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A configuration taxonomy of business process orientation

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Abstract

Organizations strive to develop a variety of capabilities to improve and measure business processes. Researchers have used various maturity models to investigate the development of a business process orientation (BPO), and most have argued that such development comes in stages. Current literature underestimates the interrelationships between BPO capabilities and fails to consider multidimensional or non-linear paths to maturity. To refine the features of maturity models, we rely on configuration theory to uncover different archetypes for BPO development and quantitatively evaluate them by examining performance differences among archetypes based on a large-scale international dataset. The resulting empirical taxonomy with seven BPO archetypes establishes important performance differences between organizations at a similar maturity level. Besides strengthening the theoretical foundations of BPO and making maturity assessments more multifaceted, our results help organizations focus their managerial efforts by enabling comparison with peers in the same archetype and showing various paths for BPO improvement.

Keywords

Process orientation; Archetype; Configuration; Context awareness; Performance.

Highlights

- Configuration theory is well suited for the study of business process orientation.
- An international data set to identify seven statistical clusters of organizations.
- Identification of archetypes based on life cycle and managerial, cultural and structural areas.
- Contextual advice on how to increase business process orientation for various organization types.

1 Introduction

An eternal mantra of organizations is the continuous improvement of their business processes (Tsoury et al., 2019; Zaby and Wilde, 2018). To measure progress, organizations strive for tools or benchmarks, often resorting to maturity models that assume progress occurs in stages (Röglinger et al., 2012; Tarhan et al., 2016). The explicit, or at least implicit, premise of those models is that maturity develops with simultaneous increases in various aspects (Lasrado et al., 2016; Skrinjar and Trkman, 2013). Some studies have assumed that components (i.e., elements or capability areas) can be treated individually (Schmiedel et al., 2014) or that the statistical analysis of change in a particular

component (e.g., critical point) can indicate which action an organization should take to increase maturity. Hence, the main goal for organizations is to climb the "maturity ladder" to reach higher levels (Skrinjar and Trkman, 2013).

Such maturity models are used in various domains, including business process management (BPM). BPM as a methodological approach requires more than technical and managerial methods because it affects cultural and structural components (de Bruin and Rosemann, 2007). Organizations use BPM to augment their business process orientation (BPO) as a multidimensional construct (Bronzo et al., 2013; Denner et al., 2018). Nonetheless, the increase of BPO should not be a goal in itself. Previous works showed that organizations should strive for an optimal BPO level (McCormack et al., 2009; Van Looy et al., 2017), beyond which investment into maturity is not sensible.

Although researchers have started to acknowledge the critiques against a one-size-fits-all approach (vom Brocke et al., 2014; vom Brocke et al., 2016), we argue that the main problem is broader (Frogor et al., 2019). In general, maturity models in information systems research have frequently been criticized for lack of theoretical grounding, methodological rigor, and incomplete consideration of multiple or non-linear paths to maturity (Lasrado et al., 2016; Van Looy et al., 2017). Given that organizations should not study maturity as the sum of all parts but rather in a multidimensional format (Denner et al., 2018), the interrelationships between process-related components need deeper examination. For instance, capabilities do not exist independently but jointly create various synergies (e.g., a supporting culture can boost human actions). Although maturity models are widely used, refining the prescriptive features of existing BPMMs has been largely neglected (Felch and Asdecker, 2020), indicating that the initial doubts about the quality of BPMMs remain valid. To tackle part of the BPMM quality issue, the literature requires a more refined approach to understanding capability interactions for more accurate analysis of the multidimensional nature of maturity.

To this end, we use configuration theory (El Sawy et al., 2010) as a paradigmatic lens to understand better the complexity of BPO and its performance outcomes among different capability configurations or settings. Our paper highlights the opportunities that a configurational perspective can create for both the BPM discipline and related fields that involve studying the development of business orientations (Linton and Kask, 2017). We focus on two research questions.

- RQ1. Which configurations of BPO exist in organizations?
- RQ2. What are the differences in performance between BPO configurations?

Our purpose is to build (RQ1) and test (RQ2) a taxonomy (i.e., a classification) of BPO configuration archetypes. We used a previously validated questionnaire (Van Looy, 2020) to collect data that enabled an in-depth analysis and visual representation of different archetypes by combining cluster analysis (RQ1) and ANOVA-based tests (RQ2). The visual representation of the configuration taxonomy helps to identify the complex interactions among the BPO capability areas. We identify a limited number of configurations that can be used as potential pathways for organizations striving to increase maturity and structure BPO improvements.

Section 2 continues with our research background, followed by an explanation of configuration theory in Section 3. We explain the research methods in Section 4 and subsequently apply them in Sections 5 and 6. Section 7 discusses the configuration archetypes, and Section 8 presents a conclusion.

2 Research background

2.1 Business process management and business process orientation

BPM is defined as "*the art and science of overseeing how work is performed in an organization to ensure consistent outcomes and to take advantage of improvement opportunities*" (Dumas et al., 2013, p. 1). BPM mainly examines topics across a life cycle, either by the original Plan-Do-Check-Act (PDCA) cycle (Deming, 1994) or by variants such as the one presented in Dumas et al. (2018). Our paper uses PDCA, which constitutes the basis of life cycle variants and has widespread use in other management domains (Nicolay et al., 2012). BPM requires managerial and organizational components besides the more technical methods and tools. Hence, to supplement the life cycle, scholars such as de Bruin and Rosemann (2007) have also emphasized the roles of strategic alignment, governance, people, and culture. We concur with Klun and Trkman (2018) that BPM's main distinctions are that business processes (1) serve as an organization's fundamental unit of analysis, (2) are visualized as process models, and (3) are used when needed for organizational changes.

To emphasize BPM's holistic approach, authors have placed their research under the wider umbrella of BPO (Bronzo et al., 2013; Kohlbacher and Reijers, 2013; Skrinjar and Trkman, 2013). Van Looy et al. (2014) summarized the literature by stating that culture and structure are BPO-specific components in addition to the life cycle. For instance, Bronzo et al. (2013) and Kohlbacher and Reijers (2013) used a range of capabilities to investigate BPO and its general effect on performance, whereas scholars such as Skrinjar and Trkman (2013) examined the BPO-specific critical practices among maturity levels. Alternatively, studies have focused on single BPO capabilities, such as process-oriented values (Schmiedel et al., 2014).

Nevertheless, BPO research has reached a certain standstill (Klun and Trkman, 2018). Despite the above-mentioned agreement in the literature to supplement the lifecycle by managerial, cultural, and structural capability areas, more research is needed on the different facets of BPO development and their configurations.

2.2 Development of business process orientation

A maturity model's purpose is to analyze practices and identify those that are critical at a certain maturity level. Organizations following these practices are believed to reach a higher orientation in a specific field, such as process orientation (McCormack et al., 2009; Skrinjar et al., 2008). Our work differs from prior perspectives by acknowledging that BPO development does not progress with simultaneous changes in various components (Froger et al., 2019), but rather as a configuration of all components.

Our research differs from design-science research because it does not develop a maturity model artefact (Röglinger et al., 2012). Being situated in the behavioral science paradigm, we do not address the link between BPO and performance as a methodological process theory (Skrinjar et al., 2008) or variance theory (Van Looy and Devos, 2019), but rather as a configuration theory.

Thus far, the literature has agreed on three assumptions: (1) a fit between enterprise capabilities and process orientation will enhance performance (Bronzo et al., 2013; Kohlbacher and Reijers, 2013), (2) a one-size-fits-all approach is less appropriate (Röglinger et al., 2012), and (3) organizations need a more context-aware approach (vom Brocke et al., 2014; Van Looy and Van den Bergh, 2018). We address these assumptions by applying a configuration theory (Doty and Glick, 1994; Oberländer et al., 2019) to reveal an organizational fit with process orientation (RQ1) and its relationship to performance (RQ2). Thus, our research is intended for understanding patterns (i.e., different

configuration archetypes of BPO capability development). We provide statistical evidence of the existence of various configurations with similar or different performances.

3 Configuration theory

Typical configuration theories (Doty and Glick, 1994; Fiss, 2007; Meyer et al., 1993) differ from contingency approaches by equifinality (i.e., using a holistic synthesis with clusters or archetypes). They investigate how organizational changes should be managed differently in different configurations, e.g., because of varying implementation costs (Sharma et al., 2008).

