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BUSINESS PROCESS MANAGEMENT AND PROCESS PERFORMANCE: THE MODERATING ROLE OF NATIONAL CULTURE

Research Paper

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Abstract

Business Process Management (BPM) is an important discipline for organizations to manage their processes. Research shows that higher BPM-maturity leads to better process performance. However, contextual factors such as culture seem to influence this relationship. The purpose of this paper is to investigate the role of national culture on the relationship between BPM-maturity and process performance. A structural equation modeling with partial least squares estimations is performed based on data from six different countries within Europe. Although the results show a significant relationship between BPM-maturity and process performance, no significant moderation effect of national culture has been found. Through a post-hoc moderation analysis on each dimension of BPM-maturity, we further find four significant moderation effects. These results provide insights into the role of culture in relation to BPM-maturity.

Keywords: National Culture, Business Process Management, Process Performance.

1 Introduction

For organizations, Business Process Management (BPM) is an important approach for managing their business processes. It can be used for enterprise-wide BPM initiatives as well as managing day-to-day single business processes in different business contexts (Vom Brocke, Zelt and Schmiedel, 2016). With BPM, insight is gained into how work is performed to ensure consistent results while providing opportunities to make improvements (Dumas et al., 2018). Nowadays, companies are facing issues such as raising raw material prices, energy costs, scarcity of labor and disrupted logistical processes. This means companies need to look critically at their process performance. There is evidence that improvements in process performance can be attained by increasing the BPM-maturity of an organization (Wong, Tseng and Tan, 2014; Dijkman, Lammers and De Jong, 2016).

With the application of BPM in an international supply chain, an essential problem arises: the current level of knowledge of applying BPM across different culture is limited (Vom Brocke, Zelt and Schmiedel, 2016). Culture references in BPM research reveals different definitions and concepts of culture such as BPM culture, work group culture, organizational culture and national culture, whereby national culture is not often mentioned as a topic within BPM (Vom Brocke and Sinnl, 2011). Business processes of multinationals often transcend national borders and BPM initiatives tend to include

locations in different countries. The influence of national culture can be a challenging factor here. With the knowledge that improvement of process performance can be attained by increasing BPM-maturity and the positive impact of BPM on supply chain collaboration, this study aims to contribute to understanding the extent to which national culture plays a role in the context of BPM. The research question of this paper is:

How does national culture influence the relationship between BPM-maturity and process performance?

To answer this research question, in the next section, the theoretical background to the different underlying concepts, i.e., BPM-maturity, process performance, and national culture is provided. In Section 3, the research methodology of this study is described, which entails the used measures and data collection. Subsequently in Section 4, the findings of the multiple linear regression analysis are presented. The paper concludes with a discussion and conclusion of the results in Section 5, together with limitations and recommendations for further research.

2 Theory and Hypotheses

2.1 BPM-maturity

Many organizations are increasingly focusing on their business processes to meet the desired quality and performance. BPM is expected to contribute to business excellence by assuring a uniform way of working, while BPM-maturity is a metric to measure and assess how professionally an organization manages its business processes and to guide an organization in applying best practices to improve process proficiency. A lot of BPM-maturity models are proposed, but a comprehensive definition is missing (Van Looy, De Backer and Poels, 2011). Van Looy, De Backer and Poels (2011) defined BPM-maturity as a model to assess and/or guide best practice improvements in organizational maturity and process capability, expressed in lifecycle levels, by considering an evolutionary roadmap regarding 1) process modelling, 2) process deployment, 3) process optimization, 4) process management, 5) organizational culture, and 6) organizational structure. BPM-maturity models are used in one or more of three ways: descriptive, prescriptive, and comparative (De Bruin et al., 2005). A maturity model serves a descriptive purpose if it is applied for as-is assessments. It serves a prescriptive purpose if it indicates how desirable, future maturity levels can be identified and if it provides guidelines for implementing corresponding improvement measures (Röglinger, Pöppelbuß and Becker, 2012). A comparative model gives the opportunity to do a maturity benchmark of similar situations between industries or areas (De Bruin et al., 2005). Of the multitude of models, the common basis for most of them is the Capability Maturity Model (CMM), developed by the Software Engineering Institute at Carnegie Mellon University (Rosemann and De Bruin, 2005). To measure BPM-maturity, we adopted the integrated model suggested by Ravesteyn et al. (2012), as this has been widely used throughout the last decade in multiple studies across countries such as the Netherlands, Peru, and Portugal (Janssen et al., 2015; De Waal, Valladares and Ravesteyn, 2017) and with different types of organizations in different sectors (Ongena and Ravesteyn, 2019). This model has a theoretical foundation in process lifecycle theory and builds on CMM and the work of Rosemann and De Bruin (2005). The model encompasses seven dimensions, each of which consisting of a set of BPM capabilities, which are briefly described in Table 1.

