Application of a Holistic Model
for Determining BPM Maturity

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Abstract

Business Process Management (BPM), in various forms, has been around for the last 10 to 15 years. During this time BPM has progressed to a holistic management approach that has an inherent level of complexity resulting in part from the myriad of implementation options available. This paper proposes a BPM Maturity model that provides a framework for the detailed evaluation of BPM capabilities and achievements within organisations. The design paradigms of this model and its multi-dimensional structure are discussed. The model has been applied in two case studies and a range of surveys and the findings from these studies are presented. They confirm the understandability, practicality and relevance of the model. Future work in this area seeks the establishment of a global standard for the measurement of BPM maturity, the development of a tool-based assessment kit, the application of this model through international case studies and plans for more comprehensive study into the relationships between (measurable) BPM-related benefits and BPM-maturity.

Key-words: Business Process Management, Maturity Management, CMM, Case Study

1. Introduction

Business Process Management (BPM) consolidates objectives and methodologies, which have been proposed in a number of approaches including Business Process Reengineering, Process Innovation, Business Process Modelling and Business Process Automation/Workflow Management. It is widely recognised as a foundation for contemporary management approaches as it goes via the analysis of business processes to the roots of an organisation. The comprehensive nature of BPM triggered a wide variety of modes of implementing BPM. The popularity and significance of BPM leads to the question of how advanced different organisations are in their BPM development. The notion of 'maturity' has been proposed in other management approaches as a way to evaluate "the state of being complete, perfect, or ready" and the "fullness or perfection of growth or development" (Oxford University Press 2004). Maturity as a measure to evaluate the capabilities of an organisation in regards to a certain discipline has become popular since the Capability Maturity Model (CMM) was proposed by the Software Engineering Institute at Carnegie Mellon University for the evaluation of the software development process. BPM is another potential area for development of such a maturity model.

This paper is structured as follows. The second and third sections provide an overview of the related literature on BPM and maturity models and a problem statement that outlines the intent of current and proposed research. The fourth section introduces the proposed BPM Maturity model and discusses its dimensions. The fifth section reports on the insights of two case studies and an extensive survey, in which

the model has been applied and tested. Following this are details of a revised version of the BPM Maturity model that incorporates the findings of research undertaken to date. The final sections provide a discussion of limitations and conclusions together with an outlook on future research.

2.   Related Work

a)   Business Process Management

Definitions of Business Process Management (BPM) range from IT-focused views to BPM as a holistic management practice. The IT-focused definition characterises BPM from the perspective of business process automation (Harmon, 2003). The analysis of BPM definitions reveals that the focus is often on *analysing* and *improving* processes (Zairi, 1997), (Elzinga, Horak, Lee, & Bruner, 1995). DeToro and McCabe (1997) represent a holistic view of BPM. They see Business Process Management as a new way of managing an organisation, which is different to a functional, hierarchical management approach. This view is supported by Pritchard and Armistead (1999) whose research resulted in BPM being seen "as a 'holistic' approach to the way in which organisations are managed". Armistead and Machin (1997) state that BPM is "concerned with how to manage processes on an ongoing basis, and not just with the one-off radical changes associated with BPR". Zairi (1997) identifies a guideline for sustainability. Zairi is of the opinion that BPM does not only rely on good systems and structural change, but, even more important, on cultural change. The holistic approach requires alignment to corporate objectives and an employees' customer focus and involves, besides a horizontal focus, strategy, operations, techniques and people. Beside the need for measurement, improvement, benchmarking and customer focus, Zairi stresses the importance of a systematic methodology. Pritchard and Armistead (1999) provide ten "lessons learned" as the outcome of a case study. Pritchard and Armistead's factors involve mainly cultural change and strategy aspects.

The varying approaches have shown that the focus of BPM is on processes and process improvement activities. A BPM approach needs to include on one hand the steps of the process lifecycle as a structured approach to the implementation of BPM. However, on the other hand a BPM approach needs to have a sound focus on developing both a culture and strategies receptive to BPM. This classification into two groups, the act of implementation and the involved and influencing aspects, is reflected within the design of the BPM Maturity model.

A number of factors are either crucial for the success of BPM or can complicate or impede its implementation. Among others, commonly mentioned critical success factors are organisational and cultural change, aligning the BPM approach with corporate goals and strategy, focus on customer and their requirements, process measurement and improvement, the need for a structured approach to BPM, top management commitment, benchmarking, and process-aware information systems, infrastructure and realignment (Armistead & Machin, 1997; Elzinga et al., 1995; Harrington, 1995; Lee & Dale, 1998; Zairi, 1997; Zucchi & Edwards, 1999). It is interesting to see that "methodology" is not mentioned explicitly as a critical success factor. Nevertheless, some authors identify the importance of applying a structured approach, of having process disciplines and fully understood and documented processes that can be supported by a sound methodology. The structured approaches to BPM presented above substantiate the need for a methodology, which is explicitly mentioned by Zairi (1997). Beside the critical success factors, a number of barriers are mentioned which mainly focus on organisational and cultural problems. Commonly mentioned barriers include resistance to change, lack of understanding of BPM principles, lack of consistency of the organisation-wide BPM approach, and developing a process-oriented organisation (Armistead & Machin, 1997; Jarrar et al., 2000; Lee & Dale, 1998; Pritchard & Armistead, 1999; Rainer & Hall, 2002).

Throughout this work BPM is defined as a holistic organisational management practice, which requires top management understanding and involvement, process-aware information systems, well-defined accountability and a culture receptive to business processes. It is based on a process architecture, which captures the interrelationships between the key business processes and the enabling support processes and their alignment with the strategies, goals and policies of an organisation.

b) BPM Maturity Models

Recently, a number of models to measure the maturity of Business Process Management have been proposed. The basis for the majority of these maturity models has been the Capability Maturity Model developed by the Software Engineering Institute at Carnegie Mellon University. This model was originally developed to assess the maturity of software development processes and is based on the concept of immature and mature software organisations. The basis for applying the model is confirmed by Paulk et al. (1993: 5) where it is indicated that improved maturity results "in an increase in the process capability of the organisation". The CMM introduces the concept of five maturity levels defined by special requirements that are cumulative. Among others, Harmon (2004) developed a BPM maturity model based on the Capability Maturity Model (see also Harmon 2003). In a similar way, Fisher (2004) combines five "levers of change" with fives states of maturity. Smith and Fingar (2004) argue that a CMM-based maturity model which postulates well-organised and repeatable processes cannot capture the need for business process innovation. A shortcoming of these BPM models has been the simplifying focus on only one dimension for measuring BPM maturity and the lack of actual applications of these models. The Rummler-Brache Group commissioned a study, which used 10 success factors gauging how well an organisation manages its key business processes (Rummler-Brache 2004). The results have been consolidated in a Process Performance Index. Pritchard and Armistead (1999) provide an attempt to divide organisations in groups depending on their grade and progression of BPM implementation. Maull et al. (2003), whilst trying to define maturity of BPR programs, encountered problems that they could not use objective measures. They tried to define BPM using two dimensions, an objective measure (time, team size, etc.) and a "weighting for readiness to change" (Maull et al., 2003), but this approach turned out to be too complex to measure. Therefore, they chose a phenomenological approach assessing the organisation's perception of their maturity, using objective measures as a guideline. Another example of how to define maturity (or in their case "process condition") is provided by DeToro and McCabe (1997), who used two dimensions (effectiveness and efficiency) to rate a process' condition.

