An Understanding of Business Process Standardization

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**ABSTRACT:** Globalization and increased competition, pressure organizations to reduce costs and be more productive. Increasingly, organizations are adopting a process-centric view to efficiently and effectively utilize resources and improve competitive parity. A strategy that can ensure consistent delivery of services and optimize costs as well as benefits is 'Business Process Standardization', whereby processes abide by metrics and aid effective understanding, communication and design. Given the importance of process standardization, there is a surprising dearth of research in this area. Particularly lacking is a clear and operationalisable definition. In attention to this lacuna, this paper offers an understanding of the theoretical construct - Business Process Standardization (BPS) - through a rigorous and systematic literature review.

**Keywords:** Business Process, Standardization, Business Process Standardization (BPS), Strategy, Conceptualization, Literature review

**INTRODUCTION AND BACKGROUND**

With increasing global competition, there is an ongoing wave of specialization and focus on core competencies in order to drive optimization of business processes. To remain competitive and survive long-term, consistent high-quality services as well as consistent delivery of services across different business units and locations, is vital (Kloppenburg, Kettenbohrer, & Beimborn, 2013b). A strategy that can ensure this consistency is Business Process Standardization (BPS) (Davenport, 2005; Münstermann, Eckhardt, & Weitzel, 2010). BPS enables processes to abide by metrics, standards and aid efficient communication of information. In addition to improving internal efficiency, business process standardization also positively impacts business performance (Münstermann et al., 2010; Wullenweber & Weitzel, 2007).

Business Process Standardization (BPS) is an effective strategy to manage processes within projects because of its ability to create optimal ways of achieving business goals via enhanced time, cost and quality matrixes (Münstermann et al., 2010). Despite the importance of process standardization in achieving operational excellence (Ramakumar & Cooper, 2004), research in BPS is largely absent. According to Münstermann et al. (2010, p. 2) “there is not much relevant literature to be found (on business process standardization). Although some ideas can be borrowed from the rich business process improvement literature from the nineties only a very limited number of papers exist
treatment 'business process standardization' solely’. Several papers address factors that influence business process standardization (Heidi L. Romero, Dijkman, Grefen, & Weele, 2015; Schafermeyer, Grgecic, & Rosenkranz, 2010), while most work in the area reports on the impacts of standardization (Münstermann et al., 2010; Wüllenweber, Beimborn, Weitzel, & König, 2008). In none of this work is careful attention given to the clear definition or conceptualisation of ‘process standardization’. This is reinforced by Muenstermann, Eckhardt, and Weitzel (2009, p. 2) who state “While it is comparatively easy to find definitions of a "business process” in the (IS) literature, it is significantly more difficult to find a definition of "standard" or "standardization.”” As noted by DeVellis (2012, p. 51) many researchers think they have a clear idea of what they intend to measure, “but is often vague than they thought”. Furthermore, Business Process Standardization (BPS) is often discussed in the context of other similar (yet different) concepts, further fueling the confusion on what BPS really is. Having a precise and detailed conception of the focal construct is important in crystallizing a conceptual model (MacKenzie, Podsakoff, & Podsakoff, 2011). This paper aims to address this gap by developing a better conceptualisation of the theoretical construct, ‘business process standardization’ (BPS), through a rigorous systematic literature review and using a grounded theory approach. The main research question here is: **What is business process standardization and what are its defining facets?**

We proceed as follows. The next section provides a brief overview of the method employed in this study. This is followed by the findings, where after the paper concludes with discussion on possible future work.

**METHOD: SYSTEMATIC LITERATURE REVIEW**

There are various approaches to reviewing literature, as outlined by Booth, Papaioannou, and Sutton (2012). This research uses the multi-phased approach outlined by Bandara, Furtmueller, Miskon, and Beekhuyzen (2015) which had synthesised prior published guidelines and demonstrates the potential of tool support for enhanced rigour in literature review based research. The next sections describe the phases employed in this study.
**Extraction of Relevant Papers**

‘Process Standardization’ is a multidisciplinary topic area, predominantly spanning Management and IT, hence databases related to these two areas were targeted for the search. These included: JSTOR, IEEE, Emerald, ABI/Inform, Science Direct, ProQuest and Gartner\(^1\). The next step was to identify the search keywords. Queries run were basic as well as involving Boolean operators. The main keywords employed were “business process” and “standard*”, which were searched in abstract, title and keywords. These terms were applied in a series of different search strings (some examples included: “business process standard*”; “business process” AND “standard*”; process AND “standard*”) . Only full, peer-reviewed, journal and conference papers in English were selected.