Dimension	Description
Process Awareness	Recognition of the importance of a process-oriented organization and inclusion in the organization's strategy by its higher management.
Process Description	Captured documentation of processes and related information within the organization.

Process Measurement	System to measure and control processes is in place in order to be able to improve processes.
Process Control	Process owners are assigned within the organization whom are “horizontally” responsible for managing processes.
Process Improvement	The organization strives to continually improve processes and there is a system in place to enable this.
Resources & Knowledge	The organization has adequate resources (such as people with process knowledge) to create a “culture of process orientation”.
Information Technology	The organization uses IT to design, simulate and execute processes, and to provide real-time measurement information (key performance indicators).

Table 1. BPM-maturity dimensions (adapted from Ravesteyn et al. (2012)).

2.2 BPM-maturity and process performance

The desired outcome of higher BPM-maturity is to achieve a better process performance. Previous research showed that increasing BPM-maturity leads to better process and organizational performance (Ravesteyn et al., 2012; Wong, Tseng and Tan, 2014; Dijkman, Lammers and De Jong, 2016). Process performance, which stands for the efficiency and effectiveness of organizational processes, is a difficult construct to operationalize, because performance is an idiosyncratic concept, varying by context, process, organization, and other levels (Schmiedel, Recker and Vom Brocke, 2020). To measure process performance, Schmiedel, Recker and Vom Brocke (2020) developed a new model. The limitation of this model is, however, that it measures only two indicators of performance, namely efficiency, which measures the economic operation of organizational processes, and effectiveness, which measures the result-oriented operation of organizational processes, thereby ignoring other aspects of process performance. A broader measurement of process performance as the dependent variable, with BPM-maturity as the independent variable, are the twelve variables described by Ravesteyn et al. (2012). These twelve variables, based on previous research by Rudden (2007), are: cost, traceability, efficiency, lead time, customer focus, quality, employee satisfaction, competitive advantage, flexibility, understandability, continuous improvement, and measurability. The first ten elements are related to quantitative and qualitative benefits, where quantitative benefits are measurable and visible and qualitative benefits are focused on organizational aspects (De Waal et al., 2017). The last two elements are based on Weske’s (2017, p.348) business process methodology in which he states that during the operation and controlling phase organizations need to collect execution information that can then be used to improve processes in an evolutionary way.

Process performance is proposed as outcome of BPM-maturity. Initiatives aiming at increasing an organization’s BPM-maturity thus subsequently lead to better process performance (Ongena and Ravesteyn, 2019). This positive relationship has been a subject of interest for many years in BPM research and successfully proved by early scholars (c.f., McCormack and Johnson, 2001; Burlton, 2001), but also in recent literature by, for instance, Dijkman et al. (2016) and Ongena and Ravesteyn (2019). We therefore hypothesize:

H1. *BPM-maturity positively affects process performance.*

2.3 The moderating role of national culture

Culture is a broad and diffuse concept, the meaning is different depending on the context (Kroeber and Kluckhohn, 1952). Of the many definitions of culture, some have common aspects: culture of a group is, according to Schein (2018), a pattern or system of beliefs, values, and behavioral norms that are taken

for granted as basic assumptions. Within culture, a distinction is made between 3 levels, namely national culture, organizational culture, and sub-unit, where the latter stands for a department, professional group, or informal community (Leidner and Keyworth, 2006). National culture refers to a particular geographic region or country, or according to Hofstede, Hofstede and Minkov (2010), the collective programming of the mind acquired by growing up in a particular country. Over the years Hofstede has distinguished six cultural dimensions: 1) power distance, 2) individualism versus collectivism, 3) masculinity versus femininity, 4) uncertainty avoidance, 5) long versus short term orientation, and 6) indulgence versus restraint (Hofstede et al., 2010). For this study, the Hofstede's six-dimension model of national culture is adopted.

The dimension of power distance expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally. People in societies exhibiting a large degree of power distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low power distance, people strive to equalize the distribution of power and demand justification for inequalities of power (Hofstede Insights, 2022a). In a cross-cultural study on the influence of culture on business process reengineering (BPR) projects in India and the USA (Agrawal and Haleem, 2003), a negative correlation is found between power distance and the initiation and implementation of BPR projects. The authors argue that employees may have a fear of nagging reactions of management and would like to operate in a free environment as far as possible. A similar finding that high power distance has resulted in highly informal BPM governance practices is presented by Jayaganesh and Shanks (2009a, 2009b). Hence, we formulate the hypothesis:

H2a. High power distance weakens the positive relationship between BPM-maturity and process performance.

Individualism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. Its opposite, collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty (Hofstede Insights, 2022a). In the field of BPM, Agrawal and Haleem (2003) find that collectivism exerts a negative influence on the implementation of BPR projects in the Indian context. With the analysis of two case studies, Jayaganesh and Shanks (2009a, 2009b) indicate that collectivism has also resulted in highly informal BPM governance practices. Thus, we hypothesize:

H2b. Collectivism weakens the positive relationship between BPM-maturity and process performance.

Masculinity represents a preference in society for achievement, heroism, assertiveness, and material rewards for success. Society at large is more competitive. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. Society at large is more consensus-oriented. In the business context, masculinity versus femininity is sometimes also related to as "tough versus tender" cultures (Hofstede Insights, 2022a). In their research, Agrawal and Haleem (2003) find a positive correlation between masculinity and severity of implementation problems, which indicates the resistance for undertaking BPR initiatives because of fear of massive lay-off, inadequate technological infrastructure, and newness in the technology in the organizations. By analyzing over 10,000 LinkedIn profiles of BPM professionals, Gorbacheva et al. (2016) identify specific gaps in self-reported competences that include cultural and social competences, as well as analytical competences and those related to special software or hardware. These competences are relevant and demanded by organizations, but seem to be underrepresented on the supply side of the BPM job market. The presentation of women among BPM professionals can be helpful to close the competence gap in the field. Consequently, we hypothesize:

H2c. Masculinity weakens the positive relationship between BPM-maturity and process performance.

The uncertainty avoidance dimension expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. The fundamental issue here is how a society deals with the fact that the future can never be known: should we try to control the future or just let it happen? Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behavior, and are intolerant of unorthodox behavior and ideas. Low uncertainty avoidance societies maintain a more relaxed attitude in which practice counts more than principles (Hofstede Insights, 2022a). In their research, Agrawal and Haleem (2003) find that low uncertainty avoidance facilitates BPR. This is in contrast to the empirical evidence of Jayaganesh and Shanks (2009a, 2009b), which establishes that low uncertainty avoidance results in a more casual approach to BPM governance with less emphasis on establishment of process roles, definition and standards. Dijkman, Lammers and De Jong (2016) also argue that, by documenting and formally managing processes, organizations in regions that score high on uncertainty avoidance can reduce risks, which could lead to a higher BPM-maturity and performance. We agree with the latter arguments and posit:

H2d. High uncertainty avoidance strengthens the positive relationship between BPM-maturity and process performance.

