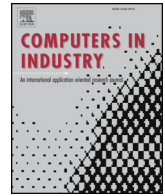




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Standardizing delivery processes to support service transformation: A case of a multinational manufacturing firm

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ABSTRACT

While enlarging their value proposition adding services to their product portfolio, an increasing number of manufacturing companies is suffering a lack of methods to engineer and manage the service offer effectively and efficiently. In particular, multinational companies are struggling with the complexity of organizing the service delivery process of a composite portfolio throughout their branches spread in different geographical locations and characterized by different maturity levels. This paper specifically focuses on this dilemma proposing an approach for service delivery process standardization as a mean to make the service activities uniform and similar in different units. The intent is not to create organizations all working in the same way but instead to reuse best practices and share business optimization. To achieve the research objective, a structured approach that guides the identification of a standard process and a service based reference model internal to the company are proposed. They would pursue the identification of a common taxonomy inside the company and the contextualization of the standard process into the company structure. Through a step-by-step procedure to apply the technique, an industrial application was carried out showing the practical and managerial implication coming from the adoption of the standardization approach inside the company. The outcome of the case constitutes a first step toward the development of a standard reference model for service delivery process to be adopted in multiple industries and contexts.

1. Introduction

In order to differentiate their positioning in the markets and retain long-term customer's loyalty, manufacturing companies are seeking to increase the perceived value of their offerings through the provision of services along the lifecycle of products [1]. Throughout this service transformation phenomenon, the tangible value of products is replaced by an intensification of the intangible service contents [2,3].

This evolution, entailing the improvement of customization and the reduction of material consumption, requires deep changes to the structure, the processes, the operations and the mindset of a company. Moreover, traditional engineering processes turn out to be inadequate to govern the intangibility and the process-based nature of services [4] whilst suitable methods to support the service engineering stages are not available yet.

Referring to a global context, multinational companies are heavily struggling in organizing the service delivery processes of a complex portfolio throughout their branches spread in different geographical locations and characterized by different maturity levels. They need to

manage multiple interconnected process variants characterized by: i) an exponential increase in the number of services they are offering in terms of number and scope, ii) a variegated adoption of technologies and tools to support the service delivery, iii) a higher uncertainty in market demands and iv) different customer segments and needs. As in the case of product design, they have to “increase their efficiency by providing new competitive solutions faster; and at the same time cut costs by improving quality and productivity” [5]. In order to respond to such uprising critical requirements [6], Service Engineering (SE) has emerged as a technical-methodological approach that inherits and adapts, when possible, the traditional engineering expertise to develop innovative services [7–9]. In spite of the success of SE in academia, the suggested methodologies in literature are still poorly applicable in industry. According to the major reviews [3,10–12], the main scope of the most known methodologies [13–17] is mainly limited to the translation of customer requirements into service concepts. Guidelines and methods recommending how to structure the service delivery process in pursuing the satisfaction of different customer segments while minimizing operational costs, are lagging. So far, despite their societal and

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economic significance, services remain largely under-researched in the operations management field [18].

Starting from the literature gaps and the practical criticalities mentioned in the previous paragraph, this paper focuses on the need of reducing the complexity and variety of service delivery processes variants through a standardization effort in order to increase customer satisfaction while reducing process management costs.

In particular, it proposes i) a structured approach that guides the identification of an internal standard process for the delivery of each single service offered by a company (or that will be offered) and ii) a reference model to set concepts inside the company and to contextualize the standard process into the company structure and offering. A step-by-step procedure to implement the outlined research and standardize service delivery processes in a real environment is also proposed. Then, the procedure validity and practical feasibility are demonstrated through its implementation in ABB, a multinational company with a worldwide service offering.

The paper is structured as follows. Section 2 presents the research methodology. Section 3 describes the search for literature in the area of service process standardization, whereas section 4 theoretically describes the technique to be adopted for company internal standardization. Section 5 summarizes the validation case in ABB, where the standardization technique has been applied. Section 6 lists the main insights of this work from the academic and the industrial perspectives, while Section 7 closes the work and proposes further research prospects.

2. Research methodology

Having in mind the difficulties that big multinational companies have to face, as hinted in the introduction, this paper tries to answer the following research questions (RQ):

RQ1. How to develop a technique to support the “internal” standardization of service delivery processes?

RQ2. How to describe and contextualize the identified standard service delivery process in a way that makes it seamlessly replicable in different units of the company?

