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Article

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Quality-oriented human resource practices (QHRP), ambidextrous culture and organizational ambidexterity: a study of green agro-food companies

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Abstract

Purpose – The purpose of this paper is to examine the effect of quality-oriented human resource practices (QHRP) on organizational ambidexterity. Furthermore, the mediating role of ambidextrous culture in the relationship between QHRP and organizational ambidexterity was assessed.

Design/methodology/approach – Drawing on data from 350 green agro-food companies with two respondents in each company, structural equation models were used.

Findings – This paper has been drawn up to provide some responses to the needs of the companies to be ambidextrous while applying QHRP. The findings show that there is a positive effect of QHRP on organizational ambidexterity. In addition, ambidextrous culture mediated the relationship between QHRP and organizational ambidexterity.

Practical implications – This research reveals key managerial aspects for QHRP implementation that facilitate firms to be more ambidextrous, and thus more efficient and innovative.

Originality/value – The authors illustrate the connection between quality-oriented human resource practices (QHRPs) and organizational ambidexterity under the dynamic capabilities theory. The findings contribute to the empirical evidence on the antecedents of organizational ambidexterity, and suggest that these specific QHRPs influence an organization's baseline beliefs and values and support the development of ambidextrous capabilities by means of an ambidextrous culture.

Keywords Human resource management, Quality management, Organizational ambidexterity, Organizational culture, Exploitation, Exploration

Paper type Research paper

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1. Introduction

Ambidexterity has featured heavily in the most prestigious management journals (Zhang *et al.*, 2022). Such is this topic's importance that it has been cited by some authors as an emerging paradigm in organizational theory (Raisch and Birkinshaw, 2008; Raisch *et al.*, 2009; Simsek *et al.*, 2009), and as an important and promising research stream (O'Reilly and Tushman, 2013; Farzaneh *et al.*, 2022; Girod *et al.*, 2023).

Ambidexterity is a metaphor – the ability to use both hands with equal skill – which in the management literature context is used to draw attention to organizations aligned with day-to-day activities and efficient enough to meet current demands whilst, simultaneously adapting to and anticipating future change, and it has also been proved as vital for firm prosperity (Fourné *et al.*, 2019; Gualandris *et al.*, 2018; He and Wong, 2004; O'Reilly and Tushman, 2013; Pertusa-Ortega and Molina-Azorín, 2018; Turner *et al.*, 2013). Ambidexterity can also be the answer required to deal with complexity and contradiction (Kassotaki, 2019), allowing companies to deal with the increasing necessity of high technologies, internationalization, aggressive competition and the necessity of innovation (Smith and Lewis, 2011; Tamayo-Torres *et al.*, 2017).

Scholars have emphasized organizational ambidexterity as critical to ensuring a sustainable competitive advantage. Numerous empirical evidences confirm that organizational ambidexterity may not only lead to improved short-term performance but also heighten long-term survival rates in dynamically competitive environments (Tarba *et al.*, 2020). It seems confirmed that ambidextrous firms are better than others at responding to disruptive new business models and emerging technologies (Birkinshaw *et al.*, 2016; Hill and Birkinshaw, 2014; Tarba *et al.*, 2020).

Ambidexterity is contingent on employees' involvement in the work innovative processes. In this vein, it is important to take into account HRM practices aimed at fostering both exploration and exploitation capabilities. However, no clarity exists about which HRM practices contribute to organizational ambidexterity (Swart *et al.*, 2019; Junni *et al.*, 2015; Pak *et al.*, 2023).

This study adds to the academic dialogue on organizational ambidexterity in several relevant ways. First, we contribute to the literature building on the quality management theory (Hackman and Wageman, 1995; Perdomo-Ortiz *et al.*, 2009) to identify those HRM practices which are specific to quality management, and we name them quality human resource management practices (QHRP). In recent decades, quality management has been recognized as a central competitive variable having a positive effect on firms' performance (Escorcia-Caballero *et al.*, 2022). As Hackman and Wageman (1995) stated, company implementation of quality management implies applying several human resource-related practices. In fact, effective people management is increasingly becoming a primary concern for quality management programmes, as it is recognized that quality management hinges on the effective management of human resources (Gutierrez-Gutierrez *et al.*, 2018). Literature has used two different approaches to the study HRM support to the ambidextrous organization. The first one uses the "best practices view" and considers single HRM practices. The second one departs from HRM systems, as a combination of congruent bundles of HR practices operating for the same purpose (Ferraris *et al.*, 2019). In our study, we follow the first option, as we start from the specific quality management-related HR practices; considering single HRM practices by themselves can be configured to support ambidextrous work (Jansen *et al.*, 2008; Mom *et al.*, 2019).