Societies with short term orientation prefer to maintain time-honored traditions and norms while viewing societal change with suspicion. Those with long term orientation, on the other hand, take a more pragmatic approach: they encourage thrift and efforts in modern education as a way to prepare for the future. In the business context, this dimension is referred to as “(short-term) normative versus (long-term) pragmatic” (Hofstede Insights, 2022a). Under a value-oriented BPM paradigm, a business process should satisfy the conditions that secure processes’ ability to operate in the long term (Vom Brocke and Sonnenberg, 2015). In return, establishing a long-term BPM approach and installing a process mindset sustainably is important to be able to leverage the potential and the value of BPM. This belongs to the principle of continuity, which is one of the ten principles of good BPM (Vom Brocke et al., 2014). While continuity, or continues improvement, is an important component of excellence, which is one of the four core values of BPR culture (Schmiedel, Vom Brocke and Recker, 2013). Long term orientation has the potential to positively moderate the relationship between BPM-maturity and process performance, thus we hypothesize:

H2e. Long term orientation strengthens the positive relationship between BPM-maturity and process performance.

Indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms (Hofstede Insights, 2022a). Indulgence versus restraint has gradually gained attention in research, mainly in the field of marketing. For example, Sun et al. (2019) discover the moderating role of this cultural dimension on the relationship between corporate social performance and corporate financial performance. Ruiz-Equihua, Romero and Casaló (2020) find the moderating effect of this cultural dimension on the relationship between positive/negative online reviews and hotel booking intentions. Both studies conclude that the moderating effect is more relevant in restrained cultures. Although there is no previous BPM research addressing this cultural dimension, we are persuaded by the above-mentioned marketing literature on its moderating role. Therefore, we hypothesize:

H2f. Restraint strengthens the positive relationship between BPM-maturity and process performance.

Based on the constructs and dimensions described above the following conceptual model is created (Figure 1):

