Holistic Guidelines for Selecting and Adapting BPM Maturity Models (BPM MMs)

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Abstract. BPM maturity models (MMs) help organizations accomplish the BPM capabilities paramount for organizational success. Although much literature deals with how to design MMs, little knowledge exists of how organizations use BPM MMs. Moreover, the academic literature about MMs is scattered, making it hard for practitioners to learn from academia. Our purpose is to offer a holistic journey to guide organizations through three phases of BPM MM use, namely (1) choosing one out of many MMs that fits the organization’s context, (2) tailoring the MM to particular needs, and (3) advising during and after a maturity assessment. Starting from a synthesis of known guidelines, a framework for BPM MM adaption is presented with evidence of its applicability when organizations are conducting maturity assessments. The analysis calls for research to derive specific guidelines for different contexts, e.g., for different levels of maturity and/or when maturity assessments are driven by consultants.

Keywords: Business process management; Maturity models; Guidelines; Case study

1 Introduction

With the rising importance of process orientation, an array of BPM maturity models (MMs) with varied focus and depth has been suggested [1-3]. A MM, also referred to as a ‘stages-of-growth model’ or ‘stage model’ [4], is a “conceptual model that consists of a sequence of discrete maturity levels for a class of processes in one or more business domains, and represents an anticipated, desired, or typical evolutionary path for these processes” [2]. BPM MMs help organizations to identify and evaluate their BPM capabilities, enabling organizations to create value and deliver enhanced business outcomes through the way their processes are managed. The required process-management capabilities stem from multiple dimensions (i.e., individual, organiza-
tional and IT), which collectively form the complex composition of BPM capabilities.

Ideally, BPM MMs provide a holistic assessment, planning and execution basis for all areas relevant to BPM [5].

BPM MMs are receiving increasing attention and claim to provide meaningful answers on how organizations can and should evolve their BPM capability [1, 6-8]. As a result, many BPM MMs have been designed by practitioners and scholars alike, and more BPM MMs continue to evolve [1, 2]. Related reviews (e.g., [2] and [9]) have pointed to over 70 MMs pertaining to BPM, covering varied process aspects. Similarly, guidelines for the design of MMs are well developed, both in general [e.g. 10, 11, 12] and specifically in the BPM domain [e.g. 4, 13]. On the contrary, principles that can guide the users of BPM MMs (i.e., on MM selection, tailoring/customization and deployment) are relatively scarce, leaving the potential end users of BPM MMs unsupported [3]. This study poses the research question: How can BPM maturity models (MMs) be selected, tailored and used? We recognize that there can be different use-cases for BPM maturity assessments, and examine two example groups: (a) where the maturity assessment is driven and conducted solely by an organization, and (b) where the maturity assessment is driven and conducted by external consultants.

The current body of knowledge is presented in Section 2. Section 3 explains the applied study approach and Section 4 presents the final framework for BPM MM adoption. Section 5 presents a summary discussion followed by a conclusion (in Section 6).

2 Literature Review

2.1 Concepts Underlying BPM Maturity Models (BPM MMs)

A MM within the BPM discipline has been defined as ‘a model to assess and/or to guide best practice improvements in organizational maturity and process capability, expressed in lifecycle levels, by taking into account an evolutionary road map regarding (1) process modelling, (2) process deployment, (3) process optimization, (4) process management, (5) the organizational culture and/or (6) the organizational structure’. In order to increase its usefulness, the MM design includes both a detailed assessment method and improvement method’ [14]. Pöppelbß and Röglinger [1] distinguished two main types of MMs in the BPM context. First, ‘Process Maturity Models’ are concerned with the extent to which individual processes are managed. Secondly, ‘BPM Maturity Models’ address BPM capabilities [7], which cover all aspects of the organization pertinent to BPM, including BPM methods, tools, culture, people, etc. [15, 16].

Maturity assessments are carried out for a pre-defined set of elements, known as ‘maturity factors’ or ‘core capabilities.’ In most MMs, the maturity factors are further described and deconstructed as sub-factors or sub-capabilities. Maturity factors are often classified into separate elements such as people/culture, processes/structures, and objects/technology, which in reality are interrelated [11]. The ‘maturity factors’ act as the ‘reference framework’, against which the current state of the organization is
A MM also has a ‘assessment framework’ which defines the elements on how the actual assessment takes place (e.g., providing ratings of the level of process quality) [2]. Both parts of the framework are needed for an organization to identify an organization’s current status, gaps and possible ways to improve the BPM capabilities.

2.2 Current Guidelines Supporting BPM MM users

BPM MMs can be applied in different contexts (e.g., by senior management and/or a BPM center of excellence, or by BPM consultants as they look for service engagement opportunities). [11] explained how MMs assist decision makers to balance divergent objectives in a comprehensive manner by incorporating formality into the improvement activities, which enables decision makers to determine whether the potential benefits have been realized. [17] have stated that: “conflicts of interest can be avoided” by the use of MMs, especially when the MM is developed externally to the organization, and when the assessment is done by an independent third party. MMs thus offer a framework to conduct organizational management and to decide on investments by reducing decision-making ‘bias’.

