A critical analysis of the demand for and nature of Business Process Management (BPM) roles in industry: a global analysis

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Abstract

Business Process Management is accepted globally as an organisational approach that can be used to enhance productivity and drive cost efficiencies. Whilst there are numerous research articles that discuss this management approach, none clearly articulate the preferred BPM capabilities sought across geographic regions. This study aims to address this through a structured content analysis of leading on-line recruitment websites, supported by essential BPM capabilities - identified through leading academic BPM capability frameworks. Whilst the skills of process modelling, documentation and improvement were commonly sought, Enterprise level factors such as strategic alignment and process governance were less frequently mentioned. In addition, there are geographical differences in the BPM skill set requirements with an emphasis on process governance and organisational culture in European countries. This analysis can be used by prospective and current BPM professionals to understand organisational requirements globally, and academics to structure BPM education to suit these differing geographic demands.

Keywords
Business Process Management, Capabilities, Content analysis, NVivo, advertisement analysis

1. INTRODUCTION

In recent years, Business Process Management has been recognised globally by corporate CIO’s as their number one business priority (Gartner 2009). According to Ravesteyn (2007), this management approach originates from Business Process Re-engineering and Total Quality Management. Bandara et al (2007) succinctly define BPM as a process driven way of achieving organisational operational efficiencies. This is further elaborated by Reijers, H. A., Song, M. et al. (2009, page 1) who assert that Business Process Management can be “characterised as the study of those methods, techniques and software that can be used to design, enact, control and analyse operational processes involving humans, organisations, applications, documents and other sources of information”. As BPM has evolved and organizations become more business process oriented, the need for BPM expertise and experience has increased. While the need for BPM related people skills has been raised and many initiatives started, there is still very little understanding on BPM as a profession. This research aims at addressing this gap by analysing current BPM vacancies on a global scale and providing a synthesised view of how the roles and responsibilities required aligns with known BPM capability frameworks. A key driver of this research piece is the failure of organisations to adopt a BPM approach due to a lack of understanding of the meaning of BPM and the capabilities required for its success (Rosemann, 2008). The importance of this understanding is supported by Kujansivu and Lonnqvist (2008) who mention that human capital in the form of employee competence can be considered as a pre-condition of successful process development.

The intent of this paper is to provide an understanding of how the BPM practitioner capabilities currently required by organisations differ between the Australian, European and North American contexts. Specifically, this study addresses the following research questions through a literature review and qualitative data analysis:
1. What does the landscape of BPM employment opportunities look like across different geographic regions?

2. How do sought after capabilities match to known BPM capability frameworks?

This paper reports on the BPM capabilities identified through the qualitative analysis of recruitment websites in Europe, North America and Australasia. The paper is structured as follows: Section 2 provides a background literature review of current research in this field. Section 3 outlines the research methodology applied and a detailed explanation of the process followed. Section 4 presents the research findings of the qualitative data review. Finally, and by way of conclusion in Section 5, the paper provides a summary of the methodology, key findings, perceived limitations and points to opportunities for further research.

2. LITERATURE REVIEW

2.1. The emerging discipline of BPM

As discussed by Seuring and Muller (2008), a literature review is the ideal starting point for research into a new or emerging field and an ideal way of identifying concepts and developing theories. This is particularly relevant to the identification of BPM capabilities as this is an emerging field and past studies have recognised a requirement for the identification of individual BPM capabilities to support organisational success. As mentioned by Ravesteyn et al (2008), these competencies can be defined as the knowledge, skills and attitude of BPM professionals. A search of popular recruitment websites for “Business Process Management” positions returns thousands of hits that require some level of process knowledge which can range widely from specific BPMN ability to BPM IT systems development (zur Muehlen, 2008). The required BPM positions can range from Executives responsible for strategic direction, Business Analysts focused on process improvement and documentation, Systems Analysts creating IT solutions and Vendors who may apply a specific methodology. Each of these roles has a range of differing responsibilities and therefore requires a diverse range of skills. (Ravesteyn et al, 2008).

