Soft TQM for competitive advantage in the transportation sector: investigating green human resource management and stakeholder integration

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Abstract

Purpose – Recent trends in total quality management (TQM) argue in favor of incorporating environmental concerns into TQM and considering external stakeholders. The aim of this study is to bring environmental consciousness in the soft TQM dimension of human resource management (HRM) and assess its interrelationship with stakeholder integration towards achieving a competitive advantage.

Design/methodology/approach – An empirical study was conducted in the transportation sector, specifically targeting managers in Greek shipping companies involved in global cargo transport and vessel operations. A structured questionnaire was administered, yielding 109 responses. The collected data were analyzed using partial least squares structural equation modeling.

Findings – The findings reveal the positive effect of both green HRM (GHRM) and stakeholder integration on the innovation differentiation advantage and market differentiation advantage of shipping companies. Results confirm the complementary (partial) mediating effect of GHRM in the relationship between stakeholder integration and both types of competitive advantage.

Research limitations/implications – The primary limitation resides in data collection exclusively from shipping companies in Greece. A longitudinal approach would be beneficial for examining how the relationship between variables changes over time.

Practical implications – The findings of the study could assist shipping managers in their decisions to allocate resources for developing GHRM practices and for involving stakeholders in organizational practices to overcome competition.

Originality/value – This study contributes to the discourse on TQM by empirically investigating the combined impact of GHRM and stakeholder integration on competitive advantage – an aspect that has been relatively overlooked in existing literature.

Keywords Soft TQM, Green human resource management, Stakeholder integration, Competitive advantage, Transportation sector

Paper type Research paper

1. Introduction

Total quality management (TQM) has long been recognized as a management philosophy and a set of practices revolving around the achievement of continuous improvement, the fulfillment of customer requirements, the increase of employee involvement and teamwork, customer and employee satisfaction, as well as improved performance (Moreno Luzon and Valls Pasola, 2011; Powell, 1995). Even though its theorization dates back in the beginning of 90s (Reed et al., 2000), research in TQM is still relevant and increasing, considering the beneficial impact of TQM on organizational results (Ho et al., 2023). In fact, recent academic voices have begun to uncover the need to focus on how TQM can be used as a vehicle for addressing environmental concerns in the post-pandemic world (Ho et al., 2023). However, existing studies primarily focus on examining the “green implications” of TQM, e.g. its impact on green organizational results (Abbas, 2020), possibly neglecting to “give a green character” to TQM.
In this regard, Wang et al. (2023) emphasized the necessity to integrate environmental aspects with TQM and to view green human resource management (GHRM) as a component of a broader TQM-oriented human resource management (HRM) system (Wang et al., 2023). In an era of rising environmental concerns, TQM and its HR elements have been put forward as vehicles to enhance environmental management, promote green practices (Hassan and Jaaron, 2021) and reach environmental goals (Lepistö et al., 2023). So, the inclusion of green aspects in TQM entails the consideration of employee management factors (Wang et al., 2023). The rationale behind this argument is that TQM is a company-wide management system that incorporates HRM (Dubey and Gunasekaran, 2015). TQM emphasizes activities, such as employee empowerment and involvement, which are important for quality improvement (Mehrajunnisa et al., 2022) and makes these practices the core of modern HRM. Specifically, human resources are crucial when implementing TQM and the HRM system could augment organizational efforts towards meeting stakeholders’ demands, achieving continuous improvement and encouraging employees to take part in problem-solving activities (Wang et al., 2023). Therefore, HRM functions are embodied in the soft elements of TQM. GHRM, which associates HRM with environmental management and encourages employees’ environmentally-friendly behaviors (Choudhary and Datta, 2023), can be part of soft TQM and offer positive performance implications from a TQM angle (Wang et al., 2023).

At the same time, studies also highlight the necessity of considering soft TQM elements for organizational excellence (Cavallone and Palumbo, 2022) and for the attainment of a competitive advantage (El Shenawy et al., 2007), as well as of embracing external stakeholders in TQM systems (Dezi et al., 2022). The importance of “greening” TQM (Wang et al., 2023) and addressing stakeholders (Dezi et al., 2022) are recognized by academics. However, research on how these green TQM practices and the involvement of stakeholders could potentially offer a competitive advantage is still missing in the literature.

Following the above, the current study makes the following contributions to the literature. First, it aims to contribute to academic research by focusing on the green, soft TQM aspects and by examining the impact of GHRM on competitive advantage. Although green workplaces are a determinant for competitiveness, very few studies have attempted to empirically examine the direct impact of GHRM on competitive advantage (e.g. Muisyo et al., 2022). This study first aims to address this gap, as the relevant literature is at its infancy and calls for further empirical evidence in different contexts (Wang et al., 2023).

Second, the present study differentiates itself by attempting to investigate stakeholder integration along with GHRM for competitive advantage. It is established that the development of GHRM is fueled by stakeholders’ demands (Yong et al., 2020). However, this study deviates from the majority of existing studies, which mainly view stakeholder pressures as an antecedent of GHRM (e.g. Guerci et al., 2016; Yong et al., 2022) and perhaps have been remiss in evaluating how the actual involvement or integration of stakeholders may impact GHRM and its organizational outcomes. Stakeholder integration differs from stakeholder pressures, because it addresses the company’s readiness to involve stakeholders in organizational processes and to respond to their demands in a more decisive manner. The importance of studying stakeholder integration along with GHRM for competitive advantage also stems from the fact that both stakeholder resources (Driessen and Hillebrand, 2013) and GHRM (Gharbi et al., 2022) have the potential to lead to competitive advantage. Nevertheless, the mechanism underlying this process remains unexplored.

Following the above and drawing evidence from the transportation (shipping) sector, the questions that this study tries to answer are the following: What is the impact of GHRM on
competitive advantage? What is the impact of stakeholder integration on competitive advantage? How do stakeholder integration and GHRM jointly influence competitive advantage?