A significant number of meta-analytic studies of MMs exist, but they mainly focus on comparisons or a classification of models based on MM characteristics, and thus typically focus on high-level and extrinsic characteristics of the models (e.g., MM design, number of levels, scope, etc.). However, they rarely attempt any deeper analysis or synthesis [2], in particular they are less catered towards supporting MM users. It appeared that the MM literature predominantly focuses on MM design by addressing MMs as artefacts, and defining requirements [12], design principles [4], evaluation criteria [10], steps with decision parameters [11], or phases for MM development [7]. While many authors have applied a particular MM [2], user guidelines for adapting a particular MM have only been covered to a minor extent. The latter specifically applies to the three main phases of MM adaption: (i) selecting a particular MM, (ii) tailoring it, and (iii) applying the tailored MM. For instance, regarding the first phase, the literature already refers to steps [11] or criteria [9] for selecting a MM based on the organization’s needs. Before using a selected MM, it should be tailored, customized or translated into the organization’s context. For instance, [5] described contingencies for BPM capability development. [11] presented steps for preparing MM deployment, while other authors referred to elements with implications for BPM MM tailoring [18] or design propositions to be adapted in a BPM MM tailoring template [18]. During BPM MM use, steps are provided for applying a MM, taking corrective actions [11], and building a strategy to support managerial actions for MM use [19].

3 Overview of Study Approach

The study design had two core phases and an additional phase (Phase 3). In Phase 1, a literature review was conducted and available guidelines for BPM MM end users synthesized and confirmed by two coders. Papers that provided direct guidance (e.g.,
in the form of clearly specified principles or criteria, like [9]) or indirect guidance (e.g., in the form of considerations to be mindful, like [18]) for BPM MM users were included.

Phase 2 was intended to explore and expand Phase 1. Two case studies (Cases A and B) were selected because they had: (i) adapted an existing BPM MM, (ii) at least fully prepared to deploy it, and (iii) we had good access to case data through the support of key informants. Empirical evidence was based on document analysis and interviews. Documents such as; project documents specific to the MM efforts, BPM team meeting notes, related communications to diverse stakeholders, and information available about the selected MM were used. Interviewees consisted of the BPM Centre of Excellence (CoE) leaders and members identified by the leads. All interviews were designed around reflecting on the ‘what’, ‘how’ and ‘why’ of adapting BPM MMs. At Case A, 2 joint-interviews with the CoE lead and deputy-lead, followed by 3 interviews with the BPM capability building program manager, senior process architect and BPM technology leader took place. Data input at Case B consisted of three interviews with the CoE lead and four group-based interviews with 13 CoE staff (who represented process architects, senior process analysts, solution architects and productivity specialists).

In Phase 3, the resulting framework was tested against two other cases (Case C and D) where the maturity assessment was actioned by external consultants who had developed their own MM and applied it to their clients to identify service opportunities for capability development. The data for Case C and D were also based on in-depth guided reflections (as in Phase 1), but they were light-weighted and were only conducted with the lead consultant who lead the design and delivery of the maturity assessment.

Case A is a large federal agency that provides social welfare support to the citizens of Australia. They work closely with a range of other federal and state government agencies and have a complex network of business processes. Case A has been adopting BPM practices to manage the myriad of complex and continuously evolving processes, with diverse BPM initiatives occurring in isolation across the agency in different sub-areas. The conduct of an organization-wide BPM maturity assessment was aimed to build awareness of the current status of BPM within the whole agency and to derive an evidence-based roadmap that proposes an 18-month and a 3-5-year plan. The agency partnered with a local university that held extensive BPM expertise and went through the selecting, tailoring and preparing stages to deploy a BPM MM. They adapted the De bruin and Rosemann’s MM [20, 21], with a number of contextual customizations.

Case B is an Australian multi-national bank, and one of Australia’s leading providers of integrated financial services. The bank applies many methodologies to improve operations by enhancing current business processes. Case B’s enterprise-wide paradigm for BPM aimed to extend the focus to full end-to-end experiences of both customers and staff, with a specific focus on risks, controls, customer and staff experiences, quality and workforce efficiencies. Whilst these aspects became factors in Case B’s creation of an in-house MM, which focused on individual process maturity, Case B also utilized the Gartner MM at the overall organizational level. This prompted Case B
to look across functional hierarchies to assess ‘end-to-end’ processes and find opportunities for standardization and scalability. The initial assessment based on the Gartner MM was the focus for this paper.