3. Problem Statement

An extensive review of current literature into BPM has confirmed BPM as a complex management practice that many organisations find difficult to implement and progress to higher stages of maturity. Benefits to be gained from the implementation of BPM may therefore not be achieved by organisations and the potential for BPM to be classified as yet another unsustainable management fad exists. This research is focused on developing a model that achieves three primary aims: 1) to enable organisations to assess their current strengths and weaknesses in BPM (i.e. their as-is BPM position); 2) to enable organisations to determine their desired maturity stage with respect to key factors within BPM (i.e. their to-be BPM position); and 3) to assist organisations in developing a BPM progress road-map to move from their as-is to their desired to-be positions. It is expected that a consequence of this research, and the development and application of the model, will be a significant contribution to the BPM body of knowledge, particularly in the area of increasing understanding of BPM maturity, benefits and factors and identifying potential relationships and correlation between these.

This paper discusses a new holistic BPM maturity model, which is more comprehensive than existing models. It also reflects the current understanding of Business Process Management instead of focusing on approaches such as Business Process Reengineering. Furthermore, the model presented is one of very few BPM maturity models, which has actually been tested within case studies.

4. BPM Maturity Model Mark 1

The primary purpose of the model presented in this paper is the evaluation and assessment of an organisation's BPM maturity, both current (as-is) and in the future (to-be). The proposed BPM maturity model has the following value propositions.

1. As a diagnostics tool, it allows the identification of current BPM strengths and shortcomings in different dimensions such as IT/IS, culture or accountability, i.e. it quantifies as-is maturity. It can also

be used to evaluate and compare the BPM capabilities of different organisational entities and support organisational learning.

2. The model and the findings derived from its application can be used to identify and direct necessary BPM-related activities, i.e. it can be used to define intended to-be maturity. It enables organisations to focus on less mature areas and to develop a structured and specific improvement plan for progressing to the determined to-be situation. For example, a low maturity in BPM methodologies can be a motivation to identify and utilise richer methodologies (e.g. for business process modelling).

3. The model facilitates informed decisions about prioritising areas for BPM development. The model provides a framework for understanding the relative cost-benefits of investing in proposed changes and the impacts of those changes on the realisation of the organisation's strategic objectives.

4. The model can be applied over time and supports, as a longitudinal study, the measurement of actual progress in the BPM capabilities, i.e. it can serve as a continuous monitoring tool in the process of moving from as-is maturity to to-be maturity.

5. Finally, the application of the model in a number of organisations will allow benchmarking studies within and across organisations, industries and countries.

Besides these benefits, which are oriented more towards the actual application of the model in practice, the development and application of the model also makes a significant contribution to the body of BPM knowledge. In particular, the establishment of a generally accepted BPM maturity model will contribute to a shared understanding of the relevant facets of BPM. Such an understanding will be beneficial for the clear differentiation of BPM from other management approaches.

It has to be stressed that the proposed model measures BPM maturity, and *not* the maturity of business processes. Whilst the factors included in the model can apply equally to both BPM and individual processes the model includes quantitative measures of "coverage" and "proficiency" to ensure that it is BPM maturity that is assessed.

In addition, the identified dimensions of BPM included in the model can be seen as independent variables. The underlying assumption is that an increased maturity in these dimensions will have a positive impact on actual business process performance, i.e. the dependent variable. The focus is on measuring these independent factors rather than actual individual process performance for two reasons. First, it provides insights into how process performance can be improved rather than just reporting on outcomes. Second, a number of models and solutions are already available for the measurement of process performance. The model can however, easily be linked to tools such as the IDS Process Performance Measurement, which are focused on capturing metrics such as processing time and costs of a business process execution. Measuring the dependent variable (i.e. actual business process performance) includes measuring the impact of BPM on operational outcomes (cost, time, and quality), customer satisfaction, competitive benchmarking and financial results.

It also has to be emphasised that the researchers are of the view that not all organisations will necessarily aim to maximise BPM maturity but rather that they may seek to maximise the effectiveness of BPM. In other words, an organisation might aim to achieve a stage of maturity that is most appropriate to achieving its goals and objectives across a range of possibly competing issues.

The model also has to find the right trade-off between complexity and simplification. A simpler model typically is easier to understand and leads to higher user acceptance. A complex model tends to depict reality more appropriately. In the context of maturity models, simple models provide only one maturity stage, while more complex models provide differentiated insights into various maturity stages. The latter approach has been chosen by the researchers in this instance. A number of maturity stages can be derived for different BPM components, different business process lifecycle stages, different organisational entities and different points in time. This allows a deeper understanding of varying maturity stages and depicts the fact that an organisation does not necessarily have one homogeneous and consistent approach towards

BPM. However, it is possible to consolidate the maturity stages of the four dimensions (factors, perspectives, organisational scope and time) to one maturity stage, if this is desired.

The proposed BPM maturity model enables the identification and assessment of the maturity of BPM policies and practices within organisations. The comparison of low and high maturity in Figure 1 helps to understand the comprehensiveness and range of BPM maturity. The idea of comparing low and high maturity derives from the work from Paulk et al. (1993), who presented such a comparison to facilitate the understanding of the concept of process maturity. The concept of maturity is similar to CMM where five BPM maturity stages are defined as: (1) Initial State, (2) Defined, (3) Repeatable, (4) Managed, and (5) Optimised. The BPM maturity definitions however differ greatly from those used in CMM. More comprehensive definitions have been used in order to better reflect the specific requirements of BPM maturity on a factor by factor basis. When applying these stages it is assumed that each stage of maturity includes, as a pre-requisite, the requirements of lower stages.
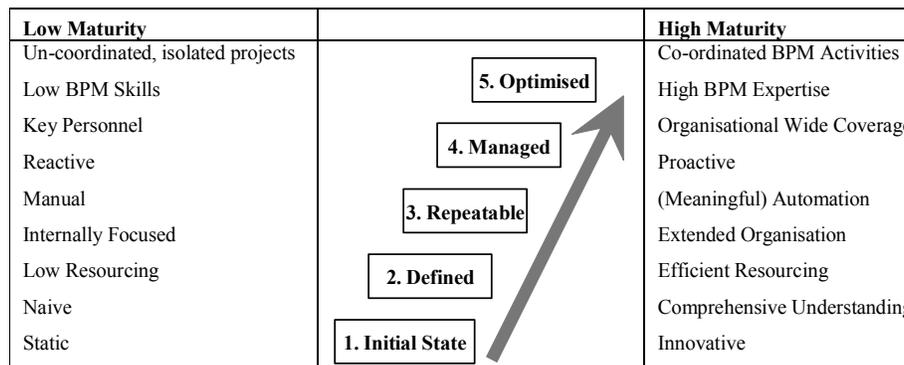
Low Maturity		High Maturity
Un-coordinated, isolated projects		Co-ordinated BPM Activities
Low BPM Skills	**5. Optimised**	High BPM Expertise
Key Personnel		Organisational Wide Coverage
Reactive	**4. Managed**	Proactive
Manual		(Meaningful) Automation
Internally Focused	**3. Repeatable**	Extended Organisation
Low Resourcing		Efficient Resourcing
Naive	**2. Defined**	Comprehensive Understanding
Static	**1. Initial State**	Innovative

Figure 1: Comparison of Low and High Maturity

a) Criteria to Measure BPM Maturity

In the scope of the proposed model, BPM maturity is defined as a combination of coverage and proficiency, which is similar to the notion of effectiveness and efficiency in the model by DeToro and McCabe (1997). Coverage refers to the capability within the organisation and the level of implementation of BPM principles, whereas proficiency measures the quality and effectiveness of BPM within the organisation. In other words, coverage asks *how far* through the organisation BPM activities extend and proficiency asks *how well* BPM activities are conducted. Attaining a higher maturity stage requires improvement in both "coverage" and "proficiency". A set of criteria derived from the key elements of BPM maturity presented above and the comparison of low and high maturity is used to characterise each stage consistently.