Regarding terminology, configuration theory either results in typologies (i.e., conceptually derived groupings of objects) or taxonomies (i.e., conceptually and/or empirically derived groupings, frequently using cluster analysis) (Oberländer et al., 2019). A taxonomic approach uses an empirical method for classification into groups or types (Neubaum et al., 2019). Taxonomies are useful tools for exploring the extent to which type classifications can be empirically identified (Hotho, 2013). In our case, statistical clusters act as configurations or archetypes (Cerrato et al., 2016).

3.1 Theoretical assumptions

We translated the assumptions of configuration theory (El Sawy et al., 2010) as follows:

1. **Holistic/systemic perspective as lens**. Our configurations are holistic archetypes of interconnected elements (i.e., BPO capability areas) that generate outcomes (i.e., BPO development and business performance). BPO development and business performance are complex phenomena captured by capability areas that must be understood simultaneously. Prior research gave evidence that inconsistencies between different elements of a configuration lead to lower performance (Onyemah and Anderson, 2009) and showed alternative combinations of elements lead to higher performance (Liu et al., 2016; Mikalef et al., 2015).
2. **Equifinality as possibility**. Different archetypes for BPO development exist, considering the contextual and managerial differences in organizational settings. Some configuration types perform more highly than do those attempting to meet several demands (Payne, 2006).
3. **Limited diversity as reality**. Each organization operates in a specific contextual and managerial setting. Practice mostly shows a relatively limited diversity of configurations, which facilitates causal inference.
4. **Research propositions as causal recipes**. Instead of predefined hypotheses, our analysis results in a taxonomy with archetypes, the outcomes of which reveal causal patterns.
5. **Rich combinatorial causality as benefit**. Theory helps to specify which elements (i.e., BPO capability areas) should be present or absent and their relative importance.
6. **Discontinuity and nonlinearity as normal**. BPO research assumes a linear relationship between maturity scores and performance (Lockamy and McCormack, 2004). The combinations leading to the presence of an outcome (i.e., business performance) can differ from those leading to the absence of one.

Our taxonomy relies on the resource-based view (RBV) of the firm (Wernerfelt, 1984). This theory argues that the BPO capability areas (i.e., related to the life cycle, a process-oriented culture, and a process-oriented structure) act as predictors of organizational performance. By considering performance outcomes, we can state which archetypes perform better. As such, the configuration taxonomy for BPO development acts as a theory for empirically deriving groupings of characteristics, being evaluated by deriving testable hypotheses for predicting organizational performance and/or

deriving practical recommendations (Doty and Glick, 1994; Nickerson et al., 2013; Oberländer et al., 2019).

3.2 Performance as the dependent variable

3.3 BPO capability areas

The resource-based view explains that organizational performance is a consequence of organizations' similarities (Wernerfelt, 1984). A firm's competitiveness and operational excellence thus result from its unique bundle of tangible and intangible assets, such as organizational structure, culture, and business processes. These constructs are crucial for our research, with the notion of business processes being covered by the PDCA life cycle and the process management area (Section 2.1, Section 3.3).

In RBV terms (Wernerfelt, 1984), business processes are capabilities (i.e., assets or resources) to achieve superior performance. The elements facilitating business processes have been described in the literature as critical success factors (Trkman, 2010) and are included in maturity models as capability areas (e.g., capability maturity model integration).

Van Looy (2020) validated a questionnaire consisting of four main BPO capability areas and 13 subareas. Because this measurement instrument comprehensively assesses all BPO capability areas, we used it for our study. We describe each BPO capability area in Table 1.

Table 1. BPO development and its capability areas

BPO capability area	Sub-areas	Description
PDCA	• Plan • Do • Check • Act	Methods and technology for designing, executing, measuring and improving business processes.
Process management	• Strategic alignment • External relationships • Roles • Skills	Roles and skills for process owners (or process managers) and teams to manage a business process throughout the PDCA cycle, and to adapt process goals to the organization's strategy and stakeholders' needs.
Process-oriented culture	• Process-oriented values • Human resources appraisals and rewards • Top management commitment	Values stimulating employees to think and work in terms of business processes, which are translated into formal appraisals and rewards and supported by top managers.
Process-oriented structure	• Process-oriented organization chart • Governance bodies	Organogram with business processes visibly crossing departments, and bodies for managing across all business processes.

Note. Adapted from Van Looy (2020).

In line with Section 2.1, the original PDCA cycle (Deming, 1994) was extended by managerial aspects related to strategy and people (i.e., external stakeholders, internal roles and skills), as well as structural governance (i.e., chart and bodies) and culture (de Bruin and Rosemann, 2007). Although a process-oriented culture can be interpreted as values (e.g., customer orientation, excellence, responsibility, and teamwork; Schmiedel et al., 2014), the "line of sight" theory (Boswell et al., 2006) states that values also require concretization by human resources with appraisals and rewards, which act as additional cultural areas in our study. Moreover, organizational change and cultural theories

proclaim the relationships between BPO capability areas (i.e., business processes, organizational culture, and organizational structure (Allaire and Firsirotu, 1984; Schein, 1985).

Although alternative perspectives on the relationship between business processes, culture, and structure exist (Allaire and Firsirotu, 1984; Galbraith, 2014; Waterman et al., 1980), they support the link between the constructs in our study. Moreover, other organizational management studies have confirmed the interrelationship between organizational culture, organizational structure, business processes, and performance (Lachman et al., 1994). We investigate whether the above-mentioned capability dimensions can be used to define alternative configurations of BPO development.

4 Research methods

Our data set contained 403 respondents, equally divided across four continents (North America, Europe, Asia, and Australia). An electronic survey (Appendix A) was sent to a panel with a response rate of 19.91%. All respondents worked on a managerial level (118 middle managers, 194 senior managers, and 91 C-level managers) and had a seniority of at least 8 years as well as a BPM background (e.g., working in IT, operations, or quality management). Besides an equal spread among continents, generalization was facilitated via a predefined restriction for organization size (i.e., 15% small, 15% medium-sized, and 70% large organizations).

The variables are summarized in Table 2. BPO was measured using a validated and reliable measurement instrument (Van Looy, 2020), resulting in Cronbach alphas of above 0.70 and variance inflation factors below 10, with significant construct/item weights and adjusted R-squared values ($P < 0.001$).

We examined organization size, sector, and market competitiveness as potential determinants because prior BPM studies identified those contextual factors as significantly affecting maturity (Weitlaner and Kohlbacher, 2015).

Table 2. An overview of the variables included in our data set (N = 403).

Variable group	Variable	Variable values	Measurement level
BPO capability areas	PDCA (construct weight = 0.262; $P < 0.001$)	Latent variable scores, comprising four sub-areas (i.e., Plan, Do, Check, Act)	Interval
	Process management (construct weight = 0.269; $P < 0.001$)	Latent variable scores, comprising four subareas (i.e., strategic alignment, external relationships, roles, and skills)	Interval
	Process-oriented culture (construct weight = 0.268; $P < 0.001$)	Latent variable scores, comprising three subareas (i.e., process-oriented values, appraisals and rewards, and top management commitment)	Interval
	Process-oriented structure (construct weight = 0.258; $P < 0.001$)	Latent variable scores, comprising two subareas (i.e., process-oriented organization chart and governance bodies)	Interval
Business context	Organization size	Seven categories	Ordinal
	Organization sector	21 NACE codes, recoded into three categories	Nominal

	Perceived market competitiveness	5-point Likert scale	Ordinal
Performance outcomes	Perceived process performance	Four statements, each measured on a 5-point Likert scale	Each statement: ordinal
	Perceived organizational performance	Seven statements, each measured on a 5-point Likert scale	Each statement: ordinal
	Operational excellence strategy	Five statements, each measured on a 5-point Likert scale	Each statement: ordinal

The data set concretized performance by relying on a balanced scorecard (BSC) (Van Looy and Shafagatova, 2016) by which to rate (1) dimensions for organizational performance (i.e., financial, customer-related, supplier-related, society-related, degree of digitalization, IT efficiency, and employee performance) and (2) process performance (i.e., time, costs, internal quality, and flexibility per business process). A BSC confirms process performance is one dimension of organizational performance, which is measured by the Devil's Quadrangle of time, cost, quality and flexibility (Dumas et al., 2013). Alternatively, authors have referred to process excellence (Harrington, 2006) or operational excellence (Treacy and Wiersema, 1993). Moreover, evidence exists for a positive relationship between BPO and performance (McCormack et al., 2009; Skrinjar et al., 2008).

