

Process Variation Analysis Using Empirical Methods: A Case Study

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Abstract. Large organizations often weigh the trade-offs of standardization versus customization of business processes. Standardization of processes results in cost reduction due to the focus on one process management system, one set of applications supporting it, and one set of process specifications and instructions to maintain and support. On the other hand, specific requirements for different business units, e.g., for a particular country or customer, often require several business processes variants to be implemented. When introducing a standardized process an organization has to identify how processes have been conducted in the past, identify variations and adjudicate which variations are necessary and which can be eliminated. This paper outlines a method of identifying process variations and demonstrates its application in a case study.

Keywords: Business Process, Variations, Qualitative Methods.

1 Introduction

In the drive to reduce costs, organizations look at process standardization to reduce duplication of process management systems, process specifications, applications used within the process, and the maintenance infrastructure needed to sustain the business process through its life cycle. Large companies often developed independent business process implementations to address the needs of different business units and countries. Service providers, e.g., IT service outsourcers, often take over existing processes from clients or develop client-specific business processes, also leading to duplicate business processes. Homogenizing business processes is typically a large effort requiring careful planning.

An important issue to be addressed in business process standardization is the identification of current process variations and their drivers. Why is a process different from one business unit to the next? Are there similarities in the variations that can be abstracted and leveraged for standardization? Answers to these questions suggest which process variants are necessary to address a business need and which ones can be homogenized to one standard variant.

Dealing with variants in the context of business process standardization proceed along the following trajectory: 1. scoping, 2. variant identification, 3. variant adjudication and 4. change implementation. The scope of the business process to be standardized defines the context in which variants can occur. In the next



Fig. 1. Variant management in the context of business process standardization

step, variants are identified. This includes understanding why these variants have been created independently. Subsequently, a variant will be adjudicated whether there is a good reason to keep the variant. If the decision is to implement the variant as a standardized change in the process, then change implementation occurs. This approach extends the typical business process standardization [1] to include the variant management perspective. The notion of variation in this case study goes beyond variations of process specifications in a workflow management system such as control flow, data specification, and resources. Variations here also include the implementation of process management system, the implementation of each step, the assignment of roles to activities, and other fundamental differences in technical platform and organizational context.

There are significant contributions to variation management in existing work. From a business processes modeling perspective, most representations such as Business Process Execution Language (BPEL) [3] or the Business Process Modeling Notation (BPMN) [4] allow users to express alternative control flow. Some work also includes the representation of variants of other model components, e.g., [2] and [3]. Software product line modeling also addresses variations, e.g., COVAMOF Software Variability Method (COSVAM) [4]; extensions to PLUSS [5]; choice calculus representation for software variation [6]; Although these methods provide a formalized foundation, they do not adequately accommodate the range, flexibility, and dynamic quality of process variations needed in our services context. Review article [3] emphasized the importance of integrating non-technical issues into variability management techniques to derive holistic solutions.

This paper addresses the problem of identifying business process variations and their underlying rationale using an empirical, user-centered method of elicitation. We report on a case in which this method was employed for identifying variations of a pricing process in a large enterprise.

2 Work Practice Design Case Study

The empirical method for variant elicitation used in this case study is the Work Practice Design (WPD) [7, 8]. WPD examines people, technology, and processes to understand how we can better integrate all three to ultimately transform standardized processes to align with the needs of the business. Similar to practice-based and user-centered design approaches WPD employs data collection methods, including observational studies, semi-structured one-one interviews with users, survey analysis, etc., to uncover the implicit practices that employees utilize to perform their responsibilities and achieve business goals. WPD facilitates identification and adjudication of process variants that correlate to the actual work practices of employees.

Case: the case our variation elicitation has been applied to pertains to the part of the sales process of a large, global IT service company. The process involves the design of the customer solution, the calculation of cost and the negotiation with the customer over the price. This process is preceded by the opportunity qualification, finding out about a customer need, and succeeded, if successful, by contract fulfillment. The process typically is highly iterative and involves several financial solution roles, artifacts and inputs into the process of generating a financial solution or price for the client. The process results in a price structure and finally a signed contract to be handed to fulfillment. At the point of the study there were high-level, normative global process definitions (not actionable) in place. In addition, there were detailed rules about who must be involved in designing a customer solution and who must approve bids of a certain size. There was no actionable global process definition and no standard process management environment, no standard process definitions, and no standard applications involved. The long-term objective of the project was to standardize the business process as possible while taking necessary variations into account. The WPD study was used to elicit the variations of business processes.

Method: having gathered some basic first data on the process and organizations, we conducted focus groups of process participants during three site visits. We choose focus groups for the following reasons: 1) the sample size of end users willing to engage in the WPD process; 2) the organizational configurations of process participants, which translated to different perspectives of the financial solution process; 3) the allotted timeframe for transformational change within the business (e.g. deployment deadline of new IT financial solution software); and 4. the need to promote transparency to accommodate knowledge sharing by creating an open forum in which end users could learn about what their peers were doing in the context of the financial solution process. Each site visit was recorded and began with an introduction of the WPD process and background information of each participant (e.g. designated role, tenure in designated role, line of business within the organization, and experience using the IT financial software application). Process participants engaged in cognitive walk-throughs of the solution process, utilizing process diagrams, additional tools necessary for creating the cost/price structure, and other supporting materials (e.g. price release letter). The group session encouraged participants to discuss the different ways in which they perform the process and the reasons why.

Participants: a total of 44 geographically dispersed end users had been identified prior to each site visit. The population of end users represented several roles in the process, including account representatives, pricers, risk managers, pricing line managers, technical solution managers, and roles involved in managing a bid process at different levels of seniority.

3 Results and Conclusion

The focus groups and the subsequent analysis of scripts and recordings enabled the establishment of a dominant process, major variations and their drivers.

We highlight examples of important variations identified and their rationale: Variations mostly evolved along geographic and line-of-business lines. We discovered 4 different implementations of process management systems, often shared in multiple countries. Most support a case management paradigm as opposed to a production process, as could be expected. Another source of variation was the upstream and downstream process integration. Some countries and business lines have an automated way of passing a contract to fulfillment, others have a standard format to pass on, and others do this all manually. Likewise for the integration with opportunity qualification. The reason is that those processes upstream and downstream are also not standardized. A major difference entailed the use of an outsourcing center for pricing. If this was the case, processes followed more the dominant case. Involvement of only in-country participants led to variants. Role scope varied between the countries and LOBs. This was the major source of large process model variations. In some markets some participant roles exceed their typical scope, for example encompassing service design and modeling the cost/price case. This led to structurally different process models and very idiosyncratic local business process implementation.

While this is only a high-level overview of the results it demonstrates that WPD as a bottom-up method of variation elicitation, here based on focus groups, is a very suitable way of complementing a traditional business process standardization project with variation management. In a subsequent step, variations must be adjudicated and accommodated in conjunction with the standardized new business process.

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