Three criteria have been defined to measure the coverage of BPM within an organisation:
  (i) The number of processes included in BPM practices.
  (ii) Staff involvement / level of staff undertaking BPM activities.
 (iii) Links to other management tools (such as budgets, KPI, organisational charts, etc).

Three criteria have been defined to measure the proficiency of BPM within an organisation:
  (i) Response to BPM issues and initiatives.
  (ii) Frequency of conducting BPM activities and initiatives.
 (iii) Suitability of BPM tools, resources and practices.

For each criterion a five-point scale is defined, which corresponds with the five maturity stages. As a result, the combination of the six criteria and the five maturity stages defines a matrix, which lists for each criterion its special characteristic at a certain maturity stage (e. g. if 20-40% of all processes are designed using software accepted as BPM best practice, this may represent a component of IT/IS maturity of Stage

2). Separate maturity stages are defined for each of the 5 factors. The researchers feel that the benefit of providing this comprehensive definition of maturity stages is twofold. Firstly, it enables organisations to better understand their maturity and makes it possible to better target BPM improvement strategies and secondly, it will reduce individual interpretation of stage meanings and enable the development of a meaningful and consistent application of the model across time, industry and geographic location.

b) BPM Maturity Dimensions

Aside from the maturity stages, the major components that form the framework for the BPM Maturity model assessment are: factors, perspectives, organisational scope and time.

A **factor** is defined as a specific, measurable and independent element which reflects a fundamental and distinct characteristic of BPM. Based on an extensive literature review, five factors have been identified which are perceived as covering and characterising BPM completely. The following five factors derive from a number of identified critical success factors or barriers to the successful implementation of BPM.

 (i) *Information Technology and Systems (IT/IS):* The use of IT/IS resources (aka process-aware Information Systems) in the implementation and conduct of BPM practices.

 (ii) *Culture:* The acceptance, practice and promotion of BPM by personnel related to the organisation's processes.

(iii) *Accountability:* The assignment of responsibility and accountability for BPM practices to personnel related to the organisation's processes.

(iv) *Methodology:* The adoption of formal, well-defined and repeatable methodologies for conducting BPM.

 (v) *Performance:* The measurement, assessment and actioning of BPM related performance, including individual processes and personnel related to the organisation's processes.

The initial sources providing BPM critical success factors and barriers are detailed in Table 1.

Factor	Initial Source
Culture	Elzinga et al., 1995; Llewellyn and Armistead, 2000; Pritchard and Armistead, 1999; Spanyi, 2003; Zairi, 1997; Zairi and Sinclair, 1995; Zucchi and Edwards, 1999
Performance	Gulledge and Sommer, 2002; Jarrar, Al-Mudimigh and Zairi, 2000; Pritchard and Armistead, 1999; Zairi and Sinclair, 1995, Zairi, 1997
Alignment	Elzinga et al., 1995; Jarrar, Al-Mudimigh and Zairi, 2000; Pritchard and Armistead, 1999; Puah K.Y. and Tang K.H, 2000; Zairi, 1997; Zairi and Sinclair, 1995
Accountability	Gulledge and Sommer, 2002; Jarrar, Al-Mudimigh and Zairi, 2000; Pritchard and Armistead, 1999
Methodology	Pritchard and Armistead, 1999; Zairi, 1997
IT/IS	McDaniel, 2001

Table 1: Initial Source of Factors

A **perspective** is defined as a high-level repeatable phase that applies to BPM in general as well as to individual business processes. In a functional sense, a perspective may represent an area of expertise or responsibility already existing within the organisation. The perspectives within the model have been derived from established business process lifecycle models and are similar to the plan-do-check-act cycle or the DMAIC (define, measure, analyse, improve, control) methodology used in Six Sigma. The 5 perspectives include: Align, Design, Execute, Control and Improve.

A perceived benefit of the model is its flexibility and the possibility of cascading implementation. Therefore, the **organisational scope**, defined as the entity to which the model is applied, is one dimension of the model. The entity can be an entire organisation or a sub-set of an organisation such as a geographical location, a division, a business unit or a subsidiary, or even a project or a process. The organisational scope increases the flexibility of the application of the model. Despite BPM being defined as a holistic organisation-wide approach, the use of organisational scope within the model reflects the reality that organisations might not start the implementation of BPM principles with a corporate top-down approach but rather bottom up, at business units or with isolated projects. Furthermore, the application of the model across the organisation helps to gain a detailed view of the current situation. An organisation that is striving for a company-wide balanced BPM approach can compare and assess entities identifying more mature entities for use as internal benchmarks and guiding examples whilst enabling a focus on less mature entities by systematically supporting their improvement.

Within the model, **time** refers to the actual point in time at which the model is applied. In its initial application, the BPM Maturity model is contributing to the first step of a BPM maturity improvement project. An organisation's maturity is assessed, whereupon a desired maturity stage and an improvement roadmap can be determined. Having completed the project, the model can be re-applied to compare the maturity over time and identify the results achieved following the implementation of the roadmap. This dimension will enable the assessment of the relative success of selected strategies.

The combination of factors, perspectives and organisational scope combined with time lead to a multi-dimensional BPM Maturity model. Factors and perspectives build a five-by-five-grid, resulting in 25 assessment fields or cubes. A "cube" is a factor/perspective combination, and can be defined as the smallest measurable entity within the model. The assessment of 25 cubes enables organisations to identify and understand their current stage of BPM maturity (i.e. their as-is position). The BPM Maturity Model is depicted in Figure 2.
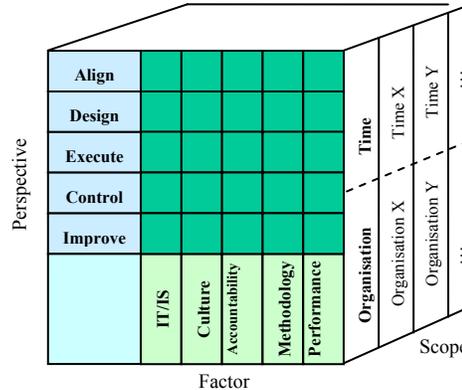

Figure 2: The BPM Maturity Model – Mark I

Similar to CMM, the BPM Maturity model is designed to be both a self-assessment and a third-party assessment tool. The self-assessment is done in the form of a survey. The questions are quantitative and based on a five-point scale. The scale corresponds to the generic stage requirement descriptions. Consequently, the answers can be related back to a maturity stage. All questions are clustered following the 25 cubes. The third-party assessment is conducted in form of a case study including the survey. In addition, this case study includes a number of semi-structured interviews with relevant stakeholders as well as studying relevant documents such as process models, job descriptions of process owners or process performance reports. The advantage of a third-party assessment is seen to be twofold. First, the scope of the study is more comprehensive as it goes beyond the survey. The conduct of a case study allows triangulation between the data gained through the survey, from the interviews and the document studies and increases the reliability of the outcomes. Secondly, the research team gains experience with the model that can be used

for improving it and contributing to the BPM body of knowledge.

