

Dynamic Capabilities for Service Innovation

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Abstract. In this paper we try to apply dynamic capabilities framework for service innovations. We aim to develop unified conceptual framework for analyzing and enhancing understanding of dynamic service innovation capabilities, by using existing literature analysis, systematization and synthesis, comparative analysis. We review the existing conceptualizations of dynamic capability in service firms. Then concentrate on the dynamic capabilities necessary for service innovation. Service innovation construct is multidimensional, and many types of different dynamic capabilities are used in research. In order to find those similarities between distinctive sets of dynamic capabilities, we have identified five dimensions that affect dynamic service innovation capabilities: strategy, client, knowledge, network, and technology-focused dimensions. This paper presents conceptual model for identifying dynamic service innovation capability dimensions. Provides model for grouping dynamic capabilities based on dimensions and perspectives. This conceptual model enhances collective understanding of the discipline and directs the attention of firms to dynamic capabilities most important for achieving continuous service innovations; and adds to the knowledge for researchers when analyzing dynamic capabilities in service innovation

Keywords: dynamic capabilities, service innovation, service firms

1 Introduction

Innovation is highly important driver for economic growth. Ability to innovate provides firms competitive advantage. Service organizations face the challenge to offer their clients new and improved services. Therefore, they require service innovations in order to sustain growth, raise the quality and productivity levels of services, respond to changing customer needs and expectations (Pöppelbuß et al., 2011). By developing dynamic capabilities, firms are able to gain, maintain and apply new knowledge that can power innovations (Teece et al., 1999). Despite growing literature on service innovation, it remains fragmented reflecting the need for a model that captures key driving forces for the service innovation (Salunke et al., 2011).

In this paper we try to apply dynamic capabilities framework for service innovations and answer the following questions: what dynamic capabilities are important for service innovation, how they are identified and applied. We review the existing conceptualizations of dynamic capability in service firms. Then concentrate on the dynamic capabilities necessary for service innovation. After analyzing different models for dynamic service innovation capabilities, we provide conceptual model for grouping dynamic capabilities for service innovation based on different perspectives. We introduce five dimensions: client, strategy, network, knowledge, and technology focused. This conceptual

model enhances collective understanding of the discipline and directs the attention of firms to dynamic capabilities most important for achieving continuous service innovations.

2 Dynamic capabilities

In highly competitive and constantly changing environment businesses need to be able to anticipate changes and prepare to make changes in their strategy, in order to gain and maintain competitive advantage. The ability to do this systematically has been referred as dynamic capability. Its main goal is to explain long term competitive advantage of the firm. (Eriksson, 2014; Teece et al., 1997).

Dynamic capabilities theory grew as extension to resource based view, which states that a firm will outperform its competitors if it has resources which are valuable, rare, difficult to imitate and substitute. Resource based view theory emphasizes the importance for the firm to acquire and accumulate those resources in order to achieve superior performance and competitive advantage. Resource based view theorists suggest that company resources are different from its abilities (Peteraf, 1993). The main criticism of resource based view is that it explains competitive advantage in static environment and does not explain why some firms have competitive advantages in fast changing environments (Barney, 2001; Eisenhardt and Martin, 2000; Janssen et al., 2012).

Teece et al. (1997) have extended resource based view to dynamic markets. He claims that in dynamic and unpredictable markets, where competitive landscape is shifting, the dynamic capabilities help managers to integrate, build and reorganize external and internal competences to address rapidly changing environments, thus building and maintaining competitive advantage. According to Teece (2007), dynamic capabilities can be grouped into three dimensions: 1) *sensing* capabilities – to identify and shape opportunities and threats; 2) *seizing* capabilities to take those opportunities; 3) *reconfiguration* capabilities – to gain and maintain competitive advantage through enhancing, protecting, reconfiguring organization's intangible and tangible assets (Fischer et al., 2010).

According to Eisenhardt and Martin (2000), dynamic capabilities are made of specific processes, such as development of new products, making alliances in the industry, making strategic decisions, that help organizations to compete in rapidly changing environments. Managers reconfigure various capabilities to adjust them to new strategies. Dynamic capabilities show commonalities across different firms and often are used as example of best practice methods. Dynamic capabilities value lies in the reorganization of resources and those capabilities than in capabilities themselves. Their effect can vary at different level of market dynamism. Some capabilities will be very effective in highly volatile and competitive markets, while others will be more effective in emerging markets. Evolution of dynamic capabilities is guided by managerial ability to identify and reconfigure them in the best fashion to suit the changing market conditions and the skill and learning process that goes along (Eisenhardt and Martin, 2000).

