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ScienceDirect

Procedia Engineering 182 (2017) 198 – 205

Procedia Engineering

www.elsevier.com/locate/procedia

7th International Conference on Engineering, Project, and Production Management

Does Experience Matter? Factors Affecting the Understandability of the Business Process Modelling Notation

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Abstract

This study proposes and tests an instrument for measuring the understandability of the selected business process modelling notation. Based on empirical research, we evaluated differences in the understandability of business process modelling notations between the groups of respondents, experienced and inexperienced in business processes modelling, and we identified the features of notations that determine the understandability of the modelling technique. Three notations were subjected to the diagnosis: EPC, BPMS, and BPMN. The analysis of differences in the understanding of a notation may be helpful when testing the process-related competence of people participating in process modelling and analysis projects.

Peer-review under responsibility of the organizing committee of EPPM2016

Keywords: business process modelling; modelling notations; understandability; BPMS; BPMN; EPC

1. Introduction

Business process modelling is a necessary and initial part of Business Process Management (BPM) and the key element in a process-driven development of organisations. Documentation and standardization of processes in the form of graphical models require the involvement of employees from different departments and management levels, with different competencies, as well as external consultants [10]. It is therefore important that all of them use the same and understandable modelling notation which is also referred to as Business Process Modelling Technique (BPMT), [7, 9, 20]. For this reason the analysis of factors affecting the understandability of the business process modelling

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Peer-review under responsibility of the organizing committee of EPPM2016
doi:10.1016/j.proeng.2017.03.164

notation motivates our study. The competence of understandability of the process models using adequate methods is essential to the development of process maturity of the organization [13].

There are three main aims of this paper. The first one is to propose and test a measuring instrument of understandability of selected business process modelling notations based on empirical research. The second aim is to evaluate differences in understandability of business process modelling notations between the groups of respondents, experienced and inexperienced in business processes modelling. In particular, we assume that the understandability of Business Process Modelling Techniques in respect of each individual notation analysed (Event-Driven Process Chain – EPC, Business Process Management System – BPMS, Business Process Model and Notation – BPMN) will be higher for the group experienced in business process modelling (EXP) than for the group inexperienced in business process modelling (INEXP). The third aim is to identify the features of notations that determine the understandability of the modelling notation. Thus, the main research questions of this paper are as follows:

RQ1: What is the diversity of the understandability of business process modelling notations between the groups of experienced (EXP) and inexperienced (INEXP) in business process modelling?

RQ2: What features of notations determine the understandability of the modelling notations?

The factors affecting the understandability of the business process modelling notation may be useful both in choosing an appropriate modelling notation and/or business process modelling software, as well as testing the process-related competence of people participating in process modelling and analysis projects.

The paper has been structured as follows: the theoretical foundation of the study is presented in the next section, followed by the presentation of research plan and methodology used in the study, which is inscribed in the conceptual framework of the paper. The interpreted and discussed results are presented in the next section. In summary, there are conclusions and future research plans, which simultaneously should overcome the limitations of the current study.

2. Background

2.1. Business process modelling: application areas

Coherent and still current application fields of business process modelling distinguish two major areas: the design and improvement of an organisation, and the design and implementation of IT systems [19]. The first area includes primarily Business Process Management implementation, but also process oriented reorganisation, certification, benchmarking and knowledge management. The second field concerns IT system choice and development, model-based customization, workflow management, and simulations. Depending on the modelling perspective adopted in the organisation's project and their purpose and scope, different techniques may be appropriate [5, 11], but the key criterion for selection of BPMT should be high understandability of models. Process defining, documenting in the form of maps and models, and its understandability stabilizes the initial stage of the BPM implementation and enables the organization to move to a higher level of maturity and achieve higher efficiency [13]. Modelling using adequate techniques and tools is among fundamental services, which offer the BPM centers of excellence in organizations that consciously design their own strategies for the BPM implementation and development [20].

2.2. Understandability of business process modelling techniques: related works

The process model, in a pragmatic approach, is well represented by BPM technique when it supports a cognitive processes effectively in reasoning with the model [4, 6]. Understandability of BPMT, in this perspective is an extent to which the technique can be understood by its users not having specialist knowledge of the technique [9, 21]. A common measures of BPMT understandability are the perceived ease of understanding a model (subjective measure) and correct answers on the model content (objective measure) [3]. These measures describe the user's ability to read and interpret process model prepared with a certain BPM technique.

An examination of understandability of EPC and BPMN notation was conducted by Jošt et al., but they investigated only intuitive understandability of diagrams, not objective, and compared additionally with UML AD notation [7]. The model comprehension and perceived ease of understanding were analysed by Recker and Dreiling concerning only two notation e. g. BPMN and EPC [17]. The influence of model characteristic on a pragmatic quality of modelling notation was published only by a few researchers. Mendling and Strembeck analysed which element of model characteristic