In order to answer these two research questions, a 3-steps research approach tracing “design study methodology” [19] was pursued. First, starting from the relevant problem of multinational companies described in the previous section and following the design study guidelines proposed by Hevner [20], an exploratory literature review was carried out to further highlight the problem relevance. Indeed, exploratory research is a good approach to be adopted when researchers are facing with “new fields of study where little work has been done, few definitive hypotheses exist and little is known about the nature of the phenomenon”. [21]. This applies particularly to the research streams related to service process standardization.

Second, a theoretical artifact was designed (first Hevner’s guideline). In line with the first phase proposed by [20], the theoretical artifact proposed in this paper is an approach to support the standardization of the service delivery process together with a framework to formalize the nomenclature. The approach is mainly addressed to large companies and aims at improving their process management.

Third, as suggested by Hevner’s guideline number three, the evaluation of the artifact [20] was performed in an industrial case to gain relevant insights and to collect in-depth feedbacks. The case was also adopted as a mean to verify the practical contribution of the proposed approach (the artifact). A great amount of data has been gathered during the long term analysis. Since it was the first application, within the case, a highly adapted approach [22] has been followed in order to collect and gather all the relevant information. The company characteristics, structure and standardization needs has led to the selection of the specific case, which is better explained in Section 5.

All the previous steps were carried out following the application of rigorous methods, as explained in the following sections.

3. Explorative literature analysis

The first step of the research methodology dealt with the explorative literature analysis on the main area of the paper, namely the service delivery process standardization. Thus, literature on “service engineering”, “service design” and “service operations” has been screened to highlight existing researches around standardisation techniques for the service delivery process. The analysis has been conducted using Scopus, Web of Science and EBSCO databases as a structured search using “service” as the main keyword coupled with “process standardization” or “business process standardization” or “standardisation procedure”. Since after the first search no results were obtained; the collection of papers has been extended pruning the “service” term. Accordingly; the results obtained were mainly in the area of “business process standardization”. A first search has led to 256 peer-reviewed papers. Then; the following language and topic screening (2nd step) and abstract reading (3rd step) further reduced the research works. It is worth considering that the majority of the papers have been excluded during the 3rd step since their findings are not applicable to the service delivery process context. Indeed; most of the identified research pertains to technical issues in IT and computer science area (e.g. software infrastructure [23]; service oriented architecture or cyber physical systems). Among the papers analysed; many standards for processes were found and some discussions on the topic of standardization can be reported.

According to the analysis, a common understanding about business process standardization can be defined: [24] describes business process standardization as “bringing the selected business process in line with the archetype process”, where the archetype process is a business process that serves as master. Similarly, [25] define business process standardization as the activity of unifying different variants of a family of business processes and [26] highlight the different possibilities to manage a large collection of business processes among which the unification of them is in the direction of standardization. Besides, other topics subjected to scrutiny are worth mentioning: i) analysis of the advantage related to standardization [27]; ii) identification of suitable processes to be standardized [28]; iii) identification of success factors for process standardization [26,29].

The importance of a common and clear nomenclature emerged as a relevant factor to reach consistent results from process standardization. [30] identify “conceptual modelling” as an established approach to support and guide standardization efforts and consider “reference models” and “modelling languages” as two ways to support the integrated design. [23] highlight the importance of “reference models” to make the system complexity manageable. In the same direction, [26], focusing on data system management, highlight the importance of language support while merging more processes. Finally, [31] highlight the need for a domain-specific glossary and verb-object phrase structures for element labels as a mean to avoid confusion and pitfalls.

In addition to nomenclature, also the way processes are represented is highlighted in literature. [32] points out the following three main criteria for the definition of a standard representation of a business process: (i) an intuitive notation; (ii) a meta-model and vocabulary; (iii) a breakdown of the meta-model and notation for each level of analysis. In the light of this, many business process modelling standards are available for the business process management. [33] propose a survey of all the available methods and classify them according to the stage of business process modelling lifecycle. In the categories of approaches for process design, the most common are BPMN, and UML [33].

For what concern the standardization procedure some suggestion can be also acknowledged. [34] considers it in a broad perspective and proposes a managers’ guide to deal with the topic of process change and improvements. [24] is more concerned with the process standardization and define a four-step-approach for the standardization of a process, suggesting to i) document all the process variants, ii) define an archetype process and then iii) enhance it to a standard process, exploited at

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