Wang and Ahmed (2007) define dynamic capabilities as firm's ability to constantly integrate, reconfigure, renew and recreate its resources and capabilities, and upgrade and reconstruct its core capabilities to adapt to changing competitive environment, in order to obtain and maintain competitive advantage. They argue that dynamic capabilities are not simply processes by themselves, but are part of the processes. Processes in itself are explicit and can be transferred within or outside of the firm. Capabilities are firm's capacity to deploy those resources by combining both explicit and implicit elements, such as skills and experience. Therefore, capabilities are developed over time as complex processes (Wang and Ahmed, 2007)

Dynamic capabilities help to combine and transform static resources, skills and knowledge into innovative products and services (Makkonen et al., 2014). Utilizing dynamic capabilities

organizations adapt to changing environment faster and more efficiently, thus producing new innovations, gaining and sustaining competitive advantage. Dynamic capabilities allow the companies to capture new opportunities and convert organizational resources into both tangible and intangible assets (Easterby-Smith et al., 2009). This reflects organization's capacity to create, extend, and modify the existing resource base. Dynamic capabilities utilize this capacity by renewing of existing processes and promote innovation to adjust to the fast changing environment (Eisenhardt and Martin, 2000; Makkonen et al., 2014; Winter, 2003).

3 Dynamic capabilities in service firms

Dynamic capabilities in service firms can be evaluated using the grouping introduced by Teece (2007): sensing capabilities, seizing capabilities and reconfiguration capabilities. In other words, capabilities to identify the organizational need and external opportunity for change, capture those opportunities by utilizing and reorganizing internal resources (Helfat and Peteraf, 2003). This approach is based on three classes of activities.

In the context of service innovation, sensing refers to the identifying the need to change existing service operations, or an opportunity for developing new services; seizing refers to exploring and selecting best opportunities for change, and regrouping is concerned with the implementation of changes by utilizing the available resources (Pöppelbuß et al., 2011).

3.1 Sensing capabilities in service firms

According to Kindström et al. (2013) sensing in service companies refer to gathering relevant market intelligence. It is important for business to be able to scan business environment, identify customer preferences and gather idea from employees. Proactive market and customer orientation helps businesses to identify customer needs and tastes. Ability to identify shift in customer preferences is particularly important for service businesses. At the center of identification is managerial and employees who work directly with customers. Employee and managerial cognition, skills, experience and knowledge, allow them to sense those opportunities and take appropriate action.

Sensing and identifying the need and opportunity for change in service-oriented organizations is triggered by three major drivers. First, diminishing effectiveness of product-based competitive strategies lower profitability and it is increasingly difficult to maintain it as a long lasting strategy. Therefore, businesses strengthen their offering to customers via improved services. Services are more labor intensive and highly dependent on employee skill, therefore it is easier to build value added via services compared to products (Mathieu, 2001). Combined product-service offer becomes harder to compare and gives opportunity for the companies to differentiate their offer in the market. (Kindström et al., 2013). Second driver is customer needs becoming more complex and particular. Growing complexity and the need for individual and customized approach demands from service-oriented companies more flexible approaches to each customer. This ability to cater individual needs of the customers increases the need for sensing competence. Ability to sense and identify those needs becomes increasingly important for successful service-oriented business. Third driver for sensing ability in service firms refers to growing need for services from the customers. Oversaturation of product markets increases demand for the services, which increase usability, customization and maintain and those products. When revenue from products is limited, additional services such as maintenance, repairs, upgrades and other, allow companies to sustain revenue stream for a longer period (Kindström et al., 2013).

3.2 Seizing capabilities in service firms

To take advantage of the market opportunity or to ‘seize’ it, service-oriented business need to utilize the insight provided by managers, who use sensing capabilities and identify external opportunities. Ability to identify market opportunities is not enough for successful seizing of those opportunities. Company structure and business model have to be ready for such exploitation of opportunities (Kindström et al., 2013). Seizing opportunities is formulating strategic response to the opportunities provided by the changing competitive environment. Decision to seize service opportunities is based on planned entering into the service market. Seizing service opportunities is considered as formulating planned service strategies (Fischer et al., 2010). Service strategies can include: 1) Systems integration – integrating components into a functioning system. It can include business process and technical application integration. Business process integration is seizing customer value by integrating customer’s business processes. While technical integration part involves customizing technical solution to fit individual needs of the customer. 2) Operational services – services for operating and maintaining products. Operation services provide maintenance or warranty service, or customizing services related to product based on individual needs. 3) Business consulting – provides customers with design, financing, purchasing, maintaining and operating various assets (Davies, 2004; Fischer et al., 2010).