4.1 Cluster analysis

The idea of classifying has already been applied to process-related maturity models (McCormack et al., 2009). We selected the K-Means clustering algorithm, which is a "*widely used clustering technique that seeks to minimize the average squared distance between points in the same cluster*" (Arthur and Vassilvitskii, 2007, p. 1) and is often represented by the criterion of within-cluster sum of squared error (SSE).

We used the K-Means++ initialization scheme, implemented using SciKit-Learn software (Pedregosa et al., 2011). This method initializes the centroids to be (generally) distant from each other, leading to better results. We used the elbow method to determine the number of clusters (Kodinariya and Makwana, 2013). In our data set, the SSE, reached a plateau (i.e., with cluster sizes ranging between 40 and 74; average cluster size = 57.57) starting at a value of 7. More information is given in Appendix B.

Afterwards, we investigated the business contexts and managerial practices per cluster, which is typical for configuration theories. We looked at the distribution of contextual variables (i.e., organization size, sector, and market competitiveness) across the BPO development clusters. We also calculated the mean per capability area, with the mean per main area serving as a reference point (i.e., for which a mean of 0 was set as a rule; Table 3).

Table 3. Descriptive statistics for the main capability areas (N = 403).

Variable	Minimum	Maximum	Mean	Std. Deviation
PDCA	-2.679	1.571	-0.00001	1.001232
Process management	-2.765	1.508	-0.00001	1.001224
Process-oriented culture	-2.652	1.544	-0.00001	1.001230
Process-oriented	-2.167	1.516	0.00002	1.001223

structure				

Finally, we used a 5-point Likert scale (i.e., ranging from *very low* to *very high*; Figure 1) to enable generalizations leading to testable configurations. A mapping between the scale and the calculated means is depicted in Table 3, which shows that each main capability area ranged from about −2 to 1.5. Because all means were about 0 with a standard deviation of 1, the middle point of the moderate scale category was 0 with a width of 1. The borders of the adjacent scale categories were also guided by this width, albeit corrected for the maximum score of the main capability areas.

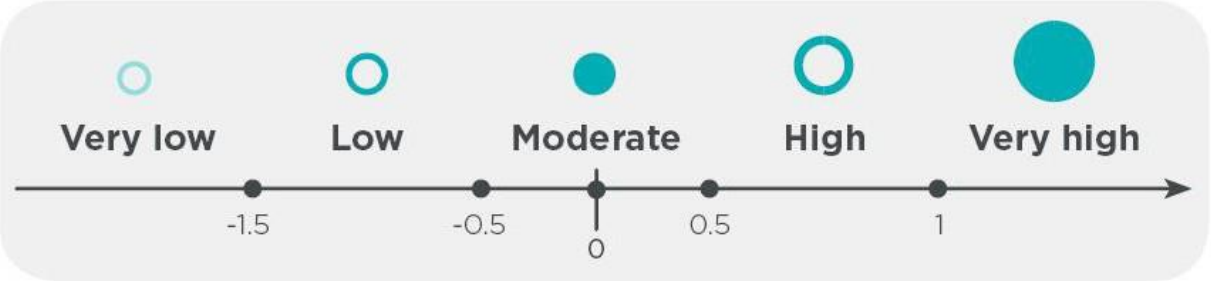

Figure 1. A BPO capability development scale.

4.2 Analysis of variance

We conducted ANOVA to verify whether the intended BPO development scores statistically differed in performance outcomes (Fiss, 2007).

We conducted three principal (exploratory) factor analyses to demonstrate scale validity and reliability and to calculate the factor scores as an index for the ANOVA-based tests.

- For the latent construct of "perceived process performance", the first factor analysis extracted one factor, which explained 53.69% of the total variance of the four process performance statements (time, costs, internal quality, and flexibility per business process). The reliability analysis resulted in a Cronbach's alpha of 0.821 (>0.70).
- For "perceived organizational performance", the second factor analysis extracted one factor, which explained 45.76% of the total variance of the seven organizational performance statements (financial, customer-related, supplier-related, society-related, degree of digitalization, IT efficiency and employee performance). Reliability was shown by a Cronbach's alpha of 0.852 (>0.70).
- Finally, one "operational excellence" factor was extracted, which explained 55.44% of the total variance of five statements (strategy towards productivity, efficiency, capacity usage, output quality, and employee work productivity). The reliability analysis for this scale resulted in a Cronbach's alpha of 0.861 (>0.70).

The corresponding hypotheses are as follows.

- H_0: No significant difference exists among the BPO development clusters
- H_a: At least one significant difference exists among the BPO development clusters

The null hypothesis can be rejected if the *P*-value associated with the *F*-ratio is smaller than 0.05. Post hoc testing should then reveal which BPO development clusters are different from each other. Because ANOVA relies on comparing the differences between mean clusters, Table 4 provides the descriptive statistics of the performance variables.

Table 4. Descriptive statistics for the business performance variables.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Perceived process performance	385	-3.730	1.435	0.000	0.909
Perceived organizational performance	360	-3.499	1.573	0.000	0.930
Operational excellence	389	-3.592	1.408	0.000	0.929

To determine which ANOVA-based test should be applied, we considered our independent variable (i.e., BPO development clusters of RQ1) to be categorical while the dependent performance variables were continuous on the interval level. The observations were independent (i.e., no matched pairs). We also verified the ANOVA assumptions for normality, homogeneity of variances, and sample size.

The "perceived process performance" variable did not follow a normal distribution (Kolmogorov-Smirnov = 0.088, df = 385, *P* = 0.000; Shapiro-Wilk = 0.950, df = 385, *P* = 0.000). The variable had unequal variances (mean-Levene(6, 378) = 7.771 with *P* = 0.000; median-Levene(6, 378) = 5.783 with *P* = 0.000). The "perceived organizational performance" variable also did not follow a normal distribution (Kolmogorov-Smirnov = 0.066, df = 360, *P* = 0.001; Shapiro-Wilk = 0.962, df = 360, *P* = 0.000) and had unequal variances (mean-Levene(6, 353) = 6.690 with *P* = 0.000; median-Levene(6, 353) = 5.441 with *P* = 0.000). Similarly, operational excellence was not normally distributed (P < 0.000) and had unequal variances (P < 0.000).

Consequently, we opted for Welch's ANOVA (Box, 1953), followed by the Games-Howell post hoc test (Shingala and Rajyaguru, 2015). Welch's ANOVA is a parametric test to assess group means but produces reliable results for non-normally distributed continuous data if each group has at least 15 observations (Frost, 2017). The Games-Howell test is a parametric test for pairwise comparison, which can be used for unequal variances and sample sizes. Moreover, this method is robust to non-normality (Shingala and Rajyaguru, 2015: p. 25).

5 Configurations of BPO

Figure 2 presents the four-dimensional clustering with seven BPO clusters across the four main capability areas (i.e., PDCA, process management, process-oriented culture, and process-oriented structure).

