and Leszczynska (2013) argue that tourism supply chains require dynamic capabilities, which increase the flexibility and responsiveness of the value chains. With the dynamic capabilities, the structure of the supply chain can be changed also after the design phase of the tourism supply chain. This, however, requires very specific supply chain structure, in which the value chain interfaces need to be standardized to enable responsive and quick changes. In the tourism supply chain there

usually is a central assembler that is responsible for all the dynamic coordination within the supply chain and, therefore, is responsible of the possible changes in the value chain. The central assembler has, therefore, crucial role in obtaining connecting the needs of the upstream and downstream value chain members to manage the dynamic changes.

To better understand the required capabilities of the central assemblers, Pellegrin-Romaggio and Leszczynska (2013) present a model, which presents four central roles for the ”pivot” (central assembler) in the tourism supply chain. These roles are design, combination, coordination and control. The model was originally created by Fréry (1997, 1998) but Pellegrin-Romaggio and Leszczynska extended the model to include the fourth role, which was the combination, to acknowledge the need for dynamic capabilities. This they considered to be important in the modern tourism supply chains that alongside of the traditional roles also have the more modern approach offering dynamic and flexible customization of the tourism “packages”.

In the Pellegrin-Romaggio and Leszczynska’s (2013) model (Figure 3) the central assembler, which has traditionally been the travel agency, is considered to use these four roles to manage the tourism supply chain (TSC). Design includes the creation of the supply chain network by identifying the required resources. Through combination then the right supply chains can be identified and activated and deactivated based on the consumers’ needs. Coordination capabilities include network and flow management. The final dimension, control, maintains the performance by monitoring the up- and downstream. In the research Pellegrin-Romaggio and Leszczynska (2013) it is, however, also noted that that central assembly role is not only for travel agency but currently anyone could have the role of the assembler.

Pellegrin-Romaggio and Leszczynska (2013) also discuss about the possibility of including fifth dimension, which is the customer. This is based on the research of Cova and Cova (2012), who see the “new customers” being agents of their consumption. This means that the production of services is becoming more and more collaborative and, especially, in travelling services the role of customer has changed. For example, customer can nowadays be seen as the central assembler, as the customer is able to create its own tourism value chain through contacting the suppliers directly and assembling his/her own tourism supply chain. All in all,

the “new customers” do not merely accept the role of consumer but do want to be part of the design and production processes.

Overall, the Pellegrin-Romaggio and Leszczynska framework (2013) helps to understand the role of travel agency (central assembler) and its activities. It shows its role throughout the supply chain management including the new dynamic capabilities that are required to create responsive and flexible supply chain. The potential fifth customer dimension that Pellegrin-Romaggio and Leszczynska (2013) suggest also brings another actor into the management of the supply chain and, therefore, disrupts the previous theory of tourism supply chain. Through the upcoming research it would be, therefore, interesting to see how this new dimension would change the framework and how it would further change the role of the travel agency. In Figure 2, the fifth dimension is added to the Pellegrin-Romaggio and Leszczynska framework (2013) but its role and place in the structure is only hypothetical and further research is needed to define the fitness of the fifth dimension.

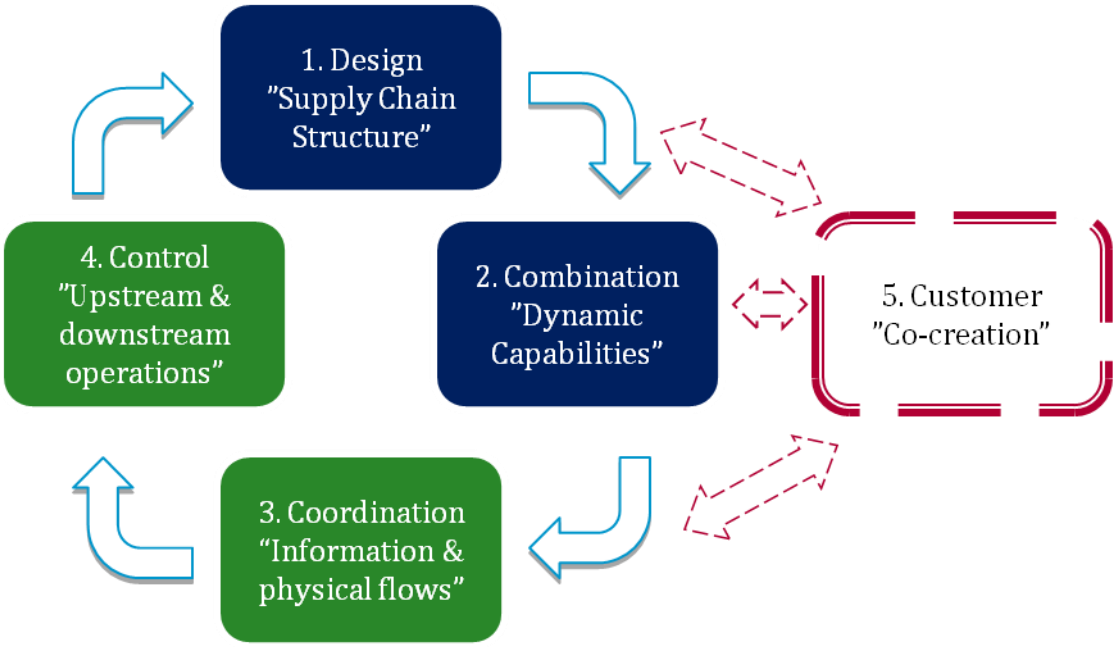

FIGURE 3: 4 C’S MODEL (SOURCE: INSPIRED BY TAPPER AND FONT, 2004, P. 4; ROMAGGIO AND LESZCZYNSKA FRAMEWORK (2013))

2.1.4 The risks of the tourism supply chain

There are multiple risks and concerns when it comes to the management of the tourism supply chains. Zhang et al. (2009) have listed some of these challenges and consider them to, for the most part, relate to the collaborative planning and expectations, design, dynamic

capabilities and coordination and integration of the entire tourism supply chain. These risks affect the performance of all the members of the tourism supply chain, as the companies are interdependent on each other and sensitive of changes in the other value chain members. Moreover, Sigala (2008) argues that the value chain members have become more aware of the interdependency and, therefore, have understood the need for better collaboration among suppliers, competitors and customers. One way the value chain members are tackling this is to strengthen the informal relationships between the tourism supply chain members (Huybers & Bennett, 2003). However, this might, on the other, hand hurt the members if the formal relationships are not built at the same time.

One of the main competitive risks for the tourism value chain is that Internet has enabled consumers to engage directly with suppliers and challenge the role of intermediaries (Buhalis et al., 2011). This means disruption in the traditional tourism value chain and that the tourism agency can be dropped out of the value chain. In this way the role of tourism agency has diminished and its value has become more obsolete to consumers. The existence of this risk has started the discussion among the tourism agencies about the current role of tourism agency.

Bennett and Lai (2005) have identified two principal ways for travel agents to overcome disintermediation. The first one is repositioning themselves as travel consultants. This means that the currently quite operational role of building the travel packages to consumers would become more knowledge-oriented. This could be done with chat on the website or changing the service offering towards stronger service orientation. The other tactic to overcome disintermediation based on Bennet and Lai (2005) would be becoming more technologically oriented. This means change from physical stores to online stores and developing the technical capabilities to answer to the needs of customers.

One risk of tourism agencies is related to the consumer behavior. Before Internet, consumers really did not have the same visibility about the tourism services as today. This meant that the tourism agencies had clear role in linking the service providers and consumers. However, when Internet came consumers became more aware of the variety of services and able to avoid the cost of travel agency by choosing the services by themselves. This has led to a

market segment, in which consumers build their own tourism experience by bundling their travel services dynamically (Buhalis and O'Connor, 2005).

All in all, the risks have grown for tourism agencies. When examining the risks with Porter's (1980) five forces model (Figure 4) we can see the risks put in five different categories. The categories are competitors among travel agencies, threat of new entrants, threat of substitution, supplier bargaining power and consumer bargaining power. Based on this research and reviewed literature the most critical risks are threat of substitution and consumer bargaining power. There is possibility that the changing consumer behavior might replace the tourism agency either with online search engines or customers themselves. As the technology has advanced, some of the travel agency services have become obsolete for consumers. The risks are, therefore, interrelated as the consumer behavior is partly the reason for substitution.

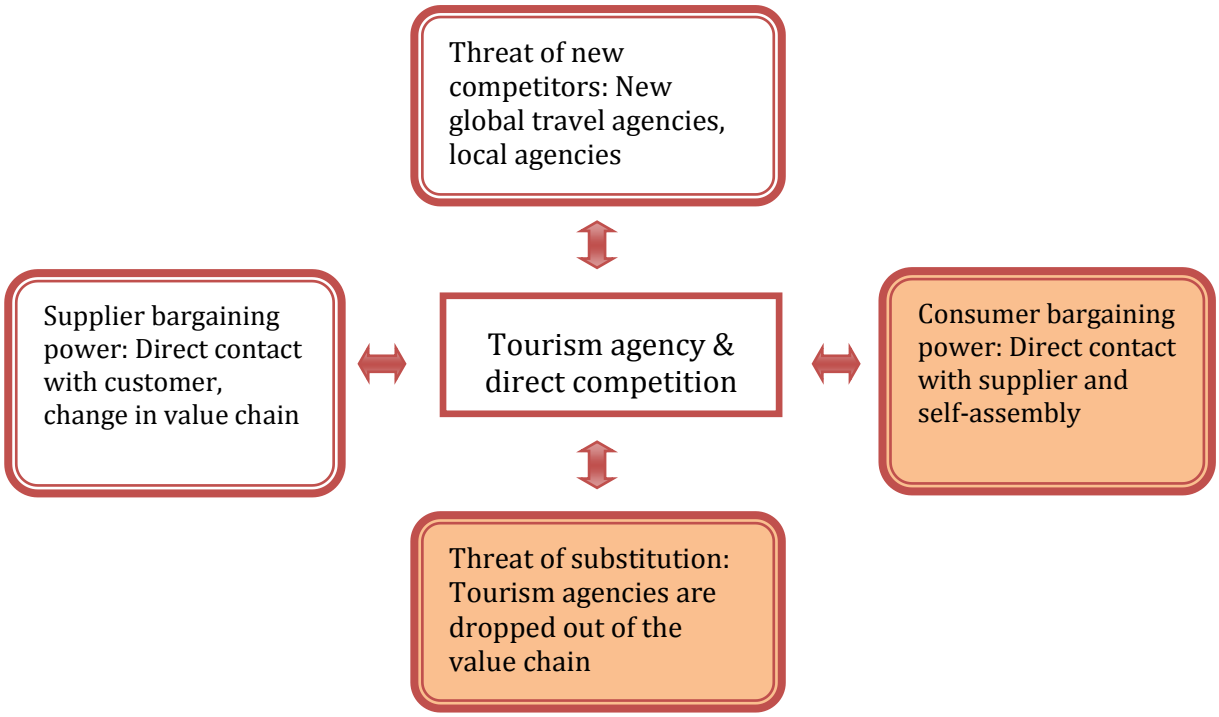

FIGURE 4: MODIFIED MODEL OF PORTER'S FIVE FORCES (1980)

2.2 Service Modularity

Before the year 2008 there really have been very few studies about service modularity (Bask et al, 2008; Dörbecker and Böhmann, 2013). Much of the research about modularity has solely focused on the products and dismissed services completely. Therefore, a lot of the research on

product modularity has been utilized as the basis for service modularity research as well (e.g. Mikkola, 2007; Droge et al., 2012). In fact, many researchers have common belief (Bask et al, 2011; Voss & Hsuan, 2009; de Blok et al. 2010; Dörbecker and Böhmann, 2013) that the modularity research that initially focused only on the software and products, and in later phases on processes and organizations, has recently directed its focus on services.

According to Voss and Hsuan (2009), the reasons for the lack of research on service modularity are due to heterogeneity of services, the role of personnel having strong role in delivery as well as in the customization process and the definition of services being somewhere between processes and products. Service modularity is, therefore, considered as much more complex than, for example, product modularity (Bask et al., 2010) and there is not easily available any quantitative method to measure it (Kazemi et al., 2011). There, in fact, exists relatively little research that has utilized quantitative measures on service modularity (Voss & Hsuan, 2009; Kazemi et al., 2011) and most of the research has utilized either qualitative or theoretical approach (de Blok et al., 2010; Pekkarinen & Ulkuniemi, 2008; Rahikka et al., 2008).

The current trends of servitization (services becoming more like products) and service modularity are, however, seen as a new way of quantifying services. Through these new trends, it has become easier to develop and manage the heterogeneity of services and acquire control over services' uncertain demand without large incurring costs. This has led in growing interest in concrete service measurements and, moreover, better understanding of service modularity (de Blok et al. 2010; Ovtchinnikova, 2011).

One of the most common definitions about modularity is Baldwin and Clark's (1997). In their definition modularity is an assembly method, in which complex products or processes are built from subsystems that are designed as independent components but connected to each other through standardized interfaces. There is not, however, clear definition about the service modularity (Dörbecker and Böhmann, 2013) and a big gap in the typology (de Blok et al., 2010). One given definition of service modularity is development of service by combining flexibility of tailoring and efficiency of standardized service modules (Rahikka et al., 2011). However, the definitions lack of consistency between different researchers (Bask et al., 2011).

In modular combinations the product and service element are called modules. Baldwin and Clark (2000) have defined it to be a unit whose elements are strongly connected to each other but only loosely to other units. This means that the modules have low interdependency and strong independency. The modules are connected to each other through interfaces, which are the shared linkages between the components and based on predefined rules (Voss & Hsuan, 2009). In Figure 5, which is from the research of Pekkarinen & Ulkuniemi (2008), we can see the service modules and their architecture, which consists of standardized interface.

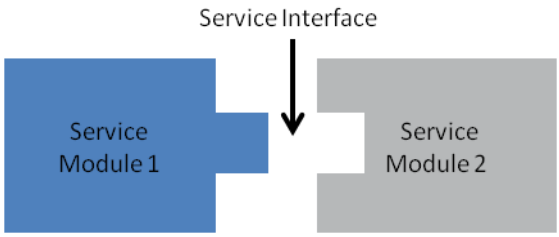

FIGURE 5: MODULAR SERVICE STRUCTURE (PEKKARINEN & ULKUNNIEMI, 2008)

In service modularity, unlike in product modality, the service components have usually discrete functions. This means that they can be quickly activated and de-activated to respond the right demand (Erlicher and Massone, 2005). Activation can be done without actually breaking the value chain. Therefore, one definition for the service modularity is that it can be decomposed into parts and again reconfigured (Schilling, 2000) with activation of components. This means that the interfaces between modules are standardized to adapt to these quick changes. Moreover, in modular service combinations the service processes (service modules) need to be standardized to achieve greater customization and economies-of scale (Voss and Hsuan, 2009). This can be achieved by utilizing scripts or training that aims to decreasing the variation.

There are many positive effects that can be achieved through modularity. Modularity is considered to offer large variety of end products/services while being able to keep the costs down (de Blok et al., 2010). The efficiency of modularity is achieved through the usage of standard components that can be included in various different services (Fixson, 2005; Starr, 1965). For example, in fast food chains, they have very standard service elements that change based on the customer order. This enables low costs while at the same time keeping the quality high (Duray et al., 2000). The customer experience is very similar in all the service points, as the service processes are pre-designed and the service providers are taught to follow the script.

Due to the loosely coupled interfaces, modularity has also enabled at the same time usage of customization and economies of scale and scope (Voss and Hsuan, 2009). The customization is usually provided in the customer touch points. The extent of customization, however, is limited to the amount of modular service elements. What is more, modularity enables also production postponement and outsourcing (Voss and Hsuan, 2009). For example, Zara usually produces its basic clothing in the countries that have inexpensive labor costs and afterwards colors them close to the customers based on their demand (Ryan, 2006). This is a modular process, in which part of the standardized process and can be outsourced to partners and the finalization process can be postponed to adapt to the demand.

According to Tu et al. (2004), modularity in production and processes does not just impact on the offered products and services but also the organization's supply chain and its organizational structure. The supply chain usually becomes much more responsive and flexible as a result of modularity, as the roles and responsibilities need to be well defined to ensure standardized interfaces. Furthermore, the organization needs to also become responsive and customer centric, as the final product and service design is dependent on the customer touch point. Thus, it can be seen that the modularity does not only exist in the production but it affects the whole organization and industry. Pekkarinen and Ulkuniemi (2008) have argued that when creating understanding about service modularity; the modularity in processes and organization need to be also included as they are all interconnected.

2.2.1 Mass Customization

One of the greatest benefits of modular design it that it enables the mass customization approach. Pine (1993) popularized the term mass customization, in which personalized products are offered with minimal price. The concept differed from the earlier strategies that had either focused on mass production or customization by combining them both. The concept is highly dependent on modularity and Pine has defined the steps, which are needed from mass producer to become mass customizer:

1) Customize services around standard products
2) Create customizable products

3) Provide point of delivery customization
4) Provide quick response and
5) Modularize components

Duray (2002) and Duray et al. (2000) have also defined own mass customization typology. This typology includes two identifiers that define the methods utilized for mass customization. The first identifier is the point of customer involvement in the process and it helps to determine the degree of customization. Based on Duray (2002), the early involvement of customer is a sign of high customization. The second identifier is the modularity, as it is a critical element in achieving the volume in the mass customization. Through modularity greater variety of end products can be achieved, even though, the amount of product components would be decreased. Through these two dimensions Duray has also created a model, which suggests four different mass customizers. The model is presented in Figure 6, in which the four mass customization options can be observed: fabricator, involver, modularizer and assembler.

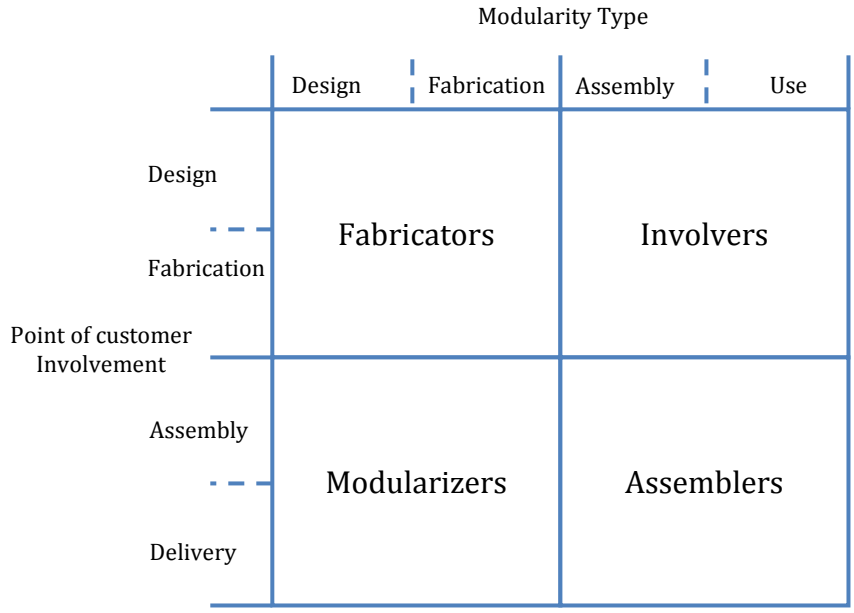

FIGURE 6: MASS CUSTOMIZATION MODEL (DURAY, 2002; DURAY ET AL., 2002)

The fabricators present almost pure customization strategy, as they involve customer early but provide modularity in their production with commonality in the components. Involvers include the customer early in the process but they do not provide fabricated custom components. Assemblers resemble most closely standard producers. They do not involve customers early and do not customize the components. They, however, provide wide variety

of components that can be utilized to construct different products. Finally, modularizers do not involve customization early in the process, only in the final stages, but include modularity already from the design stages. However, as the customization is involved so late, both assemblers and modularizers resemble more closely standard producers and fabricators and involvers customized producers.

Pine's (1993) and Duray's (2002) models of mass customization, however, are designed to understand mass customization in product manufacturing. It can be argued that the same rules do not apply in the same way to services. For example, de Blok et al. (2010) claim that the high customization in the elderly care industry is actually only achieved in the actual on-the-job phase and the early customer involvement only leads to general services. Therefore, Duray's mass customization model cannot be utilized for services in the same way, as the most critical customization usually happens only in the late stages of the service process.