Service strategies depend largely on the primary needs of the customer or direct usage of the asset. Service oriented companies can expand their service offering by seizing opportunities beyond those that are in immediate demand. They can add (temporal expansion) or reconfigure existing services (temporal reconfiguration) to widen their offering and seize additional market opportunities. Example of temporal expansion can be technical advice in the pre-sales period, information service and financing in the sales phase, repair and maintenance in the after-sales phase. Temporal reconfiguration refers to changing the structure and control of the primary service, e.g. outsourcing (Fischer et al., 2010; Sawhney, 2004).

3.3 Reconfiguring capabilities of service firms

Reconfiguring capability refers to organization abilities to match and manage service strategy and organizational design to achieve strategic fit. The main dimensions that service-oriented organizations should focus when improving dynamic capabilities are: 1) corporate culture, 2) human resources management, 3) organizational structure, and 4) service innovation (Fischer et al., 2010; Teece, 2007). Corporate culture should be able to sense shifts in the competitive environment and be prepared for changes. Effective organizational culture should foster learning and experience increasing activities. Only knowledgeable and open minded managers will be able to use sensing and seizing capabilities to make most of the opportunities presented in the market. Human resource capabilities in service-oriented companies should also be managed effectively to be able to adjust and reconfigure those resources to achieve strategic fit and gain competitive advantage. For example outsourcing can help service-oriented company to specialize in the services it doesn’t have expertise or skillful employees. In order to use reconfiguration capabilities most efficiently and in lowest possible time organizational structure should be as simple as possible. Horizontal organizational structure would allow for easier knowledge sharing, thus increasing not only reconfiguration capabilities, but also sensing and seizing. For the purpose of this study we will analyze dynamic capabilities for service innovation in more detail over subsequent chapters.

4 Dynamic service innovation capabilities

Ability to innovate provides organizations an ability to gain and maintain competitive advantage. The ability to transform existing knowledge and skills into new knowledge and services is an important source of competitive advantage (Watson and Hewett, 2006). Client retention and service offering expansion to attract new clients, is highly dependent on the ability to provide innovative services and solutions in a more efficient and effective manner compared to competitors (Barr and McNeilly, 2003). Innovation capability is very important in developing new value-creating services and solutions that provide competitive advantage for the firm (Hogan et al., 2011)

Service innovation is multidimensional and complex subject that has been analyzed through various perspectives and contexts (Giannopoulou et al., 2011). Literature on service innovation is fragmented and inconsistent, which tend to concentrate on distinctive features of the services with lack of consensus and widely shared definition (Blommerde and Lynch, 2014; Droege et al., 2009). Hogan et al. (2011) suggests holistic view of the innovation capability by considering broad range of innovation activities and performance implications, and defines it as: “firm’s ability, relatively to its competitors, to apply the collective knowledge, skills, and resources to innovation activities relating to new products, processes, services, or management, marketing or work organization systems, in order to create added value for the firm or its stakeholders”.

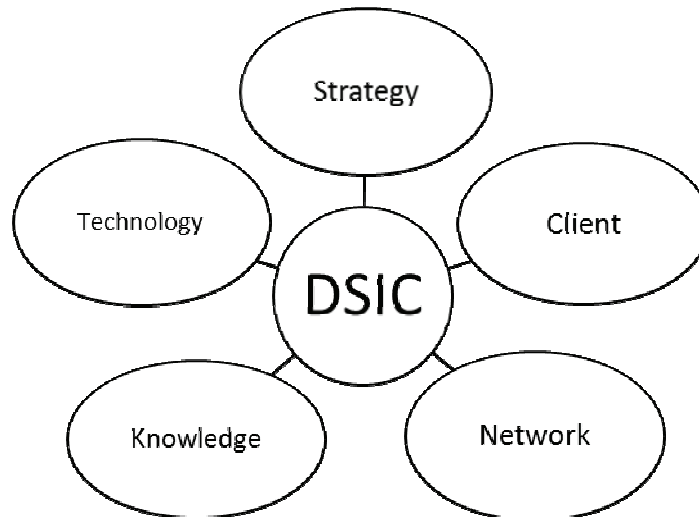
Hertog et al. (2010) define dynamic service innovation capabilities as – “hard to transfer and imitate service innovation capabilities which organizations possess to develop, (re-)shape, (dis-)integrate and (re-)configure existing and new resources and operational capabilities”. Dynamic service innovation capabilities combine existing and create new resources and operational capabilities to gain and sustain competitive advantage; and are aligned with firm strategy, market dynamics and firm history (Hertog et al., 2010).

