Original Article

Organizational Culture, Process Management and Maturity of the Process: An Empirical Study of the Process Status in Peru

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Abstract

Business process management (BPM) is considered a source of improvement for business efficiency and effectiveness, although its correct implementation is a tough challenge to most organizations. In this line, some authors noted how certain organizational culture acts as a precursor of a successful BPM implementation. However, there is insufficient empirical research in this regard. Covering this gap is the objective of the present research. The study adopted a non-probability convenience sampling method to obtain 187 participants who are executives of Peruvian companies. Using partial least squares structural equation modelling (PLS-SEM) for the data analysis, we found that oganizational culture is an antecedent that positively influences the success of a correct BPM implementation and has a direct and indirect relationship with process outcomes and maturity. We also identified which elements are most relevant to process success. Based on our findings, it is not advisable that organizations direct their efforts only to the implementation of process management practices, they should also analyse and carry out previous actions to set the right organizational culture conditions. This study shows evidence to extant traditional maturity models and consider culture as an isolated antecedent. Besides, it is the first to be developed with data from a Latin American country—Peru.

Keywords

Business process management (BPM), process maturity (PM), organizational culture (OC), process status (PS), partial least squares (PLS)

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Introduction

The current competitive environment brought by globalization of markets requires organizations capable of competing within the highest parameters of efficacy and efficiency. In addition, the problems that organizations face involve activity management solutions with an integrated approach (CMMI Product Development Team, 2000). Therefore, business process management (BPM) is becoming a strategic technique, enabling adaptive responses to the environment that are agile, timely, reliable and good quality (Diaz-Piraquive, 2008). This represents a fundamental change in the management of organizations, emphasizing the horizontal connections between functions instead of the traditional vertical-hierarchical view of task performance (Mikacic & Dulcic, 2012).

Although there is a consensus that properly implemented process management achieves significant results in organizations, few companies manage to integrate the process approach completely, which generates many flaws and criticisms (Alibabaei et al., 2009). Proof of this is that many organizations have great difficulties in operationalizing process management practices (Škrinjar & Trkman, 2013; Suša et al., 2018). In this line, the research developed by Pritchard and Armistead (1999) indicates that 97 per cent of the European organizations surveyed considered that process management was important for the organization, but only 3 per cent of them had successfully surpassed the first stages of its implementation. Therefore, it seems clear that one of the main challenges is to convert the potential benefits of the process approach into real and specific benefits (De Bruin & Rosemann, 2007). To achieve this, researchers have identified different lines of future research that should be developed (Sanchez-Ruiz et al., 2018).

The structure of this article covers the following content: the second section elaborates on the literature that support our research, the third section states the objectives of the study and the fourth section explains the rationale that motivated the study. The fifth section details the sample and the methodology used, including a description of the data source, sample frame and measures. The sixth section presents the results of the data analysis by SmartPLS software. The seventh section illustrates the discussion and conclusion of the results. Finally, the eighth section presents the main managerial implications of our findings, followed by the limitations of the study and future research lines.

Review of literature

Different factors have been identified for the successful implementation of process management projects. Among them, we can highlight strategic alignment, culture, people, governance, methods and information technology—IT (De Bruin & Rosemann, 2005, 2007). However, others note that culture is the main key success factor of BPM (Alibabaei et al., 2009). Among them, vom Brocke and Sinnl (2011) conducted a literature review of specific publications on the relationship between process management and culture in which they highlight as an issue the under-research of this duet since almost all the analysed works approach this relationship from a theoretical perspective. Furthermore, this situation has been noted and supported by more recent studies (Páez et al., 2018; Tomičić-Pupek & Bosilj, 2018).

However, among the studies that do address this relationship empirically, Weitlaner (2016) studied which components contribute to a greater or smaller extent to process cultural maturity in Austrian BPM-practising companies. The main findings point to the important components of process culture, including inter-departmental teamwork, the customer-focused attitudes of employees and lived processes of management, all of them as the most sophisticated aspects of process culture. In contrast, the lowest level is featured by employee willingness to change and usage of a common process language. Additionally, the results denoted the necessity of enterprises and their staff to reconsider their understandings of both BPM in general (and business) processes and the positive influence of the duration of practical experience with BPM over process culture maturity. Additionally, Štemberger et al. (2018) undertook their research, considering it would lead to a realistic and useful application, as it is not a plausible option to customize organizational culture (OC). They find that BPM adoption is more likely to be successful (a) when the BPM initiative is rolled out in the entire organization if the organization has a clan, market or hierarchical culture (group, rational and rational culture, respectively); (b) when the BPM is run on a continuous basis in a hierarchical culture and repeatedly in an adhocracy culture (developmental culture); (c) when a top-down approach is used in organizations with a market- or hierarchy-dominant culture; and (d) when the BPM initiative has a strategic role, and formal responsibilities are defined in the clan and hierarchy cultures.

In this vein, OC can be considered a determining factor for the success of process management because it influences the ability of the organization to adapt to change. Therefore, change in processes must be accompanied by a change in culture. It is necessary that the beliefs and cultural values of the organization are properly aligned with the change in processes (Crozatti, 1998). Aiming to test these relationships, this study attempts to define the constructs that will form part of our theoretical model, which will be discussed in the next section.

Organizational Culture

Throughout the years, many authors have defined OC, yet there is no consensus on its definition. However, OC was principally defined within a conceptual framework developed by Edgar Schein (1990, as cited by Jabbour et al., 2011). According to this author, OC is a set of basic assumptions, invented, discovered or developed by a group, as they learn from their problems of external adaptation and internal integration and have functioned well enough to be considered valid and transmitted to new employees as the correct way to perceive and think. Later, Claver et al. (2001) defined the term 'organizational culture' as 'a set of values, symbols and rituals, shared by the members of a specific firm that describe the way things are done in an organization to solve both internal management problems and those related to customers, suppliers and the environment'. Finally, the widely accepted 'Denison Organizational Culture Survey' identifies four cultural dimensions: Involvement, Consistency, Adaptability and Mission (Bonavia et al., 2010). This survey was used to evaluate the OC through 60 questions or items, grouped into 12 subscales, which, in turn, make up the dimensions (Table A1).