In addition, Bask et al. (2011) have defined a different categorization that can be also utilized as the base for identifying mass customization. Unlike Duray (2002), Bask et al. have taken as their dimensions the degree of modularity and customization. Duray (2002), however, argues that the customization dimension is very dependent on the degree of customer involvement. Bask et al. (2011) utilizes Duray (2002) research also as the basis of their research.

The key categories of Bask et al.'s (2011) model are Modular Regular, Modular Customized, Non-Modular Regular and Non-Modular Customized that can be seen in Figure 7. They all have also different order fulfillment strategy. The modularity has been for long considered as one of the key reason of mass customization (Bask et al, 2011), therefore, it can be expected that the companies in categories Modular Regular and Modular Customized present more mass customization focused approaches than the companies in other categories.

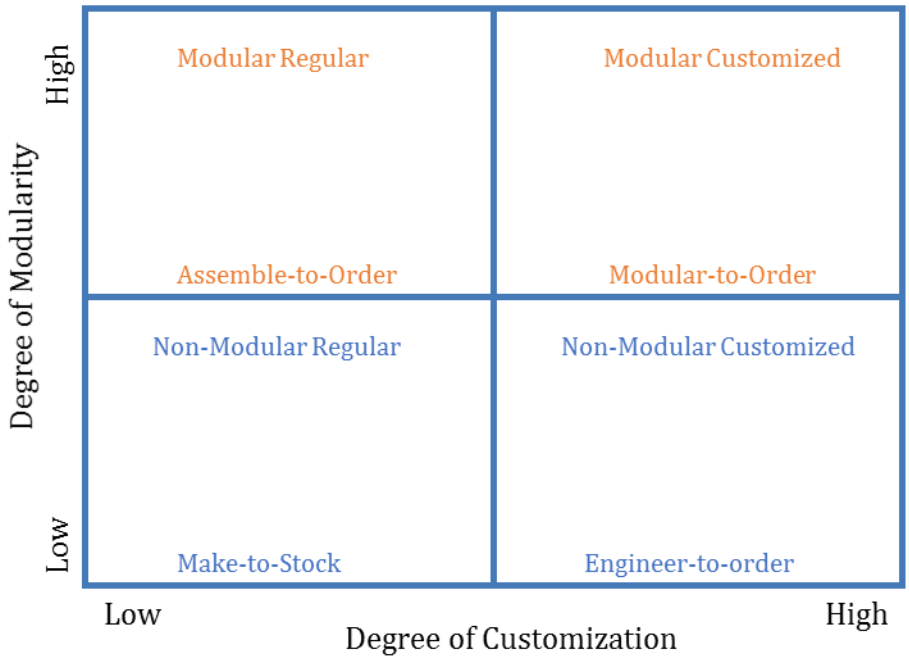

FIGURE 7: COMBINING MODULARITY AND CUSTOMIZATION IN SERVICE OFFERINGS (BASK ET AL., 2011)

There clearly is demand for further research on whether the most extensive service customization, in general, occurs in the late phases of the service production, as Blok et al.'s (2010) research shows. Further research could then lead to a better understanding of the critical customer touch points in the service industry and how the additional value is created. It must, however be noted that even though the greatest service customization points are in the late phases, it is still very important to involve customers in all of the phases. For example, in the service design it is very important to define customer needs and wants together with the customer. Nonetheless, understanding the most important value creation phases is critical to differentiate the service offering from competitors and increase customer satisfaction.

2.2.2 Service Modularity Set-up

Service bundles can be built in various ways. According to Voss and Hsuan (2009), service elements can be bundled by using either combinatorial or menu driven options. These alternatives differ in the customer's participation, extent of customization and complexity. In the combinatorial bundle the service is created in a unique way by letting the customer select the wanted services from a set of service modules. This option usually involves the customer largely in the service production, enables great customization but might also add complexity, as the selection of services expands. Mikkola (2007) argues that even though the modularity

brings flexibility, it also increases the required coordination and can create frustration to consumer, especially, if the selection and assessment of the components is not clear. For example, Nissan ended up ending some of its customization efforts as it became evident that the 87 different types of steering wheels that it offered did not increase the value for customer (Pine et al., 1993).

The menu driven bundle offers ready-made differentiated packages from the service modules (Voss and Hsuan, 2009). These bundles are not usually considered very modular, as customization, customer involvement and complexity are quite low. The prepared service bundles' elements can still be very modular but the service offering is just made in the earlier phase than in the combinatorial bundle. De Blok (2010) also notes that the ready-made bundles can offer more effective and efficient customization than the combinatorial bundles, as they reduce the large number of service variations and limit the amount of required service components. It, however, also reduces the flexibility and customer involvement and, therefore, is less dynamic option.

The choice between the combinatorial and menu driven options depends on the strategy of the company. Based on de Blok et al. (2010), the service providers can choose which part of the process to emphasize. The components can be similar in both "packaging" solutions but the decision between the two depends much on how much customer involvement is wanted and how does the service production work in the company. De Blok et al. (2010) argue that if the service provider decides on pre-assembled service bundle, it usually means that the customer needs are highly predictable. They also claim that usually travel agencies can offer these types of services. However, as the customers' behavior has become more heterogeneous and many of the travel packages are self-assembled, the customers might not be any more satisfied with readymade assemblies. The set-up strategy, therefore, can create competitive advantage for the companies.

Voss and Hsuan (2009), further, describe the three factors that they have found to contribute to competitive advantage, when deciding about the type of modularity and degree of customer involvement. The factors are having at least in a short term inimitable service modules, having ability to utilize these modules in various services and, finally, having a degree of modularity that supports customization. These three key factors clearly support the fact that the service

components should not just be standardized but also show uniqueness and enable customization. The element of customization, however, is based on the customer involvement. Therefore, based on the Voss and Hsuan (2009) research, the combinatorial model can be considered to create better competitive advantage than menu-driven option, as it involves customer earlier in the process and allows customer to be part of the service design. However, de Blok et al. (2010) argue that wide range of customization can also happen in the later stages of the process. This then means that, even with the menu-driven option, customization can still play important role.

2.2.3 Service architecture and platform strategy

Looking through modularity in services it is important to look the service architecture, as it is the blueprint of the service or in other words the design of the overall service process. The architecture has the most important role in defining the degree of service modularity, as it sets the limits and design for services and processes. This means that many of the service lines decisions have decided through the architecture and, therefore, the participation of the top management in the service architecture is very important (Voss and Hsuan, 2009). Part of the service architecture is also the platform strategy that is the organization of service components and interfaces of the service architecture (Mikkola, 2007).

Voss and Hsuan (2009) define that service platform can be seen, as the equivalent of the substitutability factor of product modularity. With the help of service platform the standardized interfaces between the services can be built, which is important factor in the utilization of the mass customization. The platform thinking has been also seen to affect the company's flexibility and responsiveness by increasing them both (Sawhney, 1998). Moreover, Pekkarinen and Ulkuniemi (2008) argue that platform thinking can be utilized in creation of services for different segments, as it can help to decrease costs. The platform increases the utilization of the same service elements in different services, which will affect the decrease of service costs. In addition, platform approach increases the service quality, as it is easier to maintain, improve and monitor fewer services and processes (Robertson and Ulrich, 1998)

The most difficult issue about the platform approach is, however, the coordination. The interfaces between the modules should have as low coordination as possible. However, the core knowledge, technology and capabilities should be shared between all the different segments and service offerings, which requires very well established and standardized coordination methods. These coordination methods, thus, again rise from the organizational modules. (Pekkarinen and Ulkuniemi, 2008).

There is not much relevant research about service architecture and platforms unlike there are about product architectures (Pekkarinen & Ulkuniemi, 2008). However, some researchers have tried to depict the modular service architecture in order to create understanding of the underlying features of services. In the Voss and Hsuan's (2009) model the service architecture decomposed vertically so that in the upper level is the industry and in bottom level the service elements, which have not been anymore decomposed in their research (Figure 8).

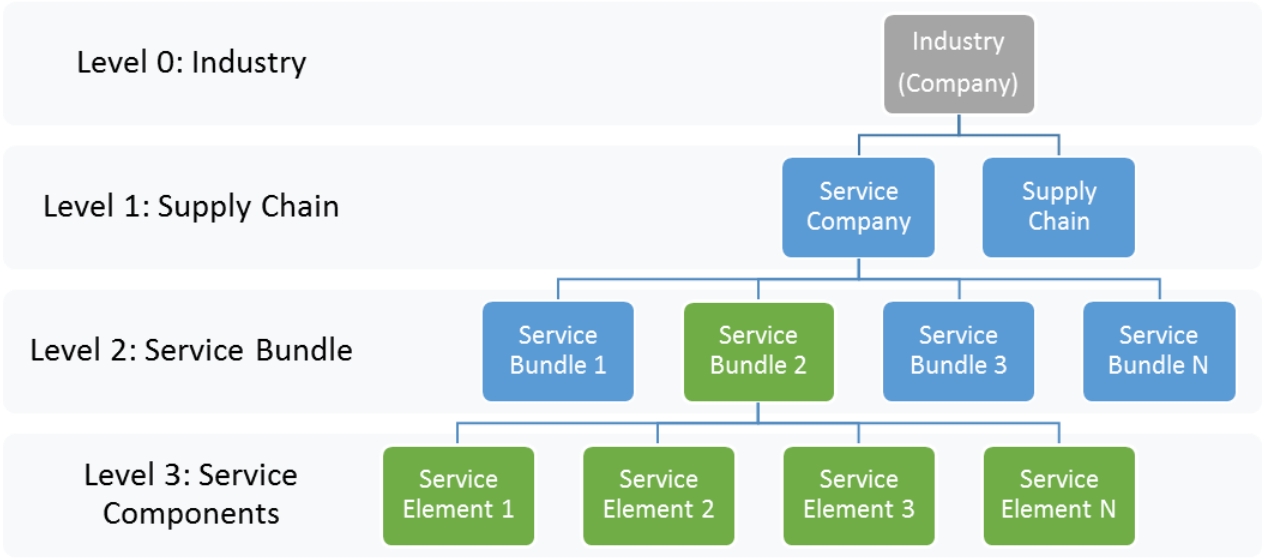

FIGURE 8: SERVICE ARCHITECTURE BY VOSS & HSUAN (2009).

In Figure 8 all the elements of the service architecture is vertically linked. This means that the modularity is as present at the industry level as on service or company level. Therefore, the whole service industry architecture is very reliant on all of its elements and requires a lot of coordination. Furthermore, the modularity does not only come from top-down but can also affect the industry bottom-up (Tu et al., 2004). The structure differs significantly from the

modular product structure, in which the product is on the top level of the vertical chain instead of industry. This is one of the factors that further emphasize the complexity of service modularity compared to product modularity.

In the Pekkarinen and Ulkuniemi (2008) also see modularity in services to extend further than in the service production. However, their structure is more value chain focused, as they depict the service architecture from the point of view of service production. In addition, they do not look the just the service architecture but rather the development of the modular service. They have defined service modularity to have an impact on four dimensions (Figure 9):

- Modularity in services
- Modularity in processes
- Modularity in organizations
- Modularity in customer interface (extension through Pekkarinen & Ulkuniemi's empirical research)

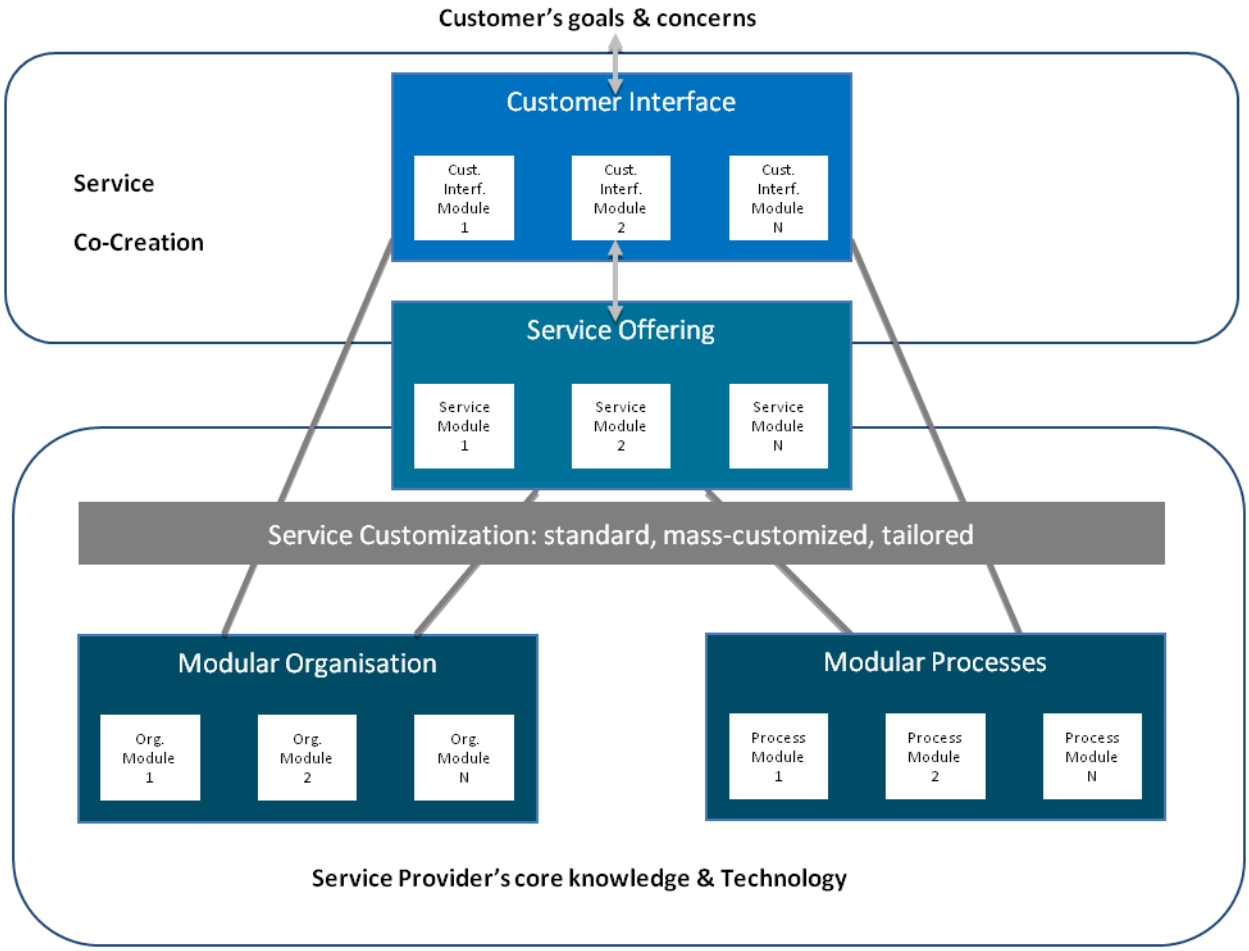

FIGURE 9: MODULARITY IN ORGANIZATION (PEKKARINEN & ULKUNIEMI, 2008)

Pekkarinen and Ulkuniemi (2008) argue that all these dimensions should be considered when defining the development of modular services. They also claim that the service offering and the customer interface are the only visible elements for the consumer, as the organizational and process elements are not visible for the customer. The organizational and process elements, nevertheless, have an important role in defining the modular service production and, therefore, the whole service offering. It should be further researched whether the modular service structure is valid for all the modular services and what is the role of customer, as currently modular services demand more customer interaction and customer self-assembly than before.

Pekkarinen and Ulkuniemi (2008), however, also raise the importance of customer involvement over the other dimensions. The customer is very involved in the service creation in the modular services and in order to customize the service to consumer, it is crucial to let the customer needs to drive the assembly process. Starr (2010), however, notes that current

technological changes might let companies to become more information-intensive and customer data-driven and even enable them to offer right services to its customers without any customer interaction. This then would again lower the role of customer and emphasize the organization's capabilities in data analytics. However, the role of the customer interface creates interesting field of research in the future.

In addition to their model about modular service architecture, Pekkarinen and Ulkuniemi (2008) have defined when the modular service architecture is most suitable option based on the supply and demand. Firstly, when the supply is complex and uncertain but the demand is at the same time stabile, the non-modular option offers better-cost efficiency than modular. Secondly, if supply and demand are both complex and uncertain the modular solution is the most suitable. Thirdly, if the supply is stable but the demand is uncertain, the modularity is the most suitable, even though it does not offer new service configurations (Schilling, 2000). In other words the demand has to do a lot with the modular service structure, and it has been seen as a way to develop services and, further, manage service variability in demand (Pekkarinen & Ulkuniemi, 2008). In the service architecture the standardized components should be put first and later the customized modules that are based on the demand in order to be efficient in the service design (Tu et al., 2004).

Even though, there does not exist much information about the service modularity, there are already many industries, where the modular service architecture has created benefits and new operating models. For example, in banking services the decomposition of the value chain to individual functional modules helps to get the benefits of the service orientation (Homann et al., 2004). In addition, in logistics services service modularity has been able to decrease the service complexity and increase responsiveness by integrating various functions within a company together (van Hoek and Weken, 1998).

2.2.4 Special characteristics of service modularity

Even though, much of the research on service modularity has been based on product modularity, there is no clear consensus whether the concepts created about product

modularity are actually useful also for service modularity (Bask et al., 2010). Voss and Hsuan (2009) consider, nonetheless, the comparisons between product and service modularity important for the research. In addition, service modularity is closely related to the concept servitization (services becoming more like products), which also highlights the linkage between service and product modularity. Service modularity is still considered to be more complex and closely related to process than product modularity due to the "human touch" (Bask et al., 2010.)

There are many reasons why service modularity can be seen as more complex than product modularity. First of all, services are not usually tangible and, therefore, they cannot be seen and compared as products. In addition, they cannot be touched or felt as products, which makes the service assemblies much more complex and dependent on the information and knowledge that is available (Zeithamlet al., 1985). For example, de Blok et al. (2010) show in their research that due to the service complexity in care services the high level customization is conducted in the late stages of the service and in the early stages only low level of customization can be added to the service. In product modularity, on the other hand, high level of customization is achieved only in the early stages (Duray et al, 2000). This is difference is highly dependent on the complexity of the bundle as well as where the production occurs in the value chain. In product manufacturing the production happens before the consumption whereas in services they are usually parallel processes.

Secondly, service modularity requires usually more human contact than product modularity. Service client is usually very involved in the service production process whereas in the production of physical goods the client involvement is very limited. In addition, the actual services, created through service modularity, are usually planned with each customer individually (de Blok et al. 2010), as the customers demand customized solutions that stem from their needs. For example, in a hair salon and doctor's appointment, the service is always customized to the client's needs, even though; most of the service elements are similar in the service processes.

Thirdly, the efficiency gains in modularity come from the standard modules that differ from the product modules, as they resemble more process modules (Fixson, 2005). For example, many of the modular services utilize scripts that describe how to perform the service process,

maintain the quality and operate more efficiently (Tansik and Smith, 1991). In addition, as the modules resemble processes, the consumer also utilizes the modules an extended time and at different times. The consumers flow from service module to another, instead of being able to utilize the service package at once. (de Blok et al., 2014).

Finally, the services cannot be stored, which means that unlike products they need to be consumed while they are produced (Zeithaml and Bitner; 2003). For example, doctor's appointment cannot be stored or saved but it needs to be consumed while the doctor is present and producing the service. This also explains why the customization is more critical in the end of the service value chain and not in the beginning as it is for the products' value chain. The service provider can still adapt the service during the service consumption, which is called personalization of the service

All in all, we cannot forget that, even though, product and service modularity differ from each other, many of the services contain product components and products include service elements. Therefore, there are both service and product modules in many of the modular service offerings. This means that the modular service offerings might not have all the characteristics that were described in this section. However, the understanding of the special characteristics of service modularity helps in the determination strengths and weaknesses of the approach. In addition, it helps in the distinction of the service modularity from the product modularity.