In Case C, a boutique consulting company offering BPM consulting services and tools lead the maturity assessment at the client. An in-house MM derived for consulting purposes was applied to determine a roadmap of work required for consulting engagement. Sixteen maturity capabilities under four categories of BPM strategy, BPM design, BPM implementation and BPM control were assessed, applying an in-house consulting assessment tool. Input obtained from quick interviews with corporate contacts as part of pre-sales formed the basis for the assessment. Five levels of maturity with guidance on what is meant for each of 16 sections was applied, focusing both on the actual and target statuses.

Case D pertained to a large ‘Big 4’ Consulting Company engagement with a Utility company in North America. The Maturity assessment was done as part of the initial ‘planning’ component of a multistage consulting engagement to determine a work-stream focus. An in-house MM derived for consulting purposes was applied. It had 20 capabilities under four topics of Process Strategy, Process Organization, Process Management Processes and Methods and Tools, with five maturity levels. The assessment data was from a survey of selected management staff, which was designed to assess the current and aspirational states and determine the biggest gaps and priority in the context of failed previous attempts at Process Improvement (Six Sigma). This resulted in five categories of key recommendations which defined work within four work-streams.

4 Study Findings

We noticed that the guidelines found in literature were already positioned within three main stages of the MM adaption journey, namely; (i) MM selection, (ii) MM tailoring, and (iii) MM application. Further sub-themes (A-G; as explained below) were identified to group the content within each stage.

(A) Guidelines pertaining to the rationale behind BPM maturity assessment (i.e., the ‘why’ aspects that motivates the maturity assessment with a purpose and value propositions).

(B) Guidelines pertaining to the scope and focus covered.

(C) Guidelines pertaining to the BPM capability areas, that represent ‘what’ is measured in the BPM maturity assessment.

(D) Guidelines pertaining to how the measurement occurs (i.e., the measurement items that concretize/operationalize the capability areas).

(E) Guidelines about the involved stakeholders (i.e., the ‘who’ aspect: respondents/users, sponsor/driver, etc.).

(F) Guidelines about other MM characteristics, such as costs, reliability/validity, customizability etc.

(G) Guidelines specifically around the MM execution (i.e., in Stage 3).

The extracted guidelines from Phase 1 were grouped across the MM adaption stages and re-grouped within the sub-themes (A-G). The three-numeric identification index-
ing each guideline captures this. For example, in ‘1.A.1’, the first digit relates to the stage (1: MM selection), the second part relates to the sub-category (A-G, as introduced above) and the last digit is an indexed number within the sub-categorisation. Sections 4.1-4.3 detail the summary findings. Given the study design, the outcomes of Phase 1 (literature) and Phase 2 (cases A and B) form the primary discussion, where insights from cases C and D are added at the end of each subsection. Tables 1-3 present the framework, listing each guideline (column 1) and depicting supportive evidence from the literature from Phase 1 (column 2), Case A-B from Phase 2 (columns 3-4), and also Cases C-D from Phase 3 (columns 5-6). The tables represent how the literature with a priori guidelines mapped with the case study observations, depicting which guidelines were applied as is (denoted by an '(A)'), which guidelines were applied with extensions (denoted by an '(Ae)'), which guidelines were not considered at all (denoted by an ‘X’) and which guidelines were new.

4.1. BPM MM Selection Guidelines

All, except one (1.D.6) of the a priori guidelines were supported by either one or both of Case A and Case B (see Table 1). Some were adopted as is (see ‘(As)’) while others were adopted with extensions where additional practices were observed (see (Aes)).

‘1.A.1’ relates to the purpose for which the MM is intended to be used, namely only raising awareness or also benchmarking and certification [9]. The driving purpose of Case A was to raise awareness and get executive buy-in for future BPM plans, hence one criterion was that the MM be simple and easy to understand by a broader community. Case B’s core purpose was internal benchmarking to be able to track and show progress with the BPM Center of Excellence’s (CoE) ongoing activities.

‘1.B.1’ is whether the MM addresses a specific process type or can be applied to any process (i.e., generic vs domain specific) [9]. At Case A, the intention was not to measure the maturity of any single process but was aimed at measuring overall BPM capabilities across the entire agency. In Case B the goal was to have a MM that was able to measure the maturity of generic processes. The Bank intended to formally assess 28 pre-identified ‘high impact’ core processes (referred to as ‘HIPs’1) using the selected process-level MM. ‘1.B.2’ captures whether the sought for MM is sourced from academia or practice [11]. This was not relevant to Case A; what did matter was that there was evidence that the MM had been rigorously designed and validated, and preferably also used in other similar government contexts. Case B had a strong preference for a MM that originated from practice. ‘1.B.3’ pertains to whether the expected recommendations from the maturity assessment are problem-specific or more general in nature. The more general ones often need further contextual detailing [11]. This aspect was not considered at all by Case A or B. ‘1.B.4’ refers to the number of business processes to be assessed and improved (i.e., one, more or all processes in an organization) [9]. Similar to ‘1.B.1’, ‘1.B.4’ this was not a consideration

1 ‘HIPs’ was an acronym used to refer to high impact processes. These are processes that are so critical, that if they failed, they would pose a significant risk (reputational, financial, regulatory) to the bank.
for Case A, as the focus was not at process-level capabilities (rather, overall organizational level). At Case B, the focus was on assessing the predefined HIPs (28 processes), from a true ‘end-to-end’ perspective. This was especially emphasized in areas where the bank’s practices were siloed, (which had the tendency to only focus on a part of the process).