Second, we develop a novel insight about the role of QHRP in relation with ambidextrous organizations introducing organizational culture to explain these relations (Asif and de Vries, 2015; Moreno-Luzon and Gil-Marques, 2015; Moreno-Luzon *et al.*, 2014). Highly capable individuals, together with a unique culture that promotes learning and innovation, are basic elements for a successful organization (Wei and Lau, 2010; Chams-Anturi *et al.*, 2020).

Organizational culture has been signalled as a mediator in some research between certain quality management practices and organizational ambidexterity. For instance, Moreno-Luzon *et al.* (2014) empirically proved the mediating role of cultural divergence between process management practices and organizational ambidexterity.

Third, we contribute to recent research linking the dynamic capabilities framework to quality management and contextual organizational ambidexterity (Escorcia-Caballero *et al.*, 2022; Faridian and Neubaum, 2021; O'Reilly and Tushman, 2013; Weiss and Kanbach, 2022; Yunita *et al.*, 2023).

The dynamic capabilities approach extends the resource-based view (RBV), which posits that firm resources are the source of competitive advantages (Barney, 1991). In today's dynamic and uncertain environment, the dynamic capabilities view enables a firm to continuously change the configuration of organizational resources. Quality management implementation needs training and development to provide employees and managers the tools and the motivation to achieve quality improvement objectives, and to upgrade their skills for the future to allow delegation and increase participation by employees (De Groote *et al.*, 1996). As De Groote *et al.* (1996, p. 543) pointed out: "Capabilities must be actively mobilized to utilize all the knowledge available in the plant, and to bring out employee initiative and ideas in order to encourage employees to 'use their hearts and brains as well as their hands".

Contrary to the structural approach (Jansen *et al.*, 2009), contextual ambidexterity, suggests that balancing challenges may be mitigated by more behaviourally integrated approaches proposing a supportive context in which individual members make their own choices on how to best divide the time and efforts between exploitation and exploration (Fourné *et al.*, 2019; Gibson and Birkinshaw, 2004; Patel *et al.*, 2013).

Our study analyses the antecedents of ambidexterity, focusing on the human dimensions of quality management, and on certain elements of organizational culture, to examine the extent to which QHRP may serve as an antecedent that enables firms to develop a context for ambidexterity, and to what extent an ambidextrous culture plays a mediating role in that relationship.

The paper proceeds as follows: firstly, we present the state-of-the-art on the relationships between human resource practices in a quality management framework, cultural values and organizational ambidexterity. Secondly, we introduce the methodology used in the empirical research. Thirdly, we present the results of the survey and, finally, we conclude by discussing the theoretical and practical implications of these findings.

2. Literature review

2.1 Human resource-related quality management (QHRP) and organizational ambidexterity

Organizational ambidexterity has attracted intense academic interest over the last few decades. Lavie *et al.* (2010), O'Reilly and Tushman (2013), Raisch and Birkinshaw (2008) and Turner *et al.* (2013) have discussed the state-of-the-art. Ambidexterity refers to the ability of an organization to simultaneously foster the exploration of new markets and the business opportunities and the exploitation of current ones (Lubatkin *et al.*, 2006).

To examine the extent to which QHRP may serve as an antecedent that enables firms to develop a context for ambidexterity, we can underline a statement by Fundin *et al.* (2021, p. 1): "the emergent quality management paradigm is an alternative perspective providing the guidance, examples, and practical solutions necessary to solve these dilemmas by recognising the dichotomies as mutually dependent".

Previous studies have demonstrated the capacity of quality management to confront paradoxes (Thompson, 1998), and some authors have signalled its capacity to build two

different models as well – a mechanistic and an organic model (Prajogo and Sohal, 2004) – and have focused on the direction of control or learning (Sitkin *et al.*, 1994).

One way of confronting these paradoxes and promoting control and learning at the same time is through the implementation of human resource practices (Smith and Lewis, 2011). Human resource practices are a particularly valuable organizational resources because they are firm specific, thus being difficult to imitate (Lepak and Snell, 2002). Human resource practices aimed at fostering problem-solving abilities, intellectual stimulation and employees' interaction and participation in the decision-making process have been related to innovation (Gutierrez-Gutierrez *et al.*, 2018).

In the field of quality management, we can find broad and rich evidence of the importance of human resource practices. Quality management provides employees from all levels of the hierarchy with great responsibility through empowerment and decentralization, which enriches their work (Hackman and Wageman, 1995; Perdomo-Ortiz *et al.*, 2009; Arifin *et al.*, 2022).

