What we know and what we do not know about DMN (Extended Abstract)[1]

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Abstract: The recent Decision Model and Notation (DMN) establishes business decisions as first-class citizens of executable business processes. This research note has two objectives: first, to describe DMN's technical and theoretical foundations; second, to identify research directions for investigating DMN's potential benefits on a technological, individual and organizational level. To this end, we integrate perspectives from management science, cognitive theory and information systems research.

Keywords: DMN, BPMN, Process Modeling.

1 Introduction

The Decision Model and Notation (DMN) is a recent standard of the Object Management Group. It complements the Business Process Model and Notation (BPMN) with a notation for modeling decision logic and dependencies between decisions and data elements. The specification formulates several goals, which can also be understood as hypothetical benefits: First, the notation should be readily understandable by both business users and technical developers. Second, it should be straight forward to transform it to artifacts that implement decision logic. Third, it should be easily usable together with BPMN. DMN enjoys an increasing uptake in industry and receives attention in academic research. However, empirical research on DMN is still scarce such that it is unclear to which degree the proclaimed benefits materialize. We review the literature and discuss a research agenda for investigating the potential benefits of DMN in the three categories: technology, individual and organization benefits.

2 Technology

The history of operational decision management and DMN finds its origin in decision table modeling, where rules for decision logic are represented in a structure of related tables, which map combinations of inputs to outcomes. DMN standardizes existing

[1] This paper was published as Figl, K., Mendling, J., Tokdemir, G., & Vanthienen, J. (2018). What we know and what we do not know about DMN. Enterprise Modelling and Information Systems Architectures, 13, 2-1.
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decision table formats (using a hit policy indicator), by elaborating the requirements diagram, and by introducing a standard expression language. Even though DMN standardizes and extends the modeling capabilities of decision requirements and decision logic (e. g. by adding FEEL), various results from previous research into decision tables can be readily adopted. These include works in the area of Verification & Validation including table networks, table simplification, code generation and decision mining.

3 Individual

In order to structure the discussion of DMN-related research problems on the individual level, we refer to a theoretical model that describes modeling as a process of knowledge construction. The outcome of this process is influenced by three major perspectives: First, the characteristics of model viewers in association with their tasks; second, the content that is captured in the model and third, the presentation format of this content. From a cognitive point of view, the content view relates to the inherent complexity of information that must be understood. While intrinsic cognitive load may not be easily altered without changing the decision situation, extraneous cognitive load can be decreased by how the decision model is presented and more cognitive effort can be devoted to schema construction (germane load). Challenges in this area include the understanding of novice-expert differences and skill differences for reading and creating models. An important reference theory is the physics of notations framework.

4 Organization

Decisions that are explicitly defined through DMN and not hardcoded inside organizational decision making processes will likely decrease complexity and hence ease the implementation of business rules and analytic technologies. In this way, DMN might contribute to improved efficiency and effectiveness of organizational decision making. From an organizational point of view, benefits might result from the integration of modeling notions that organizations utilize. From another perspective, it is also clear that decision execution efficiency is highly affected by the amount of input data that is required to be collected for business process decisions, which is likewise costly for organizations.

5 Conclusion

DMN will change the way how processes are specified and implemented. In this paper, we described its technical foundations of decision table research and its theoretical background of modeling research. We identified research directions for investigating its potential benefits on a technological, individual and organizational level, and in this way clarifying what we know and what we don’t know about DMN. Insights into the way how

programmed decisions are specified and implemented together with process will be a cornerstone of future research into information systems and BPM in the years to come.