Business Process Management

The concept of process is well known and widespread in organizations and in the literature. There are several authors who define a process as a set of activities that receives one or more inputs and creates a product or service of value for the customer (Hammer & Champy, 1993). According to Harrington (1997), a process is a group of activities that uses an input, adds value to it and supplies a product to an external or internal customer. Davenport (1993) defines a process as a structured and measurable set of activities designed to produce a product specified for a specific client or market.

According to the International Standard ISO 9001 (2015), the process-based approach consists of applying a management system in which the processes of the organization and the interactions and interdependencies between the processes are identified and managed. To implement a process management system, a series of steps are required (ISO, 2008). Although many organizations adopt a quality management system according to the proposal of the International Standard ISO 9001, a considerable amount adopts a process-based management approach adapted to other management system models.

According to a literature review of publications on process management over the period 1990–2012, most of the definitions related to the term 'process management' refer to a system of integrated management whose focus is the process; however, there is another trend that defines process management, focusing on its more technological aspect (Sánchez & Blanco, 2014). Along this line, process management can also be defined as a management system based on software that supports and facilitates the development of activities such as modelling, analysis and the representation of processes (Reijers, 2006). In the present study, process management will be understood in its broadest sense as a management system that encompasses the organization as a whole, and the process represents the basic element, with or without software.

In a stricter sense, referring to the management of processes based on IT, BPM is a system supported by the use of IT that focuses its efforts towards the optimization of processes seeking to reach better levels of efficacy and efficiency through systemic management, including continuous processes modelling, automation, integration, monitoring and optimization (Diaz-Piraquive, 2008). The term process management is also used by several authors to refer to the automation of processes through the use of technologies, which enables management of workflows and tracking of process management indicators for their control and continuous improvement (Aguirre-Mayorga & Córdoba-Pinzón, 2008). Additionally, Mahendrawathi et al. (2019) proposed a model that combines the BPM life cycle, programme/project implementation framework, principles of good practice, maturity and critical practices to evaluate how companies implementing a business process automation (enterprise resource planning—ERP) apply different BPM practices.

In the present study, we define the construct *BPM*, referring to the level of implementation of process management practices, although not necessarily focused on the use of software or the automation of processes through the use of technologies. This construct includes whether the processes in the organization have been identified, which means: if the key processes have been identified, if objectives and indicators of process measurement have been defined, if the processes have been documented, if sufficient resources are allocated for process execution, if the monitoring and measurement of indicators are continuously performed, if the processes are continually improved and if these changes are communicated effectively in the organization.

Maturity Process

We have relied on the specific literature in which we can distinguish at least 10 maturity models, according to the basic principles for descriptive or prescriptive use of the model (Páez et al., 2018; Roglinger et al., 2012). In our study, we used the Process Maturity Model (Harmon & Wolf, 2011) adapted from the Capability Maturity Model (CMM).

Maturity as a measure to evaluate the capabilities of an organization with regard to a certain discipline has become popular since the CMM has been proposed by the Software Engineering Institute at Carnegie Mellon University (Paulk et al., 1993). The definition of maturity process is drawn from the CMM and implies five maturity process levels: Level 1—Initial; Level 2—Repeatable; Level 3—Defined; Level 4—Managed; and Level 5—Optimizing (CMMI Product Development Team, 2000).

While the original CMM has a specific focus on the evaluation of software development processes, this model has been varied and extended in a number of approaches and is now applied for the evaluation of IT Infrastructure, Management, Enterprise Architecture Management and Knowledge Management to name a few (De Bruin & Rosemann, 2007).

Process Status

Efficacy and efficiency are the two most anticipated process outputs by the various authors and management systems previously presented and are considered by the process-based management approach in terms of reaching the expected results (ISO, 2015). These two are part of a larger set of properties to characterize processes. In general, these properties are the performance indicators of processes that at the end comprise what is defined as the process status in this study.

Among the studies on this subject, we highlight the one of van Looy and Shafagatova (2016) that is an extensive review of the literature, listing 140 performance measurement indicators of processes based on the contribution of 76 academic articles. This list of indicators is holistically categorized into 11 perspectives based on the metrics used to measure strategic objectives in organizations, according to the Balanced Scorecard model of Kaplan and Norton (1996, 2001). This defines a reference framework for identifying metrics different from the classic effectiveness and efficiency indicators of processes: time and process flexibility indicators.

In the same vein, Milanovic (2011) presents individual measurement indicators of processes related to the same four dimensions: (a) quality indicators; (b) cost indicators; (c) time indicators; and (d) process flexibility indicators. Therefore, the classic indicators for measuring effective processes (an aspect of quality) and efficient processes (aspect linked to costs) should be complemented with characteristics of time and process flexibility.

Other authors also highlight the value added to the customer experience that processes must provide (Willaert et al., 2007), and this suggests unbureaucratic and error-free processes as aspects of quality. From all these contributions, in the present study, we propose a final construct, the 'process status', which allows incorporating a measurement of process performance, that is, the process results in terms of effective, efficient processes; flexibility; and without errors.