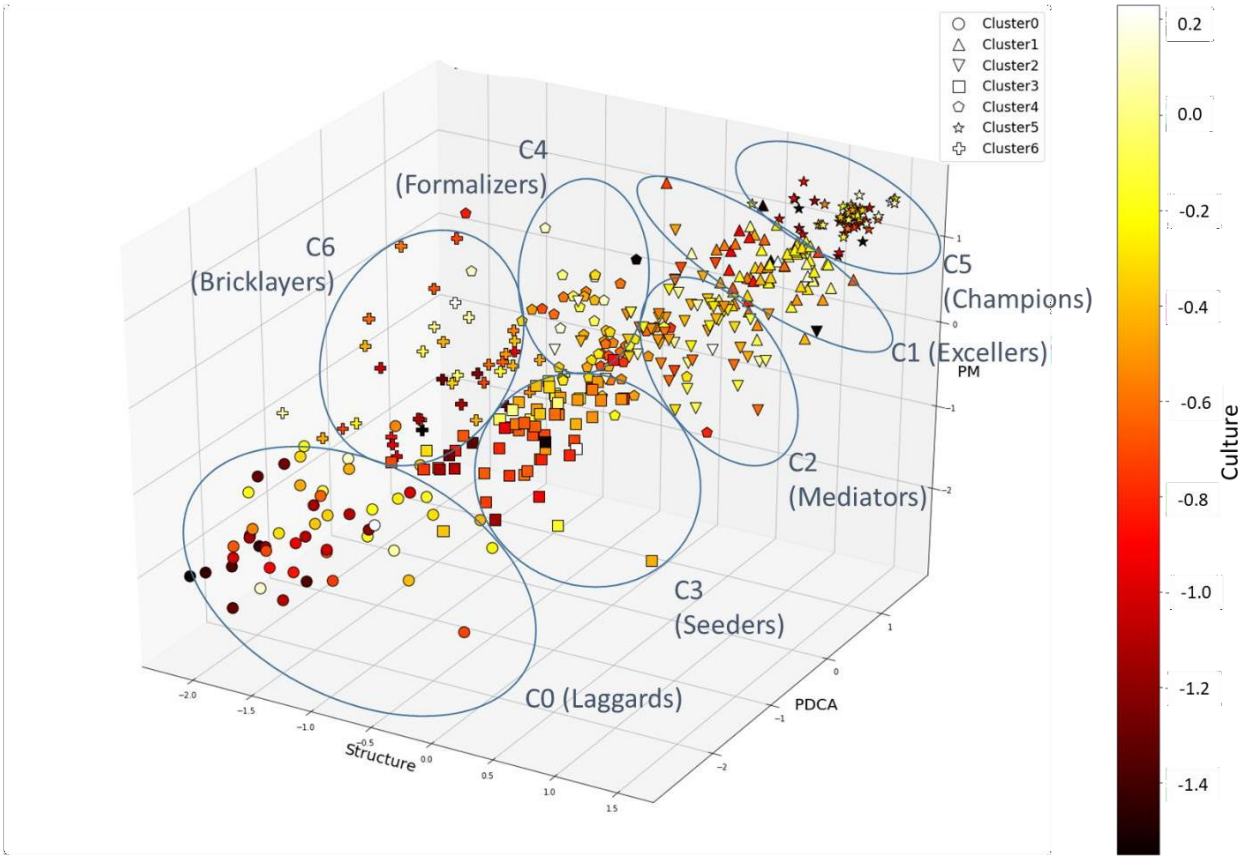

Figure 2. A four-dimensional representation of seven BPO configurations across capability areas (taxonomy).

A closer analysis of the main areas (Figure 3), followed by the sub-areas (Appendix C), confirmed a gradual BPO development from the bottom to the top clusters. The main BPO capability areas are more developed in cluster C2 than in cluster C4. However, a different capability coverage pattern is apparent between clusters C6 and C3. Cluster C6 has moderate values for the areas of PDCA, process management, and process-oriented culture, but very low values for process-oriented structure. On the other hand, cluster C3 has somewhat lower values for the areas of PDCA and process management, with a moderate value for process-oriented structure.

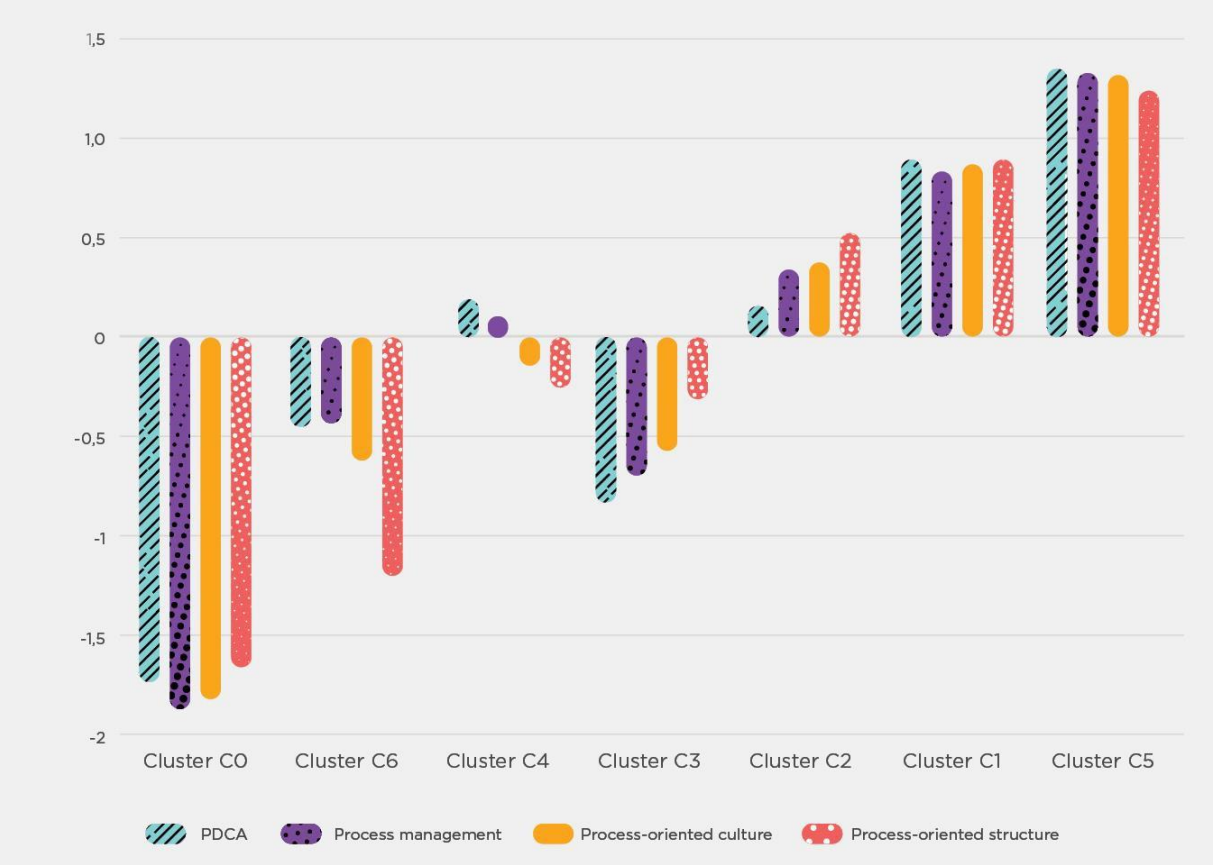

Figure 3. A bar chart of the main capability areas per BPO development cluster.

Appendix C provides a more detailed view of the gradual BPO development options. Whereas the moderate C4 cluster has lower values for all cultural and structural sub-areas than for the PDCA and process management sub-areas, cluster C2 has higher values for both structural sub-areas and the cultural sub-area of top management commitment. The difference between the moderate C6 and C3 clusters accounts for both structural sub-areas. C6 relies more on process-oriented values, whereas C3 profits more from process-oriented appraisals and rewards and top management commitment.

Based on the respective capability coverage, we assigned textual labels to each cluster to summarize the cluster content:

- C0 = Laggards (i.e., dormant in terms of all BPO capabilities)
- C6 = Bricklayers (i.e., of the initial BPM basics)
- C3 = Seeders (i.e., of the organizational foundation supportive of BPM)
- C4 = Formalizers (i.e., of the BPM methods and techniques)
- C2 = Mediators (i.e., to balance the process needs with organizational needs, and to acquire organizational support)
- C1 = Excellers (i.e., highly advanced BPO capabilities)
- C5 = Champions (i.e., best-in-class)

We use cluster numbers in the results sections, whereas in the discussion section, we use those textual labels to explain archetypes.

Next, Table 5 presents the business contexts per cluster for organization size, sector, and perceived market competitiveness.

Table 5. The contextual variables per BPO development cluster.