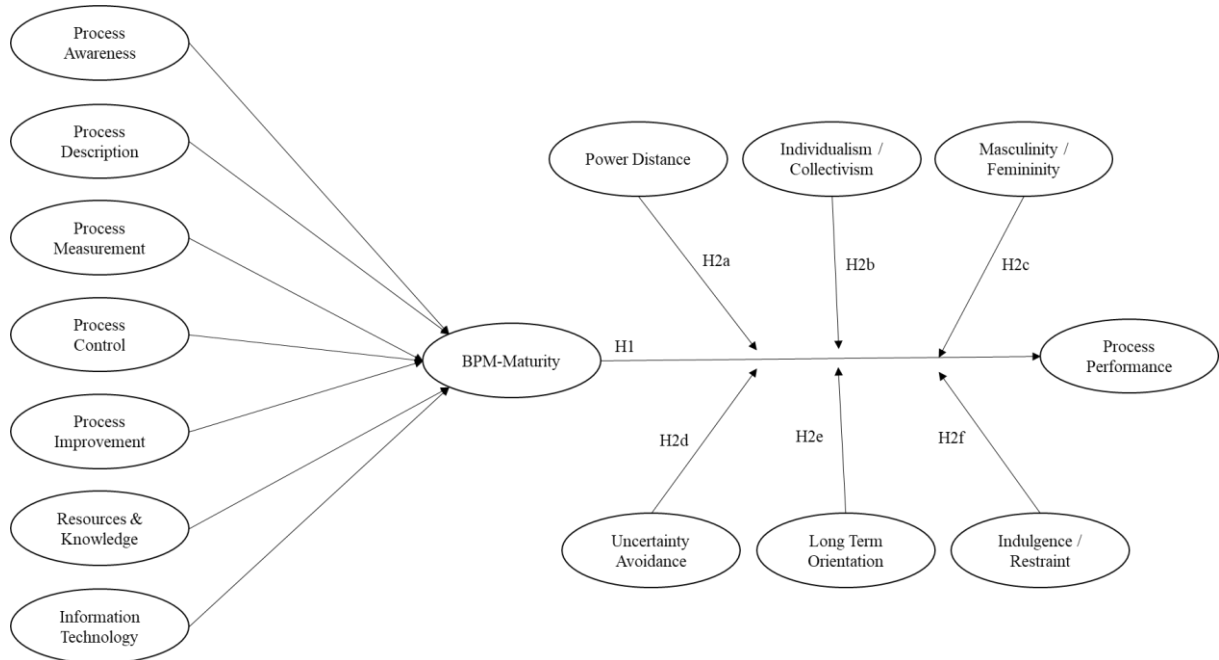


Figure 1. Conceptual model.

3 Research Method

3.1 Measures

To investigate the relationship between BPM-maturity and process performance and the influence of national culture on the relationship, a survey was conducted. The questionnaire was composed of two parts. First, 37 items were used to operationalize the BPM-maturity dimensions adopted from Ongena and Ravesteyn (2019). The second part related to the construct Process Performance, which was operationalized with 12 variables (Ravesteyn et al., 2012; Ongena and Ravesteyn, 2019). All items were measured by a five-point Likert scale. The number of items per BPM-maturity dimension is shown in Table 2. The questionnaire has been translated from Dutch into English, French, German, Polish, and Spanish by an accredited (ISO 9001 and ISO 17100:2015) translation agency (TheLanguageLab.nl).

BPM-maturity dimensions	# of items
Process Awareness	4
Process Description	6
Process Measurement	5
Process Control	5
Process Improvement	6
Resources & Knowledge	4
Information Technology	7

Table 2. Number of items per dimension.

To get reliable scores for the cultural dimensions, an ideal size for a homogeneous sample is 50 respondents per country (Hofstede and Minkov, 2013a), which we could not meet in our research. To have a reliable representation of national culture according to the Hofstede model, Hofstede's national culture scores were used instead. These scores for the six countries were adopted from Hofstede Insights (2022b). Since culture only changes very slowly, the scores can be considered up to date. Depending on the country, the data originates from different years and is based on replications and extensions of the IBM study (Hofstede Insights, 2022c). Table 3 shows the scores as adopted from Hofstede Insights (ranging from 1 to 100), with corresponding score towards five-point Likert scale in the following parentheses. The principle is: "1 to 20" turns to "1", "21 to 40" turns to "2", "41 to 60" turns to "3", "61 to 80" turns to "4", and "81 to 100" turns to "5".

	Belgium	Germany	France	Netherlands	Poland	Spain
Power Distance (PDI)	65 (4)	35 (2)	68 (4)	38 (2)	68 (4)	57 (3)
Individualism/Collectivism (IDV)	75 (4)	67 (4)	71 (4)	80 (4)	60 (3)	51 (3)
Masculinity/Femininity (MAS)	54 (3)	66 (4)	43 (3)	14 (1)	64 (4)	42 (3)
Uncertainty Avoidance (UAI)	94 (5)	65 (4)	86 (5)	53 (3)	93 (5)	86 (5)
Long Term Orientation (LTO)	82 (5)	83 (5)	63 (4)	67 (4)	38 (2)	48 (3)
Indulgence/Restraint (IVR)	57 (3)	40 (2)	48 (3)	68 (4)	29 (2)	44 (3)

Table 3. Scores on Hofstede's Cultural Dimension.

3.2 Data collection

The questionnaire was administered to all the 271 managers and executives of a multinational in the food processing industry with 27 branches in six countries in Europe. Data were collected in a General Data Protection Regulation (GDPR) compliant manner (Hoofnagle, Van der Sloot and Borgesius, 2019). A total of 192 questionnaires were fully completed. Of these, 11 respondents are dropped, due to a difference between their nationality and the country where they were working at the time of completing the questionnaire. This brings the total dataset to 181, which means the net response rate is 66.8%. Table 4 summarizes the distribution of respondents per country and response state.