2.3 Modularity in the tourism service offering

As stated in the *section 2.1* the modularity has become very important in the travel services due to various changes in the industry structure. According to Pellegrin-Romaggio and Leszczynska (2013), the industry has moved from standardized and supply based mass tourism to mass personalization due to technological changes and Internet, which has revolutionized the production and distribution of travel services. The travel "product" is currently the outcome of complex and heterogeneous supply chain that is being activated based on the need. The rigid and standardized traditional "holiday" packages still exist in the

selection of travel packages but the modular and customizable dynamic "holiday" packages have become more popular among consumers, as the consumers appreciate reactivity and flexibility (Pellegrin-Romaggio and Leszczynska, 2013)

There are, nonetheless, many benefits in the modular tourism supply chain structure compared to the rigid tourism supply chain. First of all, it is considered to better respond to the consumers' individual needs and expectations, as consumers are currently more knowledgeable of travel services and demand better value for their time and money (Buhalis & O'Connor, 2005). Secondly, modularity enables customization without large increases in costs (Duray, 2002), as the service components can be shared by various tourism supply chains.

There are, however, many problems with the modular supply chain. Mikkola (2007) marks that the increased flexibility also brings increased coordination that requires a lot of efforts from the whole supply chain, as the customer experiences the travel products integrated and also assesses then based on the whole chain's performance. Mikkola also notifies that increased flexibility might just confuse customers and create frustration. The modularity needs to be kept in issues that matter to the customer but to kept minimum in matters that are irrelevant. For example, one of the greatest success factors of Apple has been that it has been able to offer standardized hardware and customizability and modularity in regard of the software.

Bundling different service components simplifies the offering building and provides the economies-of scale for the provider. However, from the customer point of view it might bring more choice but also mean that the customer needs to pay for unwanted components (Spring and Aurajo, 2009). There is also some evidence that customers are willing to buy bundles when the market is not mature but as the market matures the customers become more ready to purchase bundles (Eppen, 1991; Mathieu, 2001). This research was about product modularity but it also brings an interesting potential research area for services. At least during the maturation of the tourism market, it has become clear that tourists are not willing to pay from tourism packages that include components they do not need. Consumers have become very price sensitive, as travelling services have become more available for consumers through internet technology.

Bundling services also includes another problem. The choice of the service structure does not only depend on the service provider, as services are usually co-produced with the consumers (Spring and Aurajo, 2009). Langlois and Cosgel (1998), thus, claim that the service design is not just dependent on the customer needs but also on the customers' knowhow. Due to Internet, the consumers are now able to contact directly with the different supply chain members. They have much of the knowledge that the tourism agencies used to utilize as their competitive advantage. This has led to customers' unwillingness to buy readymade bundles that they cannot customize to fit to their own needs.

Cova and Cova (2012) explain that there are actually two ways in utilizing technology to create more standardized services that can be also utilized in tourism industry. The first one is to utilize "hard" technology, which refers to replacing the current human activities with technology-based services. For example, in banking industry the internet banking has changed most of the services into self-service. In tourism industry, there have become many online travel agencies (OTAs) that provide travel search engines that enable automatic booking without any human contact.

The second one is to use "soft" technology, which refers to rationalizing and modularizing the human activities. This refers to the service scripts and formally designed service interfaces. For example, in tourism industry there are many times utilized the hybrid that is the combination of hard and soft technology. This can be seen, for example, in a way that the customer starts the process utilizing travel search engines but is directed to travel agents with special requests. Cova and Cova (2012) explain that the origins of modularity in services are, in fact, connected to the increased use of IT in business and automation of services. This further explains why the role of technology is critical when talking about modularity and tourism services.

2.3.1 Customer role in the modular service offering

Lately the research has noticed growing role of customer in the production of modular service offering. For example, Pekkarinen & Ulkuniemi (2008) and Pellegrin-Romaggio & Leszczynska (2013) have added an extra dimension in their frameworks for customer involvement in the

service production and do consider the role developing. In addition, many researchers mention role of the customer as one of the most interesting subject of research, as it is not very studied subject. Much of the research about tourism services as well as modularity has treated the customer as passive participant. However, the new research on tourism services has considered customer even as the self-service assembler (Pellegrin-Romaggio and Leszczynska, 2013; Zhang et al. 2009).

Pellegrin-Romaggio and Leszczynska (2013) argue that the growing number of travel service providers want to offer customers more choices. They also argue that the travel agencies need to give more attention on the customers' growing active role and provide more collaborative platform. The tourism agencies also agree that, even though, their organization would not provide completely flexibility in services, they still can offer at least basic modules for consumers. The customer cannot be anymore considered only as a mere consumer of a travel services without active real role in the service assembly but as a service co-producer. However, this means also that the tourism agencies need to be able to create additional value for customer by, for example, providing information that is not available or is very hard to find for customer. This requires specialization and understanding of each customer's needs.

De Blok et al. (2010) presents that there exists two phases in the elderly care service package construction when the service "package" is customized for each client. These phases are prior to the service and on-the-job phase. In the travel services there are not defined exact phases when the customization in collaboration with the client is conducted. Pellegrin-Romaggio and Leszczynska (2013) argue that based on their study the central assemblers are not capable to react to the customers' needs at the last minute or during the service. Therefore, many times the customization process can only be conducted prior to the service. However, they argue that the responsiveness in the late stages of service would be increasingly important, as the consumers' require more and more responsiveness in real time.

Data management is important to manage the customer requirements and expectations. The central assembler should have an access to the information about the available services in real time and, thus, dynamically respond to the customer requests. Especially, the mobile channel has pressured the travel agencies to better manage real time issues. In addition, the central assembler needs to understand its customers' needs and demographics to better

respond to their specific needs and understand their behavioral patterns. With the current technology, it has, nonetheless, become easier to get the real time data about processes and consumers. However, as there is vast amount of the data, the management and utilization of this data has become the real issue.

2.3.2 Supply chain role in the modular service offering

The modularity has greatly affected the supply chain structure. There is a trend, at least among the Western manufacturers, to reduce the number of first tier suppliers and create longer-term relationships between the partners, as the modular structures require better collaboration among the companies (Bask et al., 2010). Ambheiter & Harren (2005) also support the change of the supply network to become significantly simpler. They believe that through modularity the number of product/service components can be reduced from thousands into only a handful amount. As the same components are served by many services and products, there does not need to be as many suppliers as before.

In addition, Sanchez and Mahoney (1996) argue that modularity leads into less coordination among the supply chain. As the service components require only loose coupling in modular service structure, there is a higher degree of independence between the component manufacturers. Galvin and Morkel (2001) further claim that the loosely coupled structure leads into "embedded coordination" that requires less attention from the management side. This makes the supply chain much more effective and enables parallel processes to replace the sequential processes. This change affects the whole supply chain to become more modular but also the suppliers to become easily replaceable.

However, whether the modular structures are the actual causes for the new "embedded" coordination, it is byproduct of the modular supply chain or it caused by some other factor is still unknown (Bask et al., 2010). There is actually even no clear understanding how the "embedded" coordination actually takes place. Therefore, it can be argued that research on modularity's impact on the coordination could reveal "the best practices" and further enhance the control of service companies.

In the modularity literature it has been argued that modular supply chain and product

architecture can lead into modular industry structure (Voss and Hsuan, 2009). Modularity, for example, enables the division of labor and outsourcing of tasks across different firms, which can lead into growing cross-industry collaboration or more fragmented industry structure. (Bask et al., 2010). The modularity, therefore, cannot be only considered on the service level but the modularity affects a larger part of the service ecosystem. In the *section 2.2.3* Voss and Hsuan (2009) have also described in their framework modularity to have an effect on the whole industry. There is, however, not much research on how the industry is affected by the modularity and what the potential outcomes are. The industry-wide effects are also out-of-scope for this research but could be potential areas for further research.

2.4 Summary of the literature review

All in all, as the literature review has showed, there are a lot of gaps in the service modularity research. As the service modularity research is still in its infancy, the study has been limited to one specific industry, which is the tourism industry. The tourism industry represents a fast-growing business sector, which has largely utilized service modularity to increase effectiveness and lower the level of required coordination. The tourism industry also offers good platform to research service modularity, as the service modules (e.g. hotel, flights) are easy to separate from the service offerings and the value chain of most travel services is quite simplistic compared to many other industries.

2.4.1 Service Modularity in Tourism Industry

The tourism industry has become highly modular due to disruptive technological changes that have brought more visibility for the tourism value chain, increased self-assembly and questioned the role of travel agency as the intermediary between suppliers and customers. This change has not been, however only in the tourism industry but various service industries have gone under significant changes lately and the self-service has increased. However, this does not mean only servitization (services becoming more like products) or the end of the service industry but a change that requires new type of business model.

Consumers have become more demanding for the services. They want services that are more customized, produced in efficient manner, maintain high quality and cheap. As the traditional services have had hard time answering for these needs, the service modularity has been found as the answer. With modular services, the companies have been able to produce mass customized services that can be assembled from a pool of service modules. Even though this has answered for the consumers' needs, there has not been much research on the service modularity and many service providers have had hard time in understanding what actually drives the modularity.

The research has been considered service modularity to be an issue that does not only affect the services but the entire industry. This has been due to the special nature of service modularity, as it does not only have an effect on service production but also the processes and the entire service value chain. Due to this reasons several researchers have taken the service architecture, as the starting point of the analysis of modular services. The service architecture strategy can be used to identify the modular structure but also to utilize the modular logic in developing modular services (Pekkarinen and Ulkuniemi, 2008).

To understand the modular service development, the company needs to build service architecture that contains 3D of modularity, which are processes, organization and service offering (Pekkarinen and Ulkuniemi, 2008). With the help of understanding of the platform structure also the integration of the different service modules becomes easier (Crawford et al., 2005). However, the structure has not been enough for various services, as the services are highly dependent on the human touch points. Therefore, Pekkarinen and Ulkuniemi developed 4D of modularity as the basis of their research, which includes customer interface as the fourth dimension.

The modular service value chain of a tourism value chain can be seen in Figure 10. In Figure all the relevant members of the value chain are described and also their roles as producers of the modular value chain have been described. The tourism value chain has utilized the modular value chain structure already for a longer period of time and, therefore, it can be utilized as the basis for the research on the 4D modularity.

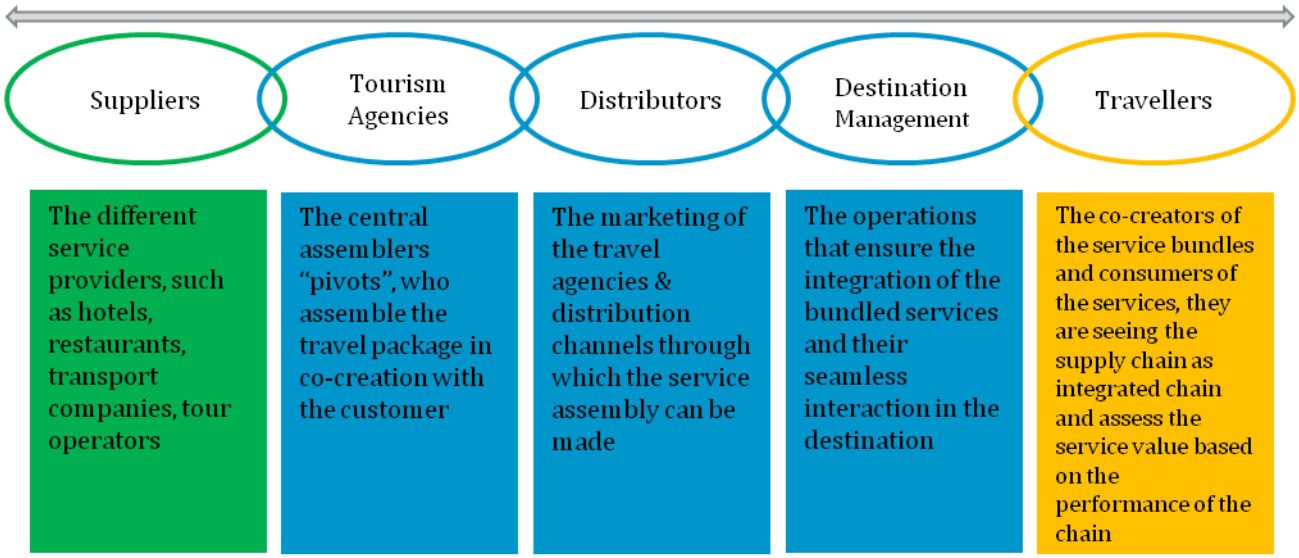

FIGURE 10: TOURISM SUPPLY CHAIN STRUCTURE (PELLEGRIN-ROMAGGIO AND LESZCZYNSKA, 2013)

All in all, the service modularity offers several research opportunities and also represents an industry with a high need of modular service architecture strategy. Even though, there is already a lot research on product modularity is does not offer a direct solution for the companies willing to develop modular services. This is due to the complex nature of services and the several special characteristics that separate the services from products. However, it is a good base to build on the research about service modularity.

2.4.2 Framework for the study

There are various frameworks that try to explain the modularity in services (Costa and Baggio, 2009; Bask et al, 2010; Pekkarinen and Ulkuniemi, 2008). Most of these frameworks are qualitative and focus on the causal relationships on what are the factors that have an effect on modularity. Only few have tried to explain modularity by utilizing numerical methodology (Dörbecker and Böhmann, 2013; Voss and Hsuan, 2009). The quantitative methods are usually created in order to measure the level of modularity. For example, Voss and Hsuan (2009) try to assess the level of modularity as a number between [0, 1], in which 1 presents totally modular system and 0 completely non-modular. Modularity is calculated based on the information about the service architecture with a focus on the service elements and the linkages between the service elements.

The research is focused on understanding the development of travel agencies' modular services and how they affect the organizational structure and processes and the value chain from supplier to customer. By value chain we mean in this study the supply chain of the travel agency, which includes all the organizations from the destination service providers to the distributors of the travelling services, the company's own internal organization and the end-customer that purchases and consumes the travelling service. In addition, to the company's own value chain, we also need to notice the surrounding market, competitors and the technology that all have important effect on the company, service offering and value chain. However, as the surrounding environment involves numerous different factors that cannot all be assessed, the focus on the research is put on the supply chain, company's internal organization and end-customer.

The study utilizes knowledge from various theoretical frameworks about the modular service architecture and service platform to build the analysis framework. Pekkarinen and Ulkuniemi's (2008) model about the modular service architecture serves as the basis for the analysis. Furthermore, the analysis framework utilizes the Voss and Hsuan's (2009) service architecture model and de Blok et al. (2014) two by two matrix about service interfaces. The created framework is utilized to analyze the service architecture on two aspects, which are the four dimensions of service modularity and the level of service modularity.

Pekkarinen and Ulkuniemi' four dimensions of modular services form the basis of the analysis. The four dimensions have been modified to this study to correspond the analyzed elements. The modular organization has been changed to modular network in order to emphasize the role of suppliers, which are the producers of the service components. In addition, the process modularity in this analysis is included to only answer about the service production process. Voss and Hsuan (2009) and de Blok et al.'s (2014) research has been utilized to further identify the level of modularity in regarding the four dimensions.

Four dimensions (modified)	Examples on the dimensions	Level of modularity
Network	Modularity of management processes (coordination, performance evaluation),	Are the network members replaceable? Can the supply

	outsourcing, formation of alliances	chain be frozen or recombined after the first configuration?
Service production	Process of producing the service packages, such as selection and combination of service components	Who is responsible of the service production and coordination? Are the processes sequential or parallel?
Service offering	Service offerings consist of service components. For example tourism service offering can consist of flight, accommodation and transportation.	Is the service offering pre-designed package or list of service modules from which to construct the service offering?
Customer interface	Customer interface represents the customer touch point, such as purchase of the service offering. It was the last level to be added to the model.	How much the customer is involved? How much power customer has for the end-service?

TABLE 1: FOUR DIMENSIONS OF SERVICE MODULARITY

According to Pekkarinen and Ulkuniemi (2008), all these four levels should be considered when trying to understand the development of modular services. The service platform ties these levels together through the service interfaces, and the interfaces and four dimensions are then illustrated in the picture of the service architecture. The development of a modular service is, however, an extremely complex process and, therefore, the service architecture is illustrated in Figure 11, which focuses on the whole value chain and the process of service production. This model is utilized in the research to illustrate the differences in the value chain of the two case companies presented in the Chapter four.

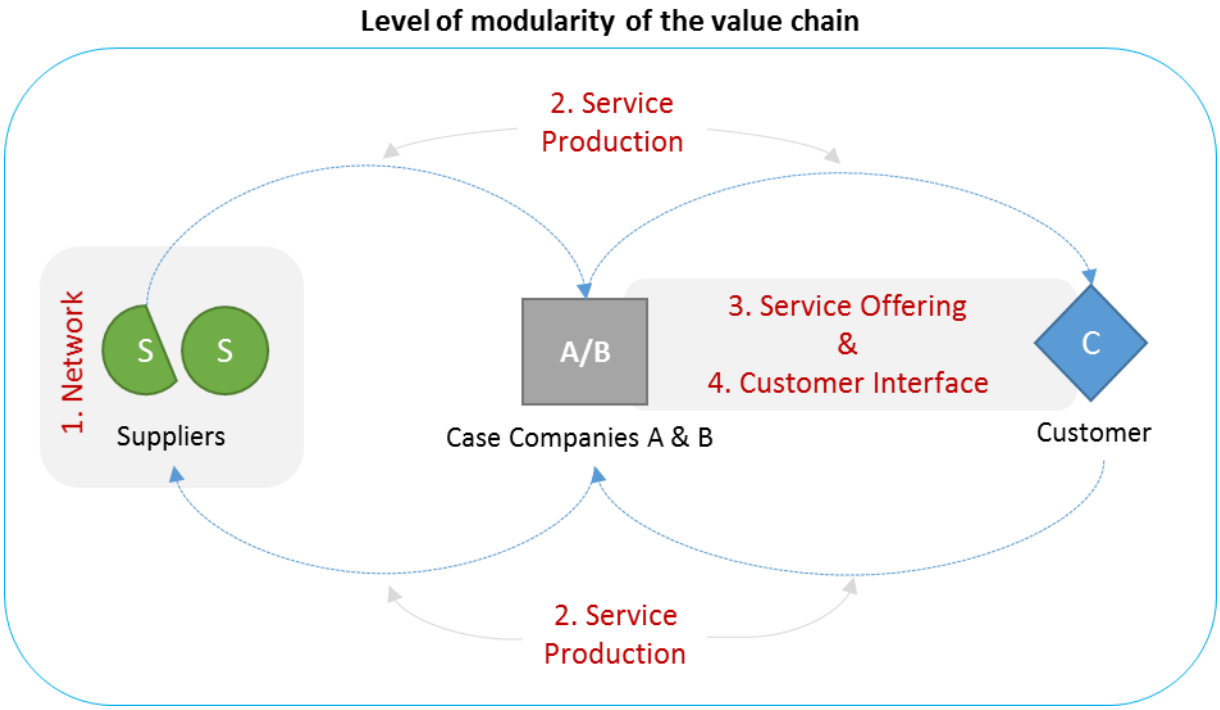

FIGURE 11: THEORETICAL FRAMEWORK OF THE STUDY

To further analyze the four dimensions Pellegrin-Romaggio and Leszczynska (2013) and Duray et al.'s (2002) theory about the tourism supply chain management and mass customization archetypes will be revisited in the analysis of the findings. Their theoretical work will help in the analysis phase to understand more in-depth the roles and responsibilities of the supply chain members. Moreover, it will standardize and bring more coherence for the analysis phase.

3. Methodology

The methodology part outlines and justifies the research methods selected for this study and how the methods have been utilized. The research methodology follows Yin's (2009) proposed research structure. In the structure, the first step is to identify the research question and objectives. Secondly, the methodology is chosen for the analysis, which is followed by determination of the analysis logic and interpretation of the results.

3.1 Multiple-case study

The objective in the section is to explain why the multiple-case study was chosen as the research methodology for this study. In addition, the research steps are presented, which show the research progress and reasoning for the case companies' selection.

