Building a multilevel integrated framework of ambidexterity: the role of dynamically changing environment and human capital management in the performance of Greek firms

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Abstract

The purpose of this study is to investigate the serially mediating mechanisms of human capital management practices and organizational ambidexterity, expressed by exploration and exploitation, in the relationship between environmental dynamism and organizational performance, expressed by creativity and productivity. The study is based on 1,183 employees working in 83 Greek private sector firms. By applying multi-level structural equation modeling, the findings show that the dynamically changing environment has a positive impact on human capital management practices, which in turn have a differential positive impact on exploration and exploitation, which then have a positive influence on organizational creativity and productivity. The study contributes to the literature on organizational ambidexterity by examining whether human capital management practices constitute

an antecedent of organizational ambidexterity, and whether organizational performance constitutes a consequence.

Keywords
environmental dynamism, human capital management, human resource management, organizational ambidexterity, organizational performance

1 | INTRODUCTION

There have been several investigations into the links between investments in Human Capital Management (HCM) and organizational performance. These investigations were generally focused across a mixture of HCM practices and a range of HCM drivers, such as leadership development, employee engagement, information accessibility, workforce optimization, and learning capacity (Bassi & McMurrer, 2007). These investigations took the view that HCM practices either influenced organizational performance directly, or influenced performance through mediating mechanisms such as employee attitudes and behaviors. Recently, there has been a substantial interest among researchers on organizational ambidexterity as a mediating mechanism in the relationship between HCM practices and organizational performance (Baškarada, Watson, & Cromarty, 2016, Hughes, 2018; Katou, Budhwar & Patel, 2021; Úbeda-García, Claver-Cortés, Marco-Lajara, & Zaragoza-Sáez, 2017; Úbeda-García, Claver-Cortés, Marco-Lajara, Zaragoza-Sáez, & García-Lillo, 2018).

Organizational ambidexterity is defined as "an organization's ability to be aligned and efficient in its management of today's business demands while simultaneously being adaptive to changes in the environment" (Raisch & Birkinshaw, 2008, p. 375). This definition is based on two activities which define the way that organizations allocate their awareness and resources. The first is exploitation,

which is associated with risk avoidance and concerns "refinement, efficiency, selection, and implementation" (March, 1991, p. 102). The second is exploration, which is associated with risk taking and concerns "search, variation, experimentation, and discovery" (March, 1991, p. 102). However, the mediating role of organizational ambidexterity in the relationship between HCM practices and organizational performance is still unexplored, and it is argued that "ambidexterity literature could be further advanced by incorporating established concepts from the HR literature" (Junni, Sarala, Tarba, Liu, & Cooper, 2015, p. S24).

Both, in the HR literature and in the literature on ambidexterity it is argued that HCM practices and organizational ambidexterity activities do not exist in a vacuum. On the contrary, it is argued that environmental dynamics, especially during the current period of economic crises, are external to the organization environment (Hansen, Guttel, & Swart, 2019) and may influence both HCM practices and organizational ambidexterity. This influence may have the role of a moderating or of an independent process in the HCM practices-organizational ambidexterity-organizational performance relationship (Katou et al., 2021; Raisch & Birkinshaw, 2008). However, few studies have investigated the influence of external environmental dynamism in this relationship (Hansen et al., 2019; Pertusa-Ortega & Molina-Azorín, 2018).

Based on the above, and considering that "there is limited research that has examined the nexus of HR architectures, ambidexterity, and environmental dynamics" (Hansen et al., 2019, p. 648), the purpose of this study is to provide multilevel insights about how, and through which mechanisms, a dynamically changing environment may encourage organizations to adopt certain human capital practices, and how those practices will facilitate ambidexterity and lead

to improvements in organizational performance. Accordingly, this study makes four contributions.

The first is to examine the differential impact of HCM practices on the exploitation and exploration dimensions of organizational ambidexterity. This finding extends knowledge with respect to the role of human resource practices in building ambidexterity (McClean, & Collins, 2011; Prieto, & Perez Santana, 2012), which is still unexplored (Junni et al., 2015).

The second is to examine the differential impact of exploration and exploitation on creativity and productivity. This extends knowledge as to whether exploration influences long-term consequences on creativity and whether exploitation influences short-term consequences on productivity (Katou et al., 2021; Zhang, Wu, & Cui, 2015).

