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Case Studies in research

Choosing the right business process maturity model

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ABSTRACT

We have built and tested a decision tool which will help organisations properly select one business process maturity model (BPMM) over another. This prototype consists of a novel questionnaire with decision criteria for BPMM selection, linked to a unique data set of 69 BPMMs. Fourteen criteria (questions) were elicited from an international Delphi study, and weighed by the analytical hierarchy process. Case studies have shown (non-)profit and academic applications. Our purpose was to describe criteria that enable an informed BPMM choice (conform to decision-making theories, rather than *ad hoc*). Moreover, we propose a design process for building BPMM decision tools.

1. Introduction

Business processes describe how organisations operate, and therefore impact on how organisations perform. Due to higher performance challenges and IT opportunities [36], business process maturity models (BPMMs) have increased in significance to help organisations obtain mature (or excellent) business processes [9]. Since the 1970s, maturity models have been recognised as important improvement tools for organisations. Accordingly, dozens of BPMMs have been designed [26], like CMMI [107] or OMG-BPMM [90]. They are evolutionary tools to systematically assess and improve capabilities (*i.e.* skills or competences) in order to reach business (process) excellence [31]. For instance, a BPMM may assess how capable an organisation is in modelling its processes or in running them faultlessly.

The huge number of BPMMs raises questions about their substantial differences. Some comparative studies have been made, albeit with a small number of BPMMs [14]. To our knowledge, the BPMM literature is mainly restricted to a design perspective, by creating a theory to design BPMMs or by designing particular BPMMs, as in de Bruin and Rosemann [59]. Mettler [17] presents design criteria for maturity models from both a developer's and user's perspective, although not specific to the BPMM context and without offering an overview of existing models. Röglinger et al. [23] propose design criteria for BPMMs, in particular. They present a limited BPMM overview to illustrate their criteria, but without practical advice on BPMM selection. Consequently, organisations and academics have no comprehensive overview of academic and industry-owned BPMMs and have an incomplete state of knowledge of how to select a BPMM that best fits their (organisational or research) needs. Therefore, the research question that this article hopes to address is: Which criteria help users (*i.e.* organisations or academics) choose a BPMM? This study is in line with recent research on information systems, which focuses more on users as consumers than on system development as such, *e.g.* [16].

Our objective is to advance knowledge on criteria that enable a well-advised BPMM choice (in accordance with decision-making theories, rather than on an *ad hoc* basis). The identification of the most relevant criteria should result in a practical decision tool to make an informed BPMM choice out of a large BPMM sample. The criteria are identified by addressing key questions and trade-offs faced by many organisations, consultants, and scholars, and are then used to design a decision tool to recommend the most appropriate BPMM (out of the numerous available models), depending on individual needs. Our research distinguishes from

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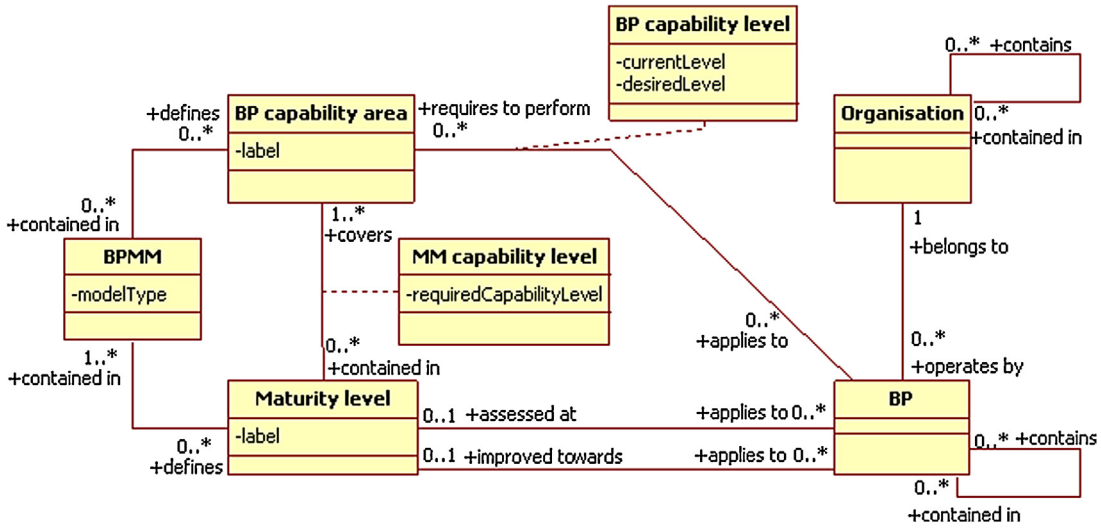