The context of the present study is the transportation sector and specifically the Greek shipping industry. As a vital global player in international trade, the shipping industry significantly influences the global economy (UNCTAD, 2023). Ships carry more than 80% of the volume of global trade, with an estimated growth of 2.4% in 2023 (UNCTAD, 2023). Despite a decline in crude oil shipments in 2021 due to reduced demand, containerized trade saw an increase in response to post-pandemic demand growth, while dry bulk trade also improved, reflecting an overall boost in ocean trade (UNCTAD, 2022). In addition, the global shipping fleet showed an increase in 2022, which amounted to 105,493 ships of over 100 gross tons; world fleet is dominated by bulk carriers (around 43% in terms of deadweight tonnage), even though the largest percentage change (i.e. 5%), over the years 2022–2023, concerned liquefied gas carriers (UNCTAD, 2023). Furthermore, Greece belongs to the top three ship-owning nations, in terms of both deadweight tonnage and vessel commercial value, along with China and Japan. In terms of deadweight tonnage, Greece holds the top position, owning 4,936 vessels, i.e. 17.4% of global fleet. As per fleet value, Greece is the world leader with a percentage share of 11.8 (UNCTAD, 2023).

The shipping industry offers an appropriate context to study the hypothesized relationships. Soft TQM in the transportation sector is at the core of research agenda (Torre et al., 2023). At the same time, empirical investigation of GHRM in the service industry – and specifically in the transportation sector – is still at an early stage (Tanova and Bayighomog, 2022; Harvey et al., 2013). Also, the shipping industry has an important role to play for transitioning to a “greener” world; thus, various green initiatives are underway to ensure sustainable maritime operations. Given new environmental regulations, mounting pressures for alternative fuels, climate change mitigation and pollution reduction (UNCTAD, 2022), shipping companies need to reassess their environmental and sustainability practices to maintain competitiveness.

At the same time, pressures from stakeholders, such as large shippers, society or regulators that set environmental standards, influence the proactive or reactive adoption of sustainable shipping practices (Yuen et al., 2017). Shipping companies need to opt for an ongoing engagement with their stakeholders, since stakeholders’ requests for organizational response to environmental problems are increasing [1]. Last but not least, most research on the organizational consequences of GHRM has been conducted in European and Asian contexts; however, relevant investigation in the Greek context is needed, as the majority of existing surveys concern UK, Italy, France, Spain and Belgium (Amrutha and Geetha, 2020). Hence, exploring stakeholder integration and GHRM, along with their implications for competitive advantage in a sector that prioritizes green practices, appears to provide valuable insights for both theory and practice.

The paper is structured in the following way. Section 2 describes the theoretical background of the study and the development of the hypotheses. Section 3 presents the methodology. Section 4 includes the results and the discussion. Theoretical, managerial and societal implications, as well as limitations and suggestions for future research are included in Section 5. Finally, Section 6 presents the conclusions.

2. Theoretical background and hypotheses development
The current study first argues that GHRM is viewed through the lens of soft TQM. Drawing upon the resource-based view (RBV) of the firm and the stakeholder theory, this study examines the linkages among GHRM, stakeholder integration and competitive advantage.
The following sections first explain GHRM from the soft TQM perspective, second delineate the two theories and then describe the formulation of hypotheses.

2.1 Soft side of TQM and GHRM
As a management philosophy, TQM aims at the continuous improvement of product and service quality, through employee participation at all organizational levels and departments, while its success largely depends on all members’ true commitment to quality (Moreno Luzon and Valls Pasola, 2011). This management philosophy ultimately targets the achievement of competitive advantage (El Shenawy et al., 2007). Soft TQM mainly relates to HRM practices, reflecting management concepts, principles, behavioral elements and social characteristics (Glaveli et al., 2022; Babatunde, 2021), such as top management involvement, employee empowerment, training, involvement and teamwork (Lim et al., 2022). TQM has exerted a huge impact on HRM over the past years. Literature on quality emphasizes the importance of training for advancing employees (Barile et al., 2023). Specifically, the soft side of human resources quality management is focused on how to create value from enhancing human capital, training, learning and building on employee capabilities (Barile et al., 2023). These arguments lead to the conclusion that there is an association between the development of people and quality (Barile et al., 2023). When integrating employee development within the TQM spectrum, the performance management systems would also be directed to positive people characteristics being enhanced. The implementation of soft TQM then helps to consolidate a market position and attain a competitive advantage (Fotopoulos and Psomas, 2009).

On the other hand, recent studies, emphasize a “greener” side of TQM, viewing it as a means to achieve environmentally-friendly business. As such, the soft HRM aspect of TQM can be leveraged for this purpose (Lepistö et al., 2023) and can incorporate green practices, such as GHRM (Wang et al., 2023). GHRM is “the inclusion of environmental consciousness within the whole HRM process of hiring, training, rewarding and developing a green workforce that understands and values environment-friendly values, practices, and initiatives” (Anwar et al., 2020, p. 2). It has mainly been treated as a multidimensional construct of individual HRM practices with a green focus (Shah and Soomro, 2023; Paillé et al., 2020). In the current study, the focus is on the GHRM practices of green employee involvement, green training and green performance management, which are among the most frequently used practices (e.g. Paillé et al., 2020).

Green employee involvement helps employees understand the need for green initiatives and show a real concern for environmental protection. Employees are given the opportunity to engage in environmental management and are encouraged to pursue environmental improvements (Amrutha and Geetha, 2020). Green training is a system of practices, which motivate employees to improve their environmental protection skills. Through educational programs or awareness-raising activities, employees learn about green values and understand the significance of green programs. Last but not least, the role of green performance management is to link employee performance to rewards. Employees’ performance in accomplishing environmental management goals is assessed and rewarded through gathering data on green performance standards (Paillé et al., 2020).

These HRM practices (without a “green” focus) have also been studied in the context of soft TQM (e.g. Ali and Johl, 2022). Employee training is considered a sub-component of soft TQM, aiming at advancing employees’ knowledge and skills in TQM (Ali and Johl, 2022); green training intends to assist employees in tackling environmental issues and improving their skills (Mehrajunnisa et al., 2022). In the framework of soft TQM, employee involvement describes employees’ encouragement and participation in TQM programs (Adam et al., 1997); green employee involvement focuses on inspiring employees to behave in environmentally-
friendly ways and engage in environmental management (Paillé et al., 2020). From the TQM perspective, the employees’ performance evaluation and reward systems target the assessment of their work and the provision of feedback on their performance (Jun et al., 2006); green performance management assesses the performance of employees in meeting environmental standards and provides rewards based on performance levels (Mehrajunnisa et al., 2022). Thus, the selected GHRM practices are consistent with TQM-focused HRM practices.

