

Capabilities for Ambidextrous Innovation of Digital Service

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Abstract. Service innovations have been a subject in the literature since the 1980s. However, ever-shortening innovation cycles and the emergence of new digital technologies create the need to reconsider well-established concepts for designing digital service. In fast changing ecosystems, organizations are under pressure to simultaneously explore new opportunities and exploit their existing portfolio, which is described as ambidexterity. While service engineering methods provide useful guidance for designing digital services, innovators are often overstrained with applying them properly. Based on ambidexterity theory, we performed a delphi study to identify organizational and individual capabilities for ambidextrous innovation of digital service. We propose a framework that shows which capabilities enable organizations exploring new value propositions while simultaneously exploiting existing digital service.

Keywords: Service Innovation, Digital Service, Ambidexterity, Capabilities

1 Introduction

Driven by digitalization, many start-ups offering service innovations have emerged and grew to global players, such as Airbnb or Uber. New technologies increase competition, thereby, urging organizations to innovate and continuously improve existing services [1]. To balance the simultaneous demand for exploiting existing services and exploring new service, organizations need to engage in ambidexterity [2]. Ambidexterity is defined as “an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment” [3]. While, there are plenty methods to design service [4–12] and frameworks for their management [13–17], ambidextrous innovation of digital service—in the following simply referred to as service—is under-researched [18]. As opposed to new product development, exploring and exploiting services requires particular capabilities, since new services are achieved through co-creation of value by multiple actors [20] with divergent knowledge and skills [21]. We close this gap by answering the question: “*Which organizational and individual capabilities are necessary to enable ambidextrous innovation of digital service?*”. We collected data from 18 experts in a delphi study to identify capabilities for ambidextrous service innovation. We present our aggregated and structured results in a capability matrix.

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2 Ambidextrous Service Innovation

Service innovation is defined as “value propositions not previously available to the customer” [16]. A peculiarity of service innovation is digital service, defined as “application of digital competencies through deeds, processes, and performances for the benefit of another entity or the entity itself” (see [23], [24]). To engineer and manage new services, organizations perform activities for which they need certain capabilities. Several methods were proposed—called service systems engineering [25]—detailing the procedures and activities for developing value propositions [26–28] or service systems [7], [11], [12]. While most methods follow a linear process [29], [30], Beverungen et al. [7] recently proposed an agile approach for the flexible and rapid development of services, serving as our theoretical lens. The method comprises service system analysis, design, and transformation. All three sub-processes are connected by a decision point, in which the engineering process can be either continued or a certain sub-process is repeated. Service system analysis addresses the identification of ideas, analysis of requirements, and feasible solutions. The service system design follows a prototypical approach of business model (re-)design, service concepts design, and service concept evaluation. Finally, in service system transformation, the service concept is implemented and the service is integrated in management [7].

New technologies force organizations to deal with opposing demands of exploring new value-propositions while exploiting existing services to stay efficient at the same time [3]. To manage this duality, organizations need to acquire capabilities to simultaneously exploit existing resources and explore completely new ones [31], which is defined as ambidexterity [32]. Exploration is directed towards the design of new service [33] through active search, discovery, and encouragement of variation [2]. Though, exploitation describes the enhancement or refinement of existing service [33] by increasing efficiency, improving productivity, and reducing variance [2]. Thereby, exploration is rather associated with radical innovation—creation of completely new value propositions [34]—whereas exploitation often leads to incremental innovations—minor changes to a service [18]. Organizations that focus only on exploitation will sooner or later become outdated [2], while organizations that engage exclusively in exploration are coping with higher risks [2].

Besides ambidextrous service innovation, innovators need to dispose of capabilities—as ability to perform a set of activities [35]—for creating value [36]. The main drivers for innovation are the acquisition and enactment of organizational and individual capabilities [19]. Both are essential for transforming ideas into an innovative service, creating value for organizations and customers [19] and are, therefore, important assets to manage the complexity of ambidextrous service innovation. Organizational capabilities are embedded in organizational routines, structures, and processes of individuals [2], and consequently, individual capabilities—enacted by employees in an organization—are considered as complementary [37]. Thereby, technology and process capabilities support and enable organizational capabilities [19].

3 Research Method

We performed an inductive, data-driven approach [38], using a delphi study as research method [38]. A delphi study is an iterative process [39] of collecting and distilling knowledge from experts [38] that is suitable for complex problems [40]. Thus, we chose qualified experts from structurally different organizations of different industries who have a deep understanding of developing and managing services [41]. The questionnaire design complied to the criteria of survey design by Dillmann [42]. Thereby, we followed the phases of a delphi survey by König et al. [43]: (1) brainstorming, (2) narrowing down, and (3) rating (as detailed in Figure 1). In the brainstorming phase, we asked the experts to name important capabilities for either exploring or exploiting services as well as capabilities for ambidextrous service innovation. To provide more structure, we asked them to name the capabilities according to the three sub-processes of service systems engineering by Beverungen et al. [7] and an additional service management phase, as described in Section 2. In total, 18 experts responded providing a good base for the further progress of the study. The responses were anonymized and iteratively coded [41]. Then, the items were aggregated to categories and identical responses were eliminated [41]. Forthcoming, we will conduct the narrowing down phase and rating phase. Analogous to the first phase, the questionnaire will be distributed among the experts from the brainstorming phase. In the second phase, we will ask the experts to mark the capabilities especially required for exploring or exploiting smart service—a more specific type of digital service—introducing a smart product into the service system, serving as boundary object between the service provider and consumer [44]. This differentiation might be relevant for organizations focusing on engineering and management of smart services.