The third is to examine the neglected issue of whether environmental dynamism is connected to HRM systems to create ambidexterity in the organization (Diaz-Fernandez, Pasamar-Reyes, & Valle-Cabrera, 2017; Hansen et al., 2019; Pertusa-Ortega & Molina-Azorín, 2018). In this article, this contribution is analyzed in the context of Greece, which still faces a turbulent economic environment.

Finally, taking into consideration that employees are nested in organizations, the fourth contribution is that the methodology used is multilevel structural equation modeling. It is argued that this contribution is significant as only a small number of studies have investigated ambidexterity using multilevel frameworks (Mom, Chang, & Jansen, 2018).

The paper is structured as follows. Based on a literature review the next section presents the development of the research hypotheses and the research model. This is followed by the methods section where the Greek context and the constructs

used in the study are presented. The results section comes next where the estimation findings of the operational model are reported and the findings with respect to the research hypotheses are explained. Finally, the discussion and the conclusion section is focused on the theoretical and the managerial contributions of the study, including both limitations and suggestions for future research.

2 | RESEARCH FRAMEWORK AND HYPOTHESES

Organizations seek to balance exploration and exploitation activities aiming at tracing an optimal equilibrium and trajectory under varying dynamic environments (Hansen et al., 2019, Katou et al., 2021). This is because, if organizations put more emphasis on exploration by distributing their resources, they may find themselves in positions where they will not be able to collect the expected profits from their investments (Levinthal & March, 2003, March, 1991). On the other hand, if organizations put more emphasis on exploitation, they may face obsolescence (Levinthal & March, 2003, March, 1991). This means that the characteristics of environmental dynamism constitute the initiating factors that drive organizational ambidexterity.

The characteristics which describe an environment as being dynamic usually refer to the intensity of changes in the markets, to the regularity of changes in the demands of clients, to the continuity of changes in the markets, to the frequency of changes during a specific period, and to the speed of changes in delivering products and services (Jansen, Van den Bosch, & Voldera, 2006). These five attributes of environmental change - intensity, regularity, continuity, frequency, and speed - influence the decisions of organizations in putting an emphasis on exploitation or exploitation (Floyd & Lane, 2000; Jansen, Van den Bosch, & Voldera, 2005). Thus, it

is argued that the characteristics of environmental dynamism have a positive impact on organizational ambidexterity (Boumgarden, Nickerson, & Zenger, 2012).

The characteristics of intensity, regularity, continuity, frequency, and the speed of change influence the form of environmental dynamism and accordingly the strategic decisions of an organization with respect to its adaptation to its environment. For example, in discontinuous environments, organizations put more emphasis on exploration, aiming to achieve superior performance in the long-term. In contrast, in stable environments, organizations put more emphasis on exploitation, aiming to protect existing performance and focus on survival in the short-term (Luger, Raisch, & Schimmer, 2018). Considering that, in most cases, financial and human resources are scarce, the balancing of exploration and exploitation under this constraint is a difficult task (Pertusa-Ortega & Molina-Azorín, 2018; Venugopal, Krishnan, Kumar, & Upadhyayula, 2019).

Research has indicated that systems of HRM policies and practices, such as high-performance work systems, can be important determinants of organizational ambidexterity (Fu, Flood, & Morris, 2016; Fu, Ma, Bosak, & Flood, 2015; Patel et al., 2013). Úbeda-García et al. (2017) found that organizational ambidexterity positively mediates the relationship between human resource flexibility and organizational performance. Further, Úbeda-García et al. (2018) found that organizational ambidexterity positively mediates the relationship between high-performance work systems and organizational performance. However, it is argued that the impact of the nexus of environmental characteristics and organizational ambidexterity could be augmented by the reengineering of organizational HCM drivers to structure HCM practices, which will also have an impact on the exploration and exploitation activities (Ahammad, Glaister, & Junni, 2019; Hansen et al., 2019).