The research is conducted as a multiple-case study with two case companies. Multiple-case occurs whenever more than one case is examined (Bryman, 2004: 55). This is considered better method than a single-case study as the repetition of the study provides greater reliability for the findings (Yin, 2009: 60). By definition, a case study is an empirical investigation that aims to understand and identify the dynamics within single setting (Eisenhardt, 1989). A case study also typically focuses on contemporary real-life phenomenon in its own context and, therefore, is a good methodology for a study with multiple organizations or stakeholders (Bryman, 2004: 55, 281).

Multiple-case study is a good method for the research due to various reasons. First of all, the research question is explanatory and a lot of "how and "why" questions occur in the research (Yin, 2009), which is considered important starting point for a case research. The explanatory research aims to explain, describe or interpret a phenomenon. This research aim is to explain and describe the service architecture of a modular value chain; therefore, the explanatory approach is considered also the most suitable method for this research. Secondly, the case study method usually consists of vast amount of information. In a case several data sources, such as interviews, archives and observations, are utilized to bring more depth to the research. The rich data is critical for this particular research, as the research holds still several

gaps and the research area is still quite young (Eisenhardt, 1989). The inclusion of large amounts of sources and data has been also considered as one of the unique strengths of case study comparing to other research methods (Yin, 2009).

As a third advantage of the case study is that it studies the phenomenon in its natural context. The research studies complex value chain that is difficult to separate from its context. In addition, it is necessary to study the value chains within the natural context to understand all the dynamic characteristics (Törnroos & Halinen, 2005). This is, especially, important for this research, as only one industry is included to the research and, therefore, the results might not be applicable in other contexts. Finally, a case study can also transfer a complex business problem into a realistic model (Eriksson & Kovalainen, 2008: 116). The issue can be better understood, as it is put into a real-life context and the variables can be limited.

Even though, the case study is a good methodology, especially for this particular research, there also exists a lot of criticism towards case study methodology. Törnroos & Halinen (2005) consider that the current business networks have become so complex that the research instructions for case studies are difficult and even questionable. In addition, the results of the case study can be hard to generalize (Yin, 2009) and the strong reliance on the empirical research might lead to a very narrow theory (Eisenhardt, 1989). Miles (1979) also notes that in case studies the researchers can end up in different conclusions, as the analysis is many times intuitive and uncontrollable.

Yin (2009: 15), however, argues that case study purpose differs from other research methods and its purpose is not to create statistically generalized findings but rather bring generalizations to theoretical propositions. Moreover, Stake (1995) argues that the case study is primarily conducted to create in-depth understanding of one case rather than widened to other cases. Therefore, it is very important to think about the end results and research question when selecting the right research method.

The multiple-case study method fit very well for this research. The research focuses only on one industry and two case companies, which creates a very narrow focus. In addition, the research does not aim to generalize the findings but rather understand the phenomenon and how the phenomenon exists in its own industry context. For example, the phenomenon is only

researched on one view point, which can distort the overall understanding of the larger phenomenon behind the research focus.

The selected research context, which is tourism industry, also fits well for the case research about the new service modularity phenomenon. The tourism industry has changed tremendously during the last decade and, therefore, does offer a dynamic research context. To respond to the pressure, the travel companies have become more interested in modular service offering and, therefore, also questioned the structure of a traditional service offering (Zhang et al. 2009; Pellegrin-Romaggio and Leszczynska, 2013). This has been due to the technological advancements and more sophisticated customers that have put a lot of pressure on the competitive tourism industry to offer more customized and fitting services with less costs and improved efficiency. (Buhalis & O'Connor, 2005).

Stake (2005) have discussed that the case study should be chosen based on, which case can teach the most. The tourism industry clearly provides excellent setting to learn more about the phenomenon and, therefore, presents an excellent research context. There is very little research on service modularity (Bask et al. 2010), and is almost no understanding of the modular service architecture or management. Therefore, understanding of the modular service development in the tourism industry context can increase understanding about the modular service architecture.

To create more understanding, the case study was selected to conduct as a comparative study. To create comparative study, the aim was to choose two case companies that would present different levels of modularity. This would give more understanding what drives modularity and what are the key factors when developing highly modular services.

In order to select these two case companies, 15 Finnish travel agencies were chosen for investigation. The investigation included gathering information about several company characteristics such as the size and establishment year. The most important characteristics, however, were the level of modularity of their offerings and the level of focus of their service offerings. To find right kinds of companies, it was decided that the companies should display different level of modularity in their service offering and high level of focus in their service

strategy. The values for these two characteristics were given based on the results of the initial investigation and can be seen in Figure 12.

3.2 Data Collection

As already stated before, the case study methodology utilizes various data collection methods (Yin, 2009: 118). The primary data collection method was chosen to be semi-structured interviews with the case companies. As the secondary data, the research consisted of the data available in the companies' website, print material and previous research. In the following sections the collected data is presented and examined.

3.2.1 Interviews

Interviews were chosen, as the way to collect data for this research due to their flexibility and the ability to create direct contact with the interviewees (Vuorela, 2005). In an interview the researcher is also able to ask unplanned questions and adapt the interview to correspond to the situation (Hirsjärvi & Hurme, 1995), which helps in an explanatory research. According to Nielsen (1993), the interviews are a good way to understand how a system works and what are its advantages and disadvantages. The data obtained from the interviews is also qualitative, which is the preferred type of date for a case research.

According to Vuorela (2005), there are three types of interview methods that can be further divided into subcategories. These methods are form, theme and open interviews. The classification between the methods is based on how much the pre-planned questions control the interview. For example, in an open interview there are not many planned questions but rather a theme, which is discussed in a conversational style with the interviewee. In the other end of the interview methods is the form interview, which has pre-designed interview structure that does not allow any modifications during the interview. (Hirsjärvi & Hurme, 1995)

The chosen method for this research is a theme interview, which is also known as semi-structured interview. The method was chosen for three reasons. Firstly, theme interview can

be a quite adaptive interview structure with closed and open questions, while still ensuring that the interview contains same themes with each interviewee (Preece et al., 2002). Secondly, semi-structured interviews are useful when there are gaps in the research, as too structured interview might prevent the interviewees to bring out important aspects that are not directly asked about (Eriksson & Kovalainen, 2008: 82). Finally, as the study is a multi-case study, the theme interview secures the cross-comparability due to the pre-designed interview structure and common themes.

The interviewees were chosen for the interviews based on their role in the company and the understanding of the company's service production and strategy. Criteria for the interviewees' characteristics were documented and the CEOs of the both case companies were contacted to assess the personnel's suitability for the interviews based on the documented criteria. In the criteria, it was stated that the chosen interviewee should hold a central role in the department of the service development and strategy and have understanding of the service production. With the help of the CEOs the interviewees were identified and contacted for the interviews.

There were three employees that met the interview criteria in the case companies and that were willing to participate. The interviews were conducted in February 2014 in the premises of the case companies. The interviews lasted on average 50 minutes and were held in Finnish. The interviewees were selected to be held in Finnish, as all the interviewees were Finnish and the atmosphere was considered to be more open if there would not be any language barriers. All the interviewees were also very experienced in the travel industry with over 20 years of experience and, therefore, could also bring relevant insights from the industry. The detailed information about the interviews can be seen in Table 2:

Case Company	Title and department of the interviewee	Experience in the travel industry	Length of the interview
Case Company A/ Interviewee 1	Sales Director, Flight based tour production & group sales	Over 23 years	1:03 hours
Case Company A/ Interviewee 2	Responsible for Service Production, Flight Based Tours	Over 20 years	0:27 hours
Case Company B/ Interviewee 3	Service Manager, Holiday Travel	Over 30 years	0:58 hours

TABLE 2: CASE INTERVIEWS

The interview questions were based on the theoretical literature review and answered primarily to the research question: *"How modularity affects the assembly of travel service offering and what are the roles and responsibilities of the tourism value chain's members?"* The questions were placed into four categories that were demographic information, general overview of the company, the description of European city travel from the service offering perspective and benchmark (Interview structure Appendix 1). A lot of theoretical research on tourism industry and service modularity was looked for in advance in order for the interviews to be as comprehensive as possible. Moreover, the interview structure and questions were inspected by an experienced researcher of the field of service modularity.

Prior to the interviews the interview material was also sent to the interviewees. The aim was to prepare the interviewees for the theme and let them have time to get familiarized with the topic. The research objective was also revealed in the end of each interview in order for to give opportunity for each interviewee to provide additional insights that were not directly asked from them. This led to some in-depth conversations about topics that were not directly planned but brought some valuable insights. In addition, some of the interviewees were contacted after the interview for additional data.

3.2.2 Secondary data

In addition to the interviews, a large collection of documents was also gathered during the research process. The secondary material is important source of data for the research, as it provides material created in a long time span and, therefore, can provide specific information (Yin, 2009: 102) that is not possible to collect through interviews. The initial research on the tourism industry and travel agencies was conducted through the available secondary data, which contained material from the company websites and articles related to the field. With the help of the initial research a rich collection of secondary data was gained. This data, further, helped to understand the tourism industry in Finland and create a map of the travel agencies' competitive positioning from the perspective of the service offering modularity.

The case companies' selection process was also based on the initial research. Only two case companies were chosen to gain better understanding on modularity and how it affects the construction of the service offering.

3.3 Data analysis techniques

The data analysis already started in the data collection phase. In order to ease the data analysis all the interviews were recorded and transcribed. The transcription of the interviews was done directly after each interview in order to ensure the collection of the details and validity of the research. In addition, all the website material was secured as screen captures. This work enabled a rich and easily accessible data collection for the analysis part of the research and also improved the validity of the analyzable data.

Data analysis involves working and categorizing of data, breaking it into smaller units and synthesizing it, searching for patterns, discovering what is important and communicating the results forward (Bogdan & Biklen, 1982). There are two principles that are quite consistent in all qualitative data analyses. Firstly, the data analysis process is ongoing and affects the research design until the researcher leaves the field. Secondly, the theory must grow naturally from the analysis rather than standing on the side and just proving some prior argument as accurate. The purpose of a qualitative study is to understand rather than to forecast, which is why cyclical approach is required. In cyclical approach, the collection of the data affects the analysis, which further has an impact on the formation of the theory, which yet again changes the way the data is collected. (Westbrook, 1994)

Categorization is utilized as the primary data analysis technique for the research. According to Ely (1991), establishing a set of categories for the final data analysis is suitable for many qualitative studies. Ely argues that as starting question, we should have: "what categories will help me to organize the essential aspects of what is written here?" This should lead into creation of categories and subcategories, and understanding the linkages between the categories.

The first step in categorization of the data was to go through each of the interview in detail to gain more understanding about the subject and relevant categories for the research. Second, the data was categorized in a table (Appendix 2). The categories came from the interview structure in order to enable direct comparison between the two case companies. Moreover, the categories were saturated with quotations and also with some secondary data gathered from the case companies (print material and company website). Tabling the data is called cross-tabulation and it enables the examination of the connections of distinct approaches (Suter, 2012: 359).

Thirdly, new categories were established based on the chosen theoretical frameworks about the service architecture. The second categorization was based on the research of Pekkarinen and Ulkuniemi (2008), Voss and Hsuan (2009) and de Blok et al. (2014). This was the last categorization stage and in this phase the amount of categories was decreased into only four.

3.4 Validity

There are no universal criteria that could fully assess the qualitative research (Eriksson & Kovalainen, 2008). Therefore, in this section, Yin's (2009) quality tests are utilized as the basis of investigation about the research validity. In addition, Vuorela's (2005) research about the validity of interviews as the data collection method is utilized to understand the chosen methodology from the point of view of reliability.

Yin (2009) proposes four types of methods in order to improve the validity of a qualitative case research. These are construct validity, internal validity, external validity and reliability. The construct validity can be executed by utilizing wide variety of sources of evidence to establish reliable chain of evidence. This has been formed by utilizing documented interviews as well as different types of documents, such as web sites, articles and printed materials. With the different materials it has been possible to cross-check the findings and, therefore, create better trustworthiness.

Secondly, the internal validity is established by identifying causal relationship and patterns in the case research. This is executed with relating the empirical data with the existing research.

Thirdly, the external validity is proved by generalization of the study results. As the research contains only two case companies and limited amount of interviews the results, however, the generalization of the findings is limited. The research, however, can be generalized better than, for example, single case study. Nonetheless, case study method is not utilized to produce statistically generalized results. In addition, consciousness of these limitations improves the external validity.

Finally, reliability is not the best method for validating qualitative research but is more suitable for quantitative research. However, the reliability in qualitative research can be also improved. Firstly, the data collection methods' reliability has been improved by providing interview structure that is followed in each interview. All the questions included in the structure were asked from the interviewees. Even though there were some additional questions, they were mostly asked only to clarify the answers. Secondly, all the data utilized in the research has been well documented. Even the website material has been documented by utilizing screen captures to avoid the potential changes in the websites.

The other validity concern in a qualitative case study is the reliability of the data collection. According to Vuorela (2005), there are five interview challenges that need to be considered. First of all, the interview questions should be designed and validated before the interview in order not to modify them too much during the interviews. The questions need to be also clear so that there are no misunderstandings and all the relevant information can be collected. In addition, the questions should not lead the interviewees in their answers but enable them to express their opinions. (Hirsjärvi & Hurme, 2001). In this research the questions were validated with an experienced researcher in the field. In addition, the questions were revisited after the first interview to see if there were some problems regarding them. Therefore, the reliability of the interview structure can be considered good.

Secondly, the problem might also be related to the interview situation. The situation is many times artificial and the focus can change from the interview to the relation between the interviewer and interviewee, in which the interviewer would be distracted by feelings of uncertainty or anxiety. Thirdly, the interviewer is required to have specific skills to conduct the interviews. Nielsen (1997) emphasizes the importance of interviewer being neutral and not expressing his/her opinions during the interview. In addition, interviewer needs to be

able to explain all the relevant concepts to the interviewees (Nielsen, 1993) and take the responsibility of interpretation of the results (Vuorela, 2005).

The fourth challenge is the reliability of the interviewee. The interviewee might try to give a certain image of him that is not real (Nielsen, 1993). This might pose a problem in the analysis phase of the interview, as the results validity must be assessed. Final challenge is the actual construction of the methodology. The interview method takes a lot of time and the process of planning, choosing the interviewees, conducting all the interviews and, finally, analyzing the results is slow. In addition, especially, the analysis phase is problematic when there are lots of open questions. There is not an analysis tool that can directly be utilized in interpreting the open questions but rather this is dependent on the analyzer skills. (Hirsjärvi & Hurme, 2001; Hirsjärvi & Hurme, 1995)

These problems are relevant in this research, as the interviewer is not very experienced in the field of research. However, due to help of more experienced researchers, validation of the interview structure and good familiarization with the current research, most of the problems can be seen as not relevant. What is more, the insights from the literature review were utilized in the interview structure development, which helped in the selection of the questions and development of the analysis framework. However, it must be remembered that the interviewees present primarily their companies, which might weaken the credibility of the interviewees. They might not be prone to describe the problems but rather focus on the strengths, which could lead into misinterpretation of the data.

3.5 Limitations of the Research

Based on the results of the research, the aim is to propose conclusions that could be considered also outside of travel industry. The research has, however, certain limitations that need to be considered before generalizing the results. These considerations can affect the results and, even though, they could not be omitted, noticing them helps the interpretation of the results. Understanding limitations can also lead to finding future research topics that cannot be answered with this research. The limitations are organized in three categories, which are the selection of the case companies, biased nature of qualitative company interviews and the author's own interpretation.

Firstly, the research only contains two case companies. Moreover, the case companies were selected based on their modular or non-modular offering. There existed many companies that, for example, presented hybrid strategies with modular and non-modular offerings. What is more, the case companies also have some connections to companies with opposite offering strategy, as the companies are usually part of some larger corporations that have many subsidiaries with different strategies.

Secondly, the personnel of the case companies are not completely objective and are likely wanting to show the company in a good light, which means that they most likely did not fully enclose all the issues that they consider as their weaknesses. In addition, as shown in the research, the offering is likely to form part of the companies' competitive advantage and be strategically important. Due to this, there can be some strategic issues or future planning that they did not want to present in order to keep it as confidential.

Thirdly, the author is responsible of the collection and interpretation of the results, which means that the author's own viewpoint, knowledge and selections from the conclusions of the research. As the study is qualitative the interpretation process is usually subjective, even though, some standard research frameworks are utilized. This means that the author needs to identify the potential bias and act on them in order to be able to handle the results in an objective manner.

4. Empirical Findings

The empirical research has been gathered through the data collection methods that were explained earlier (section 3.2). The primary data has been collected with semi-structured interviews with the case companies' key personnel that are responsible for service strategy and service production. The secondary data has been collected from the documentary material and company websites. In this section the empirical part of the research is introduced.

4.1 Travel Industry in Finland

There are several travel agencies in Finland. Mostly they are subsidiaries of global corporations but there are also some independent travel operators. Many of the global subsidiaries, however, operate under their own brand instead of one global brand. Due to the nature of travel service offerings, nonetheless, the global operation model usually helps in the achievement of the economies-of-scale. Moreover, the global operating model has big role in determining the service strategy and also providing a global network of suppliers.

The physical operations of Finnish travel agencies have recently decreased, as many of the services are currently offered directly through internet without any third-party service providers (Rosvall, 28.2.2012). In addition, Finnish people are more eager to plan their own travelling. This has led to new type of travel agencies that offer travel services through with different channel strategies.. Therefore, it is not evident, which companies operate with a traditional operating model with physical offices and which companies operate more with search engine business model that almost only offers services through online channel.

In this research, the companies needed to fulfill at least two criterions in order for them to be considered as travel agencies. First of all, they needed to have physical operations in Finland. This means that the travel agencies are required to have personnel and at least one physical office in Finland. As a second criterion, the travel agencies need to offer at least two travel components (e.g. flights and accommodation) that can be combined into one travel ”package”.

If they offer only one travel component, they are rather considered as suppliers of travel services and, therefore, are out-of-scope of the case study.

In the first phase 15 companies were selected for the initial research. The selection was based on the two criteria that define the travel agency. All the chosen companies were also well-known travel agencies in Finland in order to ensure the rich data. In the initial phase, the research focused on identifying the companies' service offering and modularity, size in regard of the number of customers and turnover, and strategic goals. The most importance in the findings was given on the level of service modularity and the service focus (clear limitation in the amount of different types of services).

In Figure 12 the modularity and service focus are compared for 15 Finnish travel agencies (some companies have the same scores and, therefore cannot be seen). The comparison was based on the information that was gathered from the company websites in the respective two main categories mentioned in the above paragraph. The first category was service modularity that was looked in respect of the customizability of the service offering and the level of customer involvement. The second category, which was service focus, was looked in respect of clear limitations of the types of services the companies provided. For example, many of the companies seemed to offer almost all type of services from "packaged" to totally customizable offerings that did not really create any type of clear service focus.