2.2 Theories

The RBV of the firm is one of the most cited and influential theories in management history (Kraaijenbrink et al., 2010). It moves away from external factors (e.g. industry position), as it emphasizes internal resources (e.g. knowledge, leadership) in addressing the competitive advantage of the firm. It argues that the way companies leverage their strategic resources, which are of high value, scant and difficult to be imitated or be substituted by competitors (Barney, 1991), determines their competitive advantage. The RBV of the firm puts human resources at the core of a company’s success and leads the way to understand how HRM practices bring competitive advantage (Wright et al., 2001).

Even though a variety of theories are utilized in the literature to explain the link of GHRM and organizational performance outcomes, such as the ability-motivation-opportunity (AMO) theory, corporate environmentalism theory (Mehrajunnisa et al., 2022), social cognitive theory (Nisar et al., 2021), social identity theory or supply-value fit theory (Tanova and Bayighomog, 2022), the RBV of the firm continues to stand among the most frequently used theories. It is used in the current study to highlight that GHRM can be a valuable resource for developing, motivating and providing opportunities for employees to adopt superior behaviors for long-lasting competitive advantage (Singh et al., 2020).

This study also uses stakeholder theory for addressing stakeholders’ role. The stakeholder theory posits that stakeholders, i.e. any individual or group who influence or are influenced by the organization (customers, employees, suppliers, competitors etc.), are critical for organizational success, since they influence a company’s strategic objectives (Danso et al., 2020). Also, it supports that the achievement of organizational goals comes along with the company’s responsibility towards its stakeholders (Plaza-Ubeda et al., 2010). Thus, the stakeholder theory provides a framework that considers the management of the relationships with various players in the business environment and emphasizes the role of stakeholders in organizational attempts to develop green systems (Guerci et al., 2016). Previous research has examined stakeholder integration through the lens of stakeholder theory to highlight its impact on firm results (Danso et al., 2020). Furthermore, it is argued that the extent of stakeholders’ integration to a company’s management could be a source of capability that may lead to competitive advantage (Adomako et al., 2019).

2.3 Hypotheses development

2.3.1 GHRM and competitive advantage. GHRM has positive consequences not only at the individual, but at the organizational level as well (Shah and Soomro, 2023; Tanova and Bayighomog, 2022). Also, some studies have focused on how GHRM is linked with competitive advantage (Gharbi et al., 2022), highlighting that GHRM provides a competitive edge for organizations (Yasin et al., 2023).

Environmental practices are essential for consolidating a competitive advantage. Carmona-Moreno et al., (2012), using data from the Spanish chemical sector, demonstrated that when companies develop environmental HRM practices, they gain advantages both in cost and differentiation, stemming from the implementation of pollution-prevention technologies. Gharbi et al. (2022) surveyed companies in the Saudi food industry and
argued that GHRM leads to competitive advantage through innovation capabilities. Muisyo et al. (2022) found that GHRM practices positively influence green competitive advantage of Malaysian manufacturing firms, while, in the same line of thought, Mishra (2017) argued that GHRM leads to green competitive advantage through innovation or cost reduction.

All in all, environmental HRM practices influence the achievement of competitive advantage in terms of differentiation (Carmona-Moreno et al., 2012). Organizations with employees, knowledgeable about environmental initiatives and willing to participate in green programs, have the potential to obtain a differentiation advantage (Carmona-Moreno et al., 2012); this advantage involves investing in the development of new organizational capabilities (innovation differentiation advantage) and establishing unique organizational processes, routines, culture and services (market differentiation advantage). GHRM differentiates a company from others (Yasin et al., 2023) and helps it solidify a position in green management and innovation (Muisyo et al., 2022). Based on the aforementioned, the following hypotheses (H1a and H1b) are formulated. These hypotheses are further substantiated by the fact that TQM is viewed as a vehicle for competitive advantage (El Shenawy et al., 2007), with its behavioral elements (e.g. employee training or empowerment) having the potential to help a company outperform competitors (Powell, 1995) and produce barriers for imitation (Reed et al., 2000).

H1a. GHRM has a positive impact on innovation differentiation advantage in shipping companies.

H1b. GHRM has a positive impact on market differentiation advantage in shipping companies.

2.3.2 Stakeholder integration and competitive advantage. Stakeholder integration reflects the ability of a company to develop positive, collaborative and trustful relationships with a wide range of stakeholders and the degree to which stakeholders’ perspectives are incorporated in decision-making (Adomako and Tran, 2022). The elements of stakeholder integration include knowledge of stakeholders, interaction between the stakeholders and the company, as well as adaptational behavior (Plaza-Ubeda et al., 2010). Knowledge of stakeholders addresses the importance of recognizing and knowing the demands of stakeholders. Interaction between the stakeholders and the company is translated in organizational activities in order to strengthen the dialog with various groups of stakeholders. Adaptational behavior addresses the adjustments in the behavior of the organization to satisfy the demands of stakeholders (Salem et al., 2018; Plaza-Ubeda et al., 2010).

Stakeholder integration is associated with many benefits, such as improved firm performance (Salem et al., 2018), proving that the greater involvement of a firm in relevant practices, the greater advantages it may have (Danso et al., 2020). Considering stakeholders in business decisions is viewed as a valuable way for competitive advantage (Plaza-Ubeda et al., 2010). Huma et al. (2023) empirically proved that the collaboration with stakeholders on environmental topics may lead to improved operational competitive performance. According to Heugens et al. (2002), organizations that are successful in building long-term relationships with stakeholders, based on trust and strong ties, gain a competitive advantage over those unable to do so. Driessen and Hillebrand (2013) claimed that stakeholder resources are a source of competitive advantage due to their inimitability and rarity and that the firm’s capability on stakeholder integration brings a competitive advantage through organizational identification by stakeholders. Salem et al. (2018) found that stakeholder integration, particularly the dimension of adaptational behavior, affects a firm’s competitiveness. Adomako et al. (2019) argued that the incorporation of stakeholders facilitates faster responses to organizational changes, leading to improved competitiveness and competitive advantage.
The above discussion indicates that stakeholder integration, consisting of knowledge of stakeholders, interaction between stakeholders and the company and adaptational behavior, is a strategic capability that is related to the attainment of competitive advantage (Plaza-Ubeda et al., 2010). When an organization engages with its stakeholders and involves them in decision-making, it generates ideas that drive innovation processes (Adomako et al., 2019). Consequently, stakeholders play a crucial role in fostering organizational innovation (Adomako et al., 2019). Moreover, companies achieve market differentiation by adopting strategies aligned with their stakeholders (Bager and Lambin, 2020). Following the foregoing, it is hypothesized that:

\[ H2a. \] Stakeholder integration is positively associated with innovation differentiation advantage in shipping companies.

\[ H2b. \] Stakeholder integration is positively associated with market differentiation advantage in shipping companies.