Jansen *et al.* (2006) empirically demonstrated the relationship between centralization, exploitation and exploration. They proved how centralization has a negative influence on exploratory innovation and does not support exploitative innovation. Since quality management promotes decentralization (Hackman and Wageman, 1995), we can therefore foresee that through these practices, both exploitation and exploration activities can be promoted.

When implementing quality management, delegation is complemented by continuous training and development to encourage participation (Moreno-Luzon, 1993; De Groote *et al.*, 1996; Nosella *et al.*, 2012). It is necessary to provide everyone with specific training to ensure their understanding of quality concepts and tools. It is important that they learn their command of tools, techniques and methodologies, as well as an attitude of participation and cooperation (Randolph, 1995; Wickramasinghe, 2012). Training is often used, therefore, not only to prepare for the use of techniques but also to promote better understanding, acceptance and inculcation of the principles of quality management (Moreno-Luzon and Valls-Pasola, 2011), integrating training with indoctrination (Mintzberg, 1979).

Human resource practices allow employees to recognize and use knowledge and experience to develop innovative ideas (Lopez-Cabrales *et al.*, 2009), thus promoting the development of dynamic capabilities, such as exploration or exploitation.

Nevertheless, limited research has explicitly examined the influence of these human resource practices from quality management programmes on ambidexterity. As far as we know, there are four prior main theoretical contributions. Moreno-Luzon and Valls-Pasola (2011) pioneered the discussion on the main issues in the relationship and proposed a research agenda; Asif and de Vries (2015), Asif (2017) and Moreno-Luzon and Gil-Marques (2015) examined how different quality management practices can be designed and executed to support ambidexterity.

Although Moreno-Luzon and Valls-Pasola (2011) concluded theoretically that there is a positive effect of quality-oriented human resource practices on organizational ambidexterity, and Asif and de Vries (2015) proposed a theoretical model in which empowerment, training and development, in the frame of quality management, positively influenced ambidexterity, no subsequent research has empirically proved these relationships. Human resource practices allow employees to recognize and use knowledge and experience to develop innovative ideas (Lopez-Cabrales *et al.*, 2009), thus promoting the development of dynamic capabilities, such as exploration or exploitation. Little research has examined human resource-related quality practices focused on training, organizational support and employee participation. Therefore, our first objective is to check if QHRP has a direct and positive effect on organizational ambidexterity.

In addition, we argue that QHRP creates a culture that trains, develops and capacitates employees in an organization, in turn, fostering organizational ambidexterity. Organizational culture has been signalled as a mediator in some research between certain quality management practices and organizational ambidexterity. For instance, Moreno-Luzon *et al.* (2014) empirically proved the mediating role of cultural divergence between process management practices and organizational ambidexterity. Due the importance of quality-oriented human resource practices in the quality management field and their foreseeable impact on organizational culture, it is important to delve deeper into this unexplored mediating role.

In trying to increase employee participation through delegating and training, a context of trust and support is created. QHRPs are based on a trust principle, and therefore, a greater degree of freedom for problem-solving without constant supervision is given to employees (Adams *et al.*, 2006). These attributes are what Gibson and Birkinshaw (2004) considered to be key values in facilitating ambidexterity, together with discipline and stretch. In this environment of trust and support, and without fear of reprisals, creativity can be developed further. We therefore find here a positive link between the human resource practices of quality management and ambidexterity. Trust, developed in a quality management framework is fundamental to allow people to make decisions that foster ambidextrous capabilities in the organization (Asif and de Vries, 2015; Moreno-Luzon and Gil-Marques, 2015; Moreno-Luzon *et al.*, 2014). As we have shown, there are arguments in literature to positively connect quality-oriented human resource practices (QHRP) and organizational ambidexterity (OA). Due to the favourable support for this positive relationship, we adopt this perspective and propose our first hypothesis:

H1. QHRP has a positive effect on organizational ambidexterity.

2.2 The role of corporate culture in the relationship between human resource-related quality management and organizational ambidexterity

Human resource practices act as the catalyst for the implementation of quality management, reinforcing human relationships to achieve a cultural change (Wilkinson, 1992). Culture consists of the beliefs, values and underlying assumptions supporting behavioural patterns and artefacts (Schein, 1986, p. 6). Ghobadian and Gallear (1996) posited that education and training, staff participation, improved communication, procedure and policy reviews and top manager behaviour can have an impact on a business culture. Moreover, this cultural effect has been recognized as a key factor for successful quality management implementation (Green, 2012; Tata and Prasad, 1998).