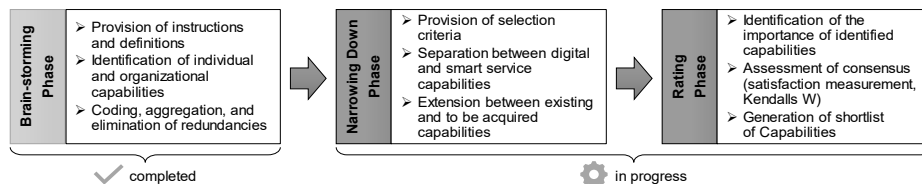


Figure 1. Visualization of the intended delphi study

4 Data Analysis and Discussion

We consolidated the results from the brainstorming phase and present an excerpt of the most relevant capabilities in a matrix (Table 1.). The matrix is structured by the delphi study's design, addressing three phases of a service systems engineering process [7] and a subsequent management phase, as well as individual and organizational capabilities, which are further divided into exploration, exploitation, and ambidextrous service innovation. The analysis of the identified capabilities reveals four insights. First, the identified capabilities vary depending on the phases of the innovation process and innovation types, making certain capabilities more relevant than others. Only a customer focus and (project) management skills are

essential for all phases and types. Second, capabilities for exploration are directed towards radical innovation. Hence, agility, open-mindedness, and readiness to fail are crucial capabilities for establishing new service. Third, capabilities for exploitation are directed towards refining existing services and increasing efficiency. Therefore, capabilities are required that empower employees to make innovations bottom-up, e.g. by freedom of action, and rigor. Fourth, ambidextrous innovation requires capabilities to coordinate and handle complexity, but also integrated thinking, flexibility, and empathy. Based on the matrix, managers can operationalize the innovation process, identify improvement areas, and plan resources accordingly. Thereby, the capabilities are rather complementary than exclusive.

Table 1. Capabilities for ambidextrous service innovation

		Analysis	Design	Transformation	Management
Individual Capabilities	Exploration	<ul style="list-style-type: none"> visionary spirit digitalization know-how creativity 	<ul style="list-style-type: none"> readiness to fail conceptual expertise decisiveness 	<ul style="list-style-type: none"> implementation strength reasoning skills 	<ul style="list-style-type: none"> analytical skills negotiating skills authenticity
	Exploitation	<ul style="list-style-type: none"> experimenting spirit ability to reflect adaptability 	<ul style="list-style-type: none"> technical competence reflectivity analytical skills 	<ul style="list-style-type: none"> persistence endurance 	<ul style="list-style-type: none"> analytical skills rigor stamina
	Ambidextrous Innovation	<ul style="list-style-type: none"> empathy complexity handling networking capability 	<ul style="list-style-type: none"> integrated thinking structuring skills organizing power 	<ul style="list-style-type: none"> implementation strength commitment economic thinking 	<ul style="list-style-type: none"> emotional intelligence conflict handling skills monitoring capability
Organizational Capabilities	Exploration	<ul style="list-style-type: none"> open-mindedness idea canalizability risk readiness 	<ul style="list-style-type: none"> business agility independence of operational business goals end-to-end perspective 	<ul style="list-style-type: none"> process standardization innovative marketing mix technological expertise 	<ul style="list-style-type: none"> investment readiness benchmark setting ability service orientation
	Exploitation	<ul style="list-style-type: none"> dynamic willingness to change service modularizability 	<ul style="list-style-type: none"> freedom of action reflectivity ecosystem networking 	<ul style="list-style-type: none"> decision-making leeway lean management structural integration 	<ul style="list-style-type: none"> resource availability efficient processes service orientation
	Ambidextrous Innovation	<ul style="list-style-type: none"> entrepreneurial culture flexibility knowledge transferability 	<ul style="list-style-type: none"> innovation encouragement process orientation trust in employees 	<ul style="list-style-type: none"> process integration ability flexible structures courage 	<ul style="list-style-type: none"> top management support organizational setup co-existence of dual structures

5 Conclusion and Outlook

We provide insights on organizational and individual capabilities for ambidextrous service innovation, i.e. for developing and managing new service and improving existing ones. Thereby, we bridge the link of ambidexterity and service literature. We provide an impetus for researchers to extend existing models and methods for service engineering by integrating a capabilities' perspective. Further, we provide innovators a structured set of capabilities to manage the trade-off of satisfying existing customer expectations with established service offerings and responding to the ever-accelerating speed of digital technology with innovative services. Organizations can use the matrix to identify strengths and weaknesses in their capabilities and promote the advancement of these capabilities through formal and informal training. In further research, we will distinguish between capabilities for digital and smart service innovation as well as capabilities that are already established and ones that still need to be acquired.

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