Typical HCM drivers, and the corresponding HCM practices, can be summarized as follows (Bassi & McMurrer, 2007):

- Leadership practices (communication, inclusiveness, supervisory skills, executive skills, and leadership development systems)
- Employee engagement (job design, commitment, workload time, and employee engagement systems)
- Information accessibility (availability, collaboration, information sharing, and collection information systems)
- Workforce optimization (processes, working conditions, accountability, hiring, and employee performance systems)
- Learning capacity (innovation, training, development, value and support, and learning systems)

It is argued that in dynamically changing environments, HCM practices have a differential impact on the dimensions of organizational ambidexterity (Katou et al., 2021). Leadership and managerial support favor exploration rather than exploitation activities (Baškarada, et al., 2016; Boyatzis & Goleman, 2017; Katou et al., 2021; Siachou, & Gkorezis, 2018). Leadership, employee engagement and job design, all seem to favor exploration more than exploitation (Kassotaki, Paroutis, & Morrell, 2019; Katou et al., 2021).

Chang (2016) supports the argument that work conditions moderate the relationship between HCM practices and organizational ambidexterity. Caniëls, Neghina, & Schaetsaert (2017) argue that employee motivation moderates the relationship between information sharing and collaboration, and employee ambidexterity. Additionally, employee training and development facilitate

organizational ambidexterity by delivering organizational creativity (Malik, Pereira, & Tarba, 2019) and encouraging learning (Diaz-Fernandez et al., 2017).

However, exploration and exploitation have different characteristics. Exploration is discontinuous while exploitation is incremental (O'Reilly & Tushman, 2004). Therefore, the impact of these two dimensions on organizational performance should be investigated individually, but within an integrated framework to avoid any misspecification bias. It may be assumed that the impact of exploration is associated more with organizational creativity compared to organizational productivity, whilst the impact of exploitation is associated more with productivity than creativity (Katou et al., 2021).

Summarizing the previous discussion, and addressing calls for further research on (1) the mediating mechanism of HRM policies and practices in the relationship between environmental dynamism and organizational ambidexterity (Ahammad et al., 2019; Hansen et al., 2019), and (2) the mediating mechanism of organizational ambidexterity in the relationship between HRM policies and practices and organizational performance (Caniels & Veld, 2019), we hypothesize the following serially mediating mechanisms:

- H1: Human capital management practices positively mediate the relationship between environmental dynamism and organizational ambidexterity.
- H2: Organizational ambidexterity positively mediates the relationship between human capital management practices and organizational performance.

These two serially mediating mechanisms are presented in the proposed research model presented in **Exhibit 1**.

[Set Exhibit 1 about here]

3 | METHOD

3.1 | The Greek context

Greece, as of 2019, is the 16th largest economy among the 27 member-states in the European Union. The economy of Greece was seriously affected by the 2008 economic and financial crises. By being a member of the Euro-zone, and by implementing policies imposed by the European Commission, the International Monetary Fund (IMF) and the European Central Bank, Greece has managed to make its economy more competitive. According to the IMF, the 2019 per capita GDP was USD 19,570, at nominal value, and USD 31,572 at purchasing power parity. The unemployment rate, which was very high at 27.0% in 2014, has been reduced to 16.2% in 2019. In this challenging environment Greek firms were trying to both expand in the long-run, and to survive in the short-run. Thus, it may be interesting to examine whether Greek firms were following exploitation and exploration activities as means to achieve their long- and short-term goals.

3.2 | Sample and data

To test the hypotheses, a survey of employees working in private organizations in the manufacturing, services, and trade sectors in Greece was conducted in October-November 2019. Questionnaires were distributed, via students following business courses at a Greek university, to 150 organizations employing more than 20 employees. The students were asked to distribute 10 questionnaires per organization (i.e., 1500 questionnaires in total). 1183 fully answered questionnaires were returned from multiple respondents in each of the 83 organizations (reflecting senior managers, middle managers, and lower employees), giving a response rate of 55.3% at the organization level, and 78.9% at the employee level.

Of the sample of 83 organizations, 43.4% had 20 to 30 employees, 33.7% had 31 to 100 employees, and 22.9% had more than 100 employees; 27.7% were from the manufacturing sector, 37.3% were from the services sector, and 34.9% were from the trade sector. The average number of employees was 89.26. Of the sample of 1183 respondents, 51.8% were male, and 48.2% were female; 2.5% had only an elementary education, 30.8% had a high school / lyceum education, and 66.7% had a college / university degree. The average age of respondents was 37.51 years old, and the average seniority was 9.65 years. With respect to employment tenure, 86.6% of the respondents had a full-time contract and 13.4% had a part-time contract. Finally, 14.4% of the respondents were senior managers, 18.6% were middle managers, and 67.0 belonged to the lower employee category.