Table 1: BPM MM Selection Guidelines with summary evidence.

| 1.A.1 Determine the requested purpose of a maturity assessment (raising awareness / benchmarking / certification) | Lit. | A | B | C | D |
| --- | --- | --- | --- | --- | --- |
| [9] | (A) | (A) | A | A |

| 1.B.1 Determine the requested type of business processes (generic/ certain domains) | [9] | X | (A) | X | X |
| 1.B.2 Determine the requested origin (academia or practice) | [11] | (Ae) | (A) | X | X |
| 1.B.3 Determine the requested practicality of recommendations (generic/context) | [11] | X | X | X | A |
| 1.B.4 Determine the targeted number of business processes (all/one/more) | [9] | X | (Ae) | X | X |
| 1.C.1 Determine the requested capabilities (BPM lifecycle/culture/structure) | [9] | (Ae) | (Ae) | A | A |
| 1.C.2 Determine the high-level definitions of the requested Capabilities | - | new | new | X | X |
| 1.C.3 Determine the definitions of the lower-level factors pertaining to each Capability | - | new | new | X | X |
| 1.D.1 Determine the requested architecture type (maturity levels/capability levels) | [9] | (A) | (A) | X | X |
| 1.D.2 Determine the requested assessment availability (public/private) | [9] | (A) | (A) | X | X |
| 1.D.3 Determine the requested data collection technique (subjective/objective) | [9] | (Ae) | (A) | A | X |
| 1.D.4 Determine the requested rating scales (qualitative/quantitative) | [9] | (A) | (A) | A | A |
| 1.D.5 Determine the requested range of assessment items (number of questions) | [9] | X | (A) | A | X |
| 1.D.6 Determine the requested assessment duration (day/week/longer) | [9] | X | X | A | A |
| 1.E.1 Determine the requested functional role of respondents (internal/external) | [9] | (A) | (A) | X | A |
| 1.F.1 Determine the requested reliability and validity (empirical evidence) | [9, 11] | (A) | (A) | X | X |
| 1.F.2 Determine the requested accessibility based on costs (free/paid) | [9, 11] | (A) | (A) | X | X |
| 1.F.3 Determine how far the MM is configurable | [11, 22] | X | (A) | X | X |
| 1.F.4 Determine the requested architecture details (descriptive/prescriptive) | [9] | (A) | (A) | X | X |
| 1.G.1 Systematically documented selection criteria | new | - | X | X |

‘1.C.1’ is about identifying which capability areas should be assessed and improved (i.e., process lifecycle, process-oriented culture, process-oriented structure) [9]. Determining this upfront will help identify which MMs have the sought-after...
capabilities. Case A did much exploratory work to identify the required capabilities. This included looking at: (i) some of the leading MMs and seeing what capabilities were suggested there and why, (ii) related other MMs (e.g., for IT, HR, Policy, etc.) applied in government settings, and (iii) Australian Federal Government strategies and related frameworks to ascertain process capabilities that may be specific to the Australian Federal Government sector. At Case B, they believed that most of the leading BPM MMs covering enterprise-level BPM capabilities overlapped, hence other aspects (such as 1.B.2, 1.B.3) were prioritized over 1.C.1.

‘1.C.2’ and ‘1.C.3’ were both new and observed in both cases. 1.C.2 related to paying attention to defining the capabilities that were to be assessed and 1.C.3 related to defining the lower-level factors within each capability used for the assessment. In both Case A and Case B, these definitions were derived and were also closely aligned with the organizations’ current BPM terminology. Case A for example used a BPM Lexicon to standardize the definition and develop a common meaning of these across all stakeholders.

‘1.D.1’ pertained to whether the MM should support a staged (the possibility to assess and develop a single capability) and/or a continuous approach (the possibility to assess and develop overall maturity across multiple capabilities) [18]. Both Case A and B had intentions to apply a continuous approach, which aligned with their overall motivations for doing maturity assessments (see 1.A.1). Again with ‘1.D.2’ (whether the assessment items and level calculations are publicly available [18]), both cases were only interested in MMs that had publicly available assessment instruments.