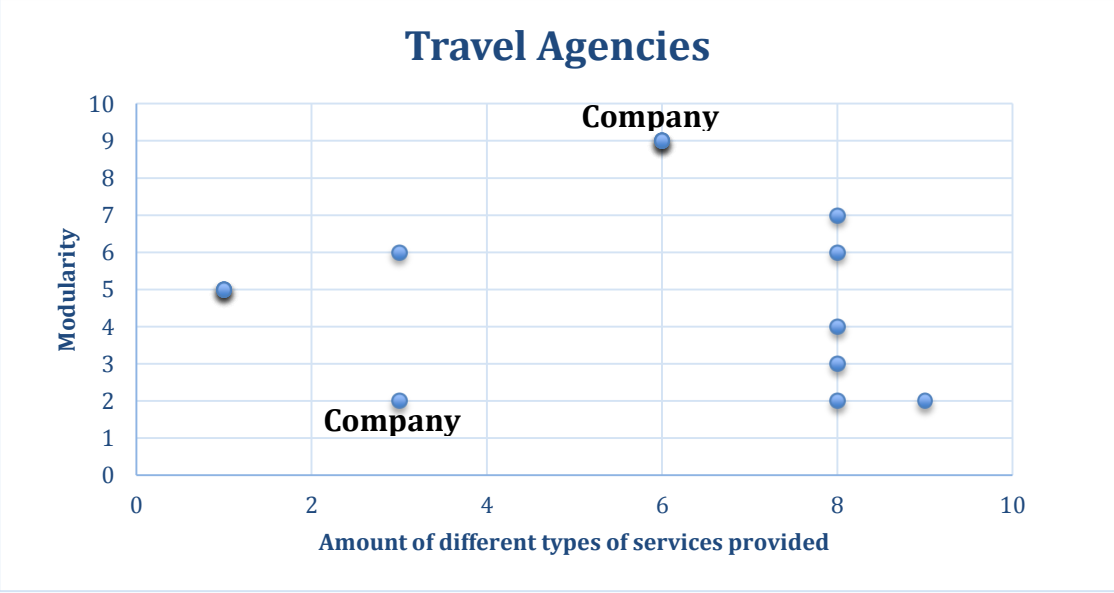

FIGURE 12: CATEGORIZATION OF TRAVEL AGENCIES

The values for modularity and service focus were given based on the subjective assessment of the company websites. Therefore, the values do not present absolute truth but give indication of the company strategy. The purpose of Figure 12 is to select the case companies that offer, as different views on modularity as possible and a low score on the amount of provided services. The selected two case companies and their respective values can be seen in Figure 12. Both companies are large travel agencies that have operations in Finland but they present the opposite degrees of modularity and have different service design for their products. Based on the initial categorization of the case companies two propositions are created:

Proposition 1: Company A has services with low level of modularity
Proposition 2: Company B has services with high level of modularity

4.2 Background and characteristics of the case companies

The main reason for selecting the case companies has been their demographical similarity in size and historical background and their different approaches towards service strategy. The both two selected case companies are mid-size companies with over 100 employees in Finland. In addition, both of them have been established in Finland but later been bought by large global corporations. However, the companies also have very independent organizations that are not controlled by the global head office and, therefore, responsible of their service production and strategy.

The companies were also asked to choose a European city destination for to further compare the companies in the similar context. One part of the semi-structured interview was also dedicated for the dealing about the value chain and service offering of the example destination. The criterion for choosing the destination was to choose a destination with high customer volumes. Company A chose as Berlin as the destination whereas Company B chose Istanbul. This comparison is further described in the section 4.3.

In the next section the case companies are introduced in order for to give better view of their service offering and strategy. The main sources of information are the conducted semi-structured interviews and material extracted from their website.

Case Company A

Case Company A is a travel agency that offers integrated service bundles for their clients. The strategy of the company is to distribute and market pre-designed service packages that contain service components such as accommodation and transportation to the destination. To offer the pre-designed service packages, the service components are compared, selected and bought in the early phases of the service production. The service components are, therefore, bundled together as a service package before they are even marketed to the end customers. After the services are bundled, they are marketed and distributed to the end customers. Thus, there is left only a little room for customization and no co-creation efforts are completed with the customer. (Interviewee 2, Company A, 2/2014).

The Interviewee 1 (2/2014) described the Company A's strategy with three main pillars: strong own service production with selected partners, sales of group travel packages and sales of holiday packages. With their own service production they refer to the planning and pre-designing of the entire service package without any other parties, such as local agents. On their website (extracted 1.3.2014) the strategy is describes as being an easily approachable travel agency that offers high quality services with trusted partners. They have further supported their strategy by arguing that they have the largest retail network in Finland. This creates, however, interesting contrast to the Interview with the interviewee 1 that stated that over half of their service offerings are bought online. The target customer group also consisted of people over 50 years old that were not frequent travelers or comfortable with self-assembly of the services.

Company A's service strategy is called "make-to-stock" (Bask et al., 2010). In the strategy, the service level of modularity and customization are really low and the offerings are directly made for the "shelves". The customer can either choose to take the service offer or not to take it but the customer has no power over the price or content. The "make-to-stock" service offering presents standard service type, in which only few variations marketed for the customer. The small number of service offerings, therefore, simplifies the customer decision making process and create an easy shopping experience. However, without any customer involvement in the service design or production cycles, the service offering cannot be considered customized (Duray, 2002) or the service production customer-centric.

All the Company A's service packages include several service components. Based on the company website and interviews, the normal services included in the service offerings are transportation to destination, transportation in the destination, accommodation and trip(s) in the destination. In addition, some packages can include restaurant visits or other program. The only exceptions are the cruise offerings that are sold in high volumes and have only short distances in the destination that do not require in-destination transportation. The cruise packages normally only include two service components, whereas other packages have at least 4-5 pre-designed service elements. (Interviewee 1 & 2, 2/2014).

The only customized element that is offered for all the service bundles is the date of the trip. However, even the dates of the packages are limited to the ones determined in the design phase of the services. In addition, some service bundles include some extra elements, such as restaurant visits that are not required for customers. However, they are not usually planned in the service design phase and bought beforehand and, therefore, are considered as external services for the service offering. (Interviewee 1 & 2, 2/2014).

The service architecture of the company A is described on the basis of Voss and Hsuan's (2009) service architecture model in Figure 13. In the architecture the services are decomposed hierarchically so that on the highest level is the industry and on the lowest level is the service component. This modular service architecture differs from the modular product architecture, as the highest level in product architecture is the product itself (Voss and Hsuan, 2009). The model could be also further detailed in even lower levels but it is not meaningful for the research.

When comparing the Company A's service offering to the Voss and Hsuan's model (2009), the lowest level of modularity offered for customers is on the service bundle level. This means that the customers cannot see or have an impact on the assembly of the service. This has been illustrated in Figure 13, in which the customer interface is on the top of the service bundle level. This signifies that the Company A has very low modularity level for their service offering and, therefore, does not represent flexible and responsive but rather rigid and standardized service structure.

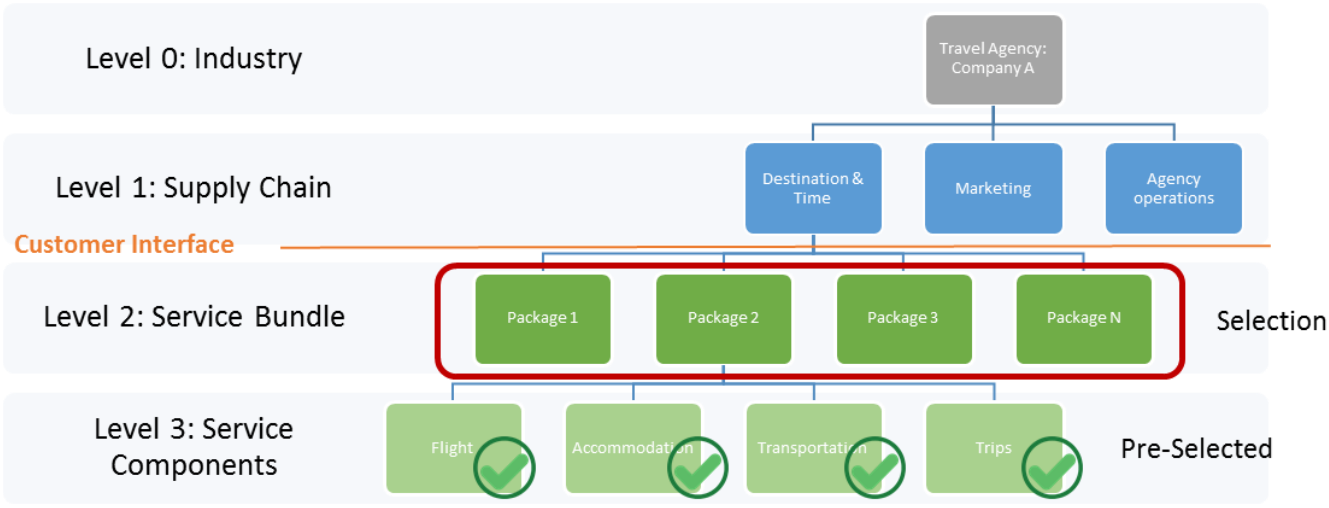

FIGURE 13: COMPANY A'S SERVICE ARCHITECTURE (VOSS AND HSUAN, 2009)

Case Company B

Case Company B presents travel agency with highly modular service offering, which signifies that they customize and co-create with the customer their offering. Their whole focus is on understanding customer needs and behavior and to be responsive and flexible towards these needs. The travel package is, therefore, created entirely based on the customer requests and needs. The service production is, in fact, only initiated after the first customer contact and, thus, the service design is adapted to the customer requirements. However, the travel package usually contains at least the flight and accommodation, as they present the base of a normal travel package.

There are various ways how the interaction between the company B and end-customer can be initiated. First of all, there are various channel choices including call center, online site and the physical offices. In fact, even though the online channels are expanding, only 15 % of all the reservations are done only using online channels. Therefore, people rather prefer channels that enable more interaction. Second of all, the customer can select pre-designed

service structure (only a proposal exists, the services are not bought beforehand), adapt the pre-designed structure to fit the customer's own needs or start the creation of a service bundle from scratch. It, however, needs to be remembered that the service production is not started with either of these service bundles before the first customer contact, which is the main difference towards the Company A. (Interviewee 3, 2/2014)

Interviewee 3 (2/2014) described the strategy of Company B to be the biggest and most wanted partner. This is clearly a statement also for their supply network strategy, in which their supplier relationships are built to resemble partnerships rather than transactional contracts. In addition, interviewee 3 emphasized that the Company B's strategy intent was focused on building strong customer relationships. Company B wants their service process to be transparent for customers and involve them in every step of the way. (Interviewee 3, 2/2014).

The Company B's service strategy is called "modular-to-order" (or in some extreme cases "engineer-to-order") (Bask et al., 2010). Through the modular-to-order method all the service elements already exist in the "service pool" (services that are offered by the company's strategic suppliers) of the company but they have not been assembled together to form a service bundle. Therefore, the customer can choose the service elements that he/she wants, which are then bundled together with the service officer in order to create the customized service package. The service elements, however, are limited to the service pool, which enables the customer to pick-and-mix only services that are under the partner contracts.

Through Voss and Hsuan's (2009) model the Company B's service architecture is also illustrated in Figure 14. It can be noted that the service architecture is very similar with the Company A. The only exception is that the customer interface is on the component-level rather than service bundle level and instead of service packages, the service offerings are described, as co-created service bundles. This type of service architecture allows high customer involvement and flexible service structure, in which the unique service offerings can be provided to the clients.

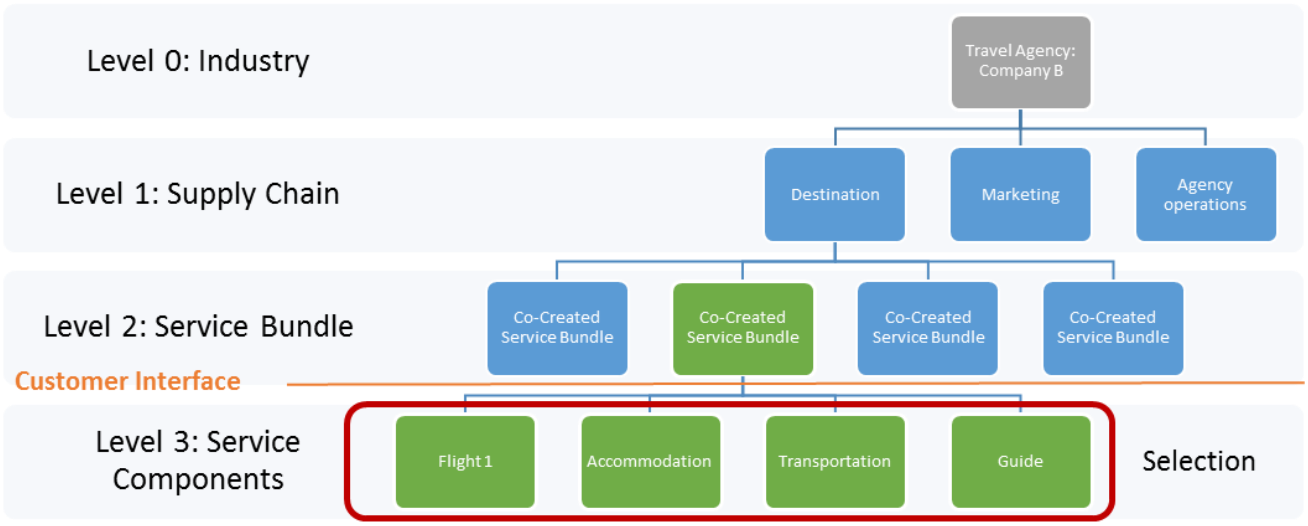

FIGURE 14: COMPANY B'S SERVICE ARCHITECTURE (VOSS AND HSUAN, 2009)

4.3 Case Company Findings

The findings focus on gathering the data in a structured manner about the company A and B based on the data collection of the primary and secondary data. The primary data comes from the semi-structured interviews that consisted of two main sections. In the first section, the companies were interviewed about their general service strategy, which consisted of service production, customer segments and performance evaluation. In the second phase the company interview focused on a real service offering that is located in one of the European cities.

The findings from the interviews are categorized based on Pekkarinen and Ulkuniemi's (2008) four dimensions of modularity in services and analyzed based on the Voss and Hsuan's (2009) theory about the level of modularity. The four dimensions are, however, modified for the research purposes. The categories are network, service production, service offering and customer interface. Based on the categorization of the data, the objective is to be able to

describe the value chain for a highly modular service and understand how it differs from the value chain with a low-level of modularity.

There is, therefore, clear belief that the value chains with a different levels of modularity do differ from each other. This is belief is based on Voss and Hsuan (2009) and Pekkarinen and Ulkuniemi's (2008) theory that the level of service modularity has an impact on the entire value chain architecture. This is formulated as one of the propositions of the study:

> *Proposition 3: The service level of modularity has an impact on the value chain architecture*

In addition, the roles and responsibilities for the value chain members are examined. Based on the Hypothesis 3, it is assumed that if the level of service modularity affects the entire value chain, it also affects the roles and responsibilities of the value chain members:

> *Proposition 4: The level of modularity affects the roles and responsibilities of the value chain*

The propositions are re-examined in the Chapter five, in which the overall findings are discussed.

4.3.1 Findings from Company A

Company A is a traditional travel agency with integrated service offerings that is pre-designed for the customer. The interviews with the Company A were conducted with the service production specialist and the sales director of flight-based tour production and group sales. As next the findings from the interviews are categorized in four categories to help to summarize the findings and to build the service value chain.

Network

Company A does not have a stable network with certain partners but rather the service production personnel have the responsibility of choosing the members for the service

package. Based on the interviewee 2 (2/2014), the suppliers are chosen on the basis of value, which include price and quality components. The strength of the company is considered the rich content and good price quality ratio, which have important role in the overall network selection (Interviewee 1, 2/2014).

The Company A's structure follows the definition of Pellegrin-Romaggio and Leszczynska's (2013) integrated organizational structure. Integrated organizational structure refers to a structure, in which the coordination and control come from the upper level of the structure and, there are not really horizontal linkages between the service components. The motivation for this type of structure usually comes for the reduction of transaction costs, which in turn enables lower prices, access to the top destinations and reduction of the coordination issues (one coordinator) (Topolsek et al., 2014).

This type of network structure, however, does not enable modularity, as the recombination of the value chain would require a disruption to the value chain. The interviewee 1 (2/2014) stated that all the service components are purchased in order for to form an integrated service offering and streamlined service process. The Interviewee 1, however, recognized the challenges for this approach, as the customer needs have changed towards more responsive and flexible services and their purchase timing, especially in Europe, has been postponed closer to the actual travel date.

Service Production

The service production is observed through Pellegrin-Romaggio and Leszczynska's (2013) Four Cs model, which describes the role of the travel agency in the service creation process. The model is modified to include also the supplier and customer role for the service production process (Figure 15). The basic four activities in the model are design, combination, coordination and control of the travel service. Pellegrin-Romaggio and Leszczynska also added fifth element, which is the customer co-creation. However, the customer co-creation seemed to be part of several activities rather than one process step, which is why the customer co-creation is included as its own background dimension showing the level of customer involvement in the process steps.

There is a clear division between the customer and supply side activities in the Company A's service production, as the design and combination of the service are activities that affect more the customer side whereas coordination and control of the services have more impact on the supply side. The activities, however, are managed and controlled by the travel agency A. In Figure 15, it can be seen that the customers and suppliers have only a little interaction with the actual service production process but rather the customers and suppliers' touch points are outside of the service production cycle.

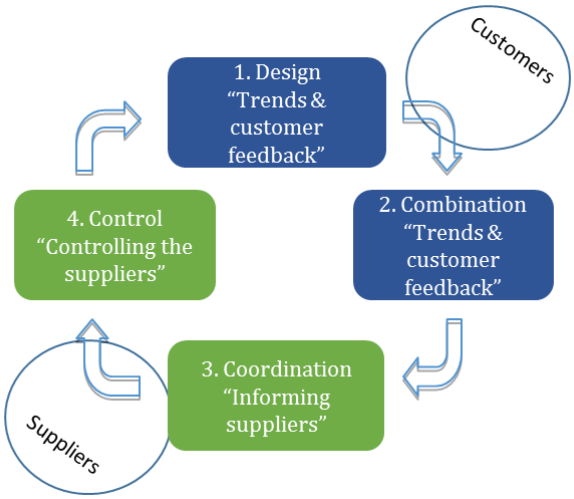

FIGURE 15: SERVICE PRODUCTION IN COMPANY A

As the first process step is the design of the service offering. Company A' service design is done by the personnel that base the design on the previous years' demand, customer feedback and industry's rising trends (interviewee 2, 2/2014). The customer is, thus, only indirectly included in the design phase by inclusion of the feedback channel. However, even the feedback channel has not brought very useful data, as it has been only collected with the help of physical channels and the collected data has not been very representative of the customer group (Interviewee 1, 2/2014). However, the Company A has recently extended the feedback channels to online channels, which has increased the amount of feedback and brought more representative sample.

The design phase starts usually 9-10 months before the actual service takes place (Interviewee 1, 2/2014). Most of the selected service components are service modules that are selected on the basis of the price and perceived quality from the available suppliers. However, some of the service modules, for example, in-destination trip, can be customized to respond to the travel agency's needs. For example, the in-destination trip can include a

Finnish travel guide that is responsible of the service interfaces and coordination of the in-destination transportation.

The second process step is combination that is tightly integrated with the design phase. The combination phase is, in fact, basically the implementation of the design phase. The process phases are, however, sequential and are not in any way parallel processes. As the third step in the process is the coordination of the selected travel components. The travel agency A is in full control of the overall service process coordination and does only distribute the required information for its partners and customers. There is, consequently, not much interaction and the agreed contracts are only short-term with the selected suppliers. This means that the interfaces are already integrated in the design phase and, therefore, do not require any specific attention from the supplier side.

The fourth and final process step is the control of the down- and upstream activities. In addition to the other existing stages also this stage includes mainly activities of the Company A (interviewee 1, 2/2014). The interviewee 1 even stated that all the value chain activities are, indeed, in control of the Company A. This, therefore, further shows how the process is very streamlined with minimal amount of any iterative or unplanned events. Therefore, the service production process of Company A cannot be considered as highly modular, which does not allow direct control and coordination or pure sequential processes.

Service Offering

The Company A offers very simple ready-made bundles that consist of travel service components. The service offerings are produced almost one year prior to the actual travel date and there are very little changes that the customers are able to do for the pre-designed service packages. Company A has very standardized service design process that has five stages:

1) Internal design of the whole service package
2) Decision on the concrete service components and contacting the suppliers
3) Service producer asks suppliers for their service offers

4) Comparison of the service producers: Who can operationally produce the services and what are the terms of the purchase

5) Purchase of the service components, integration of the services for a package and marketing the offer for customers

There are almost no other ways of producing a service offering except the fact that Company A might use local intermediaries instead of contacting all suppliers directly.

Customer Interface

There is very little customer involvement in the whole service offering. The customer is not involved before the service is ready to be marketed and the customer can only choose to buy the entire package without exclusion or inclusion of other service elements (Customer interface described in Figure 12). Therefore, the customer role has been made very passive, which explains why over 50 % of the company's service offerings are purchased online (Interviewee 1, 2/2014). On the other hand, the interviewees 1 and 2 considered that this would not be problem but rather strength, as the Company A's service offerings are very easy to buy.