Initial searching identified, 1075 articles, which were then further evaluated for relevance based on the following criteria.

C1: The article must discuss process standardization in the context of *business processes*.

C2: The articles focussing on data standards, software and application development and online codes that were disconnected to business processes will not be considered as it is outside the scope of this literature review.

While applying C1, article abstracts were screened, and it was found that a large number of articles had the word ‘process’ and ‘standard’ in their abstract; though from different contexts. For instance, the journal article “Selection of critical processes for “process improvement”” written by (Sarkar & Singh, 2006) were looking at *processes*, and, they used a quantitative approach within which they calculated *standard* deviation. This was observed with most articles when applying C1, which brought down the number of relevant articles to 165.

These articles were further reviewed in accordance to C2. As had been mentioned in the inclusion criteria, the aim was to uncover information about “business process standardization” than any other kind of standardization. There were articles which talked about standardization of IT

\(^1\) Gartner, unlike the others here, is not an academic database but more a practitioner database. This was included, as process standardization is an evolving topic and is being discussed widely by practitioners. Further evidence to support its inclusion was the fact that some papers from the academic Databases refer to Gartner resources.
language (and similar technical aspects), which was deemed irrelevant in accordance with the second inclusion criteria (C2). For instance, articles such as “Strategic Relational Sequences: Microsoft's Competitive Game in the OOXML Standardization Process” (Yami, Chappert, & Mione, 2015) was considered out of scope as it talked about standardization in an IT language. This further reduced the number of the relevant articles to 38 in number.

Once the initial corpus of papers was obtained, a forward as well as backward search was done as suggested by Bandara et al. (2015). The forward search yielded no results, however, the backward search suggested 1 additional paper and 2 book sections. These were included in the final set of relevant papers. A rigorous search resulted in 41 papers relevant to the concept of ‘process standardization’. Figure 1 presents a summary overview of the paper extraction process.

Prepare for Analysis and Coding

In order to analyse the 41 articles, they were first read in full and then imported to NVivo. Their referencing details were imported from bibliographic management software, Endnote. The coding of these literature resources was conducted in two phases. A coding rule book [following (Saldana, 2012)] was designed in order to maintain transparency and reliability. The coding proceeded in two phases. In Phase one, any direct or indirect definition of Process Standardization was captured at the node 2 ‘definition of BPS’. Once this was done, the second stage of coding was initiated where the captured definitions were then exposed to a grounded theory coding approach, where the text identified as direct and indirect definitions of Process Standardisation was further analysed in order to allow themes associated with the theoretical construct of ‘Business Process standardization’ to emerge. The grounded theory approach has been recognized as a rigorous way to identify themes in literature (Wolfswinkel, Furtmueller, & Wilderom, 2013), especially valuable in underspecified areas such as business process standardization.

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2 A node is a collection of references about a specific theme in NVivo. It is essentially a separate ‘folder’ within the tool.
The grounded theory approach was multi-phased, where first ‘in-vivo’ coding was used to identify new emerging conceptual themes. In-vivo coding is the practice of assigning a label to a section of data using a word or short phrase used from that section itself (Given, 2008). This method of coding is associated with grounded theory methodology’s open coding (Wolfswinkel et al., 2013) and enables the researcher to associate the concepts as closely as possible to original words or terms (Given, 2008). Initially, 72 in-vivo codes were created from the definitions captured from the papers. These codes were then analysed and grouped into further groups-of-themes, which were then used to arrive at a conceptualisation and definition of ‘Process Standardization’. Throughout this procedure, reliability and transparency was maintained by deriving and following a comprehensive coding rule book (as mentioned earlier) and through corroboration sessions with the second author.