‘1.D.3’ relates to the way the information is collected during the assessment (i.e., subjectively and/or objectively) [9] and ‘1.D.4’ relates to the type of data (i.e., qualitative and/or quantitative) that is collected during an assessment [9]. Case A had purely subjective intentions (where data was to be collected qualitatively) to start with, with the aim that more objective (and quantitative) measurement can be deployed after the agency gained experience and momentum on BPM MM use. Thus, the MM selection was influenced by the need to be able to make this shift in the longer term. Case B intended to use a mix of subjective and objective (and also a mix of qualitative and quantitative) measures and had the intentions of being flexible to fit the ‘current-need’ and “jump ship” (i.e., use alternative MMs if desired). ‘1.D.5’ represented the maximum number of questions to be answered during the assessment [9]. The precise number of questions was not a direct consideration at Case A but given their goals to maintain a ‘simple’ and “straight forward” assessment, MMs with a more concise set of questions were more attractive. Similarly, for Case B, the number of questions was not a direct determinant, as this was a function of other aspects such as 1.C.1 and 1.D.3. ‘1.D.6’ related to the maximum duration of an assessment [9]. Again, this was a not a direct consideration by Case A or B as it depended on other aspects (such as 1.D.3, 1.D.4 and 1.D.5) and how the overall maturity assessment efforts were to be project managed.

‘1.E.1’ captures whether to include people from within or outside the assessed areas, as respondents [9]. This was considered by both cases, but more at the MM adoption stage than the MM selection stage, where potential respondents were carefully hand-picked in each case; considering stakeholders internal (within) and external
(outside) to the assessed area. At Case B the principles of having an end-to-end process influenced the respondent selection.

‘1.F.1’ relates to how well the MM has been evaluated (i.e., evidence that the MM is able to assess maturity and helps to derive more enhanced and effective business processes), with prior evidence [9, 11]. As mentioned with 1.B.2, Case A was highly inclined to selecting a ‘rigorous’ MM. One reason for this was the aim to communicate the assessment results to the higher government authorities (i.e., Minister and steering committee) and the need to have a robust model on which the assessment was based on. Case B also intended to select a reliable MM ‘in theory’ but did not go through any formal process to ascertain the Model’s validity and reliability. ‘1.F.2’ relates to if the MM is free for use or not. And if not free, what the direct costs for accessing and using the MM are [9, 11]. Both Cases opted for a free MM; to maintain an overall low cost. Note that for Case B, the Gartner assessment was included as part of another engagement the two entities had. ‘1.F.3’ is about how far the MM elements can be customized and their ease of integration into existing organizational contexts [11, 22]. This aspect was not considered in Case A, but was as an important consideration in Case B. Not only was this relevant for the first implementation of the maturity assessment, but they also considered the ease of transitioning from one MM to another over time. ‘1.F.4’ refers to the degree of guidance the MM gives to achieve higher maturity levels (i.e., descriptive, implicit prescriptive, explicit prescriptive) [9]. Both cases looked at this at MM selection and found that hardly any gave prescriptive guidelines.

A novel aspect (see ‘1.new’) that related to and overlaid a number of the detailed guidelines was identified within Case A, namely the systematic derivation and application of MM selection criteria (SC). Case A derived an initial set of high-level SC consolidating agency-specific needs and anticipated MM features, which were then subjected to a detailed SC with sub-criteria, ranking and weights. Both stages were documented for transparency, as a means to justify selecting the ‘best-fitting’ MM. The use of these guidelines within Case C and Case D was different, due to the selector being a consulting organization who was selecting and designing a maturity model, and not the company that was applying it. Therefore, the goals of a consulting organization will be at the forefront – selecting and selling defined services, favoring competitive strengths, utilizing existing assets and intellectual property. Also, the consulting company will be more focused on outputs (plans and roadmaps) depending on when in their methodology they recommend using the maturity assessment. It is understandable that there will be less focus on factors within Category F (related to MM characteristics such as costs and reliability) as the company designs once and applies to multiple clients, and has an advantage in having a unique MM product on the market that fits with their methodology and recommended deliverables. These cases were included as even though they demonstrate a key variation in the selection and applicability of a model, they are common examples of the use of maturity assessments in the environment. It is common for organizations not to have existing skills in this area. And thus, they seek assistance from consultants in applying BPM principles and making recommendations for BPM capability uplift.
4.2 BPM MM Tailoring Guidelines

All a priori MM tailoring guidelines were supported by either one or both of Case A and Case B (see Table 2), with some extensions observed. Similar to the MM selection stage, both Case A and B revisited the rationale and motivation for maturity assessment at the MM tailoring stage as well. ‘2.A.1’ relates to determining the purpose of assessment and how it will fit to the target group (e.g., to identify a need for BPM methods or knowledge, benchmarking, action plans) [18]. ‘2.A.2’ is about the expected outcomes of the maturity assessments and how to cater the maturity assessment to meet these needs (i.e., effects on the organization and on business processes) [18]. These two facets remained the same (as the prior MM selection stage) for both cases. ‘2.A.3’ determines whether the assessment will be an informal appraisal or a formal assessment. Case A chose a quasi-formal option, where the actual assessment would be done by an internal sub-committee with advisory members of BPM MM researchers from a local university. At Case B, the assessment was informal and performed by the newly appointed General Manager of BPM, who focused on the capabilities within the 28 HIPs.