One reason for low customer involvement can be also seen in de Blok et al.'s (2014) research about the service interfaces. De Blok et al. argues that the interfaces between the service packages are expected to be managed by the service providers and the interfaces between the service components are managed by the service provider and the customer, as they are directly linked to the customer flow. As the customer interface is only on the service package level, it might not make any sense to involve the customer to a great extent.

4.3.2 Findings from Company B

The Company B presents more modern type of travel agency with a customer centric approach and responsive and flexible service architecture. In the research only one service officer was interviewed, as the service officers that interact with the customers handle the

whole service process. In the next the service architecture of the Company B is presented more in-depth.

Network

Company B does not really have any internal hierarchy but rather all the service officers are embowered to handle the customers from the service design to the post-travel feedback. Therefore, there is not any pre-designed service process but rather the process is adapted to fit to the situation. The service components included in the service offering, which can be for example transportation and accommodation, are decided together by the service officer and customer. The network partners, however, are chosen from a pool of service providers that have contractual agreements with the Company B. These contractual agreements are called as partnerships and include active two-sided communication and planning between the supplier partners and Company B.

The network for Company B can be called as reticular organizational structure, which means distribution networks and alliances that consist from several service companies (Pellegrin-Romaggio and Leszczynska, 2013). In the reticular organization structure there are no rigid and standardized structures as in integrated organization. This enables flexible and responsive structure that can adapt to changes quickly. What is more, in the reticular structure there is horizontal integration in addition to vertical integration between the value chain members and, therefore, all the coordination does not need to come from the upper level but coordination is rather embedded in the structures.

The popularity of the reticular organizational structures has grown during the last years. Customers wait for the more responsive services that can adapt to their own individual needs. However, horizontal coordination between companies can be more difficult to achieve, as many companies can be competitors to each other on the horizontal level. The interviewee 3, in fact stated that they do not have much coordination on the horizontal level but rather the coordination is still vertical. However, the relationships between the network members are long-lasting, which does enable more embedded control and, therefore, highly modular network architecture.

Service Production

The service production process is analyzed by using Pellegrin-Romaggio and Leszczynska's framework (2013). The framework lists the travel agency's four main activities that are design, combination, coordination and control. Unlike for the Company A, the Company B's processes are not, however, sequential but parallel processes that can be utilized in an iterative fashion. For example, the service offering can be recombined even after the service offering has been produced (with the limitations of partner contracts). The roles of the customers and partners are also very active in the service production. The customers and partners' involvement in the service production activities is illustrated in Figure 16.

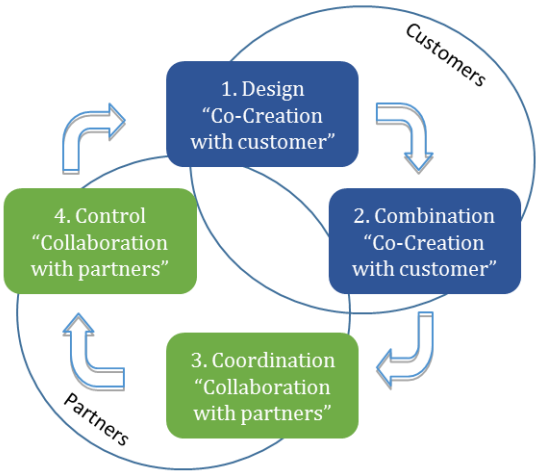

FIGURE 16: SERVICE PRODUCTION IN COMPANY B

The design phase is usually initiated by the customer need (Interviewee 3, 2/2014). The interviewee 3 emphasized the customer and service providers are in contact throughout the service production process and the customer is left to choose from the existing service pool the service components that are most suitable for the customer. The design and combination phases present iterative phases and the changes in these processes are possible throughout the service production process. The combinations of the service modules are modular and, therefore, they can be changed without any disruption in the overall service bundle.

The Coordination and control phases, on the other hand, are shared with Company B and its partners. This means de-centralization of the coordination and control activities and

empowering the partner to produce the services without any direct vertical control. Overall, the service production process, consequently, can be seen as highly modular.

Service Offering

Company B does not really offer any service packages but rather lets the customer customize their own service package from their service pool. The services, therefore, can be considered unique, even though, the service offerings have the same common elements. However, there are also possibilities for the customers choose the service through online channels or follow pre-designed structure. Nonetheless, this is not commonly utilized, as the percentage of pure online reservations is only 15 %, even though, the company has all the time developed its online services.

As there is clearly proof that Company B has highly modular service offering it is also can be considered as mass customizer. The modular service offering has, actually, been linked closely with mass customization. Duray et al. (2002) has defined four different categories of mass customizers. The Company B can be identified in the "involvers" category, as it involves the customer early in the process and provides modularity in the assembly-level. This, therefore, demonstrates that the modularity is closely related to mass customization also in this case. In addition, the "involvers" category is considered to be closely related to the customizers, which, therefore, validates the research previous assumption that Company B has a highly modular service offering.

Customer Interface

The customer is involved in to the service process from the start. The Interviewee 3 even emphasized the fact that before the service design starts the customer is expected to describe his/her hopes and dreams about the overall service. The Interviewee also stated that the service officers are educated about how to take customer into consideration in the service design process. They even take courses about how they can get the customer open up about their expectations before the service officer can fall into making false assumptions.

There is also special bond between the service officer and customer. The Interviewee 3 compared the relationship between the service officer and customer to the one that consumer might have with hairstylist or dentist. The service officer, therefore, could have very personal knowledge of the customer and many of the Company A's customers are very loyal to their service officer when planning a trip.

4.3.3 Comparison of the Case Companies' based on actual service offering

In addition to the findings about the general value chain characteristics, the case companies' findings are compared on the basis of an actual service offering. Already before the interview, the companies were asked to choose a destination that is sold in high volumes and provide material about the service offering. The actual service offering was chosen as the analysis tool to be able to bring the case companies into the same context. Moreover, it helps to understand whether all the differences are as described in the company findings or whether the service construction is highly dependent on the type and destination of the service offering.

The Company A chose Berlin as their destination, whereas company B chose Istanbul. This already showed some of the differences between the companies, as Company A overall seemed to offer more traditional service offerings whereas Company B had a lot of unconventional destinations listed as their travel destination. The companies target groups also seemed different for their destinations, as Company A's target group exceeded the age limit of 50 and Company B seemed to involve all the different age groups.

There were, however, some clear similarities between the companies. This was, in fact quite surprisingly, in the customer channel choices. Although, Company B listed only 15 % of its customers to utilize online channels as the booking channel, this share was almost 50 % with the Istanbul as destination. This percentage was the same or a little bit higher for the Company A, even though, Company A's customers utilized online channels on average 50 % of the time for all destinations. In addition, both of the companies' customers seemed to be quite used to travelling in Europe. This resulted in Company B's customer having very little communication with the travel agency regarding the services.

The biggest difference, which is also the most relevant difference for the research, seemed to be the customization of the service offering. As Berlin is a high volume destination for Company A, it has created three different travel packages that differ on the theme. For example one of the packages is for the Christmas market and other one is a culture package. This is, however, the highest level of customization that they offer. Company B, offers also a proposal for the travel package structure on their website for Istanbul. However, the package is only for illustrative purposes and to help the customer to construct their own service package. Thus, the companies are on two different levels of modularity that require completely different type of service production process and relationship with the customer.

The selection of service for the service package and the supplier relationships also differ for the two companies. Company A chooses the suppliers based on the same process that was presented in the *section 4.3.1*. However, as Berlin is a high volume destination for the Company A, more services are provided than with an average destination. Company B also offers a lot more services on their European destinations than with others. This is based on the fact that people have a lot of knowledge about Europe and can easily self-assemble the trip by using a travel search engine. Therefore, the travel agency needs to be able to offer something extra for the consumer to get the consumer motivated. However, this does not affect much the travel agency's service assembly process but it only add the level of complexity regarding the increased number of service modules.

The case companies can be located in Bask et al.'s model (2010), which is described in Figure 17. The model is a two-by-two matrix that has the degree of modularity and the degree of customization as its two dimensions. The company A is located in the non-modular regular category, as it shows a low degree of customization as well as modularity. In the non-modular regular category the companies pre-design and construct the service offering before the customer interactions. Moreover, the service offerings that are constructed in this category are called as "Make-to-Stock", as they can be produced and put into the store's "shelves".

Company B can be found from another side of the model, as it utilizes medium level of customization and high degree of modularity in the service construction. The category, in which the Company B is located, is between the Assemble to Order and Modular Customized. The reason why the company is between the categories is that it does enable assembling of

several service offerings but it does offer quite standard modules, even though some of its modules (e.g. guided tours on site) contain customized elements to respond customers' needs.

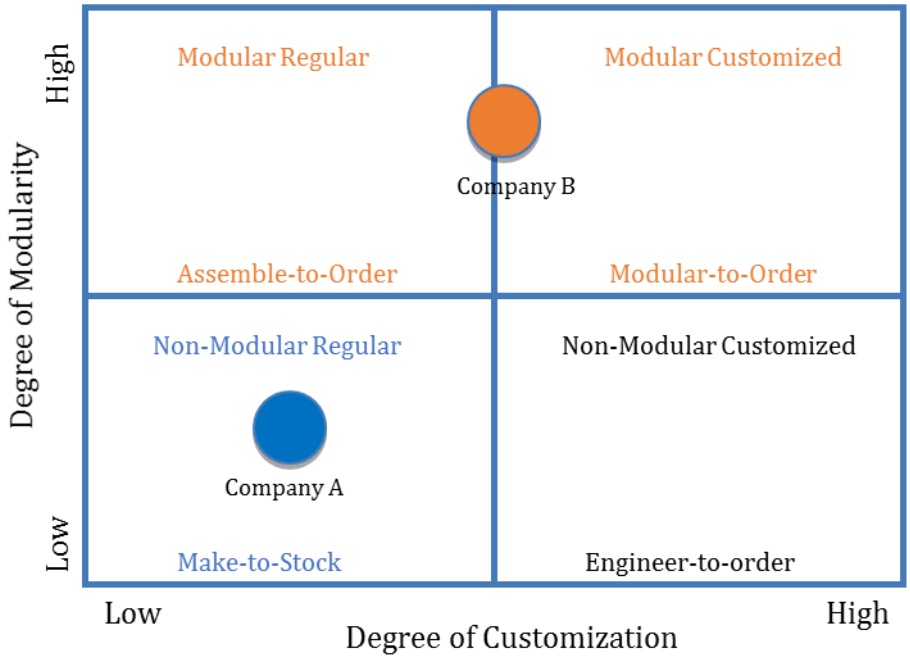

FIGURE 17: THE DIFFERENT TYPES OF FIRMS (BASK ET AL. 2010)

All in all, the findings about the general characteristics of the service production process seemed to correspond with the findings of an actual service, even though, the differences were not as radical in the common context than on the general level. For example, the case companies offered the same level of modularity and customization, as stated in the general findings but the customer behavior seemed to adapt to the actual service offering. Especially, Company B's customers were less inclined to utilize all the customization tools but rather wanted to choose a pre-designed structure with a few modifications. The customers were also not very interested in interacting with the service officers but to book the travel service directly through the online channels.

Overall, the two companies did not only differ based on their value chain and service offering but also on their key strengths. Even though, the modular structure has been increasing its popularity recently, it needs to be remembered that there are benefits also regarding the integral service structure. Even though, there are not many variations that the Company A is able to offer, the content and good price-quality ratio of their services is definitely one of their

core strengths. In addition, they are able to streamline their processes, which decreases costs and increase their sales with selling the services as a package and not as individual components.

Company B's core strengths, on the other hand are related to customization and broad knowledge of the travel services. In fact, the service officers can be called as "travel consultants", as they "consult" their clients and customize the services in order for them to be adaptable to the customers' needs.

As a summary, the findings from the two case companies are listed in the Table 3. The findings are categorized in the modified Pekkarinen and Ulkuniemi's model (2008). In the table only the key differences between the companies are raised. The findings will be further discussed in the Chapter 5.

	Summary of the Company A's four dimensions of service modularity	**Summary of the Company B's four dimensions of service modularity**
Network	Not a particular network but rather different suppliers that are compared on the basis of the offered price-quality ratio (one-way communication).	Long-term contracts and alliances with the partners and two-sided communication.
Service Production	Integrated process with the Company A having tight control and coordination over the entire process.	Modular and iterative process with shared responsibility among Company A, customers and partner network.
Service Offering	Integrated service package that does not enable changes after the service production process.	Modular and responsive service assembly that enables changes after the service production.
Customer Interface	Very low customer involvement with the customer first being contacted after the service is produced.	High level of customer involvement with the customer being involved before the service design.

TABLE 3: DESCRIPTION OF THE CASE COMPANIES' FOUR DIMENSIONS OF SERVICE MODULARITY

5 Discussion and analysis

This study focused on closing the gap in the research about the modular service architecture. The main objective was not to only to describe the service architecture inside the company but rather the whole value chain that is involved in the construction of the modular service offering. In addition, the purpose was to look into the relationships between the value chain members and how the relationships affect their roles and responsibilities.

The study was inspired by Pekkarinen and Ulkuniemi (2008), Voss and Hsuan (2009) and de Blok et al.'s (2014) research about the modular service architecture and the interfaces between the service components. The theoretical models and findings of the researchers were utilized as analyzing tools for the findings and discussion. However, their research has been modified to fit the purpose and limitations of this research.

In this chapter, the findings are analyzed in further detail and three hypotheses are proposed based on the most important findings. On the basis of the analysis the case companies' value chain structures and process and information flows are illustrated in the *section 5.2*. In the value chain also the roles and responsibilities of each value chain member is described. The value chain, however, is constructed only with the point of view of the travel agencies, which means that the value chain is built around the travel agency and, therefore, can exclude some of the members outside the travel agency's direct contacts.

5.1 Analysis through the theoretical framework

The findings reinforce the propositions 1 and 2 that were made on the company selection phase. The propositions assumed that the Company A utilizes only low-level of modularity in its services whereas Company B has highly-modular services. In addition, the findings verify Voss and Hsuan (2009) and Pekkarinen and Ulkuniemi's (2013) arguments that the modularity does not only appear on the service level but it has impact on the whole service architecture and value chain. The case companies' process of the service construction clearly differs from each other and, in addition to the value chain, also the roles and responsibilities

of the value chain members differ. Therefore, it can be argued that the propositions 3 and 4 are validate and modularity has a high impact on the entire value chain.

As it is established that there exists differences in the value chains with varying level of modularity, it is important to look at what level and due to which factors the case companies' value chains differ from each other. First of all, Company A has very low focus on the customer interface even though the services are overall very dependent on the human contact. Company B's whole service production; on the other hand, is based on the co-creation with the customer. The difference between the companies can be found in de Blok et al.'s (2014; Figure 18) theory about component- and service package-level of interfaces. Interfaces between the service packages are usually very dependent on the supplier relationships, whereas the interfaces between the service components affect the customer flow and, therefore, are dependent on the customer relationships. Company A does only offer service packages and, thus, the customer flow is already designed in the early phases before the customer involvement. This leads into low customer involvement and, thus, explains the differences between the two service companies.

The customer involvement is one of the most raised issues lately in the theoretical models about the service modularity. For example, both Pekkarinen and Ulkuniemi (2008) and Pellegrin-Romaggio and Leszczynska's (2013) raise the customer as a co-creator into the existing frameworks that describe the service modularity. It would be, therefore, interesting to conduct similar research to this from the point of view of the customer. With the research it would be possible to see how the experiences with the case companies would differ and how the customer perceives the differences.

	Level of modularity	
	Company A	Company B
Customer Interface	Service-level	Component -level
Service Offering	Service-level	Component-level
Service Production	Component-level	Component-level
Service Network	Component-level	Component-level

FIGURE 18: CATEGORIZATION OF THE LEVEL OF MODULARITY (PEKKARINEN AND ULKUNIEMI, 2008)

The other explaining factor of the core differences is the needed level of control and coordination. In a modular service structure, the chain coordination is one of the most difficult issues (Pekkarinen and Ulkuniemi, 2008). The interfaces between the service modules should require as little coordination as it is possible in order for the modules to be separated and recombined effortlessly. To enable this, the core knowledge, competencies and technology should to be shared between all of the service offerings, which requires very good organization and empowerment of the suppliers. As Company A only offers integrated services, it does not need to share control and, thus, can define the interfaces already in the design phase of the service. it does not either need to share the same interfaces between the different services, which means that the technologies and standards do not need to be common for all the services elements.

This is also reflected in how the companies build the relationships with their supplier network. As the modular company needs to share the same technologies and standards with all of its service modules, it tends to build long-term relationships and contractual alliances. As the partner companies are same among different services, the Company B can rely on the embedded coordination and empower the suppliers without quality concerns. Company A, however, design the interfaces individually and rather chooses the companies based on their fit for their service design. The service offering strategy, therefore, explains a lot on the network structure.

The third issue that clearly separates the two companies is how the companies interact and communicate with the other value chain members. Company A mainly relies on one-way communication with its suppliers and customers that it has full control of. The main reason for this is that it has streamlined its supply chain and all the decisions about its structure need to be done in the design phase. Its supply chain resembles Zhang et al.'s (2009) supply chain, in which there is a streamlined chain of activities. Company B, on the other hand, does rely a lot on a two-way communication with its value chain members. All the activities from design to coordination are done in collaboration with the other members and the other value chain members are also empowered to make decisions regarding the value chain.

This affects how the relationships are between the value chain members but also what are the value chain members' roles and responsibilities. For example, Company A is responsible for

all the decisions and processes related to the service production whereas Company B is only partially responsible. However, this does not mean that it would ease the role of Company B but rather it needs to be well aware of the others' responsibilities and see that they are completed without any actual control of the process. In addition, Company B does need to maintain continuous interaction with the value chain members and modify the chain to adapt to the upcoming changes.

5.2 Differences in the case companies' value chain

There has not been clear understanding on the differences between a modular and non-modular service offering's service architecture and value chain. This research has been set to create more understanding on this area. Based on the research findings, the value chain has been built for both case companies; a company with highly modular service offering and a company with a non-modular service offering. The value chain structure follows the findings from the Chapter 4 and compiles them for an illustrative picture of the value chain. In the picture the strong arrows show the value chains' strengths whereas weak arrows the weaknesses.

Company A's value chain is streamlined chain with sequential service production processes and described in Figure 19. The construction of the service offering is initiated by the Company A that designs the service package and selects the suitable suppliers. It contacts the suppliers directly and, thereafter, constructs a service package that it distributes with its own marketing department to customers. The process going directly from left to right without any backward linkages. The only one backward linkage is the feedback loop in the end of the value chain but even it has been described as weak.

The theoretical findings about the level of modularity are based on the Voss and Hsuan's (2009) and de Blok et al.'s (2014) definition about service modularity. The design and assembly phase of the chain is produced on the component level. This is due to the rather standardized service modules that the service offering is built. Nevertheless, the service modules are not taken out of a set pool but rather can be from any supplier. Even though, the selection and production process is on the combination-level, the service offering is modular

only on the service package-level and the interfaces are mainly focused on the interaction between the service provider and suppliers.