In the second phase, the original in-vivo themes as well as the grouped-themes identified in the Phase 1 were analysed again, this time searching the full papers (again) to see if any of these sub-themes (which were identified in Phase 1 in association to BPS specifically) also related to any other concept. This was done to compliment the Business Process Standardisation (BPS) conceptualisation work, by identifying other proxy concepts that were similar (yet different) to BPS, which also referred to some of the components that formed BPS. These indirect concepts associated with process standardization were also captured using in-vivo coding. It was believed that these concepts would be helpful in better understanding what process standardization is and is not and how it is similar to other different yet, related concepts.

**Findings**

In order to understand and conceptualise process standardization in detail, this paper adapts the framework by MacKenzie et al. (2011) which lists aspects to consider in construct conceptualization.

First the current definitions of BPS were consolidated (see Table 1). It was interesting to find that only 27 out of 41 papers had a definition of the construct on which they were researching with few definitions being common across papers, displaying lack of attention towards the understanding of
the theoretical construct of interest. Additionally, an analysis of existing BPS definitions from the literature illustrates how most of the definitions that exist, are high level and abstract. Table 1 displays 10 distinct definitions obtained across the literature analysed.

On analysing Table 1, we found that the definitions are very different from each other. Additionally, most of the definitions emphasize outcome of standardization, rather than what standardization really is or what are the conceptual themes associated with it is. This demonstrates the lack of development of the theoretical construct. Nonetheless, it was found that the nature of construct’s conceptual domain was recognized by most papers being, ‘business process’ and ‘standards’. Understanding the domain of the construct is essential to have a better understanding of the construct being studied, which enables ease in testing its adequacy during the validation process (MacKenzie et al., 2011).

In order to understand a construct, an essential step is to identify the conceptual themes associated with it (MacKenzie et al., 2011). The in-vivo (open) codes obtained in Phase 1 of coding were studied to identify the attributes/characteristics of process standardization. Figure 2 presents a summary overview of the results, and Table 2 presents the summary data supporting these.

This literature review reveals numerous characteristics and attributes associated with Business Process Standardization. Inculcating all of them into one single definition is difficult, which is probably the reason why such abstract high level definitions associated with process standardization are evident. It is envisaged that different versions of definitions would be applicable depending on the context in which process standardization is being used. Table 2 summarises the different sub-themes
associated with the notion of Business Process Standardisation enabling future researchers better define and conceptualise BPS. This is the first important contribution from this paper.

BPS is often ‘confused’ and intertwined by with other concepts. Other proxy areas to BPS (that are different, but implied at times as synonyms to BPS), were also captured and presented here, in an attempt to further understand BPS and how it differentiates and relates to other similar concepts. Figure 3 presents a visual summary of this. Table 3 presents a summary of the supporting analysis, where the proxy concepts and supporting evidence is presented, together with a description of how these concepts relate to BPS.

An understanding of these related areas enables the researcher to provide greater clarity to the theoretical construct. MacKenzie et al. (2011) communicates the significance of the researcher being able to differentiate a construct from other constructs to ensure accurate construct validity and being able to arrive at an unambiguous understanding of the construct. We hence believe that these findings will enable academics as well as practitioners to understand Business Process Standardization better.

**CONCLUSION AND FUTURE WORK**

This paper has taken a first and important step towards understanding and conceptualising the theoretical construct ‘Business Process Standardization’ (BPS). BPS is a phenomenon of growing interest because of the strategic advantage it provides to firms. However, the current literature around BPS is limited. There are papers around the impact of BPS, however, very few papers attempt to define or discuss *what is BPS*. In order to fill this gap, this paper elucidated the conceptual themes and concepts related to the construct of interest (BPS) through a rigorous systematic literature review, providing a better understanding of what BPS actually is. The information around BPS provided in this paper provides a theoretical foundation for further research in this area. We believe that this
information is essential to conduct further research on operationalization of process standardization failing which any attempt to validate the construct may be undermined (MacKenzie et al., 2011).