‘2.B.1’ gets one to think about which areas will be subjected to the assessment (i.e., specific entity or multiple entities) [11]. This aspect was not specifically considered at Case A but given the enterprise-wide BPM capability assessment goals the areas where BPM had progressed and was led by clear leadership was aimed for (yet ill defined). Case B targeted Australian sited processes. ‘2.B.2’ relates to the specific scope of assessment; at a geographical level (i.e., national, regional or local), organizational level (i.e., management or operational) or process level (i.e., intra- or inter-organizational) [18]. Case A was set at an inter-organizational level. With Case B, the process level assessments were aimed at the HIPs which were often intra-organizational. The Enterprise-wide BPM capability assessment was aimed at a national scope.

‘2.C.1’ is about deciding the optimal levels of BPM capabilities, as dependent on environmental and organizational characteristics. The dynamic market conditions and the users’ purposes will help determine relevant BPM [5, 18]. Case A did not attempt to predefine optimal levels of capabilities. Case B did this, by utilizing a pre-existing Enterprise Capability Model recently produced within its Enterprise Services unit, and then assessing all human resource capabilities directly involved in bank-wide BPM.

‘2.D.1’ is about how the assessment will look like (e.g., open questions also or only statements on a 5-point Likert scale, of a matrix to be filled out) [18]. At Case A, this was considered in detail earlier (as explained with 1.D.3-1. D.5) and designed (ready for execution) in the tailoring phase. In Case B this was completed via responses to questions on a 5-point scale. ‘2.D.2’ relates to translating the MM measurement using concepts appropriate to the target respondents [18]. Case A was very conscious about making the assessment process and results meaningful to the non-BPM specific audience (i.e., ministerial leaders/ senior agency executives) and derived a detailed lexicon to support this. Like Case A, Case B translated the results into funding proposals submitted to the Executive Committee to support the BPM im-
provement work to be performed by the Chief Process Office of the Bank. ‘2.D.3’ Defines the time frame planned for the assessment [18]. At Case A, this was planned to proceed immediately. At Case B, the intention was to proceed at the originally-set point in time, and thereafter repeat the assessment in an annual frequency.

Table 2: BPM MM tailoring guidelines with supporting evidence

|   | Lit. | A  | B  | C  | D  |
|---|------|----|----|----|----|
| 2.A.1 Determine the organization-specific purpose | [18] | (A) | (A) | N/A | N/A |
| 2.A.2 Determine the organization-specific value proposition (i.e., effects on the organization and on business processes) | [18] | (A) | (A) | N/A | N/A |
| 2.A.3 Determine the needed formality of realization (informal/formal) | [11] | (Ae) | (A) | N/A | N/A |
| 2.B.1 Determine the organization-specific application area (one/multiple entities) | [11] | (X) | (A) | N/A | N/A |
| 2.B.2 Determine the organization-specific scope (national/regional, management/operational, intra- or inter-organizational) | [18] | (A) | (A) | N/A | N/A |
| 2.C.1 Determine the BPM capabilities that fit with the environment and organizational needs (optimal/desired levels of BPM capabilities) | [5, 18] | X | (A) | N/A | N/A |
| 2.D.1 Determine the organization-specific measurement approach (e.g., open questions, statements on a Likert scale, matrix) | [18] | (A) | (A) | N/A | N/A |
| 2.D.2 Determine the organization-specific measurement items (i.e., translation) | [18] | (Ae) | (A) | N/A | N/A |
| 2.D.3 Determine the organization-specific measurement time frame. | [18] | (A) | (A) | N/A | N/A |
| 2.E.1 Define the organization-specific sponsor. | [11] | (A) | (A) | N/A | N/A |
| 2.E.2 Determine the organization-specific respondents | [11, 18] | X | (A) | N/A | N/A |
| 2.E.3 Determine the respondents’ degree of BPM knowledge (i.e., years of BPM experience, insights into ongoing BPM activities within the organization) | [11, 18] | (X) | (A) | N/A | N/A |