2.3.3 Stakeholder integration, GHRM and competitive advantage. On the one hand, stakeholder integration is a capability associated with the development of other resources or capabilities, such as HRM (Plaza-Ubeda et al., 2010). Moreover, the involvement of environmental aspects in organizational operations comes as a result of a firm’s efforts to interact and engage with stakeholders (Yong et al., 2020). For example, Yong et al. (2020) found that stakeholders’ interests (including governments, customers, employees and society) have an impact on the companies’ decision to adopt GHRM practices. Al-Swidi et al. (2022) confirmed that the pressures from a specific group of stakeholders (i.e. customers) force organizations to develop environmental practices. In the same vein, Yong et al. (2022) also confirmed the contributing role of stakeholders’ pressures on individual GHRM practices.

On the other hand, environmental practices mediate the influence of stakeholder integration on organizational performance results (Danso et al., 2020). For example, Danso et al. (2020) revealed that environmental sustainability orientation mediates the relationship between stakeholder integration and financial performance, while Adomako and Tran (2022) showed that the relationship between stakeholder integration and corporate social performance is mediated by a company’s commitment to corporate social responsibility. Zhang and Yang (2016) proposed that internal and external stakeholders influence green practices, which, in turn, impact firm performance. An organization that is responsive to its stakeholders tends to develop environmental practices; thus, pressures from stakeholders (e.g. customers or regulatory bodies) lead to positive performance results through GHRM (Guerci et al., 2016).

So, companies that respond to stakeholders’ demands and build on stakeholder integration tend to develop environmentally-focused HRM systems (i.e. GHRM) (Yong et al., 2022), which, in turn, may impact their competitive advantage (Muisyo et al., 2022). Having established in the previous sections the direct influence of stakeholder integration and GHRM on both innovation differentiation and market differentiation advantages, the current study views GHRM as an explanatory mechanism in the way that stakeholder integration impacts competitive advantage in shipping companies. Therefore, this study hypothesizes that:

\[ H3a. \] GHRM mediates the impact of stakeholder integration on innovation differentiation advantage in shipping companies.

\[ H3b. \] GHRM mediates the impact of stakeholder integration on market differentiation advantage in shipping companies.

All hypothesized relationships are shown in Figure 1.
3. Methods

3.1 Measurement instruments

For the measurement of GHRM, the instrument found in Paillé et al. (2020) was adopted. The scale includes the dimensions of green employee involvement (6 items), green training (3 items) and green performance management (4 items). The measurement of stakeholder integration was based on the study of Plaza-Úbeda et al. (2010), knowledge of stakeholders was captured using 5 items, 6 items were used to measure the interaction between stakeholders and company and 5 items reflected the dimension of adaptational behavior. Competitive advantage was evaluated with the use of 7 items, found in Zhou et al. (2009), 2 items reflected innovation differentiation advantage and 5 items corresponded to market differentiation advantage. All items were measured on a 7-point Likert-type scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree).

3.2 Research context and sample selection

The research context for this study is the shipping industry. The data were collected from Greek shipping companies, constituting the population of the current study. These companies operate vessels engaged in global cargo transport. Nowadays, there is a pronounced focus on adopting greener operational practices to reduce the environmental impact of shipping. This focus leads shipping companies to take a broad stakeholder view, to consider the needs of customers, shareholders, employees, regulators (Yuen et al., 2017) etc. and to implement green measures, in line with the shift to a more environmentally-friendly sector, for strengthening their competitive position. Greece holds the top position globally in terms of deadweight tonnage in world fleet ownership and is among the top three ship-owning countries in terms of commercial value (UNCTAD, 2022; UNCTAD, 2023). Regarding sample size determination, the G-power sampling size determinant was utilized in the current survey (Yong et al., 2019). According to Petrofin research (Petropoulos, 2023), the number of shipping companies in Greece equaled 599 in 2022. The G* Power 3.1.9.7 software was used for a-priory sample size estimation (Faul et al., 2009). We specified the effect size at 0.15 (medium effect), alpha at 0.05 and power at 0.80 (Al-Okaily and Al-Okaily, 2022; Hair et al., 2022). G*Power estimated that the minimum sample size required is 68.

The present study employed a non-probability sampling approach, in which respondents are chosen based on research goals. So, a convenience sample of 250 shipping companies was
used and a structured questionnaire was administered to shipping managers, employed in these shipping companies in Greece. The questionnaire assured the confidentiality and anonymity of the targeted respondents, who were initially contacted through emails and/or telephone. Then, trained interviewers visited the companies of those managers, who agreed to participate in the survey and collected the filled-in questionnaires. In the end, 109 useable (for further analysis) responses were gathered.

The sample size in the current study exceeds the minimum sample size mentioned above. Also, 109 respondents are considered sufficient, as the minimum required power in research of social science management is 0.80 and the current sample size (i.e. 109) yields a power of higher than 0.8 (Yong et al., 2019). In addition, frequency analysis in the sample demographics was performed and comparisons to population’s demographics were made. In this study, the majority of the sample companies belong to the dry bulk sector (45.4%). The dry bulk sector is traditionally the most popular sector in Greece, occupying about half of the entire fleet tonnage in 2022. Also, in 2022, 12% of the total Greek fleet was older than 15 years old and 88% of the fleet was aged less than 15 years (Petropoulos, 2023). The corresponding percentages in this study’s sample are 16 and 84%. Thus, our sample is deemed appropriate for the population of Greek shipping. Finally, the response rate in this study (i.e. 43.6% of the convenience sample, corresponding to 18.2% of the study’s population) is comparable to other studies in the Greek shipping industry (Pantouvakis et al., 2017; Pantouvakis and Syntychaki, 2021) or in the shipping industry in other countries (Lu et al., 2009; Yang et al., 2009). For instance, the reported response rates were 18.4% in the study by Pantouvakis et al. (2017), 51.8% (of their convenience sample) in the study by Pantouvakis and Syntychaki (2021), 27.29% in the study by Lu et al. (2009) and 40% in the study by Yang et al. (2009).