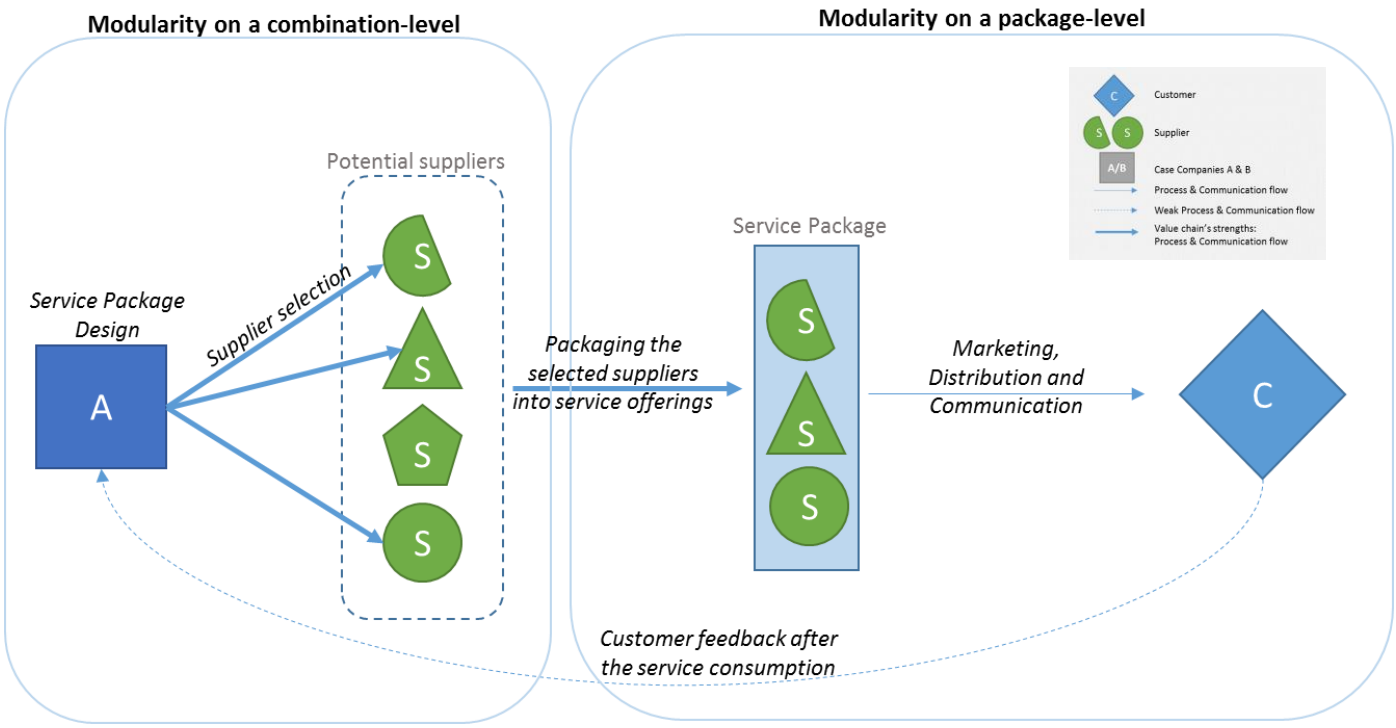

FIGURE 19: COMPANY A'S SUPPLY CHAIN

As stated in the beginning of the theoretical review, one definition of service modularity is that it can be decomposed into parts and again reconfigured (Schilling, 2000) with activation and de-activation of the supply chain. The main reasons for how this is possible are described on Figure 20, which describes the modular supply chain. One reason for this is that the modularity of the whole chain is on a combination-level. Secondly, the continuous communication loop with the customer enables the iteration of the service offering even once it has produced to a package. Finally, the strong relationships with the suppliers enable flexible and responsive structure, in which the late changes are possible

As can be seen the modular value chain is much more complex than the non-modular value chain. The relationships between the value chain members are not one-directional and there is a continuous iterative loop between the service provider and customer. In the modular value chain there is also a lot more visibility between the value chain members. Even though, the travel agency acts as intermediary during the whole value chain process, the customer

and suppliers have visibility towards each other. The travel agency, therefore, has rather the role of "facilitator" and "consultant" rather than pure service provider as in the case of Company A.

The value chain of Company B also does not really have any one-directional arrows that would not have a backward linkage. Therefore, there are not really streamlined or standardized processes. Therefore, the end result can differ tremendously from the one that is created in the design phase. However, even though the iterative process exists, it does not mean that all the Company B's processes would need it. In fact, as the Company B's process is not standardized, not many of the process elements are required.

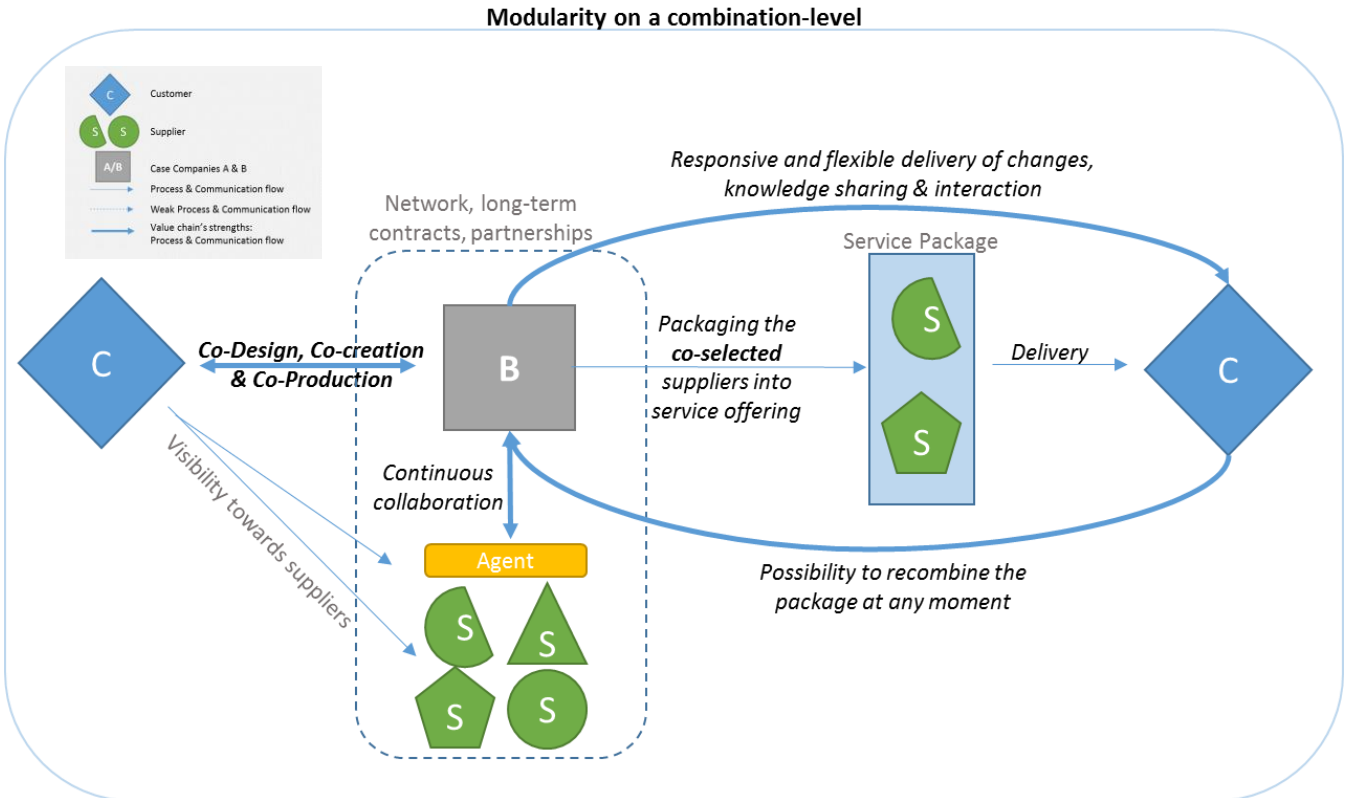

FIGURE 20: COMPANY B'S SUPPLY CHAIN

6 Conclusions

The research was set out to define the value chain of a modular service company and the roles and responsibilities of the value chain members. The research was conducted as a multiple-case study and the case companies that were selected presented a highly modular service company and a company that produces services with low modularity. The findings from the

two case companies were compared in order to understand the characteristics of both companies and the underlying features of a modular service design.

The objective of the study was to understand how the modular services are designed and what the value chain behind them is. In order to describe the value chain, semi-structured interviews and a literature review of the recent theoretical findings were conducted. Based the theoretical findings, Pekkarinen and Ulkuniemi's (2008) four dimensions of service modularity was taken as the basis of the analysis of the findings. With the help of the four dimensions, the different roles and responsibilities of the value chain members and the process of service value chain could be analyzed. Moreover, the value chain process was examined with Voss and Hsuan (2009) and de Blok et al.'s (2014) theoretical findings about the different levels of modularity. The acknowledgement about the value chain's modularity level helped to understand all the main differences in the value chains.

In the analysis of the service value chain, were also utilized theoretical frameworks from other researchers. Pellegrin-Romaggio and Leszczynska's (2013) travel agencies' four Cs were utilized to better understand the service production cycle from the travel agency's point of view. In addition, Bask et al. (2010) and Duray's (2002) two-by-two matrixes helped to define travel agencies' roles and responsibilities.

The theoretical contribution of the research is the value chain structure of a modular value chain and the roles and responsibilities of the value chain members. The findings cannot be directly generalized to other industries than to a tourism industry. There are, however three hypotheses that can be proposed based on the research. To further validate the findings, they should be tested in other industries by utilization of quantified measurements.. The research, nonetheless, brought some valuable findings to the research field that is still in its infancy.

The research led into several empirical findings about the most important differences between highly modular and non-modular value chain. One of the most important findings was the high level of customer involvement in the modular service architecture. Already in the literature review the customer role was emphasized in many of the recent research studies. In the research, it was found that in highly modular service design, the customer is usually involved even before the actual design process has begun. This finding was highly

relevant, as the company with low modularity did not involve customer before the service offering was already readymade package. This also leads into the first hypothesis of the study:

Hypothesis 1: Highly modular value chains involve customer to a great extent

The other important finding was that the company with highly modular value chain empowered its partners to produce to provide the services for the customers and relied on embedded coordination and control. The company had also usually strong relationships and long-term contracts with its partners. This differed from the company with non-modular value chain, as it chose it partners for each service offering separately and, therefore, only made short-term contracts. This can be considered as valuable insight and, therefore, is included as hypothesis:

Hypothesis 2: Highly modular value chains build strong relationships and long-term contracts with their supply network to enable embedded coordination

Finally, the third important finding is the flexible and responsive service structure for a highly modular value chain, which enables the late customer changes and iterative customization process. This was not only matter of flexible structure but two-sided and continuous communication with customers as well as with partners. The company with non-modular value chain did rely mostly on one-directional communication and did not have continuous communication with any member of the value chain. This finding leads into the final hypothesis, which is:

Hypothesis 3: Highly modular value chains ensure flexible and responsive service structure with two-sided and continuous communication

The proposed hypotheses present the main conclusions of the highly modular value chain. They, however, are not proved by the research, as the research is only qualitative. The hypotheses should be, therefore, tested quantitatively to validate the findings. However, they create basis for further research and, therefore, are important for the future research.

The research also proved that there are various benefits that can be achieved through modular value chain. First of all, the company tends to be much more customer centric than a company with integral services. The customers are involved with the service design from the start and, the main role of the service officers is to adapt the service to correspond to the customer needs. Secondly, the highly modular value chain ensures the tight relations with the supplier networks and, therefore, offers flexibility for the service structure. Thirdly, the value chain provides transparent view of the construction of the service offering for the customer.

The arisen benefits, however, mainly focus on the highly modular companies, and, thus, it is also good to consider the ones that arise from the integral architecture (Choprita et al., 2005). First of all, the service production process can be streamlined to decrease costs, as there is no need to allow it to be broken apart and recombined for the changes. This can, therefore, lead to reduction in price and more clear roles and responsibilities in the service production. Secondly, there is less need for the design of the service interfaces, as the modules can be integrated in the service production phase and their integration can be ensured by the tight control and coordination of the service assembler.

The integral structure also focuses on the systemic innovation rather than incremental improvement (Voss and Hsuan, 3009). The overall design emphasizes craftsmanship and there are higher barriers of imitation with integral design than with modular design. The integral design, therefore, is a good example of the competitive advantage that the modular service company cannot achieve. Finally, they have large sales volumes, as the customer cannot decide on only some parts of the service but needs to by all the included service components.

6.1 Managerial Implications

A number of recommendations and best practices can be extracted from the empirical results of the study, to benefit the service companies with an interest for the modular service design. The suggestions and implications discussed below are based on the empirical findings and theoretical knowledge about the service architecture. The implications can be used as guidelines for the modular service architecture, as the empirical findings are only limited for the tourism industry.

Network

In order to enable modular service architecture, the company needs to have reliable partnerships and long-term contracts with its suppliers and distributors. The modular service design is also only possible if the partners are empowered to provide their service. Therefore, the trust and construction of long-term relationships create the basis for a modular network. In addition, partner selection should be a long process, in which the compatibility of the service provider and partner should be confirmed.

Service Production

The service production process enables the assembly of the modular service offering. In order for to develop modular service production process, there are four important process guidelines that should be followed:

- *First create reliable partnerships and alliances*: The long-term partnerships can be created through long-term contracts and relationships with the suppliers and distributors. This step is important in defining the service components and enabling the creation of the service pool from which the service assemblies are constructed.
- *Involve the customer and utilize co-creation in the service production*: The customer involvement is the most important step in enabling the highly modular service design. If the company itself designs the service assembly, the service design cannot be considered as modular but rather as a "made-to-stock" service package. The service assembly should also rather resemble the customer needs and wants, and concentrate on the service component or even lower level of the service architecture.
- *Empower the partners and embed coordination and control of the value chain*: In order for the services to be highly modular, the partners need to be empowered to provide the service for the customer without the travel agency coordinating the activities outside. This is crucial in enabling the loosely coupled interfaces between the services.
- *Create good feedback mechanism and many customer touch points to enable responsive and flexible changes for the service creation*: As the modular service company cannot have the full control and coordination over the service architecture and process, it is important that the company enables two-sided communication channels. Through the

two-sided communication channels, the flexibility and responsiveness of the company can be ensured.

Service Offering

The service offering should be constructed by the utilization of the service components that can be produced independently of each other and that have loosely coupled interfaces. This requires that the service modules are visible for the customer and that they can be assembled into a package and changed with activation and de-activation of the value chain. In addition, the interfaces between the service modules should be standardized in order for the technologies and knowledge to be shared among the supply chain members.

Customer Interface

The customer role in the modular value chain is not only service purchaser or consumer but also designer and producer of the service offering. The different roles of the customer highlight the customer involvement in the service production process. Due to the importance of the customer role, a lot of attention needs to also be directed towards the design of customer touch points.

6.2 Future research opportunities

There are many research opportunities, as the research on service modularity is still in its infancy. Through the research, there are three issues listed that would add a lot of value for the current research. The research areas are; the impact that the new technologies have on the service modularity, new business model opportunities for the travel agencies and testing of the current findings in other service industries qualitatively and quantitatively.

First of all, the rise of new technologies is one of the core reasons why the customers require much more from the services in terms of effectiveness, price efficiency and customization. For example, in the travel service, the customers require real time access to the services and

flexibility and responsiveness for the service providers. One of the key channels is the mobile channels that can be utilized anywhere and reaches quickly the respondent.

Secondly, the traditional travel agency business model, in which the travel packages are pre-designed for customer, does not seem to serve anymore the needs of the travel agencies' customers. In the literature review, two key solutions were listed as new technologies and development of traditional services into more consulting services. It would be interesting to find companies that have recently changed their business model from pre-designing service packages for customers to another in order for to better understand the reasons behind the change and impact on the company's customer base.

Finally, it would be interesting to expand the research about modular value chains for other service industries. This could help to understand whether the level of modularity affects the same way in other industries as well. In addition, it would be interesting to add the quantitative analysis of the modularity to the research in order to test the hypotheses and be able to generalize the results more reliably. This could then take the research to the next level and validate the current findings.

7 References

Andreu, L, Aldás, J., Bigné, E. and Mattila, A. (12/2010). An analysis of e-business adoption and its impact on relational quality in travel agency–supplier relationships, *Tourism Management*, Vol. 31, Iss: 6, Pages 777-787, ISSN 0261-5177.

Arnheiter, E. & Harren, H. (2005) "A typology to unleash the potential of modularity", *Journal of Manufacturing Technology Management*, Vol. 16 Iss: 7, pp.699 – 711.

Axelsson, B. and Wynstra, F. (2002), Buying Business Services, Wiley, New York, NY.

Baldwin, C.Y. and Clark, K.B. (2000), Design Rules, MIT Press, Cambridge, MA.

Bask A., Lipponen M., Rajahonka M., Tinnilä M., (2010) "The concept of modularity: diffusion from manufacturing to service production", *Journal of Manufacturing Technology Management*, Vol. 21 Iss: 3, pp.355 – 375

Bask, A.; Lipponen, M.; Rajahonka, M. and Tinnilä, M (2011). ”Framework for modularity and customization: Service perspective”. *Journal of Business & Industrial Marketing*, Vol.26 Iss:5 , pp. 306-319.

Bengston, R. E. (1982). A powerful qualitative marketing research tool, one-on-one depth interviewing has 7 advantages. *Marketing News,* Vol. 15Iss:23, pp.21.

Bode, C., Wagner, S. M., Petersen, K. J., & Ellram, L. M. (2011). Understanding responses to supply chain disruptions: Insights from information processing and resource dependence perspectives. *Academy of Management Journal*, Vol. 54 Iss:4, pp.833-856.

Bogdan, R. C., & Biklen, S. K. (1982). Qualitative research for education: An introduction to theory and methods. Boston: Allyn and Bacon, Inc.

Bryman, Alan (2004). Social Research Methods. 2nd edn. Oxford University Press Inc., New York.

Buhalis, D. (2003). E-Tourism: Information Technology for Strategic Tourism Management. Cambridge. Pearson.

Buhalis, Dimitrios and O'Connor, Peter (2005) Information Communication Technology Revolutionizing Tourism. *Tourism Recreation Research*, Vol. 30. pp. 7-16.

Buhalis, D., Leung, D. and Law, R. (2011). 13: eTourism: Critical Information and Communication Technologies for Tourism Destinations. CAB International 2011. Destination Marketing and Management.

Böhmann, T., Junginger, M., & Krcmar, H. (2003, January 6-9). Modular service architectures: A concept and method for engineering IT services. In proceedings of the 36th Hawaii International Conference on System Sciences, Big Island, HI.

Choprita, B. F.,Daleiden, E. L.,&Weisz, J. R. (2005).Modularity in the design and application of therapeutic interventions. *Applied and Preventive Psychology*, Vol. 11 Iss:30, pp.141–156.

Cova, Bernard; Cova, Véronique (6/2012). "Consumption". *Markets & Culture*, Vol. 15 Iss: 2, pp. 149-168.

Crawford, C.H., Bate, G.P., Cherbakov, L., Holley, K. and Tsocanos, C. (2005), "Toward an on demand service-oriented architecture", *IBM System Journal*, Vol. 44 Iss:. 1, pp. 81-107.

de Blok, C., Luijkx, K., Meijboom, B., Schols, J. (2010) "Modular care and service packages for independently living elderly", *International Journal of Operations & Production Management*, Vol. 30 Iss: 1, pp.75 - 97.

de Blok, C., Meijboom, B., Luijkx, K., Schols, J., & Schroeder, R. (2014). Interfaces in service modularity: A typology developed in modular health care provision. *Journal of Operations Management*, Vol. 32 Iss:4, pp.175-189.

Dorbecker, R.; Bohmann, T (1/2013). "The Concept and Effects of Service Modularity -- A Literature Review," System Sciences (HICSS), 2013 46th Hawaii International Conference,pp.1357,1366, 7-10.

Droge, C., Vickery, S. K., & Jacobs, M. A. (2012). Does supply chain integration mediate the relationships between product/process strategy and service performance? An empirical study. *International Journal of Production Economics*, Vol. 137 Iss:2, pp.250-262.

Duray, R., Ward, P.T., Milligan, G.W. and Berry, W.L. (2000), "Approaches to mass customization: configurations and empirical validation", *Journal of Operations Management*, Vol. 18 Iss: 6, pp. 605-25.

Duray. R. (2002) "Mass customization origins: mass or custom manufacturing?" International *Journal of Operations & Production Management*, Vol.22 Iss:3, pp. 314-328.

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy Of Management Review*, Vol. 14 Iss:4, pp.532-550.

Ely, M. (1991). Doing qualitative research: Circles within circles (Vol. 3). Routledge.

Eppen, G.D., Hanson, W.A. and Martin, R.K. (1991), "Bundling new products, new markets, low-risk", *Sloan Management Review*, Vol. 32 Iss: 4, pp. 7-14.

Eriksson, P. and Kovalainen, A. (2008). Qualitative Methods in Business Research. Sage Publications Ltd, London.

Erlicher, L. and Massone,L. (2005). Human factors in manufacturing: new patterns of cooperation for company governance and the management of change. Human Factors and Ergonomics in Manufacturing 15, 403–419.