Country	No. of respondents	Not finished	No response	Completely filled in	Removed	Net response
Belgium	38	0	3	35	6	29
Germany	51	9	5	37	3	34
France	45	8	15	22	0	22
Netherlands	92	11	17	64	2	62
Poland	21	3	4	14	0	14
Spain	24	2	2	20	0	20
Total	271 (100%)	33	46	192	11	181 (66.8%)

Table 4. Distribution of respondents per country and response state.

4 Results

Data were analyzed using structural equation modeling with partial least squares (PLS) estimations. PLS is an analysis technique that enables the simultaneous estimation of both the measurement and the structural models (Tenenhaus et al., 2005), providing estimations that are robust against skewed data distributions and multicollinearity (Cassel et al., 2000). PLS is most appropriate in investigating

formative constructs and was historically seen as superior for modeling moderation effects (Hazen et al., 2015), as shown in this research. The software we choose for this research is SmartPLS 4. To estimate the significance of path coefficients and item loadings, we use a bootstrapping approach, where 1000 random samples of observations with replacements are generated from the original data set.

4.1 Measurement model

A hierarchical component model is applied in this research, as we conceptualize BPM-maturity as a seven-dimensional higher-order construct to reduce model complexity. On the other hand, six cultural dimensions are not operationalized at a higher level of abstraction, because their individual moderating effects are the main focus of this study, which is also in line with other research on the moderating role of national culture (c.f., Agrawal and Haleem, 2003; Jayaganesh and Shanks 2009a, 2009b; Dijkman, Lammers and De Jong, 2016; Sun et al., 2019; Ruiz-Equihua, Romero and Casaló, 2020).

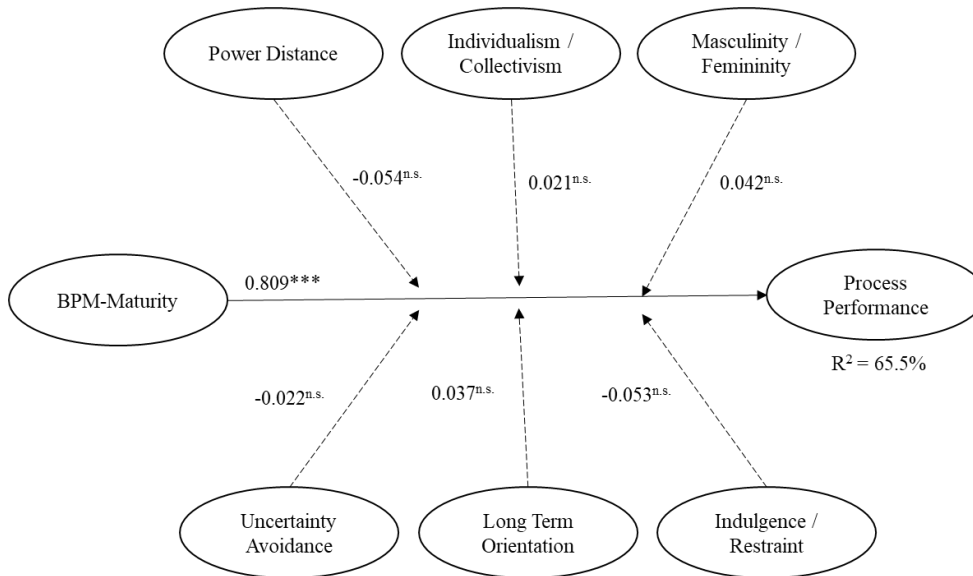
The central difference between reflective and formative constructs is that formative measures represent instances in which the indicators cause the construct, whereas reflective indicators are caused by the construct (Hair et al., 2014). In our research, BPM-maturity is a formative higher-order construct, as the seven dimensions serve as indicators that cause BPM-maturity. While other constructs are reflective.