Context		Cluster							
		C0	C6	C4	C3	C2	C1	C5	Total
Size	11 – 50 employees	**14**	4	5	**14**	3	5	0	45
	51 – 250 employees	**11**	**12**	**13**	**13**	9	5	3	66
	251 – 500 employees	7	6	7	6	8	**13**	2	49
	501 – 1,000 employees	6	1	8	10	**13**	**14**	9	61
	1,001 – 5,000 employees	8	10	5	8	**17**	**16**	**23**	87
	5,001 – 10,000 employees	1	3	8	2	3	**10**	**9**	36
	> 10,000 employees	5	4	**10**	**10**	**11**	**11**	8	59
	Total	52	40	56	63	64	74	54	403
Sector	Products	**18**	13	**19**	**19**	**19**	**25**	**17**	130
	Services	15	17	22	**26**	**33**	**35**	**28**	176
	Government and social welfare	11	8	12	**18**	11	10	4	74
	Unknown	8	2	3	0	1	4	5	23
	Total	52	40	56	63	64	74	54	403
Market competitiveness	Much lower	0	1	0	0	0	1	**3**	5
	Moderately to slightly lower	**15**	3	**13**	9	9	6	5	60
	About the same as an average organization	**14**	10	8	**16**	7	6	**13**	74
	Moderately to slightly higher	21	23	30	**35**	**37**	**50**	19	215
	Much higher	2	3	5	1	**10**	**11**	**14**	46
	Unknown	0	0	0	2	1	0	0	3
	Total	52	40	56	63	64	74	54	403
Total		52	40	56	63	64	74	54	403

Table 5 shows that organization size varies among clusters. Small and medium-sized organizations have a relatively higher presence in the bottom and moderate clusters (i.e., C0 and C3 for small organizations; C0, C6, C4, C3, and C2 for medium-sized organizations). Products, services, governments, and social welfare organizations are represented in each cluster. Service sectors are present more often in the higher than in the lower clusters (i.e., C3, C2, C1, and C5). Government and social welfare organizations are relatively more centered in the moderate clusters, especially in C3. Manufacturing companies are equally present in all clusters. Organizations with lower perceived market competitiveness more often tend to be located in the lower clusters, especially C0 and C4. In total, 46 respondents on process orientation experienced much higher market competitiveness, of which 35 are situated in the highest clusters of C2, C1, and C5.

The next step toward a configuration taxonomy was to map the descriptive statistics of the main capability areas to the predefined BPO capability development scale. The mapping was rearranged in a logical order, and testable configurations were proposed regarding the expected performance

outcomes. Figure 4 summarizes the configurations with expected performance outcomes, which will be tested in Section 6.

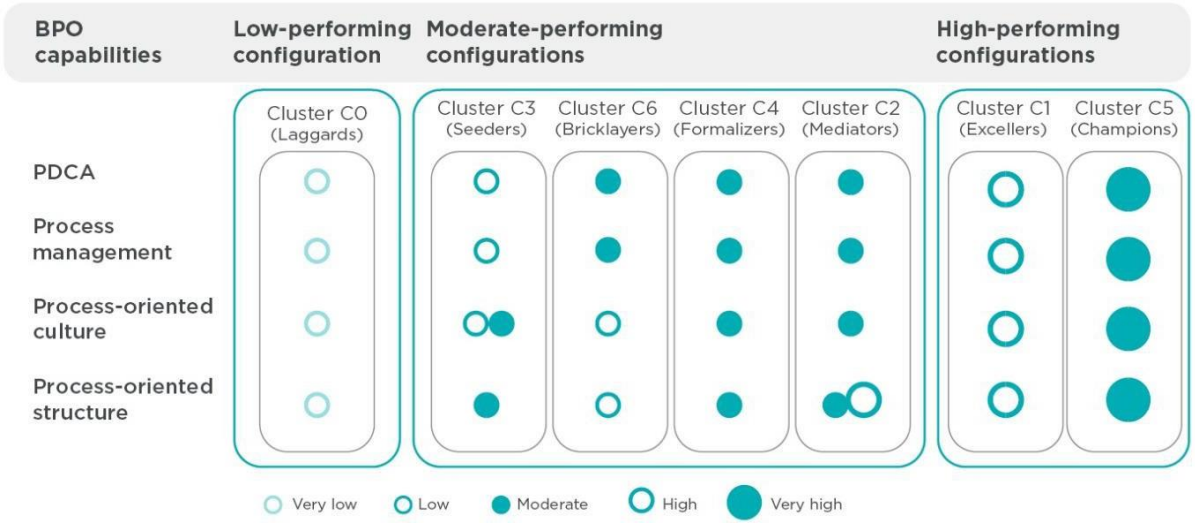

Figure 4. Testable BPO configurations with respect to the expected performance outcomes.

6 Performance differences between configurations

To investigate whether the BPO archetypes affect business performance, we ran hypothesis tests for each performance outcome.

Table 6. Performance outcomes in BPO configurations.

Cluster	Archetype (assigned name)	Mean		
		Perceived process performance	Perceived organizational performance	Operational excellence strategy
Cluster C0	Laggards	-1.124	-1.349	-1.018
Cluster C6	Bricklayers	-0.386	-0.711	-0.476
Cluster C4	Formalizers	-0.136	-0.117	0.007
Cluster C3	Seeders	-0.404	-0.506	-0.422
Cluster C2	Mediators	0.128	0.248	0.206
Cluster C1	Excellers	0.655	0.514	0.491
Cluster C5	Champions	0.836	1.082	0.799

Table 6 shows that the performance outcomes increase from the bottom cluster (C0) to the moderate clusters, and onward to the top clusters (from C1 to C5). The moderate clusters of C6 and C3 tend to have similar performance outcomes, with a somewhat higher performance for cluster C2 than for cluster C4. Subsequently, we tested whether these observed performance differences were statistically significant (Appendix D).

6.1 Perceived process performance

The Welch's ANOVA proved that at least one BPO development cluster differs from another for perceived process performance, $F(6, 154.067) = 52.624$; $P = 0.000$. Games-Howell post hoc testing (Appendix D) showed that all clusters have a higher perceived process performance than the bottom

C0 cluster has. The differences in perceived process performance between the top C1 and C5 clusters were not statistically significant, indicating that both are very high-performing configurations. We expected organizations in the moderate BPO development clusters to have a similar degree of perceived process performance, which we call moderate-performing configurations. The ANOVA did not find statistically significant differences in perceived process performance between C6 and C4, between C6 and C3, between C4 and C3, and between C4 and C2. Statistically significant differences in perceived process performance were found between clusters C6 and C2 (P = 0.012) and between C3 and C2 (P = 0.001), indicating that cluster C2 performs somewhat better than the other moderate clusters do.

6.2 Perceived organizational performance

Statistically significant differences remained between group means for perceived organizational performance, $F(6, 137.885) = 107.664$, P = 0.000. Post hoc testing (Appendix D) indicated that all BPO development clusters statistically differ from each other, except for the moderate C6 and C3 clusters. More variance in performance outcomes is expected among the moderate BPO development clusters, with clusters C6 and C3 followed by cluster C4 and then cluster C2.

6.3 Operational excellence

The Welch's ANOVA confirmed that operational excellence is expected to differ between group means, $F(6, 158.339) = 46.094$, P = 0.000. Appendix D shows statistical differences between most clusters but not between clusters C6 and C3, clusters C4 and C2, and clusters C2 and C1. This finding indicates that for operational excellence, the moderate clusters divide more often among the lower moderate clusters (C3 and C6) and the upper moderate clusters (C4 and C2), with C2 nearing the higher performing cluster of C1.

7 Discussion

By systematically building and testing BPO configurations, we have uncovered different archetypes from the bottom (laggards) to the top (champions). In addition, we have distinguished the seeders and mediators from the bricklayers and formalizers, although most maturity models would consider them to be on the same maturity level.

Three ANOVA tests offered evidence of performance differences among the archetypes, namely for perceived process performance, perceived organizational performance, and operational excellence:

- First, the data suggest no difference in perceived process performance between the bricklayer and seeder archetypes, indicating that both paths start equally and organizations will not directly see a performance difference. However, mediators have higher performance than seeders do, indicating clear progress.
- Second, for the perceived organizational performance, no significant difference between bricklayers and seeders was found. On the other hand, organizational performance increased between bricklayers and formalizers. However, although formalizers represent the more formal way of implementing BPO with a higher capability coverage, they turned out to be worse than mediators.
- Our third check involved operational excellence. Again, similar paths were present between bricklayers and seeders. Formalizers and mediators tend to show an equally high performance outcome.

We have statistically proven a clear performance distinction between the top (i.e., excellers and champions) and the bottom (i.e., laggards), as well as detected performance differences among the

moderate archetypes. In addition, we obtained evidence for higher performance at higher maturity levels, especially for operational excellence. The linear line of typical maturity levels can be replaced by alternative roadmaps or pathways to progress among the moderate archetypes (e.g., from C3 to C2 and from C6 to C4, but possibly also from C6 to C2 and from C3 to C4, switching between C4 and C2, or even returning from C4-C2 to C6-C3, albeit with some performance losses).

7.1 Taxonomy for BPO configurations

We combine our testable propositions (RQ1) with the test results (RQ2) to positon our clustering solution as a BPO taxonomy.