The assessment of 25 cubes leads to a comprehensive picture of an organisation's BPM approach. This assessment reveals specific areas of strength and weakness because one maturity stage is defined for each cube. This approach is similar to the continuous representation of the CMMI model (Ahern, Clouse, & Turner, 2004) whereby a method of mapping metrics needs to be identified to map the 25 cube maturities to one overall BPM maturity. It is assumed that a pattern exists to identify the overall maturity (Maull et al. 2003). However, it is suggested that this pattern can vary from case to case, which indicates that the importance and the weighting of the factors and perspectives might vary across industries or countries. Another viewpoint on this model can be formed by taking a slice through the model to see how a factor or a perspective varies across the organisation or over time.

5. Practical Application

a) Case Study Design

In addition to developing a theoretical model, the researcher's aim was to create a model that had wide practical application and acceptance. Since initial development, the model has been tested in two Australian organisations by conducting both case studies and surveys.

A range of tools were used to gather data during the case study. A detailed case study protocol was used to ensure consistency between case study questions and data gathering. Questions were coded on the basis of the "Coverage" and "Proficiency" of both factors and perspectives. A Feedback Survey collected data from participants to assess the design of the model and the appropriateness of the structure, factors, perspectives, scope and its overall application. An Establishment Survey was used to gather background information about the selected organisation and their motives and expectations with respect to BPM. This survey was completed by the key contact due to their extensive knowledge of both the organisation and their BPM approach. In addition, the researchers conducted in-depth interviews with the organisation's key personnel with respect to each of the model factors. Specific case study questions used in these interviews were designed to be broad, open-ended questions used to gather a range of information as opposed to specific, pre-defined answers. To ensure validity of data collected during the interviews the same two researchers conducted each of the sessions. Each researcher collected individual records of the interviews which were then translated and compared to ensure completeness and accuracy of data and subsequent interpretation. Each organisation participating in the case study was provided the option of having the sessions recorded however this option was declined by both organisations. Each of the tools used is being improved based on the feedback received during the conduct of the case studies.

The organisations selected for participation in the case studies were chosen for a number of reasons:

 (i)   Prior relationship with the research centre and involvement in previous research projects resulting in an understanding of research processes and potential outcomes;

 (ii)   Demonstrated commitment to BPM principles and practices with primary contact being well-known. In fact, the two key contacts have conducted presentations at commercial BPM conferences;

(iii)   Willingness to participate and to invest time in attending presentations, case studies and surveys; and

(iv)   Geographical location that was readily accessible to the researchers.

The two organisations selected each have a recognised BPM initiative being undertaken that is driven from a centralised area within the organisation. Both organisations operate within the public sector. Within each organisation the case study participants were selected by the key contact following a presentation by the researchers detailing what would be involved. Both organisations chose to have the model applied to their business lines. For one organisation there are two business lines. One is considered to be more commercially based due to the nature of transactions and the need to be more competitively structured whereas the other is represented by long-term assets with less commercial focus and more government support and intervention. The other organisation is represented by four lines of business that represent the

high level value chain processes that have been defined for the organisation.

b) Case Study Results

Relevance of Factors

The factors used within the model were initially derived by identifying critical success factors and barriers to implementation within BPM approaches following an extensive review of literature in the BPM area. During the conduct of the case studies the researchers sought to confirm the relevance and suitability of the factors selected. This confirmation was sought by first asking participants to grade the factors used on a 1 to 5 scale with 1 being Not Important and 5 being Very Important. Secondly, participants were asked to nominate any other issue they considered sufficiently important to include as a factor within the model.

The factors were rated as follows: Culture and Performance were both 5, Accountability 4, Methodology 3.75 and IT/IS 3. Leadership was the only other potential factor raised by case study participants. The researchers considered Leadership to be contained within the factor Culture.

Factor – Culture

The organisations selected for the case studies were both from the public sector. One organisation was only 5 years old and is the result of combining 6 organisations into 1. The other organisation has been around for more than 100 years and consists of a worker demographic that includes "mostly male over 45 with 22 years of service on average". In one case the organisation described the culture as consisting of 3 distinct groups – "the coalition of the willing", "the coalition of the unwilling" and "the innocent bystanders". The other organisation said that there was "opposition", "avoidance" and "conventional" cultural divisions. Both organisations, whilst implementing BPM, operate using a traditional functional structure to their business and have no immediate plans to modify this structure. One organisation however is in the process of implementing a new business plan that squarely focuses on 4 core processes that correspond to business lines.

The key cultural obstacles that were identified as impacting on BPM by these organisations were:

  (i)   Granularity of processes including a lack of understanding between process and procedure;
 (ii)   Ownership of existing processes and a resistance to change including a "knowledge is power" attitude;
(iii)   Silo mentality leading to a limited focus on cross-functional processes;
 (iv)   High degree of duplication, wastage of resources and bottlenecks within identified processes;
  (v)   Poor resource and budget allocation;
 (vi)   Unionisation of work-force;
(vii)   Little association between reward/compensation and process related performance;
(viii)   Poor communication of process related issues; and
 (ix)   Lack of clarity and understanding of what is required with respect to process management.

Both organisations felt that leadership was critical to overcoming these obstacles and felt that a top-down approach that works it way through the layers of an organisation was essential to success. In addition, a natural reaction to previous overcompensation has been a groundswell of support for process change as workers feel inhibited and unable to work in the overly restricted environment that has been created. Both organisations also commented that increasing commercialisation of particular business units was having a positive affect on process management. In both cases identifying and addressing process-related cultural issues was 12 to 18 months old and the feeling was that things were only just beginning to change. The general expectation was that improvements were more likely to be seen over a 3 to 5 year timeframe.

In both organisations process management is co-ordinated from a centralised area with process change generally undertaken as discrete projects. The operation of these projects, their resourcing, budgets and priority, is often the result of the perceived importance of the project outcome. In most cases however, the

outcomes of these projects are not assessed based on value-add to the organisation. In both organisations changes in the way projects are being approved is being addressed and the value-add and alignment aspect is becoming more consistently implemented. At this stage it was felt that the outcomes were not being mapped back to goals and objectives and that as long as the project did not run dramatically over time or budget the degree to which outcomes where met was not really assessed. In some instances external consultants and contractors are utilised but this was felt to inhibit successful process management as there was the tendency not to look outside the project and consider the broader needs of the organisation.

Overall, despite the importance of culture and the recognition of its impact on BPM success indicated by a consistent rating of 5, it was the most immaturely applied factor within both organisations.