Pritchard and Armistead (1999) believe that one of the difficulties with understanding what BPM actually entails is because of the terminology and specifically the word “process”, as it is discussed in operational, systems and organisational disciplines. From the results of a past survey, a “lack of understanding of BPM” was identified by 36% of respondents as the reason why organisations experienced difficulty with BPM implementations (Pritchard and Armistead 1999). To be an effective BPM practitioner, a broad range of capabilities from subject domain knowledge, workshop facilitation, change management and even creativity are required (Rosemann, 2008). One of the key considerations in the deployment of a BPM approach is the identification and application of process management skills, knowledge and attitude (Pritchard and Armistead 1999). As outlined by Rosemann (2008), knowledge of a project management methodology (e.g. PRINCE2, PMBOK) is a complementary skill that supports core BPM activities of process modelling, analysis & improvement. Additional non-BPM core skills that a Practitioner should possess are process performance measurement techniques such as activity based costing, ROI evaluation & forecasting (Rosemann, 2008).

An assumption made in this paper is that BPM is a holistic management practice which recognises business process relationships and their alignment with organisational strategies with a focus on process improvement activities (de Bruin and Rosemann, 2004). As presented by de Bruin and Rosemann (2004), the basis of most BPM maturity models is the Software Engineering Institute Capability Maturity Model. Though initially designed to assess software development process maturity, the model presents five organisational maturity levels which can be used to measure BPM process capability. Rosemann et al (2005) define organisational maturity as the level of competency, capability or sophistication across a domain based on a set of criteria.

Two frameworks that have been derived by extension from the Software Engineering Institute Capability Maturity Model are the Rosemann and De Bruin BPM Maturity Framework (2005) and the Harmon Business Process Pyramid (2007). These two frameworks were chosen as the reference point for the following analysis as they offer deep insight into the BPM capabilities required to be an effective Practitioner, and are briefly introduced below.

2.2. BPM Maturity Framework

Rosemann and de Bruin (2005) have developed a Business Process Management maturity framework that supports the evaluation of organisational BPM capabilities. This maturity framework is a reflection of an organisation’s BPM development and, by extension, these capabilities will also be reflected in the staff required to undertake the BPM function.
Figure 1: Rosemann and de Bruin BPM Maturity Framework

This model has been designed as a diagnostic tool to compare and evaluate the BPM capabilities of different organisations as well as a way of highlighting opportunities for organisational learning. The framework capability factors have been further defined and expanded in Table 1.

Table 1: Rosemann and de Bruin BPM Maturity Factors

<table>
<thead>
<tr>
<th>Capability Factors</th>
<th>Definition</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Alignment</td>
<td>Alignment to corporate strategy &amp; mission</td>
<td>Strategic Focus; Process Management; Communication; Leadership; Negotiation</td>
</tr>
<tr>
<td>Governance</td>
<td>Organisational implementation of BPM and responsibilities for assigned tasks</td>
<td>Process Management; Leadership; Project Management</td>
</tr>
<tr>
<td>Methods</td>
<td>Methods for all BPM relevant tasks</td>
<td>Process Modelling; Process Frameworks; Process training; Process Model development; Workshop facilitation; Stakeholder interviews</td>
</tr>
<tr>
<td>Information Technology</td>
<td>Technology which supports &amp; enables BPM</td>
<td>Software Skills; Process Modelling; Process Management; Project Management</td>
</tr>
<tr>
<td>People</td>
<td>Competencies of people involved in BPM</td>
<td>Process expertise; Process Management; Process qualifications; Communication Leadership; Negotiation; Communication; Collaboration</td>
</tr>
<tr>
<td>Culture</td>
<td>Common values towards BPM &amp; process change</td>
<td>Adaptable to change; Process thinking; Leadership; Communication; Collaboration</td>
</tr>
</tbody>
</table>

Table 1 was used as a reference when capturing the advertised employment requirements and mapping this information to the appropriate BPM frameworks (Section 3: Overview of the Research Approach). Each of the six BPM capability factors have underlying organisational and therefore individual capabilities which must be in-place to support BPM success. For example, several of the factors refer to the capabilities of process management and improvement which according to Rosemann (2008) require the essential skills of process analysis and creativity combined with specific domain knowledge.