3.3 | Measures

All measures refer to 5-level Likert scales (1=completely disagree to 5=completely agree), unless otherwise indicated. Multilevel confirmatory factor analyses (MCFA) were used for constructing higher level constructs.

- **Environmental Dynamism**: This construct (α = 0.860) comprised of 5-items developed by Jansen et al. (2006). A sample item was "*Environmental changes in our local market are intense*". MCFA fit indices (χ^2 = 21.849, df = 10, p = 0.016, normed χ^2 = 2.185, RMSEA = 0.032, CFI = 0.989, TLI = 0.977, SRMR – within = 0.020, SRMR – between = 0.050) indicate a good fit.
- **Human Capital Management Practices**: This construct comprised of 23-items developed by Bassi and McMurrer (2007) and referred to the following five drivers of HCM practices: leadership practices (α = 0.885), 5 items; employee engagement (α = 0.825), 4-items; information accessibility (α = 0.833), 4-items; workforce optimization (α = 0.879), 5-items; and learning capacity

(α=0.850), 5-items. Sample items were "*Management communication is open and efficient*", "*The work is well organized and helps the skills of the employees*", "*Information on work and training is readily available*", "*Work procedures are well defined*", and "*The training is practical and supports the organizational goals*". MCFA fit indices (χ^2 = 217.122, df = 10, p =.000, normed χ^2 = 21.712, RMSEA = 0.132, CFI = 0.914, TLI = 0.828, SRMR – within = 0.049, SRMR – between = 0.022), indicate a good fit.

- **Organizational Ambidexterity**: Referring to exploration and exploitation attitudes, organizational ambidexterity is based on Popadiuk (2012). The exploration attributes construct comprised of 20-items, reflecting the two dimensions of knowledge practices (α = 0.883), and innovative practices (α = 0.939). Sample items were "*Sharing in-house knowledge*" and "*Focus on completely new products or processes*". The exploitation attributes construct comprised of 25-items reflecting the four dimensions of competition (α = 0.870), strategic orientation (α = 0.708), processes (α = 0.816), and partnership relationships (α = 0.900). Sample items were "*Fierce competition in company industry*", "*Strategic view focused on the present*", "*Focus on performing activities*", and "*Concern with establishing outside partnerships*". MCFA fit indices (χ^2 = 24.371, df = 16, p = 0.082, normed χ^2 = 1.523, RMSEA = 0.021, CFI = 0.993, TLI = 0.988, SRMR – within = 0.019, SRMR – between = 0.055), indicate a good fit.
- **Organizational Performance**: Reflecting creativity and productivity, organizational performance is based on Katou et al. (2014). The creativity construct (α = 0.710) comprised of 2-items, with the first referring to innovation for products and processes, and the second to quality enhancement for products and services. The productivity construct (α = 0.723) comprised of 2-items, with the first referring

to effectiveness that indicates whether the organization meets its objectives, and the second to efficiency that indicates whether the organization uses the fewest possible resources to meet its objectives. MCFA fit indices (χ^2 = 3.892, df = 2, p = 0.143, normed χ^2 = 1.946, RMSEA = 0.028, CFI = 0.995, TLI = 0.973, SRMR – within = 0.007, SRMR – between = 0.024), indicate a good fit.

- **Controls**: Two types of control variables are used in the study. Personal, which reflects gender, age, education, seniority, tenure, and position, and organizational, which reflects sector and size.

3.4 | Statistical analysis

The data used in estimation have been collected by employees nested in organizations. As such, it is argued (Preacher, Zhang, & Zyphur, 2011) that multilevel structural equation modelling constitutes the most appropriate estimation method for getting unbiased results. The software used in estimation is Mplus (Muthen & Muthen, 2017).

4 | RESULTS

4.1 | Data characteristics

Means, standard deviations, Cronbach's Alpha, average variances extracted (AVE) and the correlation matrix of all constructs are presented in **Exhibit 2**. Based on Hair, Black, Babin, and Anderson (2010), the following data properties are derived. Construct internal consistency is acceptable, because all Cronbach's alphas are greater than 0.70. Survey instrument construct validity is suggested, because all AVE values are higher than 0.50. Construct discriminant validity is adequate, because the correlation coefficients are smaller than the square root of each factor's AVE.