Table 7. A verification of the testable configurations for BPO development (RQ1) against the test results (RQ2).

Performance outcomes	BPO development						
	Laggards	Seeders	Bricklayers	Formali-zers	Mediators	Excellers	Champions
Testable configurations	Low	Moderate				High	
Process performance	Low	Moderate				High	
Organizational performance	Low	Moderate				High	
Operational excellence	Low	Moderate			Moderate/High		High

Our hypothesis testing (Table 7) confirmed that a distinction could be made between low-, moderate-, and high-performing configurations across all performance types. Because no significant deviations from our initial configurations were found, we accept the taxonomy proposed in this study.

7.2 BPO development roadmaps

When translating our findings to the levels of a typical maturity model, one could argue that the bottom archetype (i.e., laggards) corresponds to the first maturity level, while the top archetypes correspond to the fourth and fifth maturity levels (i.e., excellers and champions). The moderate archetypes then represent maturity levels 2 and 3, including different sub-levels (i.e., with levels 2A and 2B for bricklayers and seeders, and levels 3A and 3B for formalizers and mediators). Hence, organizations that are similar in maturity level can still considerably differ in their configuration.

More specifically, the BPO taxonomy and its performance differences can be explained by inconsistencies among the capability areas. For bricklayers, the structural and cultural capability areas are inconsistent with the other capability areas. For seeders and mediators, the process-specific capability areas (i.e., PDCA and process management) lag behind organization-wide capabilities (i.e., a process-oriented culture and structure), whereas formalizers have process-specific capability areas (i.e., PDCA and process management) but lag in the organization-wide capabilities (i.e., a process-oriented culture and structure).

The identified configurations (Table 5 and Appendix E) offer some contextual advice. For example, based on the expected performance gains, product and service organizations profit from achieving one of the highest BPO levels. On the other hand, we could not find evidence for significant performance gains on the highest BPO levels for SMEs or government and social welfare organizations, which might be attributed to their small numbers at such levels in our dataset.

Although absence of evidence is not evidence of absence (Altman and Bland, 1995), this is overall in line with previous findings of a weak statistical connection between higher maturity levels and economic success in SMEs (Singer, 2015).

We elaborate on a plausible BPO development progression among the moderate archetypes based on how they develop BPO capability areas. Their capability coverage (as presented in Section 5, Figure 3, and Appendix C) is summarized in Table 8. We therefore look at the numerical representation to identify the relative importance of main and sub-areas within each archetype.

Table 8. A comparison of the BPO archetypes based on their capability coverage.

Archetypes:	Bricklayers	Formalizers	Seeders	Mediators
Relative importance of main areas:	Initial focus on PDCA + process management, followed by culture, then structure	Initial focus on PDCA + process management, followed by culture, then structure	Initial focus on structure, followed by culture, then PDCA + process management	Initial focus on structure, followed by culture, then PDCA + process management
Sub-areas for structure:	Equal focus on both sub-areas	Equal focus on both sub-areas	Equal focus on both sub-areas	Equal focus on both sub-areas
Sub-areas for culture:	Main focus on values	Equal focus on all three sub-areas	Main focus on HR and top management commitment	Main focus on top management commitment

From Table 8, two logical series of archetypes can be derived based on the compatibility of their capability coverage, namely 1) from bricklayers to formalizers and 2) from seeders to mediators, for the following reasons:

- The bricklayers-formalizers series puts more emphasis on the PDCA life cycle and process management. Although these areas are also covered by the seeders-mediators series, this second series emphasizes more the strength of a process-oriented organizational structure.
- The relative importance of a process-oriented culture is equal for bricklayers-formalizers and seeders-mediators. Nonetheless, among the cultural sub-areas, the seeders-mediators series depends more on top management commitment.

7.3 Implications

Our taxonomy provides organizations with a better understanding of their BPO development, enables them to compare with peers, and identifies how they are similar or different. Based on our investigation of performance, we can state that some archetypes perform better.

We have added to the understanding of moderate maturity levels by uncovering potential sub-levels. Instead of talking about roadmaps, organizations can talk about decision points per archetype. For instance, when an organization is located in a certain archetype (e.g., bricklayers), our results give an overview of potential next steps and allow for benchmarking. From the actual capability coverage, a bricklayer could try to progress to a formalizer. However, our study showed that the mediator archetype is also an option.

We argue that an increase in BPO beyond excellers might not necessarily be sensible and that different moderate configuration paths are equally suitable. By providing evidence for a limited diversity of configurations, the findings show that not all capability areas need to be equally

advanced in the moderate archetypes. This paper disagrees with using easy metrics and prefers talking about the complexity of a BPO configuration (Van Looy and Van den Bergh, 2018). Moreover, research into process performance could help set priorities regarding BPO development (del-Rio-Ortega et al., 2019).

Another interesting debate is to whether maturity models of any kind are applicable to SMEs and whether SMEs can reach higher maturity levels in the first place (Feldbacher et al., 2011) (e.g., due to limited resources but also less advanced needs for some BPO components, such as a process-oriented structure). Whereas Ismail and Klischewski (2020) confirmed SMEs' lack of BPO maturity, most studies have a BPO focus on large enterprises (Feldbacher et al., 2011). Van Looy and Van den Bergh (2018) showed that SMEs can still be successful in obtaining higher BPO maturity levels, and that other determinants affect an organization's maturity level more (e.g., the standardization levels of products and services, or organizational culture). Our findings agree that different adoption practices are likely to exist, and that each SME needs to question for itself whether the quest for maturity makes sense in the first place, as well as which models, standards, tools and techniques are most appropriate (Dallas and Wynn, 2014).

7.4 Limitations

Although our results have revealed meaningful insights, longitudinal data are required to substantiate the claims about actual roadmaps that current organizations have followed. This research is also limited to one international data set measuring perceptions. Alternatively, one could repeat the research based on existing process-related maturity models to assess the maturity of different components (i.e., capabilities) and establish a set of organizational archetypes that differ in terms of their performance outcomes. Because such data remain subjective, another option is to extend the questionnaire with objective performance data obtained from corporate reports. In addition, the survey could rely on triangulation by involving multiple respondents from the same organization to tackle respondent bias. Despite such limitations, we believe that generalization of our results is facilitated by the selection criteria mentioned in Section 4, involving only higher-ranked managers and guaranteeing equal division among multiple continents and organization sizes. We acknowledge that our data would further profit from more organizations in certain clusters (e.g., SMEs or government and social welfare organizations in top clusters). For instance, an in-depth longitudinal case study of such organizations could also help in identifying if, how and why an SME can reach its optimal level of BPO.

Although this research profits from a previously validated measurement instrument and an international data set with only higher-level managers, we acknowledge its limitations regarding the concretization of variables (e.g., perceptions instead of objective outcomes) and the respondents (e.g., a single representative per organization). Another limitation is that although statistical clusters were identified rigorously, the archetype names are arbitrary.

8 Conclusion

This work has addressed the one-size-fits-all critique of BPO development by taking the paradigmatic view of a configuration theory. We have observed a similar performance pattern from the bottom to the top archetypes of BPO development, which is in accordance with our testable configurations. Equal roadmaps provide advice to organizations based on their business contexts (i.e., size, sector, or market competitiveness).

We encourage longitudinal research to investigate how organizations progress and how their optimal archetype can be identified. An organization could more carefully plan its BPO development journey

to obtain an optimum ratio between investment and performance improvement. Case studies and surveys can also uncover how organizations' priorities (i.e., in terms of business actions) change in the different archetype stages of their BPO development journey, resulting in training advice per archetype and allowing for benchmarking. Another avenue is to use action research to scrutinize how BPM implementation affects BPO. More broadly, scholars can verify the extent to which BPM as a methodological approach remains an appropriate toolbox to enable BPO development.

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Appendix A. Questionnaire.

1. BPO capability areas

The first 62 questions were taken from (Van Looy, 2020).

2. Business context

[Organization size] How many employees are approximately working for your organization?