3.3 Sample demographics
Regarding the demographics of the respondents, 18.3% of them indicated the size of their employing company as small, 56% as medium and 25.7% as large or very large. The majority of the shipping companies in the sample (45.4%) are active in the dry bulk sector, 32.3% of companies operate a mix of ships and the rest of the companies belong to other shipping segments. 84% of the respondents indicated that the age of the fleet in their companies is less than 15 years old, while 16% of them stated that the age of fleet is older than 15 years old. Most respondents (61.9%) hold the position of designated person ashore and/or manager of the quality and safety department, 13% of respondents are managers of the operations department, while the remaining respondents supervise other departments in shipping companies.

4. Results and discussion
4.1 Evaluation of the measurement and structural models
Partial least squares structural equation modeling (PLS-SEM) was performed for data analysis and hypotheses testing with the use of SmartPLS 3 software (Ringle et al., 2015). PLS-SEM is an increasingly used statistical modeling technique in quality management (Magno et al., 2022). PLS-SEM was employed since the goal is to simultaneously model and estimate multiple relationships among independent (stakeholder integration, GHRM) and dependent variables (innovation and market differentiation advantages). Specifically, it was chosen as the preferred method of analysis, as it achieves high levels of statistical power with small sample sizes, is suitable for complex models with many structural relationships, constructs and indicators, as well as it balances explanation with prediction. Also, contrary to covariance-based SEM, data distribution issues are not a concern (Hair et al., 2022; Magno et al., 2022; Umar et al., 2022). The above reasons render the use of PLS-SEM appropriate in the current study.
GHRM and stakeholder integration are second-order constructs, while the types of competitive advantage, i.e. innovation differentiation and market differentiation advantages, are first-order constructs. First, the reliability and validity of the measurement model were tested. Appendix and Table 1 show the descriptives and measurement model results. In response to PLS output, three items measuring stakeholder integration were eliminated. Reliability and convergent validity are ensured, as the majority of outer loadings are above the value of 0.708 (loadings below 0.708 but above 0.5 are retained for further analysis, as constructs’ measures meet recommended thresholds). Furthermore, the values of composite reliability are above 0.7 and the values of average variance extracted (AVE) exceed the threshold of 0.5. Discriminant validity is ensured, as according to the Fornell and Larcker criterion, the square root of the AVE of each construct should be larger than its highest correlation with any other construct (Table 2).

For evaluating the structural model, collinearity, structural model relationships and both the explanatory and predictive power of the model should be considered. Regarding collinearity, the VIF values are lower than 3, so collinearity does not have a substantial effect on the structural model estimates. Table 3 shows the path coefficients of the direct relationships in the structural model. The Hypotheses 1a and 1b, as well as 2a and 2b are supported, since GHRM has a positive and statistically significant effect on innovation differentiation advantage and market differentiation advantage. Stakeholder integration also positively influences the dependent variables. Stakeholder integration has a direct, 

<table>
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<td>Interaction between stakeholders and the company</td>
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<td></td>
<td>Adaptational behavior</td>
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Note(s): AVE: Average variance extracted

Source(s): Table by authors

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<td>GT</td>
<td>0.528</td>
<td>0.340</td>
<td>0.767</td>
<td>0.670</td>
<td>0.862</td>
<td></td>
<td></td>
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<tr>
<td>AB</td>
<td>0.477</td>
<td>0.223</td>
<td>0.346</td>
<td>0.302</td>
<td>0.316</td>
<td>0.774</td>
<td></td>
</tr>
<tr>
<td>ISC</td>
<td>0.531</td>
<td>0.327</td>
<td>0.280</td>
<td>0.314</td>
<td>0.303</td>
<td>0.730</td>
<td>0.786</td>
</tr>
<tr>
<td>KS</td>
<td>0.477</td>
<td>0.403</td>
<td>0.250</td>
<td>0.314</td>
<td>0.242</td>
<td>0.417</td>
<td>0.613</td>
</tr>
</tbody>
</table>

Note(s): The diagonal values represent the square root of Average Variance Extracted (AVE). Values below the diagonal are correlations

Source(s): Table by authors

TQM
significant influence on both types of advantage and the indirect (mediating effect) via GHRM (Table 4) is also positive and statistically significant (support of hypotheses 3a and 3b). Thus, GHRM has a complementary (partial) mediating effect in the relationship between stakeholder integration, innovation differentiation and market differentiation advantages (Hair et al., 2022).

As far as the model’s explanatory power is concerned, R square and R square adjusted values for innovation differentiation advantage are 0.475 and 0.465 respectively and for market differentiation advantage are 0.195 and 0.180. In addition, the predictions of PLS-SEM outperform the most naive benchmark, since Q² predict statistics for the model’s key target constructs (i.e. innovation differentiation and market differentiation advantages) are larger than 0. Also, the target constructs’ indicators in the PLS-SEM analysis have lower root mean square error (RMSE) values compared to the linear regression model (LM) naive benchmark, indicating the model’s high predictive power.