For the purpose of this paper, we narrow the definition for dynamic service innovation capabilities to - organization’s ability to utilize dynamic capabilities and combine organizational resources to improve existing and/or introduce new services, in order to gain and sustain competitive advantage.

4.1 Multidimensionality of dynamic service innovation capabilities

Service innovation construct is multidimensional, and many types of different dynamic capabilities are introduced with each case study that has been done. At a general level, dynamic capabilities have elements in common between firms and sectors, but in individual cases they tend to have distinctive characteristics (Janssen et al., 2012). In order to find those similarities between distinctive sets of dynamic capabilities, we have identified five dimensions that affect dynamic service innovation capabilities: strategy, client, knowledge, network, and technology-focused dimensions (Figure 1).

Figure 1: Dynamic service innovation capability (DSIC) dimensions.



Main dimensions and perspectives:

1. *Client focus* – this dimension can be internal or external. Internal dimension focuses on company employees and knowledge stored there. Client representatives interact with customers every day and have their own view of customer needs and possibilities for service improvement. Managers should develop abilities that help to gain from this internal knowledge. External client focus dimension refers to firm’s ability to identify client needs and possibilities for innovation.
2. *Strategy focus* – this dimension is internal and focuses on firms abilities that allow managers to change and improve strategies to foster innovation. Implement innovative marketing or service launches, gather needed resources for innovative initiatives.
3. *Knowledge focus* – this dimension is both internal and external as it refers for the firm capability to increase knowledge from external sources (competition, market, clients) or from internal ones (employees, managers).
4. *Network focus* – this dimension refers to the external business networks and organizations ability to coordinate with them and cooperate in order to increase innovative capabilities.
5. *Technology focus* – this dimension refers to firm’s ability to utilize internal technologies or adapt external ones. Ability to adapt external technologies for the firm innovations is also internal ability.

4.2 Dynamic service innovation capability models

Dynamic service innovation capability research divides into two groups: first group (Fischer et al., 2010; Gebauer et al., 2012; Kindström et al., 2013; Pöppelbuß et al., 2011) analyze dynamic capabilities for service innovation, by grouping them into categories of activities presented by (Teece, 2007): sensing, seizing and reconfiguring. Other group of researchers present more detailed models outlining particular dynamic capabilities for service innovation (Agarwal and Selen, 2009; Hertog et al., 2010; Hogan et al., 2011; Salunke et al., 2011).

For the purposes of this paper we focus on combining both groups of research. We believe that dynamic capabilities grouped based on activities can have different dimensions. For example sensing capabilities can have an internal or external dimension, seizing capabilities can have many dimensions such as strategic, knowledge, network. This division in research makes the understanding of dynamic service innovation capabilities more complicated. Our aim is to attempt to derive a more unified

model based on dimensions and perspectives combined with dynamic capability activities. Below is the brief discussion of each of the models based on the second group of research. We later identify the main dynamic capabilities for service innovation presented by various authors and assign them to various dimensions (Table 1).

Hertog et al. (2010) offers one of the more comprehensive models for service innovation. They developed six dimensional model, covering the possible dimensions for service innovation, or more precisely, dimensions where service innovation can take place in a business: new service concept; new customer interaction; new business partner; new revenue model; new delivery system: personnel organization, culture; new delivery system: technological. These service dimensions lead to service functions that are new to the firm. These new services change the business offering and thus require structurally new technological, human or organizational capabilities of the service firm. To realize service innovation an organization can utilize various operational resources: Sales, partnering, finance strategy, HRM, technology, marketing strategy. Operational resources are combined with various dynamic capabilities the firm has: signaling user needs and technological options, conceptualizing, (un-)building, (co-)producing and orchestrating, scaling and stretching, learning and adapting. This combination of resources and capabilities leads to creation of new service experiences and solutions.

Reconceptualization of the innovation capability construct within a knowledge-intensive service context is presented by Hogan et al. (2011). Study provides three dimensional, thirteen-item innovation capability scale that reflects the unique characteristics of professional service firm's core responsibilities and activities. These three dimensions are: client-focused, marketing-focused, and technology focused. Client-focused innovation capability includes ability to provide clients with services and products that offer unique benefits superior to those of competitors and an ability to solve client problems in innovative way. Marketing-focused dimension refers to firm's ability to develop and implement novel promotional approaches, and innovative marketing programs. Technology-focused innovation capability dimension includes the ability to adopt new software, integrated systems and technology, and an ability to innovate with new software and technology in order to be competitive (Hogan et al., 2011).