[Set Exhibit 2 about here]

4.2 | Measurement model

Before estimating the structural model, two other models have been estimated through multilevel structural equation modelling to examine the properties of the measurement model in the study.

The first refers to a hypothesized model that includes all six constructs involved in the operational model shown in **Exhibit 1**. The fit indices derived (χ^2 = 1020.922, df = 310, p = 0.000, normed χ^2 = 3.293, RMSEA = 0.044, CFI = 0.925, TLI = 0.907, SRMR – within = 0.033, SRMR – between = 0.113) support that the hypothesized model is acceptable.

The second refers to a model that enters all six constructs into a single construct. The fit indices derived (χ^2 = 3432.913, df = 328, p = 0.000, normed χ^2 = 10.466, RMSEA = 0.089, CFI = 0.670, TLI = 0.618, SRMR – within = 0.098, SRMR – between = 0.154) indicate a poor fit.

By comparing these two models we find that $\Delta\chi 2/\Delta df = 86.14$. This value is greater than 3.84, which is the critical value per degree of freedom. Thus, it is concluded that the constructs are separate and single method bias is limited.

4.3 | Structural model

The usual protocol before estimating the proposed model is to examine the intra-correlation coefficients ICC1 and ICC2, and the inter-rater agreement measures $r_{wg}(j)$ (Katou et al., 2021). The ICC1 values range between 0.127 and 0.290. Taking into consideration that these values are larger than 0.10, we conclude that between-unit variation justifies multilevel analysis. The ICC2 values range between 0.743 and 0.870. Taking into consideration that these values are larger than 0.50, we conclude that within-unit agreement justifies aggregation. The $r_{wg}(j)$ values range

between 0.783 and 0.967. Taking into consideration that these values are larger than 0.70, we conclude that within-unit agreement also justifies aggregation.

Applying multilevel structural equation modelling for estimating the operational model in **Exhibit 1**, the fit indices produced ($\chi 2 = 1202.055$, df = 361, p = 0.000, normed $\chi 2 = 3.330$, RMSEA = 0.044, CFI = 0.912, TLI = 0.898, SRMR – within = 0.040, SRMR - between 0.133) indicate a very good fit. The within-employees and the between-organizations estimation results (with all figures being standardized) are presented in **Exhibit 3** and **Exhibit 4** respectively.

[Set Exhibit 3 about here]

[Set Exhibit 4 about here]

4.4 | Testing the hypotheses

Hypotheses were tested separately with respect to 'within-employees' effects (using estimation results presented in **Exhibit 3**) and 'between-organization' effects (using estimation results presented in **Exhibit 4**), to avoid any erroneous conclusions (Peccei & Van De Voorde, 2019). Additionally, for examining the type of mediation mechanisms we used the total impact values (TIV) and the total indirect impact values (TIIV) of the mediating mechanisms between initiating and ending constructs (Muthen & Muthen, 2017). In cases where TIV were significantly different from TIIV, the mediation mechanisms were partial (reflecting the existence of direct and indirect links); if the TIV and TIIV were significantly equal, the mediation mechanisms wereull (reflecting the existence of no direct but only indirect links).

Considering **Exhibit 3**, we see that environmental dynamism positively and directly influences HCM practices ($\beta = 0.309$, $p < 0.01$) and exploration attributes ($\beta = 0.192$, $p < 0.01$). Additionally, HCM practices positively and directly influence exploration attributes ($\beta = 0.796$, $p < 0.01$). These results indicate that HCM practices

partially mediate the relationship between environmental dynamism and exploration attributes, because TIV = 0.438 ≠ TIIV = 0.246 with p = 0.000. Further, because HCM practices positively and directly influence exploitation attributes (β = 0.569, p < 0.01) and TIV = 0.591 ≠ TIIV = 0.175 with p = 0.000, we find that HCM practices partially mediate the relationship between environmental dynamism and exploitation attributes. Accordingly, these findings support hypothesis 1 that HCM practices positively (and partially) mediate the relationship between environmental dynamism and organizational ambidexterity.