Objectives

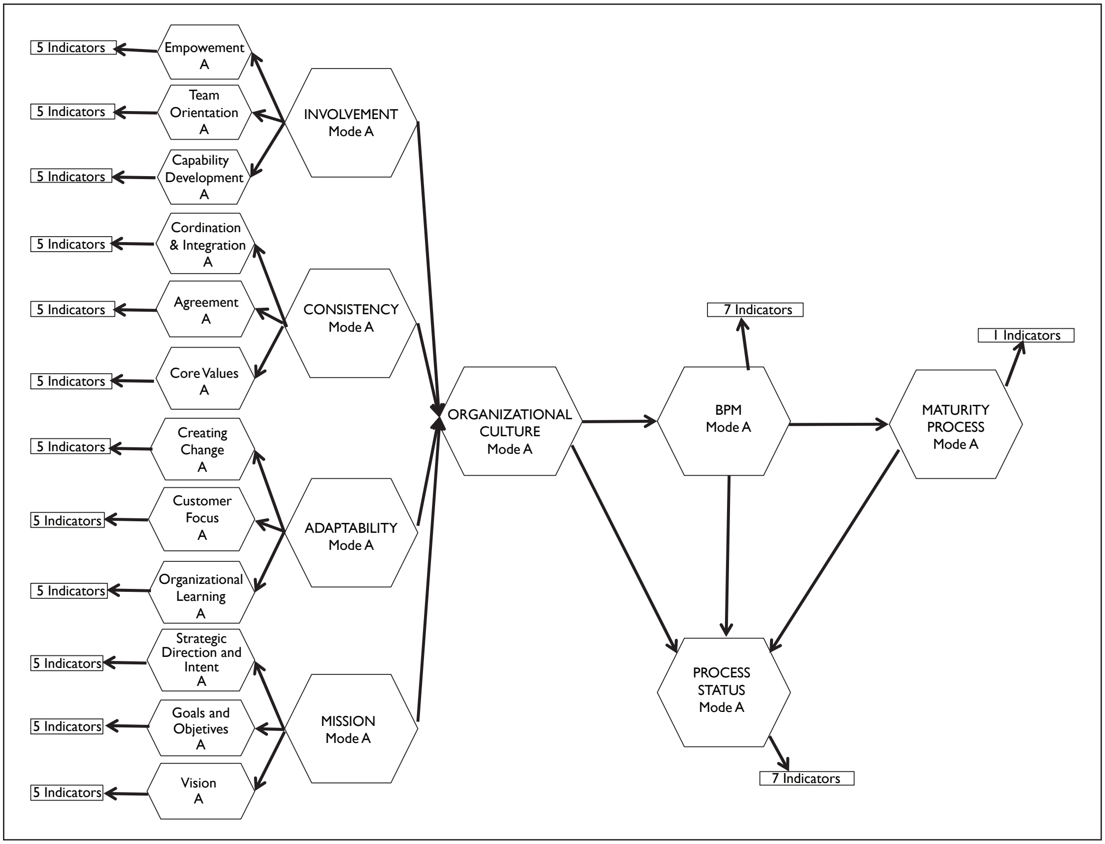
Based on the earlier discussion, the objective of this study is to answer the following research questions: (a) how does the OC influence BPM and process status? (b) How does BPM influence process status and maturity process? (c) How does maturity process influence process status? (d) What is the mediating effect of BPM in the previously proposed relationships? In other words, the study aims to examine the effect of OC on BPM and the effect of the latter on maturity process in Peruvian companies.

Rationale of the Study

Regarding this challenge, it is commonly accepted that a key point for process change is that it must be accompanied by a cultural change (Sánchez & Blanco, 2014) because companies only appear to be successful when implementing quality management programmes but are not truly successful without considering inherent cultural change (Crozatti, 1998). However, this line of academic research yields limited results (Páez et al., 2018; Tomičić-Pupek & Bosilj, 2018) due to the lack of empirical analysis. Moreover, in the cultural context in which this study is carried out, we have not found any study on the subject made with data from a South American country, in this case Peru.

For this reason, the following causal relationships are assessed: (a) OC positively and significantly influences process status, (b) OC positively and significantly influences BPM, (c) BPM positively and significantly influences the maturity process, (d) BPM positively and significantly influences process status and (e) the maturity process positively and significantly influences process status. Finally, the mediating effects of BPM between OC and the maturity of the process and the process status are assessed based on the following statements: (f) the relationship between OC and the maturity process is positively mediated by BPM, and (g) the relationship between OC and process status is positively mediated by BPM. Aiming to be clear about these statements, the following theoretical model was developed (Figure 1).

Figure 1. Theoretical Model



Source: The authors.

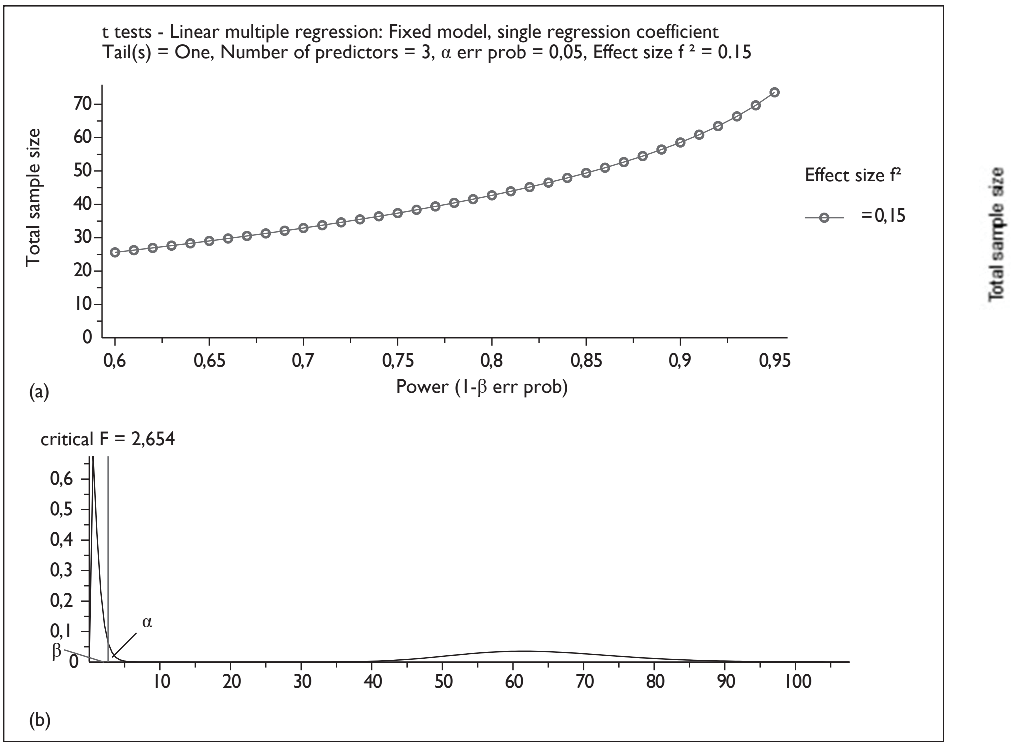
Methodology

We have employed the SmartPLS software, version 3.2.7, to develop the statistical data analysis of our research model (Ringle et al., 2015). Partial least squares (PLS), a variance-based structural equation modelling technique, was the method involved in this study (Roldán & Sánchez-Franco, 2012). We select this technique for the following reasons: (a) the model is a multidimensional construct applying the three-stage approach (third-order constructs) (Wright et al., 2012); (b) the research model is multifaceted since it includes different types of relationships (direct and indirect effect); (c) the aim is to use the latent variables scores in subsequent analyses (Marin-Garcia & Alfalla-Luque, 2019a); and (d) the study focuses on the prediction of the outcome variables.