‘2.E.1’ relates to identifying the main person responsible for driving the maturity assessment [11]. At Case A, this was one of the BPM-leads who was trying to use the maturity assessment as a means to ‘communicate-upwards’. Case B was sponsored by the newly created and appointed Chief Process Officer (CPO). ‘2.E.2’ defines the pool of respondents who will contribute to the assessment as input providers (i.e., employees, management, business partners or a combination of such) [11, 18]. At Case A this was rather ad-hoc and ill-defined. At Case B, this was performed by Chief Process Office, with input from relevant heads of business units ‘2.E.3’ Determine the respondents’ degree of BPM knowledge (i.e., years of BPM experience, insights into ongoing BPM activities within the organization) [11, 18]. This was not considered at Case A. Case B was performed within the Chief Process Office by individuals with decades of experience in BPM and/or bank specific operations.
Most of the tailoring guidelines were not applicable for Case C and D as both cases related to consulting companies creating maturity models which were applied at client sites. These MMs were originally designed to be of use with multiple clients so either, did not require many adjustments or would be designed to be easily adapted. In these cases, the former was applicable, and no tailoring was required and they were used directly as designed, with little consideration of any need to adapt to specific client needs. Matters outside of the formalized assessment were still considered, informally. Example factors considered informally included; the history of BPM within the organization, the sponsor’s focus, and the context of the capabilities. The context included such factors as understanding the dependencies between related capabilities and timelines required for foundational baseline capabilities (such as tools and awareness) being in place before considering capabilities of a more advanced nature.

4.3 BPM MM application guidelines

One of the a priori MM application guidelines was supported by all cases and two were supported by both Case A and B. Two new guidelines emerged (Table 3). The motivations (‘3.A.1’) were revisited again in the model application phase, with the aim to answer why the organization needs a process orientation (i.e., financial, customer/ employee satisfaction and/or operational performance, new business models, innovations, support sustainable society) [19]. The motivations were consistent for Case A across all three phases. For Case B, during the application phase, customer and staff experience were top priorities, followed by risk and cost/income drivers. ‘3.A.2’ confirms that the planned assessment is aligned with the organization’s strategic plans and also supported by the top management [19]. This was observed within Case A, where the assessment goals were refined by input from the senior executives as the maturity assessment rollout was been planned. In Case B, this took place as a natural outcome of the creation of the Chief Process Office.

‘3.D.1’ was to decide on the frequency of MM application; ideally if it is one off (non-recurring) or repeated, and if repeated in what intervals [11]. In both Case A and B, this highly related to the decisions made in 2.D.3 and remained as-is.

‘3.E.1’ identifies who (i.e., specific staff, line organization, or externals) will be involved when executing BPM capability developments resulting from the maturity assessment, including what roles they will play [11]. As in 2.E.2, this was overlooked in Case A. In Case B, this was determined by each Process Owner in conjunction with that business’s Master Black Belt, Black Belt and Green Belt community.

‘3.G.1’ relates to the ‘go’ or ‘no go’ options of executing the actual assessment. The maturity assessment may proceed or halt after all the detailed preparation is done [11]. Case A halted the initiative after an initial informal assessment (and did not proceed with a capability development phase; also, commonly known as a road map). This was not considered at Case B as progressing till the end was a commitment made from the outset. ‘3.G.2’ relates to decisions on whether or not to couple new/ enhanced BPM capability building with existing developmental programs. And if yes, to identify existing development initiatives to integrate with [11, 19]. This was seen in both Case A and B (e.g., piggy backing on agency-wide IT implementations) (e.g.,
integrating with existing initiatives determined). ‘3.G.3’ relates to determining if the identified ‘gaps’ when planned to be addressed should have dedicated well defined projects or occur on the fly [11]. In Case A, given the assessment discontinued the capability enhancements were not thought through in detail. At Case B, the different capability enhancements did form a mix of new projects (e.g., the creation of ‘Customer Led Simplification (CLS) projects), and ‘on-the-fly’ continuous improvement initiatives.

Table 3: BPM MM application guidelines with supporting evidence

| Guideline                                                                 | Lit  | A     | B     | C     | D     |
|--------------------------------------------------------------------------|------|-------|-------|-------|-------|
| 3.A.1 Determine the intended performance effects (e.g., financial performance, customer/employee satisfaction) and potential drivers (e.g., new business model). | [19] | (A)   | X     | A     | A     |
| 3.A.2 Determine preconditions (e.g., top management support, strategy alignment). | [19] | (A)   | (A)   | A     | A     |
| 3.D.1 Determine the frequency of application (one off/recurring).         | [11] | X     | (A)   | A     | A     |
| 3.E.1 Determine the stakeholders for corrective actions (internal/external). | [11] | X     | (A)   | X     | A     |
| 3.G.1 Determine whether to execute an assessment (go/no-go decisions).    | [11] | (A)   | X     | N/ A  | N/ A  |
| 3.G.2 Determine other synergistic initiatives with the organization (e.g., integration with existing development programs). | [11, 19] | X     | X     | X     | A     |
| 3.G.3 Determine the execution plans for corrective action (on the fly / projects). | [11] | X     | X     | A     | A     |
| 3.G.new1 Determine the inter-relationships between the different capabilities and measurements | -    | new   | new   | X     | X     |
| 3.G.new2 Determine if/ when to transfer to another MM                     | -    | -     | new   | X     | X     |

Two new guidelines were identified. ‘3.G.new1’ relates to looking at the different capabilities as a ‘whole system’ rather than isolated silos. Essentially it is to identify how one capability may relate to others. In Case A, a comprehensive mapping of these interrelationships was done. For example, a process architecture that facilitates ‘strategic alignment’, will require training (a ‘people’ factor) and may also be a ‘tool’ and appropriate procedure that guides and governs its use (thus touching on ‘methods’ and ‘governance’). This was implicitly in Case B as well, but not directly designed for such.