4.2 Discussion
The originality of the current study lies in the extension of soft TQM to include GHRM and in the examination of the relationships among GHRM, stakeholder integration and competitive advantage. This is the first work attempting to link these constructs, while evidence is drawn from the shipping sector. So, the current research expands the scope of TQM by integrating “environmentally-friendly” elements into HRM. It also builds upon recent literature that explores the connection between TQM and eco-friendly practices, with a specific focus on GHRM (Wang et al., 2023). The shipping industry is largely characterized by the implementation of environmental measures for improving environmental performance and

<table>
<thead>
<tr>
<th>Path coefficients</th>
<th>t values</th>
<th>p values</th>
<th>Significance (p &lt; 0.05)?</th>
<th>H</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHRM → Innovation differentiation advantage</td>
<td>0.406</td>
<td>4.648</td>
<td>0.000</td>
<td>Yes</td>
<td>H1a Supported</td>
</tr>
<tr>
<td>GHRM → Market differentiation advantage</td>
<td>0.262</td>
<td>2.684</td>
<td>0.007</td>
<td>Yes</td>
<td>H1b Supported</td>
</tr>
<tr>
<td>Stakeholder integration → Innovation differentiation advantage</td>
<td>0.421</td>
<td>4.600</td>
<td>0.000</td>
<td>Yes</td>
<td>H2a Supported</td>
</tr>
<tr>
<td>Stakeholder integration → Market differentiation advantage</td>
<td>0.268</td>
<td>2.162</td>
<td>0.031</td>
<td>Yes</td>
<td>H2b Supported</td>
</tr>
</tbody>
</table>

Source(s): Table by authors

Table 3. Structural model path coefficients

<table>
<thead>
<tr>
<th>Indirect effect</th>
<th>t value</th>
<th>p value</th>
<th>Significance (p &lt; 0.05)?</th>
<th>H</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder integration → GHRM → Innovation differentiation advantage</td>
<td>0.158</td>
<td>2.923</td>
<td>0.003</td>
<td>Yes</td>
<td>H3a Supported</td>
</tr>
<tr>
<td>Stakeholder integration → GHRM → Market differentiation advantage</td>
<td>0.102</td>
<td>2.095</td>
<td>0.036</td>
<td>Yes</td>
<td>H3b Supported</td>
</tr>
</tbody>
</table>

Source(s): Table by authors

Table 4. Mediating effects
competitiveness. Hence, the dynamic pursuit of green activities, such as the adoption of GHRM practices, is deemed crucial for reversing the harmful impact on the environment and building a strong competitive position. At the same time, stakeholders’ requests for addressing environmental matters are evident more than ever. The failure to adopt a multi-stakeholder view could potentially jeopardize a company’s competitive advantage. Through its findings, which provide strong support for the hypothesized relationships, the present study adds new evidence on the links among GHRM, stakeholder integration and competitive advantage. In the following paragraphs, we discuss our results following H1a and H1b. Then, we proceed to the discussion of the results that underpin H2a and H2b. The discussion of the mediating effect of GHRM follows (H3a and H3b). The next section (section 5) provides theoretical, managerial and societal implications.

According to the findings, GHRM is an antecedent of both innovation differentiation advantage and market differentiation advantage in shipping companies, given the direct, positive and statistically significant relationship between the examined variables. This finding is in accordance with similar studies in the literature that associate environmental HRM practices with differentiation advantages in other contexts (Carmona-Moreno et al., 2012). As it was expected, shipping organizations, which focus on gaining a competitive advantage in the market, need to initiate green actions that address employees and their management. This finding confirms the long-established view in the literature that internal, intangible resources, such as employees, have the potential to differentiate a firm in the marketplace. Therefore, one of the managers’ goals should be to develop those employee practices that contribute to their firm’s differentiation. The key here is not to develop isolated HR practices, but to form this HR bundle that collectively leads to differentiation. This bundle includes more than a stiff setting of green performance objectives and allocation of corresponding rewards; but it comprises practices that change employees’ mindset on environmental protection (i.e. employee involvement) and strengthen their skills (i.e. green training). Also, it was found that the impact of GHRM is stronger on innovation differentiation advantage than market differentiation advantage. This stronger effect implies that GHRM could perhaps be an effective means to create new capabilities that give firms an advantage over competitors. The impact on establishing unique qualities for customer loyalty is still evident, albeit weaker. The findings of the study advance the existing literature that provides insights on the benefits from implementing GHRM (Tanova and Bayighomog, 2022).

Also, the results disclose the direct and positive relationship between stakeholder integration and competitive advantage. Once again, the influence is stronger for innovation differentiation than market differentiation advantage. Stakeholders expect companies to consider the impact from their operations on environment and people (Adomako and Tran, 2022). Shipping business operations have a considerable impact on environment and societies not only at a local but at an international level as well. For example, this impact constitutes one of the reasons that lie behind the high regulation of the shipping sector. Thus, firms, which focus on stakeholder integration, do not underestimate the necessity of accumulating stakeholder knowledge and are willing to allot time and resources for interacting with them; but they also tend to be adaptive to stakeholders’ demands. This degree of integration could assist shipping companies having an advantage over competitors mainly through knowing what to do in order to follow new ways to serve stakeholders’ needs. It could be implied that as shipping companies stay in close contact with their stakeholders, they are in a better position to acquire the necessary intelligence for envisioning new approaches to respond to their needs, which in turn gives them an advantage over competition. This finding augments a set of previous studies in the literature, which emphasize the stakeholder perspective in shipping business and reveal the power of stakeholders for influencing shipping companies’ results (Yuen et al., 2017).
The complementary (partial) mediation of GHRM signifies that some of the effect of stakeholder integration on innovation differentiation and market differentiation advantages is explained by GHRM. This means that, on the one hand, the awareness of stakeholders' demands, the assessment of their significance for organization, the consultation with them and consideration of their feedback could lead to a competitive advantage. But this relationship is channeled via the development of green-focused HRM programs that try to associate employee involvement, training and performance management with green objectives. One explanation would be that a human resource system should ease a firm's efforts to meet the demands of stakeholders (Wang et al., 2023). Even though stakeholder integration is an important driver of competitive advantage in shipping companies, the values of GHRM allow the positive contribution of the former variable to innovation and market differentiation advantages in shipping companies. For example, if shipping managers interact with stakeholders, meaning that they have managed to develop a mutual relationship with them through intense and frequent communication (Plaza-Ubeda et al., 2010), they increase the possibility of developing green programs (perhaps as a response to stakeholders' feedback) that in turn help build competitive advantage. Overall, findings are aligned with previous research in other business sectors, which focuses on how environmental practices facilitate the impact of stakeholder integration on firms' results (Danso et al., 2020).

5. Research implications and limitations

5.1 Research implications

Based on the aforementioned, this study carries theoretical, managerial and social significance, providing insights for academia, industry and society at large.