Factor – Performance

Similarly to culture, performance appeared to be the most immaturely applied with respect to both process-oriented management and individual processes. Whilst overall performance measures were present in some instances they were completely absent or ignored in others. In both organisations performance was functionally based and rarely aligned to processes. Both organisations were using balanced score card (BSC) to set goals and objectives and to cascade these through the organisation but again this was done within (not across) functional areas. End-to-end processes were rarely recognised least of all measured. There was little if any measurement of process outcomes or assessment of value-add of suggested process improvements. In addition, the achievement of goals and objectives in process related projects was rare. In some instances post-implementation reviews, audits and benchmarks were beginning to be used. Within processes performance was measured using a range of methods such as cycle time, availability, through-put and so on however this was only applied to discrete, functionally based portions of the process and not to the process in its entirety. In addition, when these measurements were taken little thought was given to other areas within the process and the impact that results may have on these.

A range of tools including, benchmarking, competitive pricing, spreadsheets, BSC, statistical software, forecasting software and financial packages were used to measure and assess performance. In many instances information and data used by these tools was not collected by the tool itself but required manual intervention. In addition, little (if any) capacity planning and/or simulation was conducted to identify areas of improvement based on current performance. Individual performance was most notable in both organisations with Performance Management plans being developed and individuals having KPI's. In both instances however the organisations rarely linked individual performance or reward and remuneration to process related outcomes. In both organisations some ground was being made in this area at a senior executive/manager level although this was seen as being slow to take hold and in its very early stages. Both organisations raised concerns over the ability of the organisation to relate individual performance measures to reward and remuneration due to the heavy unionisation of their workforces. For both organisations financial measurement appears to be the area most consistently reported on. This is possibly due to existing external and governmental funding controls that influence gathering and maintaining financial performance data. With respect to process oriented management approaches both organisations indicated that the biggest issue with being able to measure this was their current ability to benchmark their present position. Participants felt unable to measure the success of strategies as an understanding of their starting point was not available. In addition they did not know where they were doing things well. In both instances, this was one of the motivators for the organisations participating in this research. A range of feedback measures were being used, including forums and surveys, to measure the relative success of process oriented management initiatives. One organisation had experienced significant positive results from a major process-improvement project and this success was assisting in pushing process oriented approaches through the organisation. Similarly the other organisation felt that over time, more visible and measurable wins would assist in promoting process related issues. Both organisations felt that the more commercially aware and focussed areas tended to be better at measuring and understanding the performance of processes and the impact and consequences of this performance.

Factor – Accountability

Within each organisation levels of accountability for individual processes were most evident within the finance area. Generally speaking, accountability had begun to be assigned to broader process related issues at the top level but was yet to make its way down the hierarchy. Each organisation has implemented a form of performance agreement at a senior level that linked accountability for outcomes with processes however it was felt that these did not necessarily carry any weight at this time. Both organisations commented on a "blameless society" and "looking for someone to blame". In addition, both organisations raised questions over the ability of the organisation to change this due to the heavily unionised environment. What accountability had been assigned has generally only been done within existing silos and does not consider end-to-end processes resulting in issues when functional boundaries are crossed.   Little (if any) accountability has been assigned at an operational level. Both organisations displayed little sign of linking process accountability to strategic goals and objectives.

One organisation commented that there was both a formal and an informal process of assigning accountability.   Where individuals adopted a self-assigning role the outcomes from process related initiatives tended to be more positive. In addition, both organisations felt that the lack of direct link between reward and remuneration and the achievement of goals and objectives related to process outcomes was compounded by the lack of formal accountability. This was also evidenced by a lack of accountability for delivery of project/process outcomes. Both organisations indicated that a stronger alignment between process accountability and organisational goals and objectives would likely result in employees being more willing to accept responsibility for process outcomes.

Factor – Methodology

The two organisations displayed a mix of in-house and readily available methodologies in the broader BPM arena. When considering the alignment of processes, BSC was prevalent in both organisations. In addition, benchmarking with competitors and surveys were commonly used. Again, the focus of these methodologies tended to be functionally based or outcome focused rather than being applied to well-defined and understood processes. One organisation also used the Supply Chain Operations Reference (SCOR) model and service level agreements with suppliers indicating that their application of alignment applies to the extended organisation. In looking at the design of process-oriented management and individual processes both companies used a combination of internally developed and readily available methodologies. In both instances, internally developed methodologies were utilised in the design of BPM activities rather than the design of individual processes. Both organisations use readily available methodologies for designing individual processes including Six Sigma, as-is and to-be modelling and plan-do-check-act cycles. Few formal methodologies are used in the execution of processes and process management practices.   The execution of process management is done through a centralised team in both cases. Internal methodologies have been developed to assist in this process in a similar manner to the design of process management. The execution of individual processes was seen to be more "the way things got done".

In both organisations process management practices are being driven out of a centralised unit.   This structure in itself assists in controlling the methodologies used. In one organisation additional use of methodologies relating to providing governance and advice is evident. This is done using informal communication and previously has not included much in the way of consultation. The intranet features strongly as a control methodology as it is the means by which staff access process related documentation and information. The other organisation uses a combination of reviews following the management cycle and governance structures. It was suggested that a past focus by the organisation on governance as a consequence of broader environmental issues (such as Enron and HIH) has resulted in an over reliance on governance related methodologies which are beginning to act as a hindrance to process management and its application. Consistency of process management is ensured using a combination of formal and informal channels including linkages to performance agreements and informal networks and reviews. The control and consistency of individual processes is attained using such methods as internal auditing, feedback mechanisms and reporting processes. Similarly to execution, control was seen as being integral to the basic working of the organisation. Little (if any) automated process control was used by either organisation when looking at individual processes. In the main what was used focused on quality, cost and time. This

was applied to discrete sections of processes with little regard to the suitability or value-add of interim outcomes to the overall outcomes of the end-to-end process. One organisation commented that the focus on quality actually had a negative impact on the control of processes within the organisation as, when combined with the current culture and lack of accountability, it provided staff with someone to blame and inhibits the overall adoption of more mature process management practices.

In both organisations a project-based approach to process improvement was used. As a result internal project management methodologies were heavily used. One organisation also used Six Sigma and their internally developed BPM framework when analysing automation possibilities. The other used audit functions to identify possible areas of improvement. Overall both organisations thought that the use of methodologies was leading to improvements in both process management and individual processes. However both organisations, whilst using a range of methodologies, were relatively immature in their approach to executing, controlling and improving both process management and processes. A common starting point for applying methodologies was in the alignment and design areas of both individual process and process management practices. Having said this, methodologies used in process-related alignment tended to be more focused on discrete functional components rather than a holistic approach – again indicating a relatively immature approach with respect to methodology application. This was supported by comments by members of both organisations that indicated that they were still at "early stages of maturity" and "time would tell".

Factor – IT/IS

IT/IS plays a vital role for both organisations in the conduct of their business however in one organisation, there is a large number of staff that do not use PC's for the operation of their day-to-day activities.

In both organisations IT/IS figured heavily as a means of communicating BPM practices. Both organisations had intranet sites with dedicated BPM areas used to inform staff of the latest projects and provide access to policies and process information such as details of process owners and individual process models. Email was also a major means of communicating process management information and factored strongly in the operation of processes within the organisations. Both organisations had specific systems to assist with the design of processes with one organisation currently considering an upgrade to a system such as ARIS. The use of IT/IS in searching on the process management area of the intranet has also shown to be an instigator of change for one organisation as it has revealed the extent of duplication in current process related content and led to an initiative to reduce these levels. In both cases there was little (if any) direct alignment between IT funding and functionality and process related requirements. This was supported by comments like "mismatch between requirements", "requirements systems developed to are not the same as what the business test to" and "there is no mapping of business solutions to system". One organisation said that sometimes using a business analyst to define requirements was "skipped for urgency". It was felt that the poor alignment of functionality with requirements derived (at times) from a poor understanding of the overall process for which the system was being sought.