Data Source and Sample Frame

Through a non-probability convenience sampling technique, we established the amount of participants for the study who were mid-level executives of Peruvian organizations. The online form was emailed to executives enrolled in several postgraduate programmes at University of the Pacific (Lima, Peru), obtaining a response rate close to 100 per cent and yielding 187 surveys, during 2018.

Figure 2. (a) A Priori and (b) Post hoc Power Analysis Plots



Source: The authors.

The sample of 187 Peruvian organizations would be considered a large sample according to Kline (2005). However, to confirm the suitability of the sample size, we relied on the G*power test, estimated using the G*power 3.1 tool (Faul et al., 2009). In particular, an a priori analysis was performed, whereby the required sample size was calculated as a function of the values specified by the researcher for the level of significance required (α), the desired statistical power ($1-\beta$) and effect size to be detected (Faul et al., 2009). This test shows that a minimum sample size of 74 is needed to obtain a power of 0.95, with an alpha of 0.05 and the number of predictors set at 3 (see Figure 2). Therefore, the final sample ($n = 187$) meets the initial requirements for sample size. Analogously, a post hoc analysis was performed. Following Marin-Garcia and Alfalla-Luque (2019a, b), an F-test was used in the multiple linear regression model.

Measures

This study uses different measures for the constructs in our research model (i.e., OC, the process status, BPM and the maturity process). Several validated scales from the literature were employed, where the items and responses were on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (totally agree), to measure all the questions in the questionnaire. In order to obtain a wide number of participants, an online survey of 78 items was distributed.

All the constructs—BPM, the maturity process and the process status—are first-rate constructs, except OC, which is a third-order multidimensional construct. Based on our research goals, we measured our already-defined variables with the instruments described later (the instrument is also available in Appendix 1).

We chose to use the Denison OC Survey to assess OC, as it has demonstrated good measurement properties (Bonavia et al., 2009). The scale is shaped by 60 items, and regarding the constructs, it is composed of 12 first-order constructs that are grouped into four dimensions or cultural features (second-order constructs) (Denison, 2001).

Table 1. Control Variables

Activity Sector		
Service organization	149	79.7%
Manufacturing organization	38	20.3%
	187	100.0%
Ownership		
Private company	168	89.8%
Public company	19	10.2%
	187	100.0%
Business Size		
Microenterprise (1–10 employees)	5	2.7%
Small enterprise (11–100 employees)	15	8.0%
Medium-sized enterprise (101–250 employees)	34	18.2%
Large enterprise (251 to more employees)	133	71.1%
	187	100.0%

Source: The authors.

To measure the maturity process, a single question based on the ‘CMM’ was asked (Harmon & Wolf, 2011). The respondents had to check only one of the following: Level 1—non-organized processes; Level 2—managed processes; Level 3—defined processes; Level 4—managed processes; or Level 5—optimized processes. BPM was evaluated with 10 items. The items were drawn up based on the actions to be taken to manage the processes in accordance with ISO 9001 (2015). These questions were adjusted in a focus carried out with the participation of middle management professionals by Saravia (2018a). Finally, seven items were oriented to measure ‘process status’. The questions were posed based on the proposal of both empirical studies by Saravia (2018a) and Saravia (2018b).

Additionally, the following control variables were included (see Table 1): activity sector (manufacturing or services); type of organization by ownership (public or private); and business size: microenterprise (1–10 workers), small enterprise (11–100 workers), medium–sized enterprise (101–250 workers) or large enterprise (251 or more workers).

To validate the reliability of the instrument and the convergent validity of the constructs, a previous analysis of the data was performed with the Statistical Package for the Social Sciences (SPSS) software, version 25. Cronbach’s alpha reliability indices (values must be greater than 0.70), the variance explained percentages of the constructs (values must be greater than 0.55) and the communalities of the variables that explain the constructs (values must exceed 0.50), obtained through the exploratory factor analysis by principal components, determined that some model variables had to be eliminated: empow_2, team_4, capability_5, integration_4, agreement_4, values_4, values_4, customer_4, learning_3, strategy_5 and vision_3 (Appendix 1).

Analysis

The PLS technique comprises two phases, the measurement model (outer model assessment) and the structural model (inner model analysis), which allow us to draw relevant conclusions about items, constructs and relationships within our research model.

Measurement Model Analysis

The measurement model involves assessing reliability and validity. While measured in Mode A, it is necessary to check for (a) individual item reliability, (b) composite reliability (CR), (c) convergent validity and (d) discriminant validity. The results obtained through the PLS algorithm, which are presented in Tables 2 and 3, are completely satisfactory, as the indicators’ outer loadings are higher than 0.707 on their respective constructs (Hair et al., 2014). In addition, regarding the Cronbach’s alpha, Dijkstra-Henseler’s rho (ρA) and CR to estimate internal consistency reliability, all the constructs exhibited are also higher than the 0.7 critical level. Finally, the average variance extracted (AVE) provides an indication of convergent validity. The AVE value should be superior or equal to 0.5 (Fornell and Larcker, 1981). As shown in Table 2, all first-order and third-order constructs have AVE values that exceed this value (≥ 0.50). Finally, some indicators of the first-order constructs (dimensions) that conform the third-order construct were eliminated because they did not meet the requirements (outer loadings were <0.707) (see Appendix 1 and Supplementary Material).