From a theoretical point of view, the current study expands the soft side of TQM by considering green aspects of HRM. Thus, it extends recent studies in the quality management literature, which attempt to delineate the association of TQM and green practices, and it focuses on the green nature of HRM. Through its hypothesized relationships, it augments previous research that mainly deals with the impact of GHRM on organizational performance. So, for the first time, it attempts to highlight the effects of GHRM and stakeholder integration on competitive advantage in the shipping company context. These effects have been ignored by previous studies. Also, by using evidence from the Greek shipping sector, this study answers to recent academic calls for performing relevant empirical research in different business environments (Tanova and Bayighomog, 2022).

As far as the managerial implications are concerned, the present study argues in favor of taking a broad stakeholder view in the pursuit of competitive advantage. Stakeholders anticipate that organizations will take into account the consequences of business activities on both the environment and individuals (Adomako and Tran, 2022). Therefore, shipping managers should be engaged in keeping information on stakeholders and analyzing their characteristics, being in close cooperation with them and adapting organizational priorities to meet their demands. Through these stakeholder integration practices, shipping managers could assist their companies to be innovative in terms of generation of new capabilities and be unique to ensure inimitability. For example, shipping companies could develop an integration system to collect and document information from meetings with stakeholders, then decide on prioritization of their demands and corresponding resource allocation and finally adjust company objectives or practices to meet these demands.

In addition, this study assists shipping managers to comprehend the importance of practices that not only concern employees, but also link them with environmental objectives. Considering the increasing global concerns for mitigating the environmental consequences of shipping operations, shipping managers should know that investing in GHRM practices seems to be an effective solution to ensure competitiveness. Specifically, these practices
should target green programs that involve employees in green management and give them the chance to reach green objectives. Also, GHRM practices comprise training programs to increase environmental consciousness and reward employees’ performance in line with environmental targets. The implementation of GHRM has the potential to offer an innovation and market differentiation advantage in the shipping market. For example, shipping companies could form temporary problem-solving, inter-departmental teams of employees for addressing environmental issues or finance internal environmental seminars. Both ways could boost green knowledge and ultimately offer unique advantages for the companies. Overall, findings encourage shipping managers to rethink their stakeholder perspective and HRM approach to help their companies gain competitive advantage.

The outcomes of this study hold implications for society too. TQM is associated with organizational social development. In turn, a firm’s social activities impact citizens and societies. TQM seeks involvement and satisfaction of stakeholders for achieving environmental sustainability (Barile et al., 2023). In that sense, stakeholder integration could be linked with community engagement and social responsibility. Also, business success comes from deriving value from intangible resources, i.e. the employees. Employee management practices, such as training and education, require the view of human resource development from a holistic view that transcends organizational borders (Barile et al., 2023).

So, foremost, this study highlights the significance of integrating environmental considerations into quality business practices that focus on people (employees). This research underscores the growing importance of businesses taking responsibility for their environmental impact. By showing that GHRM and stakeholder integration enhance competitive advantage, findings align with the global trend of corporate environmental responsibility. This trend contributes to the conservation of natural resources and sustainable business practices, which benefit the society at large. Also, the development of GHRM practices could shift the focus of job descriptions to aspects related to sustainability and environmental management. This shift has the potential to provide career opportunities in fields associated with environmental sustainability. Furthermore, GHRM practices can enhance the quality of work life for employees. Participation in environmentally-responsible initiatives could lead to greater sense of purpose or to inclusive employee and labor practices, improving thus potentially employee retention rates and overall well-being. Moreover, this study underscores the role of education and training in promoting environmental responsibility. Organizations may invest more in environmental education and training programs, benefiting both employees and society by increasing environmental awareness and expertise. From an economic standpoint, the competitive advantage that companies may gain, could lead to economic growth, which serves society through job creation, tax revenue and improved access to goods and services. Overall, firms need to embrace their social dimension and adopt the multi-stakeholder perspective for competitiveness.

5.2 Limitations and suggestions for future research
There are some limitations of this study and directions for future research. This study drew evidence from shipping companies located in Greece. So, comparative studies between different countries or cultures could reveal potential differences in the hypothesized relationships. The present study considered a wide variety of stakeholders collectively to examine stakeholder integration, as the focus was on assessing a shipping company’s ability to create relationships with various stakeholders in general. Future research could concentrate on specific stakeholders (e.g. only charterers, other groups of people or regulatory organizations) and examine companies’ integration efforts towards meeting specific, individual stakeholders’ needs. Also, future studies could consider the effects of
shipping company’s characteristics on the hypothesized relationships. For example, it would be interesting to study if different shipping segments (oil sector, dry bulk sector, container sector, etc.) influence the nature of the hypothesized interrelationships. Future research could adopt a longitudinal approach that will examine how the interrelationships among GHRM, stakeholder integration and competitive advantage change over time.

6. Conclusions
The present study, based on a survey in the transportation (shipping) sector, extends the human resource dimension of TQM by emphasizing its “green” perspective. The primary focus is on exploring the connections between GHRM and stakeholder integration in the pursuit of competitive advantage, by using empirical data from the Greek shipping industry. The findings confirm that GHRM has a positive and significant impact on both innovation and market differentiation advantage in shipping companies. Notably, the effect is stronger for innovation differentiation compared to market differentiation advantage. Additionally, the study reveals a direct, positive association between stakeholder integration and both innovation differentiation and market differentiation advantages. Specifically, stakeholder integration exhibits a more influential role in fostering innovation differentiation than in promoting market differentiation advantage in shipping companies. The study also substantiates the complementary (partial) mediating role of GHRM in the relationships between stakeholder integration and innovation differentiation advantage, as well as stakeholder integration and market differentiation advantage.

Note
1. In the present study, the focus is on a shipping company’s ability to establish positive, collaborative relationships with a wide variety of stakeholders in general (e.g. charterers, banks, insurance companies, suppliers, competitors, media, regulatory organizations etc.).

