

Exploring Innovation Practices for B2E Initiatives in the Digital Age

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Abstract. Digital innovation outcomes are calling traditional project settings and respective processes into question, influenced by software engineering, start-up thinking and design perspective. The challenge incumbent firms face today is how to speed up time to market for digital innovation outcomes due to the rapid speed of technology evolution. Therefore, we aim at deepening the understanding of how successful digital innovation projects are structured in terms of six dimensions (subject, object, tools, rules, community, division of labor). To do so, we draw on activity theory to analyze nine projects of incumbent firms in the business-to-employee context regarding their way of organizing innovation work in the digital age. Based on our qualitative case analysis, we provide a set of requirements within the six dimensions based on activity theory that are needed to reshape the structure of innovation projects with a digital outcome in incumbent firms.

Keywords: digital innovation management, processes, business-to-employee, agile innovation, activity theory

1 Introduction

Over the past 20 years, incumbent firms have established structured processes and clear innovation paths for physical products and services alike. At the same time these structures are now being challenged by digital product and service innovation as incumbent firms embed digital technologies [1–3] and start to break away from traditional innovation handling [3, 4]. It is not surprising that managers show an extensive interest in tools and means how to handle the portfolio of new products and services with a digital layer, to relate to the new digital environment and how organizational properties support innovation work itself [5].

To tackle these interests, the research stream of digital innovation evolved. Digital innovation as a concept focuses on the change in products, services or business processes as an outcome from the use of digital technology itself [6]. Management of digital innovation is further conceptualized as “practices, processes, and principles that underlie the effective orchestration of digital innovation” [6]. Previous research within digital innovation looked at the nature and structure of new products and services and respective value creation as well as innovation communities, multiple actors and

diverse objectives or capabilities, and lastly asked for new approaches of innovation work (e.g. [7–9]).

One key challenge of managing digital innovation addressed by research is understanding the attributes of its process [3]. However, understanding the attributes and respective interdependencies of a digital innovation process is a complex endeavor. In this regard, the rapid pace of digital innovation processes of incumbent firms is defined as particularly challenging when embedding technological components into existing products or adding digital service modules [5]. The combination of physical and digital components is accelerated by various trends such as the digitization of information compiled from outside and inside firms as well as the increased pervasiveness and processing power of (mobile) devices [10].

The challenge that arises when introducing digital components can be traced back to intrinsic differences of practices between traditional and software-focused products [11]. The greater the digital layer of an innovation outcome (e.g. product, service, customer experience), the more software alike thinking is included in its process. [12] describes these competing logics as the “dual regimes of digital innovation”. Even though, research has started to classify key challenges and transformational needs in terms of how digital innovation leads to successful outcomes in the past years, practice shows only now increasing interest in identifying requirements to tackle the rapid speed in which digital technology is evolving. Finally, the challenge incumbent firms face today is how to speed up time to market for digital innovation outcomes [6, 13].

Therefore, more research is needed towards identifying requirements in various dimensions to adapt the structure of innovation projects and consequently reduce the time to market of innovation outcomes in the digital age. To do so, we are analyzing nine projects of incumbent firms in the business-to-employee (B2E) context in regard to the way how they are organizing innovation work. Digital B2E initiatives are specifically interesting, since they are resided at the cornerstone of process innovation and new service design and are therefore facing not only external but also internal customers. It is reasoned that “similar to the reengineering wave in the 1990s, a shift can now be observed within the business process modelling discipline from an automation logic to an innovation logic” [14, 15]. Furthermore, this research combines organizational innovation management with digital outcomes [1, 2, 10].

We are particularly interested in understanding how patterns within various dimensions influenced by software engineering, start-up logics and design perspectives reshape the structure of innovation projects with a digital outcome in incumbent firms. We build our work on the activity theory [16] to understand how the six dimensions of an activity system (subject, object, tools, rules, community, division of labor) influence the way incumbent firms structure digital innovation initiatives in the B2E context. Our work employs activity theory to develop a more complete picture on the organizational set-up and corresponding activities during innovation projects. Activity theory fosters the view on a comprehensive activity system in terms of how digital innovation is structured in incumbent firms rather than focusing on individual artefacts. It further includes the environmental context, such as community or situational elements [17].