The principles underlying formative measurement are fundamentally different from those of the reflective type, therefore specific steps need to be followed when evaluating the formative measurement model (Hair et al., 2014). First, content validity was evaluated, because if an important item was omitted, the nature of the construct might be altered (Diamantopoulos et al., 2008). Our measurement items were adopted from Ongena and Ravesteyn (2019) and supported by the literature. Second, collinearity was tested, as the formative measurement model is based on multiple regression (Diamantopoulos and Winklhofer, 2001). High collinearity between two or more formative indicators can lead to unstable parameter estimates. As a rule of thumb, the variation inflation factor of formative indicators should be well below 10 (Merschmann and Thonemann, 2011), which was verified by our results.

To ensure the appropriateness of the reflective constructs, the unidimensionality, reliability, and validity were assessed (Hair et al., 2014). Factor loadings were used to test the unidimensionality of the model. All the factor loadings exceed the recommended value of 0.50 (Dunn et al., 1994). Reliability is assessed with composite reliabilities because this allows construct loadings or weights to vary (Peterson and Kim, 2013). The items are reliable: all composite reliability values exceed the threshold value of 0.70 (Hair et al., 2019). Construct correlations provide evidence for construct validity: all the average variance extracted (AVE) values exceed 0.50 (Bagozzi and Youjae, 1988). And all the heterotrait-monotrait (HTMT) ratios of the correlations are significantly lower than the threshold value of 0.85 (for conceptually different constructs), indicating adequate discriminant validity (Hair et al., 2019).

4.2 Structural model

The results of structural model analysis are reported in Figure 2. The relational hypothesis (i.e., H1) is supported. BPM-maturity has a significant positive relationship with process performance ($\beta = 0.809$, $p < 0.001$) and explains 65.5% of the variance.



Notes: *** $p < 0.001$; n.s.: not significant.

Figure 2. Results of structure model analysis.

The moderation hypotheses (i.e., H2a to H2f) are not supported. No significant moderation effect has been found. To discover the moderation effect on each dimension of BPM-maturity, we further conduct a post-hoc moderation analysis. We find that Power Distance negatively moderates the relationship between Process Awareness and Process Performance ($\beta = -0.173$, $p < 0.01$), while Process Awareness positively affects Process Performance ($\beta = 0.187$, $p < 0.05$). We also find that Long Term Orientation negatively moderates the relationship between Process Improvement and Process Performance ($\beta = -0.261$, $p < 0.01$), although there is no significant relationship between Process Improvement and Process Performance. Masculinity is found to positively moderate the relationship between Information Technology and Process Performance ($\beta = 0.129$, $p < 0.05$), though there is no significant relationship between Information Technology and Process Performance. And Indulgence is found to negatively moderate the relationship between Information Technology and Process Performance ($\beta = -0.127$, $p < 0.05$), even though there is no significant relationship between Information Technology and Process Performance.

5 Discussions and Conclusion

Based on data from six countries, this study explored the role of Hofstede's cultural dimensions on the relationship between BPM-maturity and process performance.

5.1 BPM-maturity and process performance

We found a significant positive relationship between BPM-maturity and process performance (H1). This is in line with earlier studies (Ravesteyn et al., 2012; Ongena and Ravesteyn, 2019) that also found that improvement in process performance can be achieved by increasing an organization's BPM-maturity.

5.2 Cultural dimensions

We further explore the role of national culture on the relationship between BPM-maturity and process performance (H2a to H2f). No significant moderation effect has been found. We have further conducted a post-hoc moderation analysis on each dimension of BPM-maturity. Based on this, we find that Power Distance negatively moderates the relationship between Process Awareness and Process Performance,

while Process Awareness positively affects Process Performance. This is in line with the findings of Agrawal and Haleem (2003) and Jayaganesh and Shanks (2009a, 2009b) that high power distance has a negative influence on BPM implementation/governance. In particular, our finding demonstrates that the negative moderation effect of Power Distance has mainly been reflected on Process Awareness more than any other BPM capability. Such findings may reveal the fact that employees are willing to voluntarily realize the importance of BPM, rather than being educated by managers.