- 11 – 50 employees
- 51 – 250 employees
- 251 – 500 employees
- 501 – 1,000 employees
- 1,001 – 5,000 employees
- 5,001 – 10,000 employees
- > 10,000 employees

[Organization sector] Which sector does your organization belong to? [NACE codes]

- A - Agriculture, forestry, fishing
- B - Mining, quarrying
- C - Manufacturing of products, e.g., equipment, chemicals, pharmaceuticals, installations
- D - Construction
- E - Electricity, gas, steam, air conditioning supply
- F - Water supply, sewerage, waste management and remediation activities
- G - Wholesale and retail trade, repair of vehicles and motorcycles
- H - Transportation, storage
- I - Accommodation and food service
- J - Information and communication, e.g., publishing, IT services
- K - Financial and insurance
- L - Real estate
- M - Professional, scientific and technical activities, e.g., legal, accounting, engineering
- N - Administrative and support service
- O - Public administration, defense, compulsory social security
- P - Education
- Q - Human health and social work
- R - Arts, entertainment, recreation
- S - Other services
- T - Households, activities for own use
- U - Extraterritorial organizations and bodies
- Other (please specify):_____

+ Recoded into three categories: products, services, government and social welfare.

[Perceived market competitiveness] How would you describe the market competitiveness in your sector?

"Market competitiveness compared to an average organization is …"

- Much lower
- Moderately to slightly lower
- About the same as an average organization
- Moderately to slightly higher
- Much higher

3. Performance outcomes

The following 5-point Likert scale per item:

- Strongly disagree
- Disagree
- Neither disagree nor agree
- Agree
- Strongly agree

[Perceived process performance] "The business process focus in my organization has improved the:"

- Time-related performance per business process (e.g., cycle time)
- Costs per business process
- Internal quality (= the quality of intermediate outputs) per business process
- Flexibility per business process (e.g., to better respond to special requests)

[Perceived organizational performance] "The business process focus in my organization has improved the:"

- Financial performance for shareholders and top management (e.g., net profit margin)
- Customer-related performance (e.g., perceived customer satisfaction)
- Supplier-related performance (e.g., less external delays)
- Society-related performance (e.g., perceived society satisfaction or sustainability)
- Degree of digitalization
- Efficiency of information systems (or ICT) development
- Employee performance (e.g., perceived employee satisfaction)

[Operational excellence strategy] "The business process focus in my organization has improved the:"

- Productivity
- Efficiency
- Capacity usage
- Output quality
- Work productivity of employees

Appendix B. Cluster analysis.

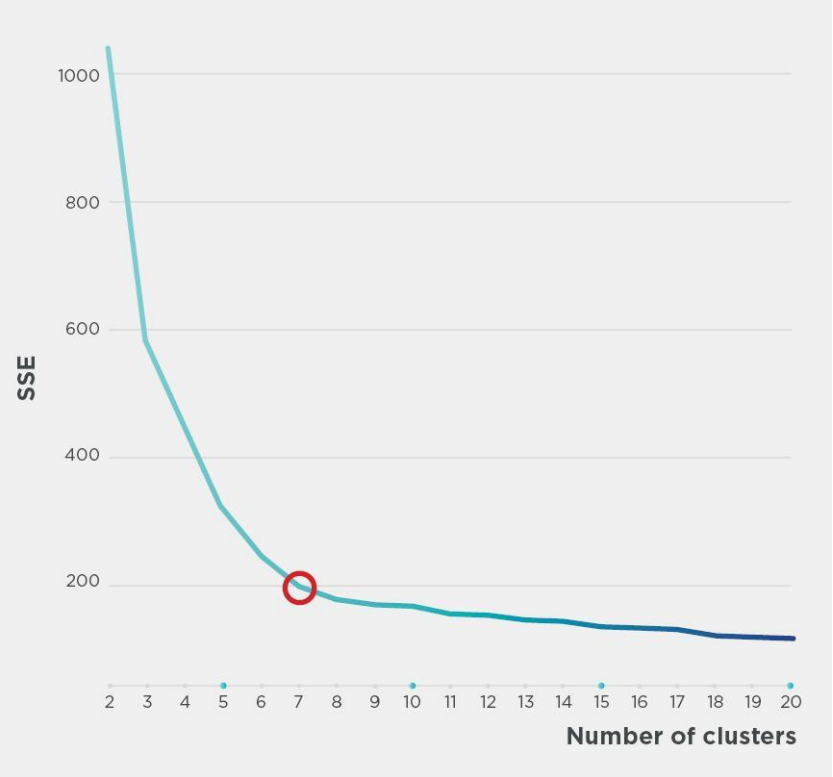

Figure B. Elbow method.

Appendix C. Capability areas per cluster.

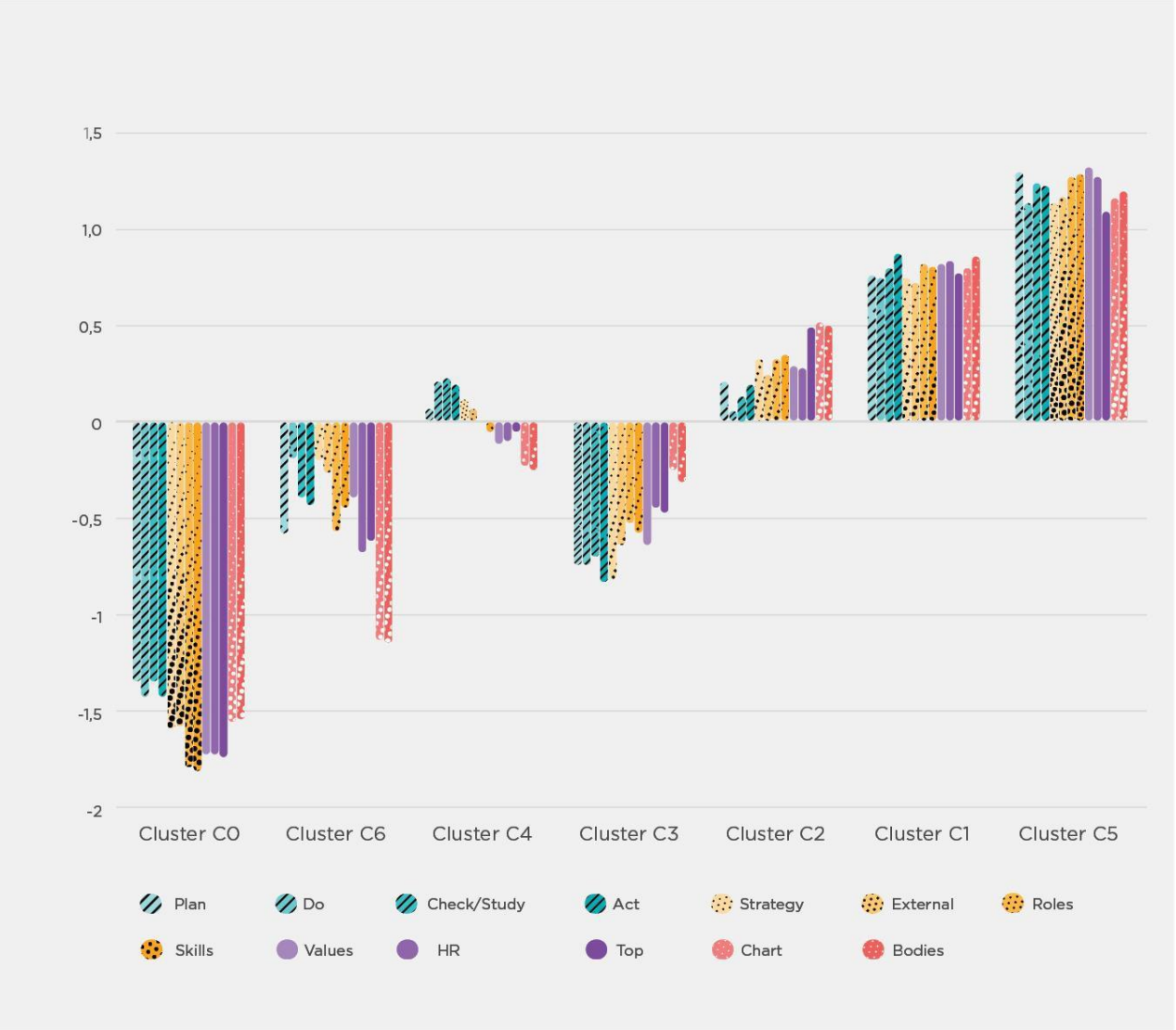

Figure C. A bar chart of the capability sub-areas per BPO development cluster.

Appendix D. ANOVA output.

Table D1. Games-Howell post hoc testing with significant mean differences related to the "perceived process performance" variable (N=385).