Agarwal and Selen (2009) in evaluating service innovation, imply that new or enhanced services can only be offered as a result of partnering and not through individual company means. They argue that higher order dynamic capabilities in services are generated as a results between stakeholders. Through this collaboration additional new capabilities are learned: customer engagement, collaborative agility, entrepreneurial alertness, collaborative innovative capacity. Agarwal and Selen (2009) suggest that these capabilities are not only influence service innovation outcome, but also are important in managing the flexibility, delivery and reliability of service offer.

Salunke et al. (2011) study focuses on project-oriented service firms and present a model that captures key antecedents that create competitive advantage and are based on service innovation. Their model suggests that service firms pursuing innovation select and use dynamic capabilities that enable them to achieve greater innovation and sustained competitive advantage. Salunke et al. (2011) claims that firms purposefully use create, extend and modify processes to build and maintain key dynamic capabilities. Those key dynamic capabilities for service innovation are listed as: episodic learning, relational learning, client-focused learning, and combinative capability.

Table 1: Dynamic service innovation capabilities and their dimensions

Author	Dynamic service innovation capabilities by activity			Dimensions
	Sensing	Seizing	Reconfiguring	
Hertog et al. (2010)	Sensing user needs Sensing technological options Conceptualizing	(Un-)building capability Co-producing and orchestrating	Scaling and stretching Learning and adapting	Client Network, Technology Strategy Strategy Network, Strategy Strategy Knowledge
Hogan et al. (2011)	Innovative solutions to clients	Provide unique services Implement marketing programs	Innovate with new technology Adopt the latest technology	Strategy, Client Client Client, Strategy Technology, Strategy Technology, Strategy
Agarwal & Selen (2009)	Customer engagement Entrepreneurial alertness	Collaborative agility Collaborative innovative capacity		Client Network Network, Client Network
Salunke et al. (2011)	Episodic learning capability Relational learning capability Client focused Learning		Combinative capability	Knowledge Knowledge, Network Knowledge, Client Knowledge, Strategy

Aim of this paper is to attempt to classify service innovation capabilities into more holistic framework using set of unified dimensions and perspectives. For this purpose we take various dynamic capabilities used for service innovation by different authors and plot them against two fields: dynamic service innovation capabilities by activity – sensing, seizing, reconfiguring and five dimensions (strategy, client, knowledge, network, technology). Some of the presented capabilities have only one dimension, others cover several perspectives. For example, co-producing and orchestrating capability introduced by Hertog et al. (2010) can be looked from two perspectives: internal ability to use firm resources and produce a service (using strategy dimension), or external focus – collaborate with business partners and seize market opportunities (network dimension). From this plotting of various dynamic service innovation capabilities we can attempt to arrange them into matrix. Table 2 shows the combination of possible dynamic service innovation capabilities and various dimensions.

Table 2: Dynamic service innovation capabilities and their dimensions matrix

Dimensions	Dynamic capability activities		
	Sensing	Seizing	Regrouping
Client	Client (internal/external)		
Strategy			Strategy (internal)
Network		Network (external)	
Knowledge		Knowledge (internal/external)	
Technology			Technology (internal)

From the matrix we can see that some dimensions, such as network, have all dynamic capability activities – sensing, seizing and regrouping. While others, such as client perspective, usually has one activity – sense and identify client needs and market opportunities

5 Conclusion

Dynamic capabilities are important for service-oriented firms, as they allow firms to identify market opportunities and client needs, take action on those opportunities by organizing available resources, and gain competitive advantage in the process. Service innovation construct is multidimensional, and many types of different dynamic capabilities are used in research. In order to find those similarities

between distinctive sets of dynamic capabilities, we have identified five dimensions that affect dynamic service innovation capabilities: strategy, client, knowledge, network, and technology-focused dimensions.

This allowed us to find commonalities between different service innovation capabilities and assemble them into more holistic framework using set of unified dimensions and perspectives. We used various dynamic capabilities applied in service innovation by different authors and arranged them based on five dimensions, introduced earlier. This led to development of matrix model and plotted dynamic capabilities activities against different dimensions and perspectives. This conceptual model enhances collective understanding of the discipline and directs the attention of firms to dynamic capabilities most important for achieving continuous service innovations.

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