Table 2. Measurement Model

Construct	Outer Loading	Cronbach's Alpha	Composite Reliability	rho_A	AVE
Business Process Management (BPM)		0.933	0.943	0.936	0.625
BPM_01	0.756				
BPM_02	0.758				
BPM_03	0.801				
BPM_04	0.828				
BPM_05	0.764				
BPM_06	0.785				
BPM_07	0.795				
BPM_08	0.803				
BPM_09	0.814				
BPM_10	0.799				
Maturity Process		1.000	1.000	1.000	1.000
Maturity	1.000				
Organizational Culture		0.930	0.950	0.932	0.826
Involvement	0.920				
Consistency	0.927				
Adaptability	0.906				
Mission	0.882				
Process Status		0.892	0.915	0.896	0.608
status_1	0.822				
status_2	0.775				
status_3	0.756				
status_4	0.736				
status_5	0.854				
status_6	0.744				
status_7	0.765				

Source: The authors' elaboration.

Table 3 shows the test for discriminant validity, following the heterotrait–monotrait ratio of common factor correlations (HTMT) (Henseler et al., 2015). These authors propose a threshold level of HTMT below 0.85 or 0.90. After observing the values, the results conclude that all constructs are consistent with this criterion.

Table 3. Latent Variable Correlations and Discriminant Validity

Latent variable correlations				
	BPM	Maturity Process	Organizational Culture	Process Status
BPM	1.000			
Maturity process	0.712	1.000		
Organizational culture	0.682	0.530	1.000	
Process status	0.757	0.657	0.719	1.000
Heterotrait–Monotrait ratio (HTMT)				
	BPM	Maturity Process	Organizational Culture	Process Status
BPM				
Maturity Process	0.736			
Organizational culture	0.721	0.548		
Process status	0.819	0.690	0.786	

Source: The authors.

Structural Model Analysis

After verifying that each construct has suitable reliability and validity, this research assesses the structural model. In this study, a 5,000 resample bootstrapping procedure was employed to generate standard errors and *t* -statistics, *p* -values and 95 per cent bias corrected confidence intervals to evaluate the statistical significance of the stated relationships (Hair et al., 2014).

Table 4. Structural Model

$R^2_{BPM} = 0.463$

$R^2_{Maturity} = 0.505$

$R^2_{Processstatus} = 0.665$

Relationships	Path Coefficient	*t*-Value	*p*-Value	95% BCCI		Supported
Direct effects						
H1 (+): organizational culture á BPM	0.682	14.118***	0	0.575	0.766	Yes
H2 (+): organizational culture á Process status	0.71	18.013***	0	0.624	0.78	Yes
H3 (+): BPM á Maturity process	0.712	21.107***	0	0.637	0.772	Yes
H4 (+): BPM á Process status	0.509	9.494***	0,000	0.399	0.61	Yes
H5 (+): maturity process á process status	0.206	3.026***	0.002	0.078	0.345	Yes
Indirect effects						
H6 (+): organizational culture á maturity process	0.486	11.267***	0	0.397	0.568	Yes
H7 (+): organizational culture á process status	0.347	7.754***	0	0.268	0.441	Yes

Source: The authors.

Notes: $t(0.05, 4{,}999) = 1.645$; $t(0.01, 4{,}999) = 2.327$; $t(0.001, 4{,}999) = 3.092$.

***$p < 0.001$.

Table 4 presents the adjusted coefficient of determination (R^2), which values the explained variance of the endogenous construct. The results are R^2_{BPM} = 0.463, $R^2_{Maturity}$ = 0.505 and $R^2_{ProcessStatus}$ = 0.665, which implies that the model attains an adequate level of explanatory power. In this case, we observe that each adjusted R^2 obtained is satisfactory, as they meet the criterion of Falk and Miller (1992) by exceeding the minimum value of 0.10.

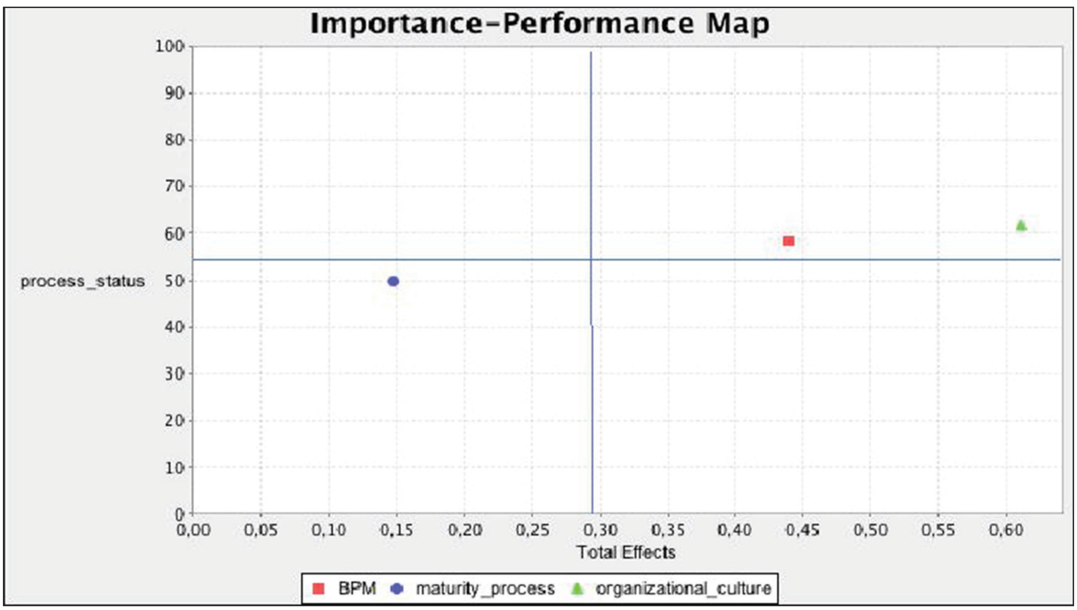
As shown in Table 4, the structural model results support all the established effects, directs and indirects, since all of them have significant and positive values. This means, all the relationships have *t*-values greater than 3.092 (three stars). For this reason, their values are very robust and the structural model is satisfactory. Hence, the evaluation of the structural model demonstrates the causal link among constructs.

Importance–Performance Map Analysis

Importance–performance map analysis (IPMA) is a useful and novel PLS feature that enables drawing interesting conclusions about contrasts of importance and performance of predecessor 'constructs' or 'items' while determining the target construct. This way, the analysis serves to identify and estimate predecessors' constructs or items of target construct (Ringle & Sarstedt, 2016).