Literature also points out that quality management is related to a wide range of cultures. Drawing on the competing values framework (Quinn, 1988; Quinn and Rohrbaugh, 1983), it has been empirically proven that opposing cultural values such as flexibility and control cohabit in quality management (Al-Khalifa and Aspinwall, 2001; Dellana and Hauser, 1999; Prajogo and McDermott, 2005).

From a dynamic capabilities view, training employees foster problem-solving abilities, which contribute to creating an environment for learning (Flores *et al.*, 2012). Also, training fostered by QHRP enhances intellectual stimulation, dialog, motivation and experimentation, which promote a culture of both exploration and exploitation.

According to Naveh and Erez (2004), quality management has a positive impact on two different types of values: control and attention to detail on the one hand, and creativity, flexibility and experimentation on the other. Moreno-Luzon *et al.* (2013) also found evidence of a diverse cultural change generated by quality management, and pointed out to the role of this ambidextrous culture as a mediator between quality management practices and innovation.

Rafailidis *et al.* (2017) measured cultural ambidexterity following the competing values framework as well, and they concluded that an organizational culture oriented towards exploitation as well as exploitation has a positive impact on innovation performance only through firm's quality capability, revealing an underlying connection mechanism.

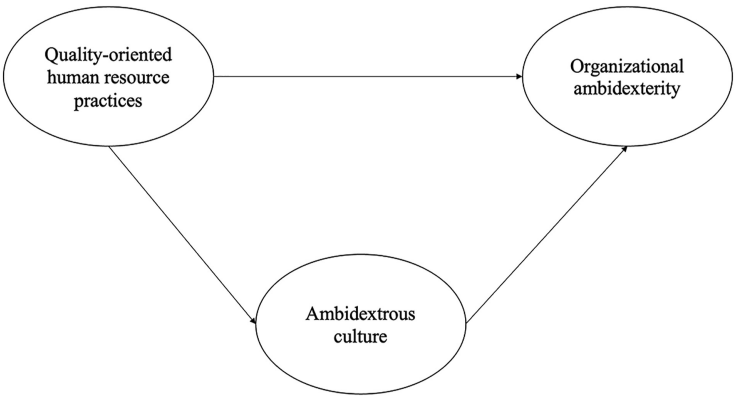
Previous empirical research by Moreno-Luzon *et al.* (2014) in two traditional industries, furniture and textiles, pointed to the importance of culture as a mediator in the relationship between process management practices implemented in a quality management framework and ambidexterity. Although process management practices have been traditionally viewed as mechanical, the empirical results of this study revealed that process management practices could promote an organizational culture made up of diverging values such as security, discipline and improvement on the one hand, and creativity, experimentation, risk-taking and flexibility on the other. These findings suggest that the implementation of QHRP may influence the organization's basic beliefs and values, and therefore support the development of ambidextrous capabilities. The importance of cultural change as a mediator reveals that having a balanced culture comprised of conflicting cultural values can be a key to success (Prajogo and McDermott, 2005).

Conceptual developments in the management literature have analysed what kind of organizational culture enables ambidexterity. In this line, Wang and Rafiq (2014) provide relevant evidence on the connection between organizational culture and ambidexterity. They conceptualize and examine ambidextrous organizational culture, consisting of organizational diversity and shared vision, as an antecedent to contextual ambidexterity and consequently new product innovation outcomes. Their findings sustain that organizational ambidexterity can be achieved through involving individual organizational members, emphasizing the involvement and participation of people (Wang and Rafiq, 2014).

Our objective is to examine the impact of corporate culture as a mediator in the relationship between human resource practices and ambidextrous capability in the organic agro-food sector. Based on the theoretical and empirical studies cited earlier, we propose the following hypothesis:

H2. An ambidextrous culture mediates in the relationship between QHRP and organizational ambidexterity.

Following the specified hypotheses structure, the assumed relationships between variables need to be empirically proven. Figure 1 shows the proposed research model.



Source(s): Figure by authors

Figure 1.
Proposed theoretical model

3. Research methodology

3.1 Sample and data collection

We have chosen this sector because it shows a clear need for organizational ambidexterity as well as quality management. This sector needs combining exploitation, to reduce operating costs and compete on price, and exploration, to be receptive to new markets, technological change and product innovation (Moreno-Luzon *et al.*, 2018). In this sector, companies have a high export profile and compete openly with conventional products. Organic-sector firms need to pursue exploitation to make continuous improvements in efficiency, improve processes, reduce costs and be competitive in terms of price. Companies are required to comply with specific quality standards applicable to the agro-food industry and organic labels. These formal regulations require exploitation and are necessary to ensure quality and create a secure environment for international trade and economic development, but they could discourage risk-taking to avoid possible errors and hamper innovation (Gil-Marques and Moreno-Luzon, 2015). These companies must also promote exploration, as they should be alert to technological changes and impulse product innovation, given that innovation is essential in this niche market. The Spanish organic agro-food industry is then our target research context.