As stated before, this is the first step towards building an evidence based conceptual understanding of BPS. We aim to extend the findings further in order to provide a comprehensive overview of measures, antecedents and impact of process standardization that will enable its operationalization. A series of multiple case studies are planned to empirically validate the construct and report on its suitability as a strategic initiative by organizations to reduce costs and survive competition.
REFERENCES


LIST OF FIGURES AND TABLES

Figure 1: Overview of Paper extraction process

- Potentially Relevant papers (1075)
- Screening abstract on the basis of Inclusion criteria 1 (165)
- Screening abstract on the basis of Inclusion criteria 2 (38)
- Backward and forward search (3)
- Number of relevant articles (41)

Figure 2: Conceptual themes of Business Process Standardization

- Process Standardization
  - Definition of rules, metrics
  - Smooth communication
  - Agreement of specifications
  - Structured
  - Unification of variants
  - Uniformity
  - Common language
  - Best and Easy
  - Formal and followed
  - Efficient
  - Repeatable
Figure 3: Figure displaying other concepts associated with BPS

Table 1: Definitions of Business Process Standardization (BPS) from the literature

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The degree to which work rules, policies, and operating procedures are</td>
<td>(Jang &amp; Lee, 1998)</td>
</tr>
<tr>
<td>formalised and followed”</td>
<td></td>
</tr>
<tr>
<td>“Process standardization is both the process and the result of achieving</td>
<td>(Davenport, 2005)</td>
</tr>
<tr>
<td>transparency and homogenization of business processes within a firm or</td>
<td></td>
</tr>
<tr>
<td>even across multiple firm.”</td>
<td></td>
</tr>
<tr>
<td>“Business process standardization (BPS) tries to implement the same</td>
<td>(Kloppenburg et al., 2013b)</td>
</tr>
<tr>
<td>process in the overall organization.”</td>
<td></td>
</tr>
<tr>
<td>“Business process standardization as the unification of business processes</td>
<td>(Davenport, 2005)</td>
</tr>
<tr>
<td>and the underlying actions within a company in order to facilitate</td>
<td></td>
</tr>
<tr>
<td>communications about how the business operates, to enable handoffs across</td>
<td></td>
</tr>
<tr>
<td>process boundaries in terms of information, and to improve collaboration</td>
<td></td>
</tr>
<tr>
<td>and develop comparative measures of process performance.”</td>
<td></td>
</tr>
<tr>
<td>“Process standardization contains general definitions of metrics, common</td>
<td>(Mahmoodzadeh, 2004)</td>
</tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

| **languages enabling organizations to gain the integrity of business rules, process logic, and data.**” | Jalalinia, & Yazdi, 2009 |
| "Standards are documents, established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context" (ISO, 1996). Standardization then is defined as the activity of diffusing and adopting a standard.” | (ISO, 1996) |
| "Standardization is the activity of establishing and recording a limited set of solutions to actual or potential matching problems directed at benefits for the party or parties involved balancing their needs and intending and expecting that these solutions will be repeatedly or continuously used during a certain period by a substantial number of parties for whom they are meant". | (Vries, 1999) |
| We define ““process standardization” as the unification of variants of a given business process by aligning the variants against an archetype process. The archetype process against which the process variants are aligned can either be created or selected within the focal firm or be based on/adopted from an existing external reference/best in class process.” | (Münstermann et al., 2010) |
| “is the process of producing an agreement on technical and business specifications to be used consistently across the enterprise to ensure that processes information, format and systems are interconnected and interoperable.” | (Seethamraju & Seethamraju, 2009) |
| Business process standardization as “defining exactly how a process will be executed regardless of who is performing the process or where it is completed” | (Zellner, Laumann, & Appelfeller, 2015) |
| “Standard process can be defined “as the currently best-known method for accomplishing the work. This assumes that it is the […] most efficient method to do the work that meets the required level of quality” |  |
Table 2: Demonstrating conceptual themes of Process Standardization as used in literature