In the following sections, we will present the theoretical background and develop our propositions. Furthermore, we will describe the approach and context chosen to

empirically test our propositions, and show how we will report on our findings. The paper concludes with a short discussion on the preliminary results, implications and limitations of our research-in-progress.

2 Theoretical Background

2.1 Competing Logics for Digital Innovation

Conceptualizations of digital innovation have evolved over the past ten years. While in the beginning, it was referred to the act of embedding of digital technology into traditional products [13], five years later it was described as “products or services that are either embodied in information and communication technologies or enabled by them” [18]. In line with this, [6] relate to the use of digital technology during the innovation process or as the outcome of innovation. However, literature indicates two competing logics of digital innovation: the product innovation literature and IT innovation literature regime [12]. “Technological progression is not seen as a phenomenon deriving from linear development processes, hierarchical organizations, and vertical industry structures. Instead, IT innovation research underlines that digital technology destroys many barriers favoring incumbent innovation” [12]. As a result, IT innovation fosters a distributed activity that involves whole networks and ecosystems rather than taking place in firm-centric dimensions [3, 19]. In their work, [12] propose a competing logic framework for understanding digital technology in product innovation management. We take this as a starting point to further elaborate on the tensions in the six dimensions of activity theory where the two innovation regimes inevitably meet when innovating digital products and services alike.

2.2 Business-to-Employee Initiatives

In the 1990s, a first generation of IT applications, later mobile applications, were used to digitize internal content as well as to innovate business processes [5]. More recently, besides the adoption of new solutions, the consumerization of IT has played a major role in enabling mobile solutions in the business context [20]. This has led to the second generation of mobile business solutions that focused on incremental improvements in business features. In this regard, technology adoption was a critical key aspect in order to generate business value from the application [21]. For this article, we focus on the latest generation of B2E initiatives, which are considered as “authentically mobile” and therefore at the intersection of business process redesign and new service development [22]. Examples here are smart glasses for distribution purposes or increased data collection combined with algorithms for data quality or product maintenance. Furthermore, digital B2E initiatives are resided at the cornerstone of business process innovation and new service design and are therefore facing not only external but also internal customers. Consequently, digital technologies can create novel business processes or substantially improve existing ones but should be always linked to market offerings [14].

2.3 Activity Theory and its Application to our Research-in-Progress

Activity theory as a meta-theory aims at understanding the object-oriented and tool-mediated interactions between humans [23]. The research paradigm is often used by multidisciplinary research communities in the field of work place practices (e.g [24, 25]) and human-computer interaction (HCI) (e.g. [26, 27]). Furthermore, it has been recently applied in a study on the transformation of tasks influenced by information systems [28]. Historically, there are three generations of activity theory. In particular, Engeström's third generation is widely used in current research endeavors and adopted within this research. As depicted in Figure 1, the activity theory offers six dimensions (subject, object, tools, rules, community, division of labor).

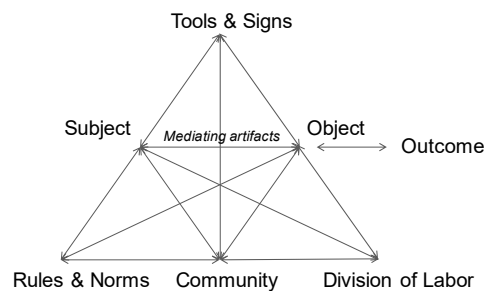


Figure 1: Basic structure of an activity system adapted from [16]

The socio-technical nature of innovation networks is emphasized when shaping the behavior, because it is highly influenced by the cultural context and the technology itself [18]. Applied to this research, activity theory allows us to gain deeper insight in how different dimensions relate and influence each other within an innovation project as a system itself.