The study is part of a larger project supported by the Spanish Ministry of Economy, Industry and Competitiveness, and the State Research Agency. With the purpose of delimiting the study population, the whole list of 3,984 organic agro-food industrial companies from the Spanish Ministry's website (www.mapama.gob.es) was consulted and downloaded in August 2017. Each company was reviewed to verify that it really belongs to the sector studied, and to ratify the contact information. Once the information was obtained, a very laborious refining and filtering process was carried out to ensure all the firms were industrial companies in the organic agro-food sector. The final population was reduced to 2,317 companies, all of them having organic certification.

The details of the sample used in the study are shown in Table 1 and Table A1.

A previous pilot study was conducted. First of all, the questionnaire was reviewed by relevant academics in the area of business organization who made some specific suggestions for its improvement. Secondly, the questionnaire was sent to the managers of five companies in the organic agro-food industrial sector. Managers made important suggestions as well that were introduced to the measuring instrument. These five previous questionnaires were considered adequate and incorporated into the final sample.

The final questionnaire was answered by two managers from each company, managing director and quality or operation manager; on the one hand, the quality and operations managers answered the questions related with quality management, including the human resource practices for quality, while on the other hand, the managing directors answered the questions related with organizational culture and ambidexterity. We targeted quality and operations managers as we are asking about quality-related human resource management

Geographical scope	Spain
Industry	Spanish agro-food industry
Study population	2,317 companies
Sample obtained with two respondents	350 companies
Response rate	15.10%
Respondents surveyed	Managing directors and quality/operations managers
Means of data collection	Web questionnaire, with e-mail and telephone reminders
Carried out	December 2017–January 2018

Source(s): Table by authors

Table 1.
Summary of sample details

practices. Moreover, the size of these agro-food companies is usually small or medium. They frequently have created a department to manage quality, as it is a demanding issue in this sector. On the contrary, not many of these companies have a HRM department, and quality managers, operations managers or general managers take decisions in this area. A telephone follow-up was done to obtain a larger sample. At the end of the process, a sample of 350 companies was obtained, each of them with two respondents.

3.2 Measures

The scales were constructed based on previous studies that are shown in Appendix A.

3.2.1 Quality-oriented management (QHRP). We used previous human resource measurement literature (Bou-Lusar *et al.*, 2009; Dean and Bowen, 1994) and quality management literature (Gutierrez-Gutierrez *et al.*, 2018) to develop a four-item and seven-point Likert scale. Quality managers were asked about the organizational QHRP (i.e. "Quality management training is continuous and includes all managerial and non-managerial staff"). The scale's α reliability was 0.886.

3.2.2 Ambidextrous culture (AC). We self-developed the ambidextrous culture measurement scale based on a solid literature ground (Al-Khalifa and Aspinwall, 2001; Dellana and Hauser, 1999; Moreno-Luzon *et al.*, 2014; Naveh and Erez, 2004; Prajogo and McDermott, 2005). General managers were asked in a six-item and seven-point Likert scale which included the two dimensions of the ambidextrous culture, namely, exploration values (RVALUES) and exploitation values (TVALUES). Each dimension had three items to measure an ambidextrous diverse culture made of values connected with exploration and exploration. Both dimensions loaded into a single factor. The scale's α reliability was 0.855.

3.2.3 Organizational ambidexterity (OA). An eight-item and seven-point Likert scale, based on Benner and Tushman (2003), Jansen *et al.* (2006) and Lubatkin *et al.* (2006), was used to ask general managers about the two dimensions of organizational ambidexterity, namely, exploration capability (EXPLOR) and exploitation capability (EXPLOT). The scale's α reliability was 0.936.

3.3 Common method bias

We used *post hoc* measures to reduce potential common method bias. Full collinearity test is as a comprehensive procedure for the simultaneous assessment of both vertical and lateral collinearity (Kock, 2015). Variance inflation factors (VIFs) were generated for all latent variables. Given that our research model is a reflective model, it was only necessary to consider the inner model VIF values (Hussain and Endut, 2018). VIF values equal to or lower than 3.3 indicate that the model does not suffer from common method bias. The full collinearity test confirmed no collinearity issues (Table 2).