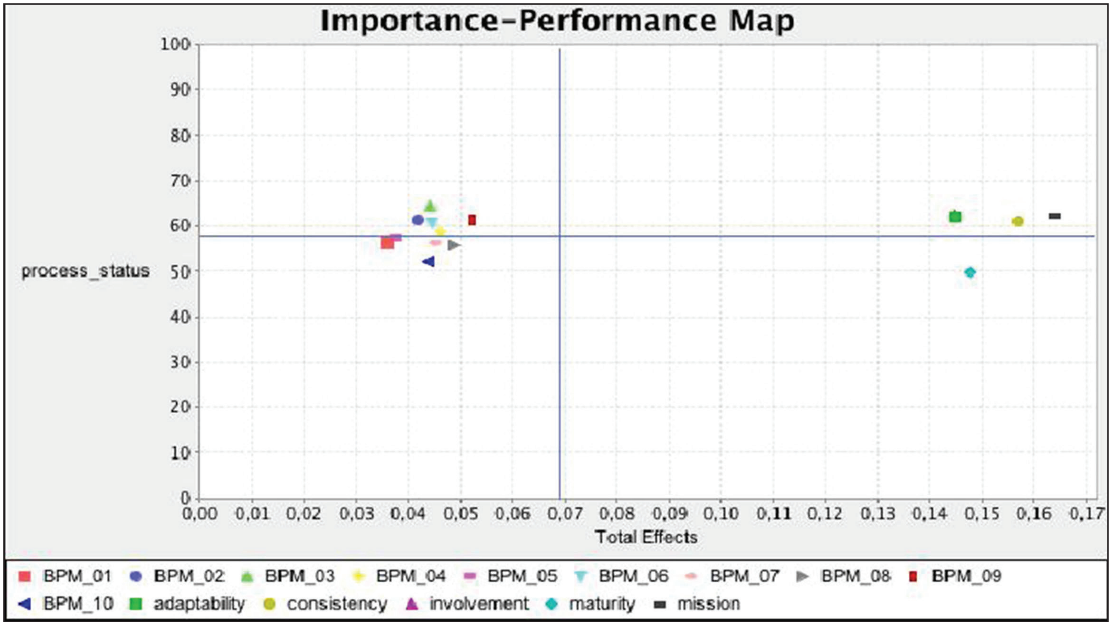
In our case, the process status is the target construct that is predicted by 3 predecessor constructs (i.e., BPM, maturity process and OC) and 15 predecessor items (i.e., involvement, consistency, adaptability, mission, maturity process and BPM indicators). Figures 3 and 4 let us analyse these relationships from a more practical and intuitive approach. The first graph will focus on the constructs, and the second one, on the items.

Figure 3. The IPMA Map: Constructs Level



Source: The author.

Figure 4. The IPMA Map: Indicators Level



Source: The authors.

The first graph (Figure 3) shows which constructions are most important and have the highest performance. To do this, two lines have been incorporated, one horizontal (performance) and another vertical (importance), that represent the average values of both dimensions; when opposed, both axes give rise to four zones or areas. The constructs of BPM and OC have very good levels of importance and performance. The construct maturity process has very little importance and performance for the target construct of process status.

In contrast, we can see in Figure 4 that the consistency, adaptability and mission demonstrate high performance and importance. However, the items of the BPM variable are located between the two right quadrants, have a minor importance and a minor performance, or a minor importance and a major performance for the objective construct. Finally, we find the maturity process item in the quadrant that represents a higher importance but a lower performance for the process status construct.

Discussion and Conclusion

The first contribution of this study constitutes the model itself, the causal relationships between OC, BPM, maturity process and process status. The theoretical model was very robust, incorporating a total of 78 items, with high reliability indices (Cronbach's alpha) and validity of the latent variables (AVE), with high indices of statistical significance of the causality relationships between the latent variables (p-value) and with high measurement indices to explain the latent variables (R^2). In this line, it is also a contribution of the validation of the two measurement scales used that still remain in an experimental stage at the exploratory level and show a very robust complex model with the inclusion of 78 variables.

A second contribution of this study is defining the fundamental role of OC in the process management projects because the OC not only directly influences the implementation of process management techniques and process status as a way of measuring the results but also indirectly influences process status, where BPM acts as a mediating variable. In this line, different processes may be influenced by OC, such as knowledge management processes (Singh & Rao, 2017), innovative processes (Jantan et al., 2003), communication process (Aremu et al., 2019), etc. In addition, the result of the IPMA analysis by construct (see Figure 3) shows that OC is the latent variable with the greatest total effect in explaining the process status.

A third contribution of this study, according to the results of the IPMA analysis by indicators (see Figure 4), was to identify specific variables that have greater effects and importance in explaining 'process status'. In this sense, the components' 'mission', 'consistency', 'adaptability' and 'involvement', in that order, contribute comparatively much more intensely than the individual components of 'BPM' and 'maturity process'. Therefore, knowing the organizational mission and the organizational objectives and having a shared vision (key aspects of the 'mission' component); transmitting consistent leadership and capacity of the employees to reach agreements, even when there are discrepancies (key aspects of the 'consistency' component); having a customer-focused orientation and the attitude of adaptation to change and institutional learning (key aspects of the 'adaptability' component); and working in teams and empowering employees (key aspects of the 'involvement' component), are the cornerstones of the success of the implementation of process management practices.

However, it is important to highlight that 'process maturity' is a widely used variable in the literature to measure the success of the implementation of process management, but in reality, it does not measure the maximum objective of process management, creating value for the organization and obtaining concrete results in terms of effective, efficient, error-free and flexible processes, with reasonable times and procedures, all of which are risk-free. Implementing process management practices and achieving general levels of managed processes do not guarantee the true goal of process management; other variables such as OC, for example, also have an impact, as shown in this study. This study clearly differentiates and measures the three elements of the process management trinomial, and this constitutes a very relevant contribution to the literature.