3 Methodology

Following our objective, this research endeavor is exploratory in nature. More specifically, because we are interested in understanding how patterns within various dimensions influenced by software engineering, start-up logics and design perspectives reshape the structure of digital innovation projects in incumbent firms in order to speed up time to market. As such, we aim at being “broad-ranging, purposive, systematic, and prearranged undertaking designed to maximize the discovery of generalizations leading to description and understanding of the area of research” [29]. Therefore, we carefully selected nine incumbent organizations in Germany, Austria and Switzerland offering B2E initiatives that met the criteria of [22] for the third generation of mobile business solutions focusing on process redesign, as referred to in Section 2.2. Our data collection comprises three or more interviews per case and end at the point of theoretical saturation. In addition, we consider further sources of evidence, i.e., public and company internal data that is provided by the interviewees. To ensure taking into consideration multiple perspectives from each case company, our interview set-up

included three different user groups within each incumbent firm: 1. Innovation manager, responsible for structure and process, 2. Senior manager responsible for taking decisions regarding resources (financial and personnel), 3. Project owner for an ongoing B2E project. An activity theoretical lens is used to guide both, the data collection and analysis. We are following the guideline to iteratively and continuously collect and analyze data [30]. As such, this research-in-progress represents an intermediate stage of analysis, while data collection is still ongoing (June-October 2017, 22/31 interviews are conducted the remaining ones scheduled). Our structured approach is as follows: We collect the data on audio files, transcribe and upload the transcripts to Atlas.ti. Then, on a first level, the data is coded according to the six dimensions, on a second level, requirements are identified and provided with a specific code. Interviews are coded in a horizontal order based on the user groups introduced earlier.

4 Preliminary Results

Table 1 shows a short description of the dimensions used in the activity theory according to [16], how we apply these in our research and first interview results, e.g. the major effect of location-based influence (such as an innovation lab) or the organizational structure of the project team and team members' roles.

Table 1. Application of the dimensions of activity theory to our research

<i>Dimension</i>	<i>Description and Application of the Dimension</i>
Subject (Sub)	The subject is referring to a group of people (the project team), tool-mediated towards reaching the objective. Subjects are led by the project owners within the nine use cases.
Object (Obj)	As object, we refer to the objective of the activity. In our research, this is the digital technology for the outcome (B2E processes and new service offering).
Tools (Too)	In this research, tools are artifacts, methods and instruments such as a specific location (e.g innovation labs), methods from software development (e.g. Scrum, Agile Manifesto), design orientation (e.g. Design Thinking), Lean Start-up thinking (e.g. iterations with learn-build-measure cycles).
Rules and Norms (Rul)	External rules or internal governance are shaping how projects are set-up. Regarding digital innovation, this can refer to the decision-making and approval process on resources, degree of freedom for project teams and structure and content related mechanisms.
Community (Com)	The social context, in which the project is embedded and refers to internal/external partners, its structure and collaboration mechanisms.
Division of Labor (DoL)	This refers to the team structure, roles and responsibilities in digital innovation projects (team roles such as project owner, developer, user experience designer, business analyst, scrum master etc), initial team setting, its development over time and dependencies on related departments within the organization.

5 Conclusion

The objective of this research-in-progress is to understand how time to market of B2E initiatives in digital innovation can be reduced. Digital B2E initiatives are resided at the cornerstone of business process innovation and new service design and therefore create novel business processes or substantially improve existing ones when introducing new service offerings. As a result, we provide a set of requirements within six dimensions based on activity theory that are needed to reshape the structure of innovation projects with a digital outcome in incumbent firms. So far, little research has examined this complex setting of digital innovation projects with an increasing digital layer as outcome that is driven more and more by software development, design and lean start-up logics. We build upon the competing logic framework for understanding digital technology in product innovation management proposed by [12] and analyze the requirements that are needed to adapt the structure of innovation projects and consequently reduce the time to market in the digital age. With our research, we aim at investigating these patterns through activity theory within an exploratory multiple case study setting, which should provide insights regarding the state of the art of digital innovation within the B2E realm of incumbent firms. The long-term aim of this research endeavor is to build a next generation innovation reference model based on the requirements conducted within this setting.

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