Besides the moderation effect of Power Distance, three other significant moderation effects are discovered in our post-hoc moderation analysis, although there is no significant relationship between the corresponding BPM-maturity dimension and Process Performance. First, we find that Long Term Orientation negatively moderates the relationship between Process Improvement and Process Performance. According to Hofstede Insights (2022a), this cultural dimension is referred to as “(short-term) normative versus (long-term) pragmatic” in the business context. Normative cultures are concerned with doing things properly from a procedural perspective, while pragmatic cultures are more competitive, market-driven, and result-oriented. Pragmatism is the characteristic of the company where this research was done, with most countries involved scoring higher than 50 on the index. The high (long-term) pragmatic approach pushes process performance down. It is possible that investments in process improvements are aimed at the long term (pragmatic), and therefore do not benefit process performance. This finding echoes Schmiedel, Recker and Vom Brocke’s (2020) opinion on the importance of establishing a BPM culture to increase process performance in a long run.

Second, Masculinity is found to positively moderate the relationship between Information Technology and Process Performance, though there is no significant relationship between Information Technology and Process Performance. This finding may reinforce the gender stereotype that IT jobs are more appropriate for men (Gorbacheva et al., 2016), but more importantly, the non-significant relationship between IT and process performance reflects the fact that only focusing on technical competences cannot guarantee improvements on process performance. Relationship competences, both at the workplace and with customer, may also be critical for the success of BPM projects (Von Hellens, Nielsen and Beekhuyzen, 2004).

Last, Indulgence is found to negatively moderate the relationship between Information Technology and Process Performance, even though there is no significant relationship between Information Technology and Process Performance. This finding highlights the importance of regulation and standardization on IT implementations, especially in multinational firms (Ives and Jarvenpaa, 1991).

5.3 Contribution

Foremost, the outcomes of this study contribute to practice. It contributes to the knowledge on BPM-maturity, process performance, and the effect of national culture which multinationals that strive for process improvements can use in order to achieve better performance. When processes cross national boundaries, it is important to know what influences the practice of BPM. Contextual factors play a role in BPM initiatives. Although the role of national culture does not contribute significantly to the relationship between BPM-maturity and process performance, the significant moderation effects on individual dimensions of BPM-maturity are worth noting. A low power distance is recommended to improve process awareness, while a long-term-oriented BPM culture should be established to help improve process performance. Both technical competences and relationship competences are critical for the success of BPM initiatives, while regulation and standardization can benefit the accumulation of technical competences.

Our contribution to theory is two-fold. First, the call for more research on contextual factors within business process management (Vom Brocke et al., 2016) has been answered. With the consideration of national culture in this study, previously conducted research on the role of contextual factors within BPM-maturity and process performance (c.f., Ongena and Ravesteyn, 2019) is further expanded. Second, this research has contributed to the role of national culture in the context of BPM, thus

answering the call for more awareness and research on the role of culture within BPM (Vom Brocke and Sinnl, 2011).

5.4 Limitations and future research

For this research, some limitations must be recognized. First, the data collected to measure national culture dimensions do not meet all the requirements of the Value Survey Module (Hofstede and Minkov, 2013a). To overcome these limitations, the scores from Hofstede's previous studies were used, thereby assuming that these national culture scores are representative of the respondents in this study. For future research that can meet the requirements, 24 items can be adopted from Hofstede and Minkov (2013b) to operationalize Hofstede's six dimensions of national culture. Second, the study was conducted within one multinational in the food processing industry, therefore generalizing the results to the entire food processing industry or even other industries is questionable. Third, the results of BPM-maturity and process performance collected from respondents from different sites within a country were aggregated at the country level to make the comparison with national culture. This ignores the differences on the subsidiary level. Lastly, the influence of national culture has been examined as a separate cultural construct, ignoring all other cultural forms, such as organizational culture and workgroup culture. Thus, there is no complete picture of the influence of culture in general on the relationship between BPM-maturity and process performance. Research into the role of cultural context, which includes organizational culture and workgroup culture (in addition to national culture), on the relationship between BPM maturity and process performance can provide more insights.

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