Cluster (I) versus Cluster (J)			95% confidence interval	
Cluster (I)	Cluster (J)	Mean difference (I-J)	Lower bound	Upper bound
Cluster C0	Cluster C6	-0.739**	-1.308	-0.169
	Cluster C4	-0.988***	-1.490	-0.486
	Cluster C3	-0.720**	-1.251	-0.189
	Cluster C2	-1.252***	-1.773	-0.731
	Cluster C1	-1.779***	-2.264	-1.295
	Cluster C5	-1.961***	-2.457	-1.464
Cluster C6	Cluster C4	**NS**		
	Cluster C3	**NS**		
	Cluster C2	-0.5131***	-0.952	-0.075
	Cluster C1	-1.041***	-1.435	-0.646
	Cluster C5	-1.222***	-1.632	-0.812
Cluster C4	Cluster C3	**NS**		
	Cluster C2	**NS**		
	Cluster C1	-0.792***	-1.065	-0.518
	Cluster C5	-0.973***	-1.270	-0.676
Cluster C3	Cluster C2	-0.532***	-0.914	-0.150
	Cluster C1	-1.059***	-1.387	-0.732
	Cluster C5	-1.241***	-1.587	-0.894
Cluster C2	Cluster C1	-0.527***	-0.837	-0.218
	Cluster C5	-0.709***	-1.039	-0.379
Cluster C1	Cluster C5	**NS**		
(NS $P > 0.100$; * $P < 0.100$; ** $P < 0.050$; *** $P < 0.001$)				

Table D2. Games-Howell post hoc testing with significant mean differences related to the "perceived organizational performance" variable (N=360).

Cluster (I) versus Cluster (J)			95% confidence interval	
Cluster (I)	Cluster (J)	Mean difference (I-J)	Lower bound	Upper bound
Cluster C0	Cluster C6	-0.637**	-1.194	-0.080
	Cluster C4	-1.232***	-1.753	-0.711
	Cluster C3	-0.843***	-1.357	-0.329
	Cluster C2	-1.596***	-2.106	-1.087
	Cluster C1	-1.863***	-2.350	-1.376
	Cluster C5	-2.431***	-2.906	-1.957
Cluster C6	Cluster C4	-0.595***	-1.017	-0.172
	Cluster C3	**NS**		
	Cluster C2	-0.959***	-1.367	-0.551
	Cluster C1	-1.226***	-1.605	-0.847
	Cluster C5	-1.794***	-2.157	-1.431
Cluster C4	Cluster C3	0.389**	0.0320050	0.7465377
	Cluster C2	-0.364**	-0.7152848	-0.0134799
	Cluster C1	-0.631***	-0.9448813	-0.3166167
	Cluster C5	-1.199***	-1.4925759	-0.9060946
Cluster C3	Cluster C2	-0.754***	-1.093	-0.415
	Cluster C1	-1.020***	-1.321	-0.719
	Cluster C5	-1.589***	-1.867	-1.310
Cluster C2	Cluster C1	-0.266*	-0.559	0.026
	Cluster C5	-0.835***	-1.105	-0.565
Cluster C1	Cluster C5	-0.569***	-0.786	-0.351
(NS $P > 0.100$; * $P < 0.100$; ** $P < 0.050$; *** $P < 0.001$)				

Table D3. Games-Howell post hoc testing with significant mean differences related to the "operational excellence" variable (N=389).

Cluster (I) versus Cluster (J)			95% confidence interval	
Cluster (I)	Cluster (J)	Mean difference (I-J)	Lower bound	Upper bound
Cluster C0	Cluster C6	-0.593**	-1.163	-0.024
	Cluster C4	-1.026***	-1.555	-0.498
	Cluster C3	-0.563**	-1.103	-0.023
	Cluster C2	-1.232***	-1.773	-0.692
	Cluster C1	-1.510***	-2.013	-1.007
	Cluster C5	-1.818***	-2.292	-1.343
Cluster C6	Cluster C4	-0.433*		
	Cluster C3	**NS**	-0.893	0.027
	Cluster C2	-0.639**	-1.113	-0.165
	Cluster C1	-0.917***	-1.35	-0.487
	Cluster C5	-1.224***	-1.621	-0.828
Cluster C4	Cluster C3	0.464**	0.043	0.884
	Cluster C2	**NS**		
	Cluster C1	-0.484**	-0.853	-0.114
	Cluster C5	-0.791***	-1.119	-0.463
Cluster C3	Cluster C2	-0.670***	-1.105	-0.234
	Cluster C1	-0.947***	-1.333	-0.562
	Cluster C5	-1.255***	-1.601	-0.908
Cluster C2	Cluster C1	**NS**		
	Cluster C5	-0.585***	-0.932	-0.238
Cluster C1	Cluster C5	-0.308**	-0.587	-0.028
(NS $P > 0.100$; * $P < 0.100$; ** $P < 0.050$; *** $P < 0.001$)				

Appendix E. Extra ANOVA output on subsamples.

We used the nonparametric Kruskal-Wallis *H*-test because (in contrast to the main analyses in Section 6), some clusters in the subsample had fewer than 15 categories (see Table 5). For the pairwise comparisons, the significance values were adjusted by Bonferroni correction for multiple tests.

E.1 Subsample of SMEs (N = 111)

- For perceived process performance: H(6) = 33.811; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C6
- For perceived organizational performance: H(6) = 44.847; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C5, C3-C4
- For operational excellence: H(6) = 33.139; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C1-C3, C3-C4

The subset of SMEs shows that most clusters perform better than laggards do (at the bottom).

E.2 Subsample of service organizations (N = 176)

- For perceived process performance: H(6) = 81.108; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C5, C6-C1, C6-C5, C3-C2, C3-C1, C3-C5, C4-C1, C4-C5, C2-C5
- For perceived organizational performance: H(6) = 95.640; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C5, C6-C1, C6-C2, C6-C5, C3-C2, C3-C1, C3-C5, C4-C1, C4-C5, C2-C5
- For operational excellence: H(6) = 70.685; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C5, C6-C1, C6-C2, C6-C5, C3-C2, C3-C1, C3-C5, C4-C1, C4-C5

The subset of service organizations shows differences among the bottom, middle, and top clusters, including similarities with Section 6.

E.3 Subsample of product organizations (N = 130)

- For perceived process performance: H(6) = 59.784; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C5, C1-C3, C1-C4, C1-C6, C3-C5, C4-C5, C5-C6
- For perceived organizational performance: H(6) = 78.095; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C5, C1-C3, C1-C6, C2-C5, C3-C5, C4-C5, C5-C6
- For operational excellence: H(6) = 58.208; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C5, C1-C3, C3-C5, C5-C6

The subset of product organizations shows differences among the bottom, middle, and top clusters, including similarities with Section 6.

E.4 Subsample of government or social welfare organizations (N = 74)

- For perceived process performance: H(6) = 33.622; *P* = 0.000
  - Significant median differences between C0-C1, C0-C2, C0-C5
- For perceived organizational performance: H(6) = 38.020; *P* = 0.000

    - Significant median differences between C0-C1, C0-C2, C0-C4, C0-C5, C1-C3
- For operational excellence: H(6) = 21.266; *P* = 0.002
    - Significant median differences between C0-C1, C0-C2, C0-C5

The subset of government or social welfare organizations shows that the top clusters perform better than laggards do (at the bottom).

E.5 Subsample of organizations with lowest market competitiveness (N = 65)

- For perceived process performance: H(6) = 29.657; *P* = 0.000
    - Significant median differences between C0-C1, C0-C5
- For perceived organizational performance: H(6) = 37.594; *P* = 0.000
    - Significant median differences between C0-C1, C0-C2, C0-C5, C5-C6, C5-C4
- For operational excellence: H(6) = 19.885; *P* = 0.003
    - Significant median differences between C0-C5

The subset of organizations with lower market competitiveness especially shows significant performance differences between the bottom and the top.

E.6 Subsample of organizations with highest market competitiveness (N = 46)

- For perceived process performance: H(6) = 19.359; *P* = 0.002
    - Significant median differences between C0-C5, C2-C5 and C4-C5
- For perceived organizational performance: H(6) = 23.467; *P* = 0.000
    - Significant median differences between C0-C5 and C2-C5
- For operational excellence: H(6) = 18.878; *P* = 0.002
    - Significant median differences between C0-C5 and C4-C5

The subset of organizations with highest market competitiveness shows that the top cluster (Champions) performs best.

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