Fixson, S.K. (2005), "Product architecture assessment: a tool to link product, process, and supply chain decisions", *Journal of Operations Management*, Vol. 23 Iss: 3/4, pp. 345-69.

Gimenez, C. (2006). Logistics integration processes in the food industry. *International Journal of Physical Distribution & Logistics Management*, Vol. 36 Iss:3, pp.231–249.

Halinen, Aino and Törnroos, Jan-Åke (2005). Using Case Methods in the Study of Contemporary Business Networks. *Journal of Business Research*, Vol. 58 Iss:9, pp.1285-1297.

Hans Voordijk, Bert Meijboom & Job de Haan, (2006) "Modularity in supply chains: a multiple case study in the construction industry". *International Journal of Operations & Production Management*, Vol. 26 Iss: 6, pp.600 – 618

Heikkilä, M. (2010). Modulaaristen palvelujen tuotteistaminen B2B-ratkaisuliiketoiminnassa. Pro Gradu Thesis, 87s. Aalto University.

Hirsjärvi, S. & Hurme H. (1995) Teemahaastattelu. Helsinki: Gaudeamus

Hirsjärvi, S. & Hurme H. (2001) Tutkimushaastattelu – Teemahaastattelun teoria ja käytäntö. Helsinki: Yliopistopaino.

Homann, U., Rill, M. and Wimmer, A. (2004), "Flexible value structures in banking. How service-oriented architectures can help achieve the business objectives of the transformation process in banking". *Communications of ACM*, Vol. 47 Iss: 5, pp.34-6.

Huybers, T., & Bennett, J. (2003). Inter-firm cooperation at nature-based tourism destinations. *The Journal of Socio-Economics*, Vol. 32 Iss:5), pp.571–587.

IfM & IBM. (2008). Succeeding through service innovation. Cambridge, UK: University of Cambridge Institute for Manufacturing.

Kazemi, A.; Rostampour, A.; Azizkandi, A.N.; Haghighi, H.; Shams, F. (15-16 June, 2011). "A metric suite for measuring service modularity," Computer Science and Software Engineering (CSSE), 2011 CSI International Symposium. pp.95, 102.

Lambert, D.M., Cooper, M. C., & Pagh, J.D. (1998). Supply chain management: Implementation issues and research opportunities. *International Journal of Logistics Management*, Vol. 9 Iss:2, pp.1–19.

Lin, Y. and Pekkarinen, S., (2011). QFD-based modular logistics service design. *Journal of Business & Industrial Marketing*, Vol. 26 Iss: 5, pp. 344-356.

Luciano da Fontoura Costa, Rodolfo Baggio (2009). The web of connections between tourism companies: Structure and dynamics. Physica A: Statistical Mechanics and its Applications, Vol. 388, pp.4286-4296, ISSN 0378-4371.

Mathieu, V. (2001), Service strategies within the manufacturing sector: benefits, costs and partnership. *International Journal of Service Industry Management*, Vol. 12 Iss: 5, pp. 451-75.

Mikkola, J. H. (2007). Management of Product Architecture Modularity for Mass Customization: Modeling and Theoretical Considerations. *IEEE Transactions On Engineering Management*, Vol. 54 Iss:1, pp.57-69.

Nielsen, J. (1993) Usability Engineering. Boston: Academic Press, 209–225.

Nielsen, J. (1997) Let's ask the users. IEEE Software May/June 1997, 110–111.

Ovtchinnikova, A. (2011). Application of service modularity in consulting industry. Pro Gradu Thesis, pp.94. Aalto University.

Pekkarinen, S. & Ulkuniemi, P. (2008). Modularity in developing business services by platform approach. *International Journal of Logistics Management*, Vol. 19 Iss:1, pp.84-103.

Pellegrin-Romeggio, F., & Leszczyńska, D. (2013). Dynamic Tourism Supply Chain Assembly: A New Lever for Managerial Innovation. *Supply Chain Forum: International Journal*, Vol. 14 Iss: 1, pp.28-40.

Pine, B.J.I. (1993) Mass customization: the new frontier in business competition. Boston Massachusetts, Harvard Business School Press, 333p.

Pine, J., Victor, B. & Boynton, A. C. (9.–10.1993), Making mass customization work. *Harvard Business Review*, Vol. 71 Iss: 5, pp. 108–119.

Porter, M. E. (1980). How competitive forces shape strategy. Mckinsey Quarterly, (2), pp.34-50.

Preece, J., Rogers, Y. & Sharp, H. (2002) Interaction Design: Beyond Human-Computer Interaction. New York: Wiley.

Rahikka E., Ulkuniemi P., Pekkarinen S. (2011) "Developing the value perception of the business customer through service modularity", *Journal of Business & Industrial Marketing*, Vol. 26 Iss: 5, pp.357 – 367.

Robertson, D. & Ulrich, K. (1998), Planning for Product Platforms. *Sloan Management Review*, Summer98 Vol. 39 Iss: 4,pp. 19-31.

Rosvall, Minna (28.2.2012). Matkatoimistot vähenevät - valmismatkat kiinnostavat. YLE Uutiset. http://yle.fi/uutiset/matkatoimistot_vahenevat-valmismatkat_kiinnostavat/5066276 (Extracted 2.10.2014).

Ryan, T. J. (2006). Uncovering Zara. Apparel Magazine, 47(5), 27.

Salvador, F. (2007). Toward a product system modularity construct: Literature review and reconceptualization. *IEEE Transactions on Engineering Management*, Vol. 54 Iss. 2, pp.219–240.

Sawhney, M.S. (1998), Leveraged high-variety strategies: from portfolio thinking to platform thinking. *Journal of the Academy of Marketing Science*, Vol. 26 Iss: 1, pp.54-61.

Schilling, M. A. (2000). Toward a general modular systems theory and its application to interfirm product modularity. *Academy of Management Review*, Vol. 25 Iss: 2, pp.312–334.

Schilling, M.A. and Steensma, H.K. (2001), The use of modular organizational forms: an industry-level analysis. *Academy of Management Journal*, Vol. 44 Iss: 6, pp. 1149-68.

Shamsuzzoha, A.H.M.; Kristianto, Y and Helo, P (2013). Implications of interface management for modularity degree. *Journal of Modelling in Management*, Vol. 8 Iss: 1, pp.6 – 24.

Sigala, M. (2008). A supply chain management approach for investigating the role of tour operators on sustainable tourism: The case of TUI. *Journal of Cleaner Production*, Vol. 16 Iss: 15, pp.1589–1599.

Sinclair, M. T., & Stabler, M. (1997). The economics of tourism. London: Routledge.

Singh, L. K. (2008). Management of Travel Agency. Delhi: ISHA Books.

Song, H., Zhang, X., & Witt, S. F. (2008). Collaborative forecasting for tourism supply chain via the Internet. Paper presented at the 18th international symposium on forecasting, Nice, France.

Spring, M. & Araujo, L. (2009) Service, services and products: rethinking operations strategy. *International Journal of Operations & Production Management*, Vol. 29 Iss: 5, pp.444 – 467

Stake, R. E. (1995): The Art of Case Study Research. London, UK: Sage Publications.

Stake, R.E. (2005). Qualitative Case Studies. In: N.K. Denzin and Y.S. Lincoln (Eds) The SAGE Handbook of Qualitative Research (3rd ed.), Thousand Oaks: Sage, pp. 443-466.

Starr, M. (2010) Modular production – a 45-year-old concept. *International Journal of Operations & Production Management*, Vol. 30 Iss: 1, pp.7 - 19.

Suter, W. N. (2012). Introduction to Educational Research: A Critical Thinking Approach. Sage Publications Ltd. 528 pages.

Tansik, D.A. and Smith, W.L. (1991), Dimensions of job scripting in service organizations. International *Journal of Service Industry Management*, Vol. 2 Iss: 1, pp. 35-49.

Tapper, R., & Font, X. (2004). Tourism supply chains. Report of a desk research project for the Travel Foundation, Leeds Metropolitan University for the Travel Foundation.

Topolšek, D. Mrnjavac, E., Kovačić, N. (1/2014). Integration of travel agencies with transport providers. Tourism Management Perspectives, Vol. 9, pp. 14-23, ISSN 2211-9736.

Tu, Q., Mark, A. V., Ragu-Nathan, T. S., & Bhanu, R. N. (2004). Measuring modularity-based manufacturing practices and their impact on mass customization capability: A customer-driven perspective. *Decision Sciences*, Vol. 35 Iss: 2, pp.147–168.

Tunney, D. (31.7.2012). Consumer Trends 2012: Booking channels. *Travel Weekly*.

Walker, J. R. (2009). Introduction to Hospitality (5th ed.)New Jersey, Upper Saddle River: Pearson Education Inc.

van Hoek, R. & Weken, H. (1998) How modular production impacts integration in inbound and outbound logistics, *International Journal of Logistics Research and Applications*, Vol.1, Iss: 1

Werthner, H. & Ricci, F. (2004). E-commerce and tourism. Communication ACM Vol. 47 Iss:12 , pp.101-105.

Westbrook, L. (1994). Qualitative research methods: A review of major stages, data analysis techniques, and quality controls. *Library & Information Science Research*, Vol. 16 Iss: 3, pp.241-254.

Voss, C. A., & Hsuan, J. (2009). Service Architecture and Modularity. *Decision Sciences*, Vol. 40 Iss: 3, pp.541-569.

WTTC (World Travel and Tourism Council) (2013). Travel & Tourism Economic impact 2013 Europe. http://www.wttc.org/site_media/uploads/downloads/europe2013_1.pdf

WTTC (World Travel and Tourism Council) (2013). Travel & Tourism Economic impact 2013 Finland. http://www.wttc.org/site_media/uploads/downloads/finland2013.pdf

WTTC (World Travel and Tourism Council) (2013). Travel & Tourism Economic impact 2013 World. http://www.wttc.org/site_media/uploads/downloads/world2013_1.pdf

Vuorela, S. (2005) Haastattelumenetelmä. Tamperen yliopisto.

Xinyan Zhang, Haiyan Song, George Q. Huang (6/2009). Tourism supply chain management: A new research agenda, *Tourism Management*, Vol. 30 Iss: 3, pp.345-358.

"Yin, R. (2009). Case Study Research: Design and Methods. Sage Publications Inc, California"

Zeithaml, V.A., Parasuraman, A. and Berry, L.L. (1985), Problems and strategies in services marketing. *Journal of Marketing*, Vol. 49 Iss: 2, pp. 33-46.

Zeithaml and Bitner (2003). Services Marketing: Integrating Customer Focus across the Firm (3rd ed.)McGraw-Hill, New York, NY

Zhang, X., Song, H., & Huang, G. Q. (2009). Tourism supply chain management: A new research agenda. *Tourism Management*, Vol. 30 Iss: 3, pp.345-358.

Appendices

Appendix 1: Semi-structured interview

Interview structure

Construction of the Travel Agencies' Service Offering

Company's or interviewees' names will be confidential, and they will not be presented in the study without a request.

The interviews will be utilized as empirical material in the interviewer Heidi Hartikainen's Master Thesis in Aalto University School of Business

1. Demographical data:

1. Name: _____

2. Company: _____

3. Job Title & Department: _____

4. The length of employment in the current position? _____

5. The length of employment in the company? _____

The Size of the Company:

6. Turnover: _____<5m ____5-49m ____50-499m ___>500m Other_____

7. The Amount of Personnel: ____<50 ___50-499 ___500-4999 ___>5000 Other_____

2. Company in General:

1. What is the General description of the Company?

2. What is the company strategy? Is it documented?

3. What are the Target Groups? If different, how does this show in the service offering (examples)?

4. What are the different channels that the customer can utilize in the trip reservation? (%-shares)

5. What is the company's supply chain/value chain from the services to the trip reservation (which different companies/organizations are present in the supply chain – partners, bilateral agreements, global distribution system (GDS), and number)? (Possible illustration)

6. How the service offering is constructed? (How the service package is formed from the different service components (accommodation, flights etc.)). Are there clear differences in service packages/destinations and in their components?

7. How the customers/potential customers are taken into account in the service design? Do the customers participate in the service development (co-production)?

8. What is the role of the customer in the service construction (Service design & production, purchase situation and after-purchase)?

9. Is there a plan to develop the supply chain and/or service offering in the near future? If is, to what direction (possible new service channels, new supply chain structure, the change of the customer role etc.)?

10. How the success of the service offering is measured? (for example customer satisfaction/ operative metrics)?

11. What has been the customer satisfaction measured in the company (own metrics)?

3. Travel destination: European city destination (travel agency chooses a popular destination in Europe)

1. What is the importance of the European (city) travel in the service offering? Give a general description of this type of service offering?

2. What types of services are wanted from a European city trip?

3. What is popular European city destination for the company? (Dependent on the volume)

4. How is this city as destination and target group?

5. What services are wanted from this city destination? (Do they differ from general, meaning does this destination have more service components compared to others?)

6. Is there more service components offered for popular destinations? And are they similar (examples)?

7. What are the most typical reservation channels (%)?

8. What are the companies/service providers that are part of the supply chain of this travel destination?

9. What are all the elements, which are part of this trip reservation?

- Flight
- Accommodation
- Insurance
- Trips in the destination
- Airport transportation
- Other services? _____
- Others? _____

10. How is the service offering constructed, meaning how the service elements (flights, accommodation etc.) are integrated into one service package? (Pre-designed packages vs. modular)

- a) Is the integration fully vertical or also horizontal (what are the connections between the service elements)
- b) What is the travel agency's responsibility of the coordination? Other coordinators?

11. What is the customer role in the selection of the service elements in the beginning and just before the journey? When the customer decides on the different service elements of the journey?

12. Can the customer change their selections or add more services after the reservation and during the journey?

13. Are customers offered any services after the journey?

14. Is there a plan to develop the supply chain and/or service offering in the near future? If is, to what direction?

4. Benchmark

1. How the company is positioned itself compared to competitors (in the company-level & from the point of view of the city destination)

- a) Which are their strengths and which factors have affected the success of the company?

Appendix 2: Data analysis first stage

Category	Case Company A (non-modular service offering)	Case company A: European city destination (BERLIN)	Case Company B (modular service offering)	Case Company B: European City Destination (ISTANBUL)
Strategy	Easy to approach; strong own production	A lot of information, experiences, contents & convenience wanted Fear for self-assembly, travel agency more trustworthy	Want to be the biggest & wanted partner; co-production & -creation with the customer; Solution for all the problems	Mostly just online reservations and not many services included (just accommodation & flights) People self-assemble their journeys convenience is important
Target Group	age group 55+, mid-income, not young people	50 +, however, some families Many people have gone many times	Large target group but many loyal customers	all age groups;
Channels (%)	40% internet & 60% calling & face-to-face; however depends on the destination & type of the trip	online 50% calling & face-to-face 50/50 (rest 50%)	15% internet and 85% calling & face-to-face (reservations); internet growing & much internet utilized before reservation	online 50% (growing all the time), but mostly younger people customization with employer +22e
Value chain	1. internal design 2. decisions on service packages 3. Offers from service companies 4. Comparison of service companies 5. Reservations (9 months before the time of travel)		1. Customer need 2. Service package co-designed & -produced 3. Service Agreements dictate the limitations of the offering 4. Purchase 5. Post-Purchase interaction & decisions on the changes	
Service construction: role of Travel Agency	Has really dominant role in all the aspects of service offering construction	Has really dominant role in all the aspects of service offering construction	Shares the construction with the customer & coordination with agents (many	A lot of self-assembly & co-creation

			times)	
a) Design	Internal design, the earlier experiences & feedback from customers utilized	company designs	Co-design with the customer	A lot self-designing → self-customization Other channels co-design
b) Combination	Internal service assembly	company combines	Co-creation of the service assembly	A lot self-assembly → self-customization customer can choose services
c) Coordination	All the coordination done by the travel agency	company coordinates → Quite hard, as all the service components are integrated (but only vertically) so a lot of planning and coordination work needed	Coordination many times shared with the agents so that the agents take care of the coordination in-destination	Travel agency or agency+agent, vertical coordination
d) Control	Full-control of the whole service offering	mostly vertical (travel agency), however, some horizontal due to integrated structure	Limited-control, as the customer & agents take part in the control	travel agency + agent (however the final control always with travel agency)
e) co-creation	No co-creation	No co-creation	A lot of co-creation	co-creation competes with self-assembly
Service construction: role of Supply Chain	Supply chain has limited role. The services are chosen based on comparison (short-term) & are controlled fully by travel agency		Supply chain is formed from valid contracts (log-term) & can also be proactive in the relationship	
Agreements with the supplier companies	One-Directional; some travel destinations agreement only with agents that handle other agreements	One-Directional	Long-term agreements with all the service providers (business done only with companies that the agreement is valid). Some agreements are	Agreements. However, also hotels.com utilized as online-tool, therefore, all companies do not have agreements (?)

			preferred, as there can be some advantages with higher volumes); Many global agreements as is part of a global company	
Service construction: role of Customer	The travel services are pushed to customers	The travel services are pushed to customers	The customer need starts the service process	Customers knows a lot about the destinations & does need much help → growing role of self-assembly The need always comes from customer
a) Design	Only customer feedback included in the design phase	Only customer feedback	Co-design	customer are given "example structure" which they can modify how they want
b) Production	Customer not included	Customer not included	Co-Production	co-production & self-production
c) Purchase	Usually customer chooses trip without much help (dependent on the service channel)	Customer chooses date → ready package	Purchase process after dialogue between the company & customer	many times made online
d) Post-Purchase	Not much interaction; week(s) before the journey no changes are possible	2 weeks before all the tickets & final journey plan arrives	Customer all the time included in the process & changes are possible	can keep contact (different number for online & non-online reservations) → less contact kept than in long-distance journeys
e) During the journey	No changes are possible	No changes	Changes are possible → quick reaction to customer needs	changes are possible
f) After journey	No services after journey	No	Planning of including services after journey (not yet)	
g) Feedback process	From 2014 also online feedback	Now also online	Customers share rich feedback →	less feedback from European

	to bring volume, before only printed version		taken very seriously	journeys
Service construction: service components	Flight company, accommodation, local guide, transportation company (in-destination), local service providers (museum, restaurant etc.), tour leader	three different packages (differs from normal one) all the same services that normally: Flight company, accommodation, local guide, transportation company (in-destination), local trip (Potson palace area, museum), tour leader, couple restaurant ➔ each day has programme	Flight company, accommodation, transportation company (in-destination), agents (handle all the operations in destination) All the services can be chosen (combining & separating is possible)	"ready package" that just gives example Flights: Turkish Airlines Agent: Accommodation, transportation, guide, trips in-destination If "package" not wanted: online "tools" through which different accommodation options etc. are possible
Service construction: service component interfaces	Tightly integrated interfaces	Tightly integrated interfaces	Loosely coupled interfaces	Loosely coupled
Service construction: future	Need for customization and personalization Need to postpone the customer reservation for the journey	Varying opinions: Interview 1: need for customization & postponement of journey reservation (people want to do it more in real time) Interview 2: No changes, only even more simplification → same hotel/transportation company for all trips → easier coordination (currently coordination causes a lot of problems)	"Social" integrated journeys: readers of certain magazine (shared interest) go to a journey together	The online channel is wanted to develop in the future. However, not wanted to compete based on price Need to find a middle ground between the price and high quality (strategy not maybe clear)
Customer satisfaction measurement	Manual feedback after journey (already for 40		General customer satisfaction survey 4	

	years) 2014: electronic after journey survey (want increase in volume) Report from trip leaders		times/year After journey survey Visits from customers Employees visit destinations Report from destination agents	
Benchmark	Strengths: tours and trips that have a lot of content → Really good quality-price ratio	price/quality-ratio	Strengths: Customization due to the amount of opportunities: trusted partners & good knowledge of the services Finding the right solution for each customer ("consult")	Not price competitor Finnish & high quality, however, many people are becoming more price sensitive
Important attributes		experiences, information, content, direct flights, good location, transportation, good breakfast, Finnish guide		convenience, direct flights, online
Other	do have also the group trips, in which the customization can be done & the age group is more varying	Trend that people want more to be able act in real time	Even though modular service offering, clear need for integrated service packages	People are very knowledgeable