Both organisations saw IT/IS as providing a means of overcoming the silo mentalities that exist within the organisations and present an obstacle to the adoption of BPM. However, neither had seen a great deal of improvement in the suitability of IT/IS functionality since beginning to implement process related initiatives. It was felt that this would change over time but that attitudes such as "high level talking process and low level thinking function" and "more expensive the better" are impeding such improvement. In both cases the climate and culture of the organisation and the general lack of understanding of processes was felt to impede improvements in IT/IS suitability. In both organisations IT funding and budget processes were strong although primarily conducted at a senior management level. Budgets themselves however tended not to be associated with specific processes but rather with financial and functional objectives of the organisations. Both organisations were able to provide examples of IT/IS being used to automate and/or improve processes resulting in increases in both efficiency and effectiveness. This included reduction in safety issues, improved compliance, reduced cycle times, ability to monitor performance, capacity planning and improved accuracy of data and information. Despite this, both organisations also felt that they had

some way to go with improving in this area.

c)   Survey Design

In addition to the case studies, an extensive survey was conducted to fully apply the model within one of the organisations. The survey contained over 300 questions that were used to evaluate the maturity of BPM within the organisation with respect to each factor and perspective. The results of the survey were then analysed and reported back to the organisation on the basis of 'coverage' and 'proficiency' within each factor and perspective.

One of the difficulties with constructing the survey was to have, in terms of quality and quantity, the right questions to obtain relevant and useful information for meaningful analysis without having so many questions that individuals were deterred from completing it.   For this reason, the survey was developed primarily on the basis of the 5 factors. The relevance of the factors identified in the case studies indicated that this would enable the recognition of individual specialists within an organisation who could be used to complete the survey. Each question was also coded on the basis of the perspective they related to and also based on whether they were measuring 'coverage' or 'proficiency'. This additional coding was not seen by the individual/s completing the survey questions but was used by the researchers when analysing the data collected and formed the basis of reporting back to the organisation.

d)   Survey Results

Originally it was intended to conduct the survey with each organisation that had participated in the case study. One of the organisations had identified 4 business lines which could be independent units of analysis for a BPM maturity study, the other two. Within the one organisation specialists for each factor were selected within each business line. In the other organisation one individual who was familiar with all five factors was selected from each business line. In the end, results were received from 3 of the 4 business areas in the one organisation and not at all from the other organisation. In total 15 employees from the participating organisation were involved in the completion of 3 surveys. The reasons provided for non-completion of additional surveys was lack of time, competing work priorities, insufficient interest by the individuals chosen to complete and the inability of BPM co-ordinators to influence individuals chosen to participate. This highlights one of the difficulties for researchers and organisations attempting to gather data regarding BPM maturity being the ability to successfully gather sufficient meaningful and complete data to enable desired analysis. Additional factors that may have contributed to the non-completion of the survey include:

(i)   The voluntary nature of participation in the case study and survey research. Neither organisation had a vested financial commitment to the outcome of the research. Both were participating purely on the grounds of an active interest in the BPM area and an existing relationship with the researcher body. As a result there was little or no leverage for the co-ordinators to exert within the organisation.

(ii)   The timing of completion was the result of progress made to date by the researchers rather than necessarily identifying the optimal time for the organisation. The survey was conducted in the final quarter of the financial year with both organisations having existing regulatory reporting requirements which may have been a competing factor on individual's time.

(iii) At lower stages of BPM maturity process-orientation is not a part of how things are done but seen as an additional burden on top of other priorities. On the basis of the case study results, both organisations were considered to be at low stages of BPM maturity.

Despite these difficulties and the relatively small number of complete surveys received, there was a significant amount of relevant and useful information obtained by the researchers through the conduct of the surveys. The researcher's intention is that, following review of the model and it's toolset to include enhancements from research conducted to date, the survey will be made available on-line and conducted with a much wider sample data-set.

Individuals that completed the various sections of the survey for each of the business lines fell into three

groups: those that had been briefed on the model and also participated in the case study sessions, those that had been briefed on the model and not participated in the case study sessions and those that had neither been briefed on the model nor participated in the case study sessions. This process enabled the researchers to gain valuable feed-back on the survey design in addition to gathering data for analysis and presentation to the organisation.

Following collection of the survey results analysis was undertaken by the researchers with the results being reported back to the organisation.

e)   Outcomes

For the organisation that completed both the case study and the survey, the results obtained from the survey supported those obtained from the earlier conduct of the case study. Following analysis of the results from the survey a final presentation was conducted with participants of the case study and survey from the organisation. During this presentation, participants indicated that the results were substantiating their existing perceptions of their own BPM initiatives. They were also of the opinion that receiving validation of this from an external source was particularly useful as it provided a level of independence that would be useful for progressing BPM within the organisation.

The survey results indicated that the organisation was at low stages of maturity for all factors and perspectives. This was particularly noticeable for the factors culture (i.e. "How much do individuals appreciate and think in business processes?") and performance (i.e. "How well does the organisation continuously control and interpret the performance of their business processes?") across all business lines. Performance maturity tended to be higher for the business lines that were more commercially focussed whereas methodology tended to be higher in the business line that incorporated the BPM implementation unit. The difference between the coverage and proficiency of each of the factors was interesting in that again the proficiency of BPM was higher within the commercially focused business lines and the coverage of BPM was higher in the business line that include the BPM implementation unit.

The results of applying the model in the case studies and the survey provided valuable insights into how the model could be improved to make it more useful for organisations and to assist future research initiatives.

f)   Impact on Model

The initial BPM Maturity model had the following value propositions.

1. As a diagnostics tool, it allows the identification of current BPM strengths and shortcomings in different dimensions such as IT/IS, culture or accountability, i.e. it quantifies as-is maturity. It can also be used to evaluate and compare the BPM capabilities of different organisational entities and support organisational learning.

2. The model and the findings derived from its application can be used to identify and direct necessary BPM-related activities, i.e. it can be used to define intended to-be maturity. It enables organisations to focus on less mature areas and to develop a structured and specific improvement plan for progressing to the determined to-be situation. For example, a low maturity in BPM methodologies can be a motivation to identify and utilise richer methodologies (e.g. for business process modelling).

3. The model facilitates informed decisions about prioritising areas for BPM development. The model provides a framework for understanding the relative cost-benefits of investing in proposed changes and the impacts of those changes on the realisation of the organisation's strategic objectives.

4. The model can be applied over time and supports as a longitudinal study the measurement of actual progress in the BPM capabilities, i.e. it can serve as a continuous monitoring tool in the process of moving from as-is maturity to to-be maturity.

5. Finally, the application of the model in a number of organisations will allow benchmarking studies within and across organisations, industries and countries.