References


(The Appendix follows overleaf)
**Appendix**

<table>
<thead>
<tr>
<th>First</th>
<th>Item</th>
<th>Loadings</th>
<th>Composite reliability</th>
<th>AVE</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEI</td>
<td>Our company has a clear developmental vision to guide the employees’ actions in environment management</td>
<td>0.834</td>
<td>0.929</td>
<td>0.734</td>
<td>6.018</td>
<td>0.908</td>
</tr>
<tr>
<td></td>
<td>In our company, there is a mutual learning climate among employees for green behavior and awareness</td>
<td>0.890</td>
<td></td>
<td></td>
<td></td>
<td>0.966</td>
</tr>
<tr>
<td></td>
<td>In our company, there are a number of formal or informal communication channels to spread green culture</td>
<td>0.886</td>
<td></td>
<td></td>
<td></td>
<td>1.089</td>
</tr>
<tr>
<td></td>
<td>In our company, employees are involved in quality improvement and problem-solving on green issues</td>
<td>0.876</td>
<td></td>
<td></td>
<td></td>
<td>0.992</td>
</tr>
<tr>
<td></td>
<td>Our company offers practices for employees to participate in environment management (newsletters, suggestion schemes, problem-solving groups, ...)</td>
<td>0.836</td>
<td></td>
<td></td>
<td></td>
<td>1.339</td>
</tr>
<tr>
<td></td>
<td>Our company emphasizes a culture of environmental protection</td>
<td>0.814</td>
<td></td>
<td></td>
<td></td>
<td>0.943</td>
</tr>
<tr>
<td>GT</td>
<td>Our company develops training programs in environment management to increase environmental awareness, skills and expertise of employees</td>
<td>0.816</td>
<td>0.835</td>
<td>0.743</td>
<td>5.275</td>
<td>1.291</td>
</tr>
<tr>
<td></td>
<td>Our company has integrated training to create the emotional involvement of employees in environmental management</td>
<td>0.896</td>
<td></td>
<td></td>
<td></td>
<td>1.311</td>
</tr>
<tr>
<td></td>
<td>Our company has green knowledge management (link environmental education and knowledge to behaviors to develop preventative solutions)</td>
<td>0.873</td>
<td></td>
<td></td>
<td></td>
<td>1.278</td>
</tr>
<tr>
<td>GPM</td>
<td>Our company uses green performance indicators in performance management system and appraisals</td>
<td>0.904</td>
<td>0.922</td>
<td>0.760</td>
<td>5.138</td>
<td>1.617</td>
</tr>
<tr>
<td></td>
<td>Our company sets green targets, goals and responsibilities for managers and employees</td>
<td>0.947</td>
<td></td>
<td></td>
<td></td>
<td>1.525</td>
</tr>
<tr>
<td></td>
<td>In our company, managers set objectives on achieving green outcomes included in appraisals</td>
<td>0.948</td>
<td></td>
<td></td>
<td></td>
<td>1.484</td>
</tr>
<tr>
<td></td>
<td>There are dis-benefits in the performance management system for non-compliance or not meeting environmental management goals</td>
<td>0.654</td>
<td></td>
<td></td>
<td></td>
<td>1.800</td>
</tr>
</tbody>
</table>

*Table A1. Descriptives and measurement model results (continued)*
## First order Item Loadings

<table>
<thead>
<tr>
<th>Item</th>
<th>Composite reliability</th>
<th>AVE</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS</td>
<td>0.901</td>
<td>6.110</td>
<td>0.922</td>
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<td>ISC</td>
<td>0.895</td>
<td>5.706</td>
<td>1.052</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>0.750</td>
<td>4.459</td>
<td>1.617</td>
<td></td>
</tr>
<tr>
<td>IDA</td>
<td>0.752</td>
<td>4.229</td>
<td>1.392</td>
<td></td>
</tr>
</tbody>
</table>

---

### KS
Our company keeps documented information on the previous relationships with stakeholders (important meetings, conflicts, agreements, etc.)

Knowledge of all stakeholders and their demands is very important for the managers (e.g., performance, relationships among them, positions of power, importance and satisfaction)

Our company obtains feedback on its repercussions on stakeholders

---

### ISC
Our company frequently has meetings with the stakeholders

Our company consults the stakeholders and asks them for information before taking decisions

Our company's formal or informal cooperation with the stakeholders is intense (commitments, collaboration agreements . . .)

Stakeholders participate in the company's decision-taking process

Our company strives to develop new contacts with all the stakeholders

Our company dedicates time and resources to assessing and prioritizing the demands of the different stakeholders

---

### AB
Our company makes a special effort to prepare the information for the different stakeholders

There is frequent managerial debate about the demands of the stakeholders

Our company is willing to change its objectives in line with stakeholders' demands

Our company's policies and priorities are adapted to stakeholders' demands

---

### IDA
We are constantly investing in generating new capabilities that give us an advantage compared to our competitors

If ever there was a new way of serving customers, our company would be able to offer that

---

(continued)

Table A1.
<table>
<thead>
<tr>
<th>First order</th>
<th>Item</th>
<th>Loadings</th>
<th>Composite reliability</th>
<th>AVE</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDA</td>
<td>It is difficult for our competitors to imitate us</td>
<td>0.774</td>
<td>0.876</td>
<td>0.636</td>
<td>4.688</td>
<td>1.254</td>
</tr>
<tr>
<td></td>
<td>Our services are unique and nobody but our company can offer them</td>
<td>0.720</td>
<td></td>
<td>3.807</td>
<td>1.511</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It took us several years to build our brand name reputation — nobody can easily copy that</td>
<td>0.719</td>
<td></td>
<td>5.312</td>
<td>1.386</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our advantages are embodied in the company and not in individuals — nobody can copy us by stealing our employees away from us</td>
<td>0.895</td>
<td></td>
<td>4.505</td>
<td>1.554</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nobody can copy our corporate routines, processes and culture</td>
<td>0.863</td>
<td></td>
<td>4.284</td>
<td>1.574</td>
<td></td>
</tr>
</tbody>
</table>

**Note(s):** IDA: Innovation differentiation advantage, MDA: Market differentiation advantage, GEI: Green employee involvement, GPM: Green performance management, GT: Green training, AB: Adaptational behavior, ISC: Interaction between stakeholders and the company, KS: Knowledge of stakeholders

AVE: Average variance extracted

**Source(s):** Table by authors

**Table A1.**

**Corresponding author**

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