Moreover, in **Exhibit 3** we see that HCM practices positively and directly influence creativity (β = 0.164, p < 0.05) and exploration attributes positively and directly influence creativity (β = 0.596, p < 0.01). This, in conjunction with the previous finding, indicates that exploration attributes partially mediate the relationship between HCM practices and creativity, because TIV = 0.639 ≠ TIIV = 0.475 with p = 0.000. Further, we see in **Exhibit 3** that HCM practices positively and directly influence productivity (β = 0.415, p < 0.01) and that exploitation attributes positively and directly influence productivity (β = 0.455, p < 0.01). This result, in conjunction with the previous finding, indicates that exploitation attributes partially mediate the relationship between HCM practices and productivity, because TIV = 0.594 ≠ TIIV = 0.139 with p = 0.001. Accordingly, these findings support hypothesis 2 that organizational ambidexterity positively (and partially) mediates the relationship between HCM practices and organizational performance.

Turning now to **Exhibit 4**, we see that environmental dynamism positively and directly influences HCM practices (β = 0.577, p < 0.01), HCM practices positively and directly influence exploration attributes (β = 0.936, p < 0.01) and exploitation attributes (β = 0.851, p < 0.01). Moreover, exploration attributes

positively and directly influence creativity (β = 0.878, p < 0.01), and exploitation attributes positively and directly influence productivity (β = 0.614, p < 0.01). Taking into consideration that TIV = 0.540 = TIIV = 0.540 with p = 0.006, and TIV = 0.491 = TIIV = 0.491 with p = 0.003, it is found that HCM practices fully mediate the relationships between environmental dynamism and exploration and exploitation attributes respectively. Accordingly, these findings support hypothesis 1 that HCM practices positively (and fully) mediate the relationship between environmental dynamism and organizational ambidexterity.

Similarly, considering that TIV = 0.822 = TIIV = 0.822 with p = 0.000, and TIV = 0.523 = TIIV = 0.523 with p = 0.008, it is found that exploration attributes fully mediate the relationship between HCM practices and creativity, and exploitation attributes fully mediate the relationship between HCM practices and productivity. Thus, these findings support hypothesis 2 that organizational ambidexterity positively (and fully) mediates the relationship between HCM practices and organizational performance.

With respect to the controls used in the study we note here that the controls which produced significant estimation results are only those included in **Exhibit 3**. It is seen that the impact of employee hierarchy (1=senior managers, 2=middle managers, and 3=lower employees) on HCM practices (β = -0.184, p < 0.01) indicates that managers are more likely to use HCM practices that will facilitate organizational ambidexterity than lower-level employees. This finding supports similar findings of Swart, Turner, van Rossenberg, and Kinnie (2019) who examined 'who does what in enabling ambidexterity?' To our surprise the results in **Exhibit 3** indicate that the highly educated employees tend to be less involved in exploration (β = -0.052, p < 0.05) and exploitation (β = -0.079, p < 0.01) than the less educated employees. An

explanation of this finding may be attributed to the Greek adage "ingenuity and smart solutions are the creative counterweight to the difficulties and inadequacies of the means".

5 | DISCUSSION AND CONCLUSIONS

5.1 | Theoretical implications

The study makes the following contributions to the organizational ambidexterity literature. First, from the within-employees results we found that HCM practices and organizational ambidexterity serially, positively, and partially mediate the relationship between environmental dynamism and organizational performance. From the between-organizations results we found the same structure of the two serially mediating mechanisms with the only difference being that these mechanisms were now fully mediating the relationship under study. In other words, the similarity of the two structures supports the homology assumption between the two levels of analysis (Kozlowski & Klein, 2000).

Second, both the 'within' and 'between' structures (examined using t-tests) support the view that HCM practices influence exploration and exploitation activities differently. Thus, we conclude that HCM practices facilitate exploration activities more strongly than exploitation activities. This means that in periods of high environmental turbulence, organizations, through their HCM managerial decisions, put more emphasis on the long-term expansion of the organizations, without neglecting their short-term survival. Therefore, this study contributes to the understanding of how HCM drivers differentially influence the two dimensions of organizational ambidexterity (Hansen et al., 2019).

Third, it is found that exploration activities have a higher positive impact on creativity when compared to the impact of exploitation activities on productivity. This result supports the findings of Katou et al. (2021). However, to further confirm this finding, we proceeded to post hoc analyses by including the links in **Exhibit 1** that connect exploration with productivity, and exploitation with creativity. These extra links were not found to be significant.