Fig. 1. The conceptual model of a BPMM.

existing studies by: (i) identifying a diverse set of BPMMs (in response to the lacking BPMM overview), (ii) identifying the most decisive selection criteria (in response to the lacking knowledge of BPMM selection), and (iii) designing a decision tool based on these criteria. We provide knowledge contributions by filling these important gaps, and by extending the literature with a thorough design process, resulting in users being able to make more informed decisions with the BPMM decision tool. The major managerial implication is that the tool helps each organisation choose a BPMM that will best suit its particular needs.

The theoretical background to this problem statement is explained in Section 2, while Section 3 proposes our solution on which we elaborate in Section 4. We also explain how the decision tool was built (Section 5) and tested (Section 6). Section 7 discusses the tool as a solution to our research problem. We conclude by summarising the contributions and limitations (Section 8), and main findings (Section 9).

2. Theoretical background

Despite the many maturity models, a common conceptualisation is still lacking [18]. Hence, Fig. 1 introduces the conceptual model of a BPMM for this study.

As its name suggests, a BPMM assesses and improves business process maturity. It does so by defining a number of maturity levels, each representing a higher or lower degree of maturity. The highest maturity level represents business process excellence. As shown in Fig. 1, each maturity level covers a number of concrete capability areas (or areas of related capabilities), in which a business process can perform at a particular capability level. Van Looy et al. [33] present a framework of process capability areas with six main areas divided into 17 sub areas. The main capability areas are business process (i) modelling, (ii) deployment, (iii) optimisation, (iv) management, and a process-oriented (v) culture, and (vi) structure. The authors argue that BPMMs do not always address all capability areas, but that three clusters exist: (i) BPMMs limited to the first four basic areas in the traditional business process lifecycle [39], (ii) BPMMs combining the basic areas with a process-oriented culture, and (iii) BPMMs addressing the basic areas plus a process-oriented culture and structure. This classification is adopted in Section 5.1.2 and is referred to as the 'modelType' of a BPMM in Fig. 1.

Furthermore, Fig. 1 explains that a BPMM can assess the current maturity level of a particular business process or a set of business processes, and suggest improvements to reach the next, desired maturity level. Similarly, a BPMM can assess and improve each capability area separately by capability levels and will sometimes also associate certain capability levels with a particular maturity level. Hence, maturity levels indicate the overall growth through all capability areas, whereas capability levels indicate the growth per capability area. The labels of maturity levels and capability levels may refer to (i) business process optimisation (*e.g.* initial, managed, standardised, predictable, innovating) [90], (ii) business process management (BPM) (*e.g.* BPM initiation, BPM evolution, BPM mastery) [101], or (iii) business process integration (*e.g. ad hoc*, defined, linked, integrated) [86]. Also, the number of levels varies (*e.g.* five, three and four).

Further on, de Bruin and Rosemann [59] distinguish two types of BPMMs, also included as 'modelType' in Fig. 1: models that assess (i) maturity of (one or more) specific business process(es), and (ii) maturity of BPM in general (*i.e.* of all business processes in the organisation). For instance, an organisation with ten business processes can choose between: (i) a BPMM that assesses and improves each process separately, (ii) a BPMM that assesses and improves the organisation's mastery in BPM, or (iii) a BPMM that combines both alternatives. This refinement may, for instance, indicate that the organisation is generally capable of modelling its processes, but that only some processes already have a graphic design, or that support processes do not need the same maturity level as core processes.

Examples of potential decision criteria, derived from the above, are the capability coverage of BPMMs, the labelling and number of maturity levels and capability levels, or the number of business processes addressed. This study will investigate which other criteria might guide BPMM selection, and which set of decision criteria is most relevant. Besides relevant decision criteria, a sound BPMM decision tool copes with requirements of decision-making theories, which explain how a motivated decision must be taken. We consider the following theories that underlie our solution (Table 1).

- *Theory of bounded rationality* [27]: As rational as possible, given the limited human capabilities to capture data, resulting in optimal and satisfactory decisions.
- *Theory of information symmetry* [1]: With users having the same information as designers, resulting in better decisions.
- *Theory of managerial work* [19]: Keeping pace with managers.