This multidimensional framework was selected as it is based on an established theoretical foundation; is a globally accepted standard; has a broad scope; has high applicability supported by a wide range of industries; and finally the model supports the requirements of a wide range of stakeholders (Rosemann 2008). Each of the Factors in this framework is independent but the overall dependent variable is the business success of the BPM initiative (Rosemann and de Bruin 2005). The use of this organisational maturity framework provides us with a...
view of the optimum employee capabilities required to achieve BPM success. The Rosemann and de Bruin (2005) approach offers a more holistic BPM Maturity (BPMM) model based upon earlier work, developed to better identify and refine BPM requirements and complexities (Rosemann and de Bruin, 2005). Their model supports not only the identification but also the assessment of the BPM maturity of organisational policies and procedures (Rosemann and de Bruin, 2005).

2.3. A holistic approach to BPM: The Harmon Business Process Pyramid

As discussed previously, the Harmon (2007) Business Process Pyramid has been developed based upon the Capability Maturity Model (CMM) and is represented in summary in Figure 2. The Harmon (2007) framework represents a hierarchical view of organisational BPM capability with each level supported by the previous. In this manner, each level has a subset of capabilities required to satisfy the goals of the organisation. The identification of the individual skill-sets provided for the clear allocation of capability to individual node in the NVivo database as presented in Figure 2.

Figure 2: The Harmon Business Process Pyramid

The Harmon (2007) pyramid capability factors have been further expanded in Table 2. Similar to the mapping of the Rosemann and de Bruin BPM maturity factors above, this table was used as a reference when capturing the advertised employment requirements and mapping this information to the appropriate BPM frameworks in NVivo (Section 3: Overview of the Research Approach).

Table 2: Harmon BPM Pyramid levels of capability

<table>
<thead>
<tr>
<th>Enterprise Level</th>
<th>Business Process Level</th>
<th>Implementation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>Process analysis</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>Process Architecture</td>
<td>Process improvement</td>
<td>Workshop facilitation</td>
</tr>
<tr>
<td>Process management</td>
<td>Method (six sigma/Lean)</td>
<td>Process training</td>
</tr>
<tr>
<td>Program/project management</td>
<td>Process modelling and Documentation</td>
<td>BPMS knowledge</td>
</tr>
</tbody>
</table>

3. OVERVIEW OF THE RESEARCH APPROACH

The fundamental approach of this paper was the identification and qualitative analysis of leading recruitment websites, with a focus on Business Process Management related employment opportunities. The Researchers intent is to provide a clear understanding of the BPM capabilities and attributes sought by organisations across three geographic regions (North America, Europe and Australasia) and how these requirements align with known BPM capability frameworks.

As visualised in Figure 3, following a comprehensive literature review, online recruitment website information was extracted, evaluated, interpreted and allocated to BPM framework maturity and capability success factors as identified in Rosemann and de Bruin (2005) and Harmon (2007). The following section outlines the research methodology applied and a detailed explanation of the process followed.

Figure 3: Research Method
3.1 Phase 1: Data Collection

The following well known recruitment websites were chosen for this study on the assumption that most BPM related vacancies would be advertised on these sites - monster.com; careerbuilder.com; seek.com and dice.com. Data was sought for three geographic regions; Australia, Europe and North America on the assumption that most BPM positions will be located here. From these websites, 35 BPM related positions were returned from each of the three geographic regions to provide a total dataset of 105 BPM positions advertised during the six week data collection period during April and May 2010. It is acknowledged that some Employers are only looking for generic business analysis skills and the advertisements may have been created by novices with little understanding of BPM, the vacancies may not actually reflect the duties of a BPM professional.

For consistency and repeatability of the website search and retrieval exercise, a list of key search terms was derived following analysis of recruitment advertisements retrieved in a pilot study. This list of key words (Figure 4) was used consistently during the six week data collection phase. The search terms were chosen to ensure that the results returned were broad enough to also encompass BPM related positions that were not explicitly defined in the recruitment webpage’s.


Figure 4: Search Criteria key words

3.2 Phase 2: Populate the NVivo database

When the individual BPM positions were retrieved from the recruitment websites, a qualitative data analysis application (NVivo) was used to store and group individual BPM opportunities by geographic region (Figure 5).