Fourth, the study supports the view that environmental dynamism influences organizational ambidexterity, which in turn improves organizational performance. Therefore, the research framework used in this study extends knowledge with respect to the antecedents and consequences of organizational ambidexterity (Pertusa-Ortega & Molina-Azorín, 2018) by utilizing HCM practices as antecedents and creativity and productivity as consequences. This contribution is significant because it argues that a prerequisite for the implementation of successful organizational ambidexterity activities depends on the HCM practices that the organization is using.

5.2 | Managerial implications

The main message that this study gives is that managers, although they cannot control environmental dynamism, can still design HCM practices which will have a positive impact on organizational ambidexterity, and in turn on organizational performance. HCM practices are important for many aspects of the organization, such as the development of business strategy, and as found in this study, HCM practices are important for facilitating exploration and exploitation. However, it should be noted that the influence of HCM improvements in driving performance may depend on the specific characteristics of the organizations (Bassi & McMurrer, 2007).

In this study we have used three types of small organizations from the manufacturing, services, and trade sectors in Greece. According to the second order

confirmative factor analysis with respect to the 23 HCM practices that constitute the five HCM drivers proposed by Bassi and McMurrer (2007), we found that the two most important HCM practices for each driver that differentially influence exploration and exploitation are the following: from leadership practices the two most important are communication and executive skills; from employee engagement they are job design and commitment; from information accessibility they are collaboration and information sharing; from workforce optimization they are processes and hiring; and from learning capacity they are training and development. This finding has implications for the design of HCM practices.

Having identified the ten HCM practices that are most closely associated with creativity and productivity, through exploration and exploitation respectively, managers are advised to focus on further improving these ten HCM practices without, of course, neglecting the other 13 practices. This can be achieved by collecting the relevant data in their own organization and trying to improve the HCM practices that receive low scores. For example, it can be seen in **Exhibit 3** and **Exhibit 4**, that leadership drivers have low loadings in forming the HCM practices system. This 'low performance' of leaders may be improved by focusing on enhancing communication and executive skills. Similarly, workforce optimization drivers have high loadings in forming the HCM practices system. This 'high performance' of workforce optimization may be stabilized in high levels by focusing on enhancing processes and hiring practices.

5.3 | Limitations and future research

The study has three major limitations. First, utilizing cross-sectional data collected at a single point in time, the findings of the study reflect associations rather than causal

inferences. Therefore, future research would benefit from longitudinal data collection and analysis. The use of different actors and respondents for collecting data, and the multilevel analysis applied in the analysis, does not necessarily mean that common method bias has been completely eliminated. Therefore, future research would benefit from utilizing independent sources of data. Third, the findings that are supported by this study may not generalize across other countries, because the study was applied in the Greek context, which reflects the influence of recent financial and economic crises. Thus, future research should be replicated in other contexts.

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EXHIBIT 1 Proposed research model