Managerial Implications

Some recommendations are suggested based on our results' analysis. It is advisable that organizations analyse and perform previous actions related to organization culture before they engage in implementing process management practices. Another important recommendation is to consider the measurement and monitoring at three levels: (a) level of implementation of process management practices (b) level of maturity reached in each process (detailed) and, above all, (c) level of achievement reached in project objectives, for each process. Finally, the process management project should continue until reaching the desired third-order measurements. This means that the planning and the success of the project should continue until actually achieving the process status, and not just until documenting the process, as it is commonly done.

Limitations and Future Research

A limitation of this study is that it represents an exploratory research that does not allow for generalizing the results to all organizations in Peru. Another limitation lies in the characteristics of the respondents as they were executives from diverse organizations, sectors and sub-sectors, and functional departments. In this sense, future research should explore control variables such as context, sector and subsector of the organization, or functional area. A final limitation would be that only the main key success factor for process management was considered regardless of the other ones identified by others (Alibabaei et al., 2009). In this sense, future research should explore the influence of these other factors on the success of project management projects.

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Appendix 1

Composite/Indicator		Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
Organizational culture (third-order composite)							
Involvement (second-order composite)							
Empowerment (first-order composite)							
empow_1	Most employees are highly involved in their work.	3.802	0.841	5.000	1.000	−0.542	0.150
empow_2	Decisions are usually made at the level where the best information is available.	3.711	0.929	5.000	1.000	−0.533	−0.154
empow_3	Information is widely shared so that everyone can get the information he or she needs when it is needed.	3.390	1.064	5.000	1.000	−0.536	−0.450
empow_4	Everyone believes that he or she can have a positive impact.	3.599	0.895	5.000	1.000	−0.666	0.569
empow_5	Business planning is ongoing and involves everyone in the process to some degree.	3.508	1.023	5.000	1.000	−0.600	−0.246
Team orientation (first-order composite)							
team_1	Cooperation across different parts of the organization is actively encouraged.	3.492	1.007	5.000	1.000	0.472	−0.311

(*Appendix 1 continued*)

(*Appendix 1 continued*)

Composite/Indicator		Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
team_2	People work like they are part of a team.	3.743	1.010	5.000	1.000	−0.511	−0.535
team_3	Teamwork is used to get work done rather than hierarchy.	3.610	0.952	5.000	1.000	−0.734	0.365
team_4	Teams are our primary building blocks.	3.439	1.117	5.000	1.000	−0.464	−0.530
team_5	Work is organized so that each person can see the relationship between his or her job and the goals of the organization.	3.487	1.018	5.000	1.000	−0.597	−0.141
Capability development (first-order composite)							
capability_1	Authority is delegated so that people can act on their own.	3.455	1.001	5.000	1.000	−0.524	−0.097
capability_2	The 'bench strength' (capability of people) is constantly improving.	3.380	1.063	5.000	1.000	−0.428	−0.424
capability_3	There is continuous investment in the skills of employees.	3.257	1.041	5.000	1.000	−0.301	−0.416
capability_4	The capabilities of people are viewed as an important source of competitive advantage.	3.599	1.090	5.000	1.000	−0.811	0.018
capability_5	Problems seldom arise because we have the skills necessary to do the job.*	3.037	1.128	5.000	1.000	−0.029	−1.006
Consistency (second-order composite)							
Coordination and integration (first-order composite)							
integration_1	Our approach to doing business is very consistent and predictable.	3.594	0.981	5.000	1.000	−0.765	0.131
integration_2	People from different parts of the organization share a common perspective.	3.396	1.013	5.000	1.000	−0.513	−0.327
integration_3	It is easy to coordinate projects across different parts of the organization.	3.155	1.113	5.000	1.000	−0.264	−0.868
integration_4	Working with someone from another part of this organization is not like working with someone from a different organization.*	3.080	1.140	5.000	1.000	−0.049	−0.966
integration_5	There is good alignment of goals across levels.	3.326	1.105	5.000	1.000	−0.361	−0.677

(*Appendix 1 continued*)

(*Appendix 1 continued*)

Composite/Indicator		Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
Agreement (first-order composite)							
agreement_1	When disagreements occur, we work hard to achieve 'win-win' solutions.	3.417	1.066	5.000	1.000	−0.467	−0.371
agreement_2	There is a 'strong' culture.	3.578	1.072	5.000	1.000	−0.734	−0.037
agreement_3	It is easy to reach consensus, even on difficult issues.	3.182	1.031	5.000	1.000	−0.342	−0.640
agreement_4	We seldom have trouble reaching agreement on key issues.*	3.075	1.045	5.000	1.000	−0.122	−1.030
agreement_5	There is a clear agreement about the right way and the wrong way to do things.	3.594	0.970	5.000	1.000	−0.856	0.543
Core values (first-order composite)							
values_1	The leaders and managers 'practice what they preach'.	3.166	1.052	5.000	1.000	−0.225	−0.579
values_2	There is a characteristic management style and a distinct set of management practices.	3.455	0.979	5.000	1.000	−0.566	−0.237
values_3	There is a clear and consistent set of values that governs the way we do business.	3.658	1.011	5.000	1.000	−0.912	0.431
values_4	Ignoring core values will get you in trouble.	3.583	1.025	5.000	1.000	−0.816	0.210
values_5	There is an ethical code that guides our behaviour and tells us right from wrong.	3.995	1.034	5.000	1.000	−1.256	1.324
Adaptability (second-order composite)							
Creating change (first-order composite)							
change_1	The way things are done is very flexible and easy to change.	3.257	1.077	5.000	1.000	−0.371	−0.714
change_2	We respond well to competitors and other changes in the business environment.	3.417	1.020	5.000	1.000	−0.511	−0.315
change_3	New and improved ways to do work are continually adopted.	3.428	0.961	5.000	1.000	−0.435	−0.153
change_4	Attempts to create change seldom meet with resistance.*	3.567	1.037	5.000	1.000	−0.546	−0.332

(*Appendix 1 continued*)

(*Appendix 1 continued*)