As a diagnostic tool (value proposition 1) and to enable the identification and direction of necessary BPM-related activities (2) the model worked particularly well. The results presented to the organisation confirmed what was already felt but provided important external validation to these feelings. Comments of "no surprises there" were common. The ability of the researchers to provide additional information from the analysis of the 'coverage' and 'proficiency' was also valuable – particularly where an organisation was making a decision about whether their approach to BPM implementation was to "get it out there and get it known" or "to start small and get it right before going further". It was also useful for organisations to be able to identify knowledge sources within different business lines and comparison across business entities enabled logical conclusions to be drawn. For example within the organisation one area was particularly strong in methodology. The organisation had adopted the approach of implementing BPM within a centralised area and extending from that point. It therefore was logical that the area that was strong in 'methodology' was the area that contained the BPM team. It was also useful for the organisation to see that outside of this area they still had some way to go to get the message across. A sample of results analysed following the conduct of the survey is depicted Figure 3.
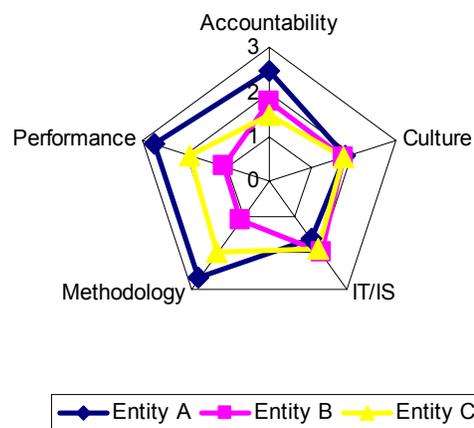

Figure 3: Sample Survey Results – Radar Diagram

With respect to facilitating informed decisions about prioritising for BPM development (3) the results were positive as well. Support for the 5 'factors' was high with all findings indicating that the 5 chosen where relevant, meaningful and consistently understood. However, additional detail that enabled further targeting of strategies was considered to be beneficial. As an example, it was felt that whilst it was useful to be able to say that an organisation was strong or weak within 'culture' it would have been more beneficial if specific details were known such as:

 (i)   Do we need to focus more on Leadership and Support?

 (ii) Should we invest more in Education and Training?

(iii) Do we have the right skill sets in the right places?

To provide this additional level of detail, without increasing the perceived complexity of the model, the researchers are working to include an additional classification of sub-factors. This classification will be used to code questions within data-gathering tools thereby enabling additional analysis to be performed that has the potential to increase insight and understanding of factors. As an example sub-factors for Culture may be: Leadership & Support, Education & Training, Skills & Knowledge and Values & Beliefs. The use of sub-factors is felt to provide the additional benefit of increasing stability and relevance of the model over time as changes can be made to the sub-factors whilst the primary factors remain unchanged.

With respect to the 'perspective' dimension of the model the research results were less positive. Whilst this dimension remained a source of interest to the researchers it appeared to be less relevant to practitioners.

The use of 5 perspectives led to a degree of repetition and redundancy within the survey questions and did not add significant benefit to the final analysis of BPM maturity, from the organisation's point of view.

Being able to apply the model over time and measure actual progress in BPM capabilities (4) was felt to be a significant advantage to the model. The ability to use the model to achieve an understanding and current baseline to measure against was considered by the organisations to be extremely beneficial though such a longitudinal study has not actually taken place yet. Similarly, applying the model across organisations (5) was limited due to the small number of participants. The researchers remain confident that this will be achieved over time.

6. BPM Maturity Model Mark II

Whilst conducting the case studies and surveys the researchers were also continuing to collaborate with international peers with a view to developing a model that could serve as a global standard in BPM maturity. The initial model has been revised to integrate feedback from international collaboration and the results of the empirical research conducted. Resultant changes to the model are depicted in Figure 4 and are discussed in the following sections.
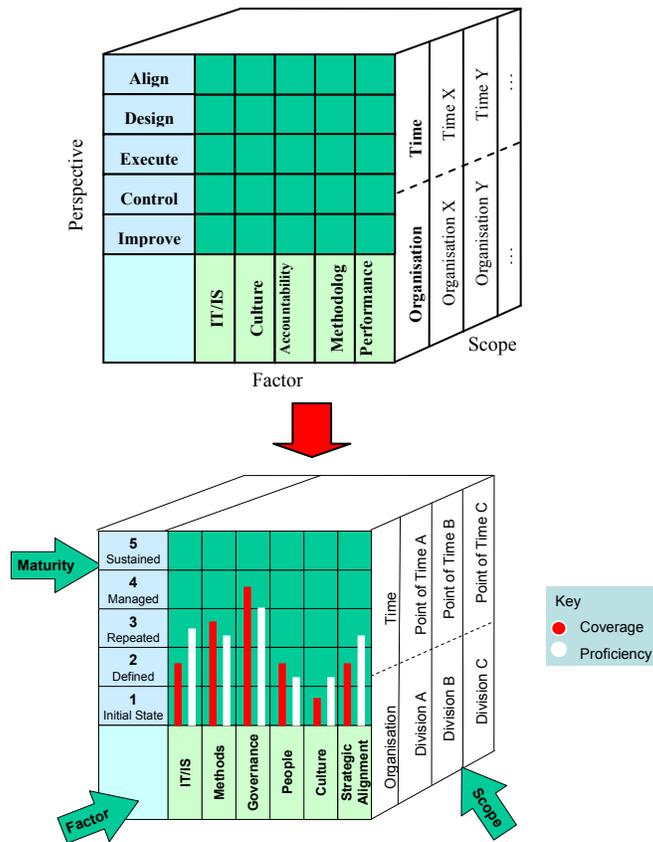

Figure 4: BPM Maturity Model - Mark I and Mark II

In summary enhancements include:

1.   Include Strategic Alignment as a Factor
2.   Separate People from Factor – Culture
3.   Remove Factor – Performance

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4. Change Factor – Methodology to Methods
5. Change Factor – Accountability to Governance
6. Depict Maturity Stage and not Perspective
7. Depict 'Coverage' and 'Proficiency' for each Factor
8. Maturity Stages and Definitions
9. Development of Sub-Factors

Include Strategic Alignment as a Factor

When initially constructing the model 'factors' and 'perspectives were derived from an extensive literature review of BPM. 'Factors' were derived from identified critical success factors and barriers to entry and 'perspectives' were derived from identified process life-cycles and implementation approaches adopted by organisations. 'Strategic Alignment' was applicable to both and a decision was taken by the researchers to include it as a 'perspective'. On the basis of the additional research conducted the researchers now consider it to be more appropriately placed as a 'factor' within the model. This is due in part to the importance of alignment in the broader context of BPM where it is associated not only with individual processes but also, with customers and vendors, internal and external benchmarking and strategic and operational goals and objectives.

Separate People from Factor – Culture

It was felt that there may be value in separating "people" from "culture" and including as an additional Factor. Culture will include aspects such as visioning, values, styles and behaviours. People depicts more the resource side including knowledge, capabilities, education, training and skills.

Remove Factor – Performance

When developing questions for use in case studies and surveys the researchers considered two aspects of Performance, being the dependent and independent aspects. The dependent aspect included the physical outcome of such performance (i.e. a decrease in process time, an increase in worker productivity and so on). The independent aspect included questions on how the performance of processes, people, resources and other BPM activities was measured, recorded and actioned.

Whilst the distinction of these two aspects was clear to the researchers developing the model, it was less clear to practitioners applying the model and raised a potential area of conflict when considering the independence of the factors. To ensure that the independence of the factors is not compromised, the independent aspect of performance has been removed as a separate factor and where appropriate, case study and survey questions have been incorporated into the remaining factors.