Table 2.
Factor correlations, means and standard deviation

	Mean	SD	Firm age	Firm size	QHRP	AC
Firm age	35.900	90.776				
Firm size	28.130	33.872	0.154**			
QHRP	5.670	1.150	0.005	0.029		
AC	5.686	1.024	0.05	−0.024	0.191*	
OA	5.947	1.043	0.251	−0.054	0.240**	0.760**

Note(s): *$p < 0.05$; **$p < 0.01$
Source(s): Table by authors

3.4 Procedure

Smart PLS 4.0 and the bootstrapping method were used with 10,000 runs to check the proposed hypotheses. It follows a statistical method accepted in HRM research (Ringle *et al.*, 2020). PLS-SEM maximizes the explained variance of dependent variables. We introduced firm size and firm age. Firm size is important as larger companies are expected to have more resources and more defined human resource management policies. Firm age should be considered given the particular sector analysed, as it is a novel industry in which human resource management practices of older firms with higher experience might alter the different effects of the proposed model.

4. Findings

Table 3 shows the means, standard deviations and correlations. There was a significant and positive correlation between quality-oriented human resource practices, ambidextrous culture and organizational ambidexterity. Firm age and firm size were positively and significantly correlated.

First, we checked the measurement model. We used the SRMR fit index to confirm the model fit. Values under 0.10 mean that the mode presents a good fit (Kline, 2005). The results showed a value of 0.062, which confirms a very good model fit. We assessed the measurement model by checking convergent validity and discriminant validity (Hair *et al.*, 2017) to evaluate the measurement model. Convergent validity was evaluated by means of factor loadings, average variance extracted (AVE) and composite reliability (CR). The AVE and CR values were above 0.5 and 0.7, respectively (Table 4). Discriminant validity was checked using the HTMT index. HTMT values above 0.85 indicate problems of discriminant validity (Franke and Sarstedt, 2019). Table 4 reveals that HTM values were all below the recommended value, thus confirming that each construct measured a different concept. We also assessed the predictive accuracy of the model using the Q^2 predict index. The prediction error was above 0, thus revealing predictive significance. VIF values were used to check lateral collinearity, showing values lower than 3.3 (Diamantopoulos and Siguaw, 2006), which supports discriminant validity.

Second, we assessed the structural model. Hypothesis 1 predicted a direct and positive effect of QHRP on organizational ambidexterity. The results revealed that 0 was not included

Mod	S-B $\chi 2$	d. f	*p*-value	BBNFI	CFI	RMSEA	NC (=$\chi 2$/d.f.)
QHRP	23.166	6	0.012	0.973	0.944	0.064	3.861
Ambidextrous culture	21.672	6	<0.001	0.894	0.908	0.078	3.612
Organizational ambidexterity	27.357	17	0.053	0.948	0.965	0.042	1.374

Note(s): All the loadings were significant at $p < 0.001$
Source(s): Table by authors

Table 3. Fit values of the factorial model of QHRP, ambidextrous culture and organizational ambidexterity measurement scales

	AVE	CR
QHRP	0.6648	0.888
AC	0.6181	0.905
OA	0.7317	0.956

Note(s): AC = ambidextrous culture. OA = organizational ambidexterity
Source(s): Table by authors

Table 4. Average variance extracted (AVE) and composite reliability (CR)

in the confidence interval (β = 0.238, t = 3.680, LL = 0.120, UL = 0.371, $p < 0.001$), thus suggesting a direct and positive effect of QHRP on OA. Hypothesis 2 predicted the mediation effect of AC in the relationship between QHRP and OA. To assess mediation, we also used confidence intervals (Zhao *et al.*, 2010), which is a more robust measure compared to other approaches such as pseudo t-values (MacKinnon *et al.*, 2004). The results revealed that 0 was not included in the confidence interval (β = 0.156, t = 3.772, LL = 0.080, UL = 0.241, $p < 0.001$), thus suggesting a direct and positive effect of QHRP on OA (Table 5). Control variables did not reveal a significant effect on the dependent variable.

5. Discussion and conclusions

The main objective of this research is to examine the relationships between QHRP, ambidextrous culture and organizational ambidexterity in order to clarify the emergence of ambidextrous capabilities from a human resource perspective.

This research was framed in the organic agro-food sector, which currently is facing major challenges. There is sustained growth in the demand for organic products, but competition in terms of prices is greater, making the need for improved, more efficient processes essential. The strict requirements imposed on firms via food quality standards and organic regulations require control and discipline. Nevertheless, new markets demand innovative products, and therefore firms must be ready to be creative and take risks. Firms developing ambidextrous capabilities will assure their future as they will be ready to improve the security and efficiency of their processes, as well as to acquire innovative technology and develop new products for new markets, technological change and product innovation (Moreno-Luzon *et al.*, 2018). Due to the necessity to reconcile forces towards exploitation and exploration in the organic agro-food industry, this is an ideal ground to study the connections between ambidexterity and quality management.