Figure 5: Geographical grouping of BPM job advertisements

Once each individual BPM job advertisement was captured in the database, each position was reviewed and a series of attributes (see Table 3) were allocated based upon the text provided in each job description. These attributes are typically tangible and measurable characteristics that can be used to differentiate between the advertisements. The attribute values were defined in the NVivo properties as presented in Table 3.

Table 3: BPM advertisement attributes

<table>
<thead>
<tr>
<th>Career Level</th>
<th>Education</th>
<th>Employment</th>
<th>Industry</th>
<th>Location</th>
<th>Salary</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unassigned</td>
<td>Unassigned</td>
<td>Unassigned</td>
<td>Unassigned</td>
<td>USA</td>
<td>Unassigned</td>
<td>Unassigned</td>
</tr>
<tr>
<td>Intern</td>
<td>Bachelor</td>
<td>Full Time</td>
<td>Finance</td>
<td>EUROPE</td>
<td>$50 000 - $80 000</td>
<td>1 – 3 years</td>
</tr>
<tr>
<td>Non-Manager</td>
<td>Masters</td>
<td>Part Time</td>
<td>Health</td>
<td>Australasia</td>
<td>$80 000 - $100 000</td>
<td>3 – 5 years</td>
</tr>
<tr>
<td>Manager</td>
<td>PhD</td>
<td>Contract</td>
<td>Education</td>
<td>Technology</td>
<td>$100 000+</td>
<td>5+ years</td>
</tr>
<tr>
<td>Experienced</td>
<td></td>
<td></td>
<td></td>
<td>Government</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.3 Phase 3: Data Analysis

When the above tasks were complete, a set of NVivo tree nodes were defined based upon the Rosemann and Harmon BPM maturity and capability frameworks (Figure 6). These node structures were created within NVivo to allow for the allocation of individual BPM positions to a single or multiple capability factors across both frameworks. This was completed via the identification of key words in the advertisements and then mapping these to the most appropriate framework node. Each advertised BPM position in the NVivo database was subject to the same analytical process; where we mapped the required BPM capabilities (stated in the advertisements) to BPM frameworks.

4. RESEARCH FINDINGS

This section presents the research findings, including a detailed assessment of the BPM capabilities required by organisations in three distinct geographic regions (Australia, Europe, and North America) and an indication of how these requirements map to known BPM capability frameworks.

The first of the research questions to be answered is:

1. What does the landscape of BPM employment opportunities look like across different geographic regions?

To answer this question, each of the captured 105 job opportunities (35 from each geographic region) were reviewed and tagged with a series of attributes as defined in Table 3. These attributes provide the foundation for the following analysis.

Firstly, Figure 7 displays the desired standard of education across the regions. From the representative sample, 52% of advertised positions required some form of University qualification with North America the only region to require PhD levels. In addition, 63% of all North America positions required a Bachelor degree compared to 32% for both Europe and Australasia. A reason for this could be due to the maturity of the BPM market in North America as evidenced (Figure 13) by the demand for Enterprise level (strategic/governance) capabilities.

A second view of the positions’ is that of BPM practitioner salary and industry group. As evidenced in Figure 8, the majority of BPM positions remunerate in the range of $50,000 - $80,000 Australian dollars with the highest rates paid in Australasia (in 6 cases), possibly due to an undersupply of practitioners with the specialist capabilities required. Note that these salary figures are indicative due to the cross currency comparison. Figure 9 displays the industry sectors currently seeking BPM practitioners. From this representation, it is evident that the main employer for BPM related positions is the Technology sector (60%); this view is supported by the demand for Information Technology capabilities as demonstrated in Figure 12.
Another interesting view of BPM position attributes is a comparison of the preferred education level required to undertake tasks defined by the Harmon (2007) BPM capability levels. Represented in Figure 10, it is obvious that whilst the bulk of the business process level activities can be undertaken with a Bachelor level of education or less, a higher proportion of Enterprise level tasks require a post-graduate degree (26% of activities). This aligns with the findings of Delavari et al (2010) who assert that the focus of most undergraduate courses is the teaching of structured process modelling and documentation activities.