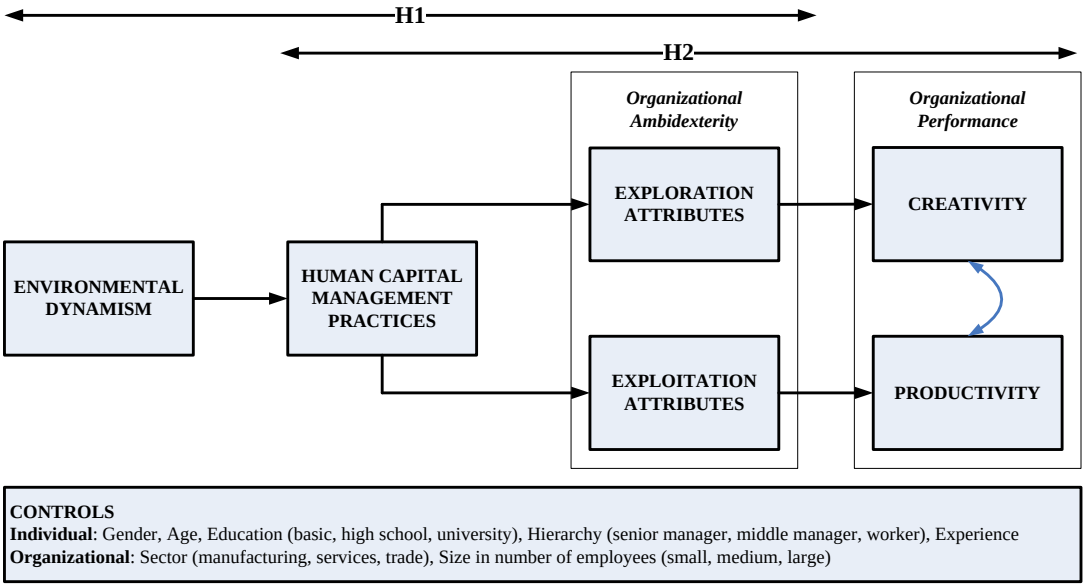

EXHIBIT 2 Means, standard deviations, consistency indices, and the correlation matrix

Constructs	Mean (standard deviation)	Cronbah's Alpha	Correlation coefficients					
			Environment	HCMP	Exploration	Exploitation	Creativity	Productivity
Environment	3.64 (0.87)	0.860	[0.643]					
HCMP	3.74 (0.73)	0.920	0.316	[0.759]				
Exploration	3.61 (0.74)	0.800	0.435	0.708	[0.842]			
Exploitation	3.96 (0.70)	0.726	0.451	0.563	0.604	[0.575]		
Creativity	4.00 (0.84)	0.710	0.289	0.582	0.623	0.487	[0.778]	
Productivity	4.04 (0.74)	0.723	0.252	0.529	0.457	0.442	0.560	[0.786]

Note: All correlations are significant at 0.01 level (2-tailed)
Figures in brackets indicate Average Variance Extracted (AVE)

EXHIBIT 3 The within-employees estimation results of the proposed model

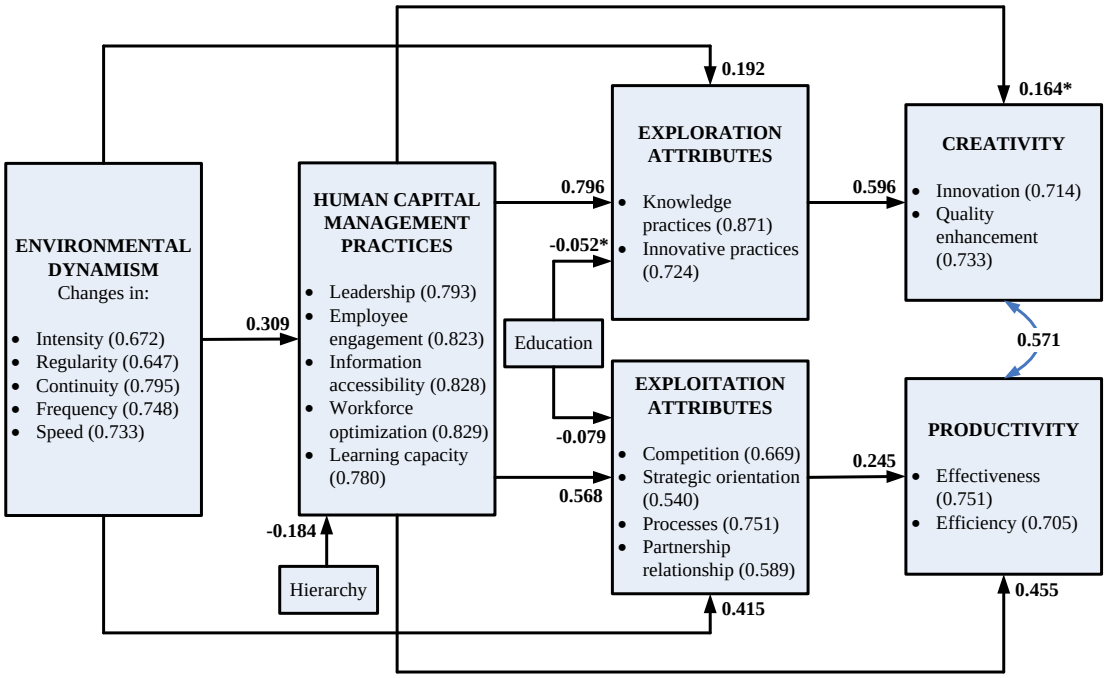

EXHIBIT 4 The between-organizations estimation results of the proposed model