The results show the potential of QHRP in building organizational ambidexterity in the companies trading in this industry. This is in line with previous studies stating that human resource-related quality management practices, such as training, foster experimentation and knowledge integration within the organization (Chiang and Shih, 2011). Similarly, Moreno-Luzon and Valls-Pasola (2011) suggested a positive connection between quality management, human resources practices and ambidexterity, and the subsequent by Asif and de Vries (2015), who also theoretically proposed that, in the framework of quality management, training and development could positively influence ambidexterity.

Table 5.
Test results of partial mediation effect: the mediating role of ambidextrous culture (AC) on the relationship between QHRPs (quality-oriented human resource practices) and organizational ambidexterity (OA)

	Coefficient	S.E.	T-value	Percentile Lower	Percentile Upper
Total effect					
QHRP → OA	0.289***	0.061	24.253		
Direct effect					
QHRP → OA	0.248***	0.022	59.211		
QHRP → AC	0.322***	0.023	67.018		
AC → OA	0.349**	0.011	84.174		
AGE → OA	0.011 n.s	0.033	0.08		
SIZE → OA	0.017 n.s	0.041	0.07		
Indirect effect					
QHRP → AC → OA	0.212*	0.012	23.362	0.071	0.197

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$
Source(s): Table by authors

Our study responds to the need for shedding light in the HRM-ambidexterity relationship (Pak *et al.*, 2023) and the lack of research on the influence of human resource management on quality management (Gambi *et al.*, 2022) from a dynamic capabilities perspective, and confirms the high value of the human resource management mechanisms that promote employees ambidextrous capabilities. Therefore, it makes key contributions to human resource management and quality management literature. First, prior research on human resource management has overlooked the quality management perspective. Second, recent research on human resource-related quality management practices has not yet included employees and managers' participation in the quality programmes (Gutierrez-Gutierrez *et al.*, 2018).

In addition, we have found evidence to suggest that the relation between quality-oriented human resource practices and organizational ambidexterity is mediated by cultural change. Accordingly, the importance of cultural values should not be forgotten. Quality management implementation is capable of implementing far-reaching cultural change in companies through human resource practices. As stated in the quality management literature (Bou-Lusar *et al.*, 2009; Hackman and Wageman, 1995; Prajogo and McDermott, 2005; Santos-Vijande and Alvarez-Gonzalez, 2007), quality-oriented human resource practices are central to a quality management programme, and both at the initial implementation stage and the following stages, these practices promote participation, empowerment and continuous training (Arifin *et al.*, 2022).

The RBV, extended through the dynamic capabilities approach, enables us to argue that by implementing a quality management programme, a culture composed of ambidextrous values allows efforts towards exploitation, whilst equally stimulating exploration, favouring the development of ambidexterity as an organizational capability. Our findings contribute to the empirical evidence on the antecedents of organizational ambidexterity, and suggest that these specific human resource practices influence an organization's baseline beliefs and values and support the development of ambidextrous capabilities by means of an ambidextrous culture. An ambidextrous culture based on values related to exploitation (improvement, safety, control, precision and discipline) and exploration (flexibility, creativity, tolerance to uncertainty, risk-taking and interest in experiencing) becomes an important driver of ambidexterity. The simultaneous presence of competing cultural tensions acts as a suitable context for the development of organizational ambidexterity.

Summarizing, our results confirm the hypothesized positive effect of QHRP on ambidexterity, thus indicating that QHRP can be the key to manage tensions and contradictions underlying ambidexterity. This result, combined with our mediating hypothesis findings, suggest that the quality-oriented human resource practices act through a cultural change.

We have shown how to achieve ambidexterity in highly formalized industries, which need quality assurance, security and control. Specifically, we extended previous research by responding to recent calls for investigation in different organizational and industry contexts (Fourné *et al.*, 2019).

Moreover, we consider especially relevant future research about these variables in sectors suffering from high pressure to innovate and to control quality and security. Further research examining different sectors with a high need to innovate, as well as a need for strict controls, would certainly strengthen this field of research.