This is further evidenced in Figure 11 where a review of remuneration and skills required, demonstrates that higher level capability factors such as strategic alignment bring with it comparatively higher levels of salary. Based on this analysis of the attributes tagged against the representative BPM job market dataset in NVivo, the following conclusions can be drawn:

- North America has the greatest demand for qualified applicants.
- Whilst demand may be lower, due to the size of the market, remuneration rates are higher in Australasia.
- Higher level BPM capabilities typically require post-graduate qualifications and are remunerated accordingly.

The second research question to be answered is:

2. How do sought after capabilities match to known BPM capability frameworks?

As outlined previously, both the Rosemann and de Bruin (2005) and Harmon (2007) frameworks were represented as tree-nodes in the NVivo application as represented in Figure 6. Through an analysis and key word tag of each BPM vacancy to the frameworks, the following graph was derived (Figure 12). Following on from this mapping, Figures 12 and 13 represent the allocation of required capability to each of the BPM frameworks. In the case of the Rosemann and de Bruin (2005) maturity model (Figure 12), the factors of Methods and Information Technology are the most sought after capabilities. Secondly, Culture and Governance are the least required abilities.
Figure 12: Rosemann and de Bruin BPMM by Location

North America   Europe   Australasia

Figure 13: Harmon Framework by Location
Similarly, as shown in Figure 13 (Harmon), the Business Process Level capabilities are required, followed closely by Implementation level abilities. This representation supports the obvious alignment between the two frameworks at the Methods factor (Rosemann and de Bruin 2005) and the Business Process/Implementation levels of Harmon (2007). Observations drawn from the above analysis can be grouped into two distinct categories. Firstly, based upon a review of position attributes, it is clear that whilst University level qualifications are sought across the regions, industry qualifications (Six Sigma/PRINCE2) are also valued. Typically remuneration is driven by practitioner experience with a high proportion of positions offered on a contractual, project focused basis. In addition, the Technology sector and the Finance industry are the two business areas with the highest demand for experienced BPM staff. Secondly, the two BPM frameworks chosen reflect the Industry demand for BPM staff with process modelling, analysis and improvement ability supported by the application of appropriate information technology systems where required. Higher level BPM enterprise activities of strategy and governance are requested the least but this may be a reflection of the maturity of the market and the relative demand for these capabilities.

5. CONCLUSION
The objective of this study was to identify those Business Process Management capabilities that are sought by employers in three specific geographic regions and identify how well these capabilities map to known BPM capability and maturity frameworks. As this work is the first attempt to present a view of geographically diverse BPM capability requirements, the authors acknowledge the limitations of the findings presented. The research methodology has been designed to ensure rigour and process repeatability however assumptions were made and some limitations remain:

- The assumption was made that the online recruitment sites are industry leading and therefore contain the majority of advertised BPM positions. This study was limited to the results returned from the online recruitment sites.
- The lack of a standard job advertisement template and semantic inconsistencies with the recruitment sites’ wording may have impacted upon the quality of the results returned via the search criteria.
- The website search criteria (i.e. based on terms related to “business process”) could have limited the returned search results.
- The advertised employment opportunities may not necessarily reflect the actual work undertaken by a BPM professional. The data captured could be validated through the application of surveys or case studies in future work.

Following this global review of BPM related roles; there is a known demand for experienced process modellers with exposure to known methodologies (Six Sigma/LEAN). There is a requirement for University level qualifications in approximately half the positions reviewed with a strong emphasis on project management experience. In addition, an outcome of this research is the apparent high demand for BPM capabilities at the Methods (Rosemann and de Bruin, 2005) and Business Level (Harmon, 2007). The skills of process modelling, redesign and improvement appear to be core to the industry requirements for BPM practitioners globally. Finally, the low demand for higher level BPM capabilities such as strategic alignment and governance is possibly a reflection of current organisational BPM immaturity.

This study can be further extended to incorporate and align industry requirements with academic offerings to better serve the needs of the BPM community and make BPM curriculum more relevant. The research findings could also be validated through interviews and assessment with experienced BPM practitioners. Additional research to identify any required capabilities that do not align with these frameworks is also required to gain a better understanding of the industry requirements of BPM practitioners.

REFERENCES


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