3.G.new2 captures the consideration of when to swap MMs, especially in re-occurring MM applications. This was strongly emphasized in Case B where they argued that as an organisation’s BPM maturity increase over time and need for maturity assessment evolves, they may wish to ‘move-on’ to other MMs. For example, the more sophisticated the adoption and utilisation of BPM within an organisation, the use of the more detailed and sophisticated MMs should follow – as the benefits of less detailed MMs will hit ‘the law of diminishing returns’ for the organisation.

With Phase 3, all but one (3.G.1) a priori MM application guidelines were observed in Case C and Case D. Given that both cases intended to encourage sales (Case
C) and work (Case D), the recommendation was always going to be to proceed and a go/no go decision would not be applicable. With ‘3.A.1’, Case D looked closely at performance effects as a tailored response was developed as an outcome from the maturity assessment that took into account history and context. Case C was a very simple assessment for one purpose only, to get an initial evaluation, and so was not concerned with the outcomes, just providing a reading of where the organization was at. Case C and D although quite different did take into account the existing state of the organization and the factors that would ensure organizational readiness such as top management support which are incorporated into any consulting engagement relating to capability uplift (‘3.A.2’). With ‘3.D.1’ Case C was designed as a one-off assessment and Case D was designed to be used annually but would be determined on success of initial work to see if momentum could be maintained. Case D looked at stakeholders as part of implementing a roadmap ‘3.E.1’. Case C was a standalone assessment and Case D tried to incorporate existing past and future projects and priorities to a limited extent ‘3.G.2’. The focus on Case C and D was to foreseen future work so considered the approach for building BPM capabilities, and selecting which ones to focus on, and was designed to be a more defined planned approach (‘3.G.3’).

5 Summary Discussion

Figure 1 presents a visual summary of the resulting framework for BPM MM adaptation, which combines three stages, including 20 guidelines for BPM MM selection, 12 guidelines for BPM MM tailoring and nine guidelines for BPM MM application. The guidelines are divided into seven sub-themes (A-G) pertaining to the: (A) rationale behind maturity assessment, (B) scope and focus covered, (C) capabilities measured, (D) operationalization of the measures, (E) involved stakeholders, (F) MM meta-characteristics, and (G) MM execution.

![Fig. 1. A BPM Selection and Adaption guidelines](image)

The guidelines were interrelated in a nested manner across the stages, i.e., decisions made in Stage 1 would influence the decisions and options in Stage 2 and Stage 3. Themes appearing across the stages have specific guidelines for decisions in that point of time of the journey (as enumerated in Figure 1 and summarized in Table 4). These sub-themes occur in varying degrees across the three phases (Table 4). The framework synthesizes otherwise scattered literature-based guidelines and demon-
strates how this synthesized knowledge is validated and at times extended by our case insights. Compared to the literature, five new guidelines have been added, namely three selection guidelines and two application guidelines. The analysis indicated dependencies between the sub themes and phases. For example, the rationale behind maturity assessment (A) can influence the scope and focus (B) for the assessment, which capability areas are selected (C), and also how the MM is eventually executed (G).

Table 4: Summary overview of the extracted themes

| Main phases                          | Sub-categories of themes |
|--------------------------------------|--------------------------|
| A) For selecting/choosing a BPM MM   | X X X X X               |
| (2) For tailoring or customizing a BPM MM | X X X X               |
| (3) For the actual application of the BPM MM | X X X X               |

6 Conclusion

This paper has provided detailed guidelines for the selection, tailoring and application of BPM MMs, from a user perspective. The framework was built with a literature synthesis and further supported by case study insights. The framework is a useful artifact for practitioners with 41 detailed guidelines, which are categorized into seven categories and grouped in three phases. Meanwhile, the framework can support multiple journeys (e.g., possibly by combining MMs) to inspire future MM adaptations rather than stimulating extra BPM MMs.

The current framework has limitations and leaves room for further development and validation. First, while the literature typically differentiates between the levels of BPM maturity assessments (e.g., at the process level and organizational level [1]), the framework guidelines do not consider this differentiation more deeply. Also, the different MM user-types with diverse motivations and means of applying BPM MMs in practice need further inquiry. An attempt to generalize the findings by different MM use-case scenarios (i.e., where the maturity assessment is driven by consultants, in Case C and Case D) proved that the guidelines are not fully applicable to this context. Future research can derive a typology of BPM MM use-cases to refine the framework with evidence obtained from representatives of such different scenarios.

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