There are executive implications stemming from this study, one of which is that top managers should be conscious of the impact that implementing quality programmes can have on organizational culture. If leaders wish to move toward a culture that fosters contextual ambidexterity, they will necessarily have to broaden in-house communication to inspire trust and generate confidence, providing clear explanations of policy and working closely with their staff. Managers have the ability to be the inspirational force behind

generating staff creativity and broad-mindedness, while also promoting the culture of discipline, combining the necessity for standardization tools and the search for new ways to resolve problematic issues. In order to implement ambidexterity in the corporate environment, staff should not be scared of difficulties or be averse to conflict. Instead, they should be prepared for exploration and for calculated risk-taking, with a measure of caution, generating positive mindsets towards change. It is also essential to provide a supportive response to any failure if a culture oriented to change is to take root in an organization.

The need for close collaboration between quality departments and human resource departments should also be highlighted. Quality departments, traditionally linked to operations management, have to work closely with human resource departments in order to generate synergies. In terms of human resource practices linked to the implementation of quality management, this research suggests that emphasizing participation at different levels, and continuous training and development, can enable not only quality management success but organizational ambidexterity as well.

The research we have carried out has some limitations, but knowing these represents opportunities that can be addressed in future lines of research. Some of these are described in the following text.

Firstly, we have considered ambidextrous organizational culture and ambidexterity as variables as a whole even though both have two dimensions. This is because we were interested in operationalizing ambidextrous organizational culture as a single concept, and ambidexterity as the balance between exploitation and exploration. New models could be defined to study relationships with only one type of values (exploitation or exploitation) and/or only one type of innovation (exploitation or exploration), for example, the impact of quality-oriented human resource practices on exploitation or the impact of quality-oriented human resource practices on exploration. Future research could also focus on the study of other organizational variables that measure possible mediating effects in this relationship, for example, formalization.

Secondly, our study focuses only in the organizational ontological level; it will be interesting to widen the perspective using a multilevel analysis (Mom *et al.*, 2019) to see how QHRPs influence not only organizational ambidexterity but individual ambidexterity as well.

Thirdly, this research is quantitative in nature. It could be complemented by other research of a qualitative nature based on the case studies of some of the companies in the sample. This would allow us to broaden and deepen the results. Also, the questionnaires were answered by two people, the general manager and the technical or quality manager. Although this is an important strength of our research, a case study would allow us to obtain information from non-management personnel and thus analyse other perspectives.

Fourthly, this empirical research has been carried out only in the Spanish organic agro-food industry sector and only in Spain. Future research could extend the study to other innovative sectors with a strong implementation of quality management, for example, the health or transport sectors, and in other countries, in order to provide greater consistency to the results obtained.

Finally, the cross-sectional nature of the empirical study has not allowed us to explore the causal relationships between the proposed variables. Therefore, analysing their behaviour in a longitudinal study would allow us to improve our understanding of the phenomena studied and their results over time.

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Appendix 1: Measurement and items

Quality-oriented human resource practices – QHRP

V1. Employees understand the quality programme well and actively participate in it.

V2. Quality management training is continuous and includes all managerial and non-managerial staff.

V3. Managers support the quality programme and actively participate in its design and implementation.

V4. Employees are aware of the results of their work and suggest ways to improve it.

Ambidextrous culture – AO

Cultural values related to exploitation

V5. One of our core values is improving and refining what we do.

V6. Our mindset is oriented towards control, precision and discipline.

V7. We prefer to choose safer options and those where sufficient information is already available.

Cultural values related to exploration

V8. We are tolerant of uncertainty and assume the risks inherent to entrepreneurship.

V9. We value flexibility and creativity.

V10. One of our characteristics is searching for and being actively interested in experimentation in new areas.

Organizational ambidexterity – OA

Exploration

V11. We constantly acquire new skills to be able to develop new products and services.

V12. We frequently learn new skills to position ourselves in new markets.

V13. We regularly look for new technologies for our production processes.

V14. We develop new and creative ways to satisfy current and potential clients.

Exploitation

V15. We regularly apply our current knowledge to adapt our products and services.

V16. We regularly use continuous improvement methodologies to improve quality and reduce costs.

V17. We continuously learn to improve the efficiency of our processes.

V18. We try to find out more about our clients to introduce small improvements in what we offer them.

Source(s): Appendix by authors

Appendix 2

Public sector participants	Private sector participants
• General manager of rural development and agricultural policy. Valencian regional government • Chairman of the society of organic agriculture • Head of subdivision of quality and organic agriculture. Ministry of agriculture, food and the environment • Representative of IFOAMs (International Federation of Organic Agriculture Movements) – Organics International	• CEO of The Muesli Up company • Director of quality, RandD and the Environment, Dulcesol Group • Technical director, Herbes del Molí S.L. • General manager of José María Bou S.L.

Source(s): Appendix by authors

Table A1. Expert panel participants

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