<table>
<thead>
<tr>
<th>Theme</th>
<th>Coding references</th>
<th>Sources</th>
<th>Sample Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of rules, metrics</td>
<td>14</td>
<td>13</td>
<td>“Process standardization includes common definitions of metrics, common languages that maintain the integrity of business rules, process logic and data, and flexibility” (Wüllenweber et al., 2008, p. 214)</td>
</tr>
<tr>
<td>Smooth communication</td>
<td>7</td>
<td>5</td>
<td>“Implementing strategies should take less time with standardized business processes that facilitate smooth communications and coordination” (Dai, Kauffman, &amp; Wang, 2011, p. 162)</td>
</tr>
<tr>
<td>Agreement of specifications</td>
<td>18</td>
<td>10</td>
<td>“Standards are documents, established by consensus and approved by a recognized body” (ISO, 1996)</td>
</tr>
<tr>
<td>Structured</td>
<td>10</td>
<td>10</td>
<td>“Structured, repeatable work can be easily controlled, and has long been the target for automation and standardization as businesses pursue competitive advantage through scale, efficiency and lower costs ’(Cantara, 2003, p. 2)</td>
</tr>
<tr>
<td>Unifications of variants</td>
<td>8</td>
<td>6</td>
<td>“Process standardization as the unification of variants of a given business process by aligning the variants against an archetype process” (Kloppenburg, Kettenbohrer, &amp; Beimborn, 2013a)</td>
</tr>
<tr>
<td>Uniformity</td>
<td>3</td>
<td>3</td>
<td>“Standardization means creating uniform business processes across various divisions or locations” (Richen &amp; Steinhorst, 2005, p. 1)</td>
</tr>
</tbody>
</table>
| Common language              | 4                 | 4       | “Process standardization includes common definitions of metrics, common languages that maintain the
integrity of business rules” (Wüllenweber et al., 2008, p. 214)

Best and easy 4 4 “On the basis of current knowledge, the standard process derived represents the best known method to accomplish the business process with regard to customer expectations” (Zellner et al., 2015, p. 3)

Formal and followed 3 3 “Degree to which work rules, policies, and operating procedures are formalised and followed” (Jang & Lee, 1998, p. 69)

Efficient 6 5 “Standard process can be defined “as the currently best-known method for accomplishing the work. This assumes that it is the […] most efficient method to do the work that meets the required level of quality” (Martin & Bell, 2011)

Repeatable 4 4 “Structured, repeatable work can be easily controlled, and has long been the target for automation and standardization as businesses pursue competitive advantage through scale, efficiency and lower costs” (Cantara, 2003, p. 2)

Table 3: Table elucidating the concepts associated with Business Process Standardization

<table>
<thead>
<tr>
<th>Concept</th>
<th>No of sources</th>
<th>Definition</th>
<th>Relationship to BPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process integration</td>
<td>4</td>
<td>Process integration is concerned with the overall coordination of business processes and activities. This involves effective division of tasks across units and consequent coordination to execute</td>
<td>Coordination and efficiency of execution of business processes were also found to be themes of BPS,</td>
</tr>
</tbody>
</table>
the tasks (Narayanan, Jayaraman, Luo, & Swaminathan, 2011).

<table>
<thead>
<tr>
<th>Information processing</th>
<th>1</th>
<th>Information processing in organizations is defined as the gathering of data, the transformation of data into information, and the communication and storage of information (Narayanan et al., 2011).</th>
<th>Smooth communication was found to be a theme of BPS. Information processing seems to be a pre-requisite for BPS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Orientation</td>
<td>2</td>
<td>Process orientation or transversality is defined as a set of activities that transform inputs into outputs for customers (Seethamraju &amp; Seethamraju, 2009)</td>
<td>Process orientation communicates the significance of sequence of activities, which is also conveyed by BPS. Process orientation seems to be a subset of BPS.</td>
</tr>
<tr>
<td>Process Compliance</td>
<td>1</td>
<td>Business process compliance is about ensuring that processes, operations and practices are in accordance with a prescribed or agreed set of norms (Papazoglou, 2011)</td>
<td>Agreement of specifications was found to be a theme of BPS, which is line with process compliance.</td>
</tr>
<tr>
<td>Process harmonization</td>
<td>2</td>
<td>Process harmonization is the activity of designing and implementing business process standards across different regions or units, so as to facilitate</td>
<td>The definition conveys that process harmonization and standardization go</td>
</tr>
</tbody>
</table>

achieving the targeted business benefits arising out of standardization, while ensuring a harmonious acceptance of the new processes by the different stakeholders (H. L. Romero, Dijkman, Grefen, van Weele, & de Jong, 2015)

| Interoperability | 1 | Interoperation “occurs whenever independent or heterogeneous information systems or their components controlled by different jurisdictions/administrations or by external partners smoothly and effectively work together in a predefined and agreed upon fashion (Scholl, Kubicek, Cimander, & Klischewski, 2012). | The goal of interoperability is similar to the goal of process standardization, enabling partners to work smoothly. |