Composite/Indicator		Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
change_5	Different parts of the organization often cooperate to create change.	3.305	1.031	5.000	1.000	−0.551	−0.400
Customer focus (first-order composite)							
customer_1	Customer comments and recommendations often lead to changes.	3.588	0.971	5.000	1.000	−0.484	−0.066
customer_2	Customer input directly influences our decisions.	3.850	0.955	5.000	1.000	−0.779	0.256
customer_3	All members have a deep understanding of customer wants and needs.	3.492	1.034	5.000	1.000	−0.510	−0.227
customer_4	The interests of the customer seldom get ignored in our decisions.*	2.604	1.237	5.000	1.000	0.257	−1.050
customer_5	We encourage direct contact with customers by our people.	3.733	1.012	5.000	1.000	−0.762	0.322
Organizational learning (first-order composite)							
learning_1	We view failure as an opportunity for learning and improvement.	3.679	1.023	5.000	1.000	−0.935	0.654
learning_2	Innovation and risk-taking are encouraged and rewarded.	3.294	1.143	5.000	1.000	−0.379	−0.814
learning_3	Few things 'fall between the cracks'.*	3.647	1.064	5.000	1.000	−0.526	−0.276
learning_4	Learning is an important objective in our day-to-day work.	3.754	1.064	5.000	1.000	−0.900	0.466
learning_5	We make certain that the 'right hand knows what the left hand is doing'.	3.439	1.016	5.000	1.000	−0.562	−0.123
Mission (second-order composite)							
Strategic direction and intent (first-order composite)							
strategy_1	There is a long-term purpose and direction.	3.952	1.123	5.000	1.000	−1.125	0.621
strategy_2	Our strategy leads other organizations to change the way they compete in the industry.	3.561	1.191	5.000	1.000	−0.620	−0.475
strategy_3	There is a clear mission that gives meaning and direction to our work.	3.824	1.055	5.000	1.000	−0.833	0.222
strategy_4	There is a clear strategy for the future.	3.759	1.108	5.000	1.000	−0.783	−0.102
strategy_5	Our strategic direction is clear to me.*	3.027	1.297	5.000	1.000	0.040	−1.169

(*Appendix 1 continued*)

(*Appendix 1 continued*)

Composite/Indicator		Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
Goals and objectives (first-order composite)							
goals_1	There is widespread agreement about goals.	3.588	0.998	5.000	1.000	−0.673	0.243
goals_2	Leaders set goals that are ambitious, but realistic.	3.396	1.099	5.000	1.000	−0.468	−0.526
goals_3	The leadership has 'gone on record' about the objectives we are trying to meet.	3.636	1.035	5.000	1.000	−0.753	0.237
goals_4	We continuously track our progress against our stated goals.	3.599	1.105	5.000	1.000	−0.847	0.116
goals_5	People understand what needs to be done for us to succeed in the long run.	3.337	1.087	5.000	1.000	−0.399	−0.567
Vision (first-order composite)							
vision_1	We have a shared vision of what the organization will be like in the future.	3.326	1.198	5.000	1.000	−0.426	−0.781
vision_2	Leaders have a long-term viewpoint.	3.610	1.161	5.000	1.000	−0.718	−0.186
vision_3	Short-term thinking seldom compromises our long-term vision.*	3.594	1.075	5.000	1.000	−0.704	−0.036
vision_4	Our vision creates excitement and motivation for our employees.	3.460	1.059	5.000	1.000	−0.540	−0.132
vision_5	We are able to meet short-term demands without compromising our long-term vision.	3.358	1.119	5.000	1.000	−0.465	−0.478
61. Process Maturity (first-order composite)		2.995	1.090	5.000	1.000	0.137	−0.808
Processes have been identified and a process map has been developed, in order to understand the organization as an integrated set of processes.		3.246	1.211	5.000	1.000	−0.392	−0.852
Efforts are made to identify and manage key processes that add value to customers.		3.449	1.113	5.000	1.000	−0.368	−0.726
Process objectives and results' measurement indicators have been defined.		3.572	1.092	5.000	1.000	−0.562	−0.410
Clear procedures are set to define and design processes, and people involved in the process know their roles and responsibilities.		3.348	1.127	5.000	1.000	−0.377	−0.674
Processes are documented, and the activities and procedures are carried out according to the manuals.		3.299	1.203	5.000	1.000	−0.277	−0.902

(*Appendix 1 continued*)

(*Appendix 1 continued*)

Composite/Indicator	Mean	Standard Deviation	Max	Min	Skewness	Kurtosis
Resources (personnel, infrastructure, materials, etc.) are estimated and allocated to ensure that processes are carried out effectively and efficiently.	3.433	1.112	5.000	1.000	−0.376	−0.665
The monitoring, measurement and process analysis are permanently carried out, in order to propose corrections.	3.262	1.136	5.000	1.000	−0.375	−0.627
Processes are improved continuously.	3.241	1.108	5.000	1.000	−0.321	−0.716
Innovation allows process improvement, based on customer needs, expectations and satisfaction.	3.455	1.123	5.000	1.000	−0.554	−0.375
Changes in the processes are effectively communicated.	3.080	1.253	5.000	1.000	−0.219	−1.111
The processes are effective, they satisfactorily reach their purpose.	3.492	0.941	5.000	1.000	−0.622	0.289
The processes are efficient, they are carried out at the lowest possible cost.	3.193	0.992	5.000	1.000	−0.162	−0.485
The processes are carried out without errors and without failures.	2.824	0.907	5.000	1.000	0.008	−0.601
The processes are flexible, adaptable to specific requirements of customers or to a particular situation.	3.316	1.012	5.000	1.000	−0.541	−0.084
The processes are agile, they have a good response capacity and are carried out very quickly.	2.968	1.052	5.000	1.000	−0.048	−0.711
The processes involve adequate and necessary procedures, do not have unnecessary procedures nor excessive bureaucracy.	2.930	1.078	5.000	1.000	−0.095	−0.677
The processes have control mechanisms that ensure that they are carried out without problems or major risks.	3.118	1.051	5.000	1.000	−0.069	−0.618

Source: The authors' elaboration.

Notes: *Question phrasing and answer reversed from survey. Instructions for each item were presented as follows: 'Please indicate your opinion about the following statements. (1 = strongly disagree, 5 = strongly agree). In this organization…'. The process maturity unique item had the following options to answer with: level 1—non-organized processes; level 2—managed processes; level 3—defined processes; level 4—managed processes; level 5—optimized processes.

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