The dependent aspect of performance (i.e. a decrease in process time, an increase in worker productivity and so on) is maintained as a component of the analysis and assessment process. This includes measuring the impact of BPM maturity on operational outcomes (time, cost and quality), customer satisfaction, competitive benchmarks and financial results.

Change Factor – Methodology to Methods

The intent of the factor remains unchanged with a change in name only.

Change Factor – Accountability to Governance

The perception was that governance includes accountability, but is more comprehensive than accountability.

Depict Maturity Stage and not Perspective

Following the conduct of additional research the importance of 'perspective' from an organisational perspective was found to be less critical then originally thought. In some instances the inclusion of perspectives led to confusion as individuals associated the life-cycle with individual processes rather than with the broader holistic approach to BPM.

It was also considered beneficial to depict the achieved maturity stage within the model. As a result the original dimension of "Perspective" has been replaced with "Maturity Stage". The result is the model now depicts the aspects of BPM maturity assessment that are considered to be of greatest priority to practitioners and organisations applying the model.

The distinction of perspectives remains of interest to the researchers and is included within the analysis and assessment processes.

Depict 'Coverage' and 'Proficiency' for each Factor

Distinguishing between 'coverage' and 'proficiency' when presenting the findings back to the organisation was found to be extremely beneficial from an organisational perspective. This was because it enabled a more focused approach to be applied when implementing BPM strategies. Knowing levels of 'coverage' and 'proficiency' within each factor enables organisations to determine priorities by asking "Do we want to do this more broadly?" or "Do we want to do this better?"

It was recognised that for any given factor this decision may be different and that it may also differ depending on the scope of application. As an example an entity that has greater external customer focus may want to become more proficient in the area of IT/IS so that it can deliver more e-solutions to customers. On the other hand, an entity within the same organisation that has a more internal focus (e.g. the BPM Centre of Excellence) may want to ensure maximum coverage in the initial instance prior to focussing on becoming more proficient.

In order to best reflect the importance of 'coverage' and 'proficiency' within the model the relevant stage of maturity for each factor is now depicted in the model. This enables individuals to immediately view the model and ascertain their position for each aspect with respect to individual factors.

Maturity Stages and Definitions

When initially designing the model the researchers were influenced by the 5 stage approach adopted in the CMM developed by Carnegie University for use in assessing software development. In order to distinguish from this model and also in an attempt to better reflect the broader holistic approach to BPM being incorporated into the model the researchers developed different names for each of the 5 maturity stages. These were: Learner, Improver, Achiever, Performer and Leader.

Review of the model by international peers has indicated that it would be preferable to keep the stage names consistent with those introduced by the CMM as they are already known and accepted within many organisations. As a result the revised model depicts stage names consistent with those initially introduced within the CMM. The 5 stages are therefore now referred to as: Initial State, Defined, Repeated, Managed and Optimised.

The researchers are of the view that, in the context of this model, it is inadequate to provide a brief, one-line definition for each stage of maturity and that a more comprehensive definition is required. This view has been formed for a number of reasons. Firstly, the appropriate maturity stage description will vary dependent on what factor is being considered. For example if looking at IT/IS maturity may be reflected in (among many other things) the level of software sophistication achieved. When looking at BPM maturity with respect to Culture however, maturity may be reflected in the level to which employee knowledge and skills are mapped to process requirements. Secondly, that BPM and BPM maturity is a complex area that is

not well represented by simplistic definition and thus no value is added to the model by using simplistic definitions. Thirdly, that the provision of a simplistic definition enables individual interpretation at each maturity stage potentially resulting in inconsistent interpretation of the model stages with each application.

As a part of on-going research detailed definitions of each maturity stage have been developed. These definitions apply to each stage and for each factor. The definitions incorporate the 6 criteria identified earlier as being representative of BPM maturity: number of processes included, level of employee included, linkage to existing management practices, suitability of tools chosen, nature of response and regularity of conduct. The stages have been defined to enable consistent application irrespective of the scope of model application.   Quantifiable indicators have been used (where possible) to ensure comparability and consistency of stage application. As an example within the IT/IS stage definition, Stage 1 includes a statement that "0 – 20% of processes are executed using software that incorporates vendor and customer interfaces" whereas Stage 5 requires that "> 80% of processes are executed using software that incorporates vendor and customer interfaces".

Development of Sub-Factors

As indicated earlier, initial design concept (3) whereby the model has been designed to facilitate informed decisions about prioritising for BPM development has been achieved to some degree with the inclusion of 'factors'.   Research conducted to date however indicated that organisations would gain significant additional benefit by taking this concept to a more granular level. The difficulty for researchers is in obtaining an appropriate balance between model complexity and the desired granularity. This balance will be achieved by introducing sub-factors.

A sub-factor will not be visible within the visual model but will be used to code questions completed when applying the model. This additional coding can then be used to provide additional interpretation and analysis of data gathered. As an example sub-factors for People may be: knowledge, capabilities, education, training and skills.

The researchers are of the view that there are a number of benefits to be gained in taking this approach. Firstly, the perceived complexity of the model is not increased by introducing a multitude of additional factors. Secondly, the principle of the model can be maintained over time as there is stability within the primary factors whilst sub-factors can be modified to reflect incremental changes. Thirdly, the potential for individuals to be confused by what is meant by each factor is limited by the use of only a small number of factors in the first instance.

Proposed Application of Revised Model

The researchers are currently working to revise all elements of the model on the basis of empirical research and peer reviews undertaken thus far. Following these revisions further testing of the model will be conducted. The researchers already have a number of expressions of interests from organisations interested in an evaluation of their BPM maturity utilising the revised model.

7. Limitations

This paper has two limitations. First, there is the narrow application of the model where it has only been applied within a small number of Australian organisations. The researchers currently participate in an international network of researchers with interest in developing a globally standardised BPM Maturity model where the potential for more wide-spread application of the model is being progressed.

Second, at this stage the researchers do not have evidence for the positive correlation between the components of the proposed BPM Maturity model and actual business process performance. The current model is largely based on a consolidation of previous related research as well as insights from the case studies conducted by the researchers. Further testing of the validity and reliability of the identified variables

in the model is still required.

8. Conclusion

Overall, the results of both the case studies and the survey indicated that the structure of the BPM Maturity model, its multiple dimensions (particularly the factors) have been evaluated as intuitive, perceived as complete and relevant, and can easily be applied to organisations. The findings confirm the model as having the potential to be very beneficial to organisations wishing to progress BPM initiatives.

The value of applying the model in the initial instance was in enabling both organisations to baseline their current position with respect to process-orientation. Benefits were also seen to be in the independence of data collected by a party external to the organisation, providing validity and support to internal determinations. Both organisations remain interested in further identifying areas in which they should focus their process-related strategies. Similarly, both organisations are keen to re-apply the model over time as they see benefits in being able to assess the impact and relative success of strategies implemented.

This research project has a number of current initiatives including:

1. As part of a global network of approximately 20 academics, comparing and consolidating the proposed BPM Maturity model with other available models.
2. The identification of larger, global organisations, for the conduct of future case studies and surveys.
3. Developing tools which will further automate application of the model within organisations.

With respect to the ongoing research, the case study and survey is being revised to include enhancements from the inputs of both organisations. In particular, attention is being paid to developing a model that can be broadly applied and will assist in establishing BPM as a sustaining management practice.

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