Board heterogeneity and organisational performance:

The mediating effects of line managers and staff satisfaction

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Abstract: Upper Echelons (UE) theory posits that organisational performance reflect the personal values and cognitive frames of the top management team (TMT) and, crucially, that greater heterogeneity in individual backgrounds of senior executives leads to better outcomes. However, often missing from this research is a more developed account of how this relationship between the characteristics of TMTs and performance is also mediated by internal conditions within organisations. In this paper we begin to address this deficiency focusing on the mediating impact of employee satisfaction and the styles and practices of line managers. Looking at the empirical case of English National Health Services acute care hospital trusts, we use a multiple mediation model to analyse the relationship between board heterogeneity, performance and these two (internal) organisational factors. A variance-based structural equation modelling approach (Partial Least Square) is applied to a sample of 102 boards of directors. First, the results lend support to the UE hypothesis that there is a positive impact of board heterogeneity and hospital-level performance. Second, the analysis shows that the relationship heterogeneity-performance is positive influenced by: a) the styles and practices of line managers; b) the levels of staff satisfaction; and by their mutually reinforcing roles.

Keywords: Board of Directors; Health care; Heterogeneity; Line Managers; Organisational performance; Path Modelling; Staff satisfaction.

1. INTRODUCTION

In recent years, there has been a growing interest in the role of top management teams (TMTs) at the apex of organisations and how their leadership styles and strategic decision choices impact on performance (Daily, Dalton, & Cannella Jr, 2003; Forbes & Milliken, 1999; Kim & Rasheed, 2014). In particular, attention has focused on the question of heterogeneity in TMTs and the extent to which this makes a difference (see Carpenter, Geletkanycz, & Sanders (2004); Homberg & Bui (2013); Nielsen (2010)). Central to this work is the argument that 'the demographic characteristics of executives' may be 'used as valid, albeit incomplete and imprecise, proxies of executives' cognitive frames and behaviours' (Hambrick, 2007; p. 335). In this respect, much of the research focuses both on task related measures of heterogeneity – including job tenure and career/functional background (marketing, finance, HR and so forth) – and non-task related indicators (including age, gender, social class, educational background) (Kim & Rasheed, 2014).

To date, in this literature considerable attention has focused on the link between these measures of TMT heterogeneity and performance outcomes (Carpenter, 2002; Kim & Rasheed, 2014). Although the findings of some studies are mixed (Homberg & Bui, 2013; Carmeli & Sheaffer, 2009), the balance of evidence suggests that demographic characteristics of TMT do have many positive consequences for organisations (Boone & Hendriks, 2009; Harjoto, Laksmana, & Lee, 2014; Naranjo-Gil, Hartmann, & Maas, 2008). These effects, in turn, are frequently explained by the cognitive, symbolic and communicative impact of more heterogeneous management teams, improving both the quality of strategic decisions and the likelihood that they will be translated and implemented (Milliken & Martins, 1996).

However, while research in this area has become increasingly sophisticated, questions remain about the precise mechanisms that shape the relationship between TMT heterogeneity and performance (Nielsen, 2010). Carpenter et al. (2004) note how the underlying framework used by Upper Echelons (UE) scholars tends to be a linear (or direct) one, assuming a

relatively straightforward relationship between the demographics of TMT's, their strategic choices and performance outcomes. Raes, Heijltjes, Glunk, & Roe (2011) make similar points, suggesting that many studies have tended to adopt 'a strong internal focus on TMT composition and intra-TMT processes when studying TMTs' influence on organisational performance'. As a result, they argue 'additional processes of TMT influence' still need to be explored (p. 102).

In this paper, our aim is to begin to address this concern by focusing on how the relationship between TMT heterogeneity and performance is mediated by internal dynamics within organisations. Specifically, we build on the work of Raes et al. (2011) and Raes, Bruch & De Jong (2013) to explore the relationship between TMT heterogeneity and two additional variables: employee satisfaction and line managers' styles and practices. Raes at al. (2013) suggest that more emphasis needs to be placed on 'employee-related consequences' of TMT behaviour, including satisfaction, while Raes et al. (2011) highlight the potential importance of line managers as critical 'linking pins' between TMTs and 'lower organisational echelons'. But while these connections between TMT heterogeneity and other mediating factors have been suggested in the literature, thus far, they have not been explored systematically. As such, our aim here is to advance understanding of how far these mediating factors, both individually and in combination, interact with the characteristics of TMTs and how (if at all) this also impacts on a range of performance outcomes.

To address these concerns, we focus on the case of one type of organisation: public acute care hospitals operating in the English National Health Service (NHS). As a result of new public management reforms across the developed world, public hospitals have increasingly adopted the model of corporate boards found in private sector firms (Veronesi, Kirkpatrick, & Vallascas, 2013). In the English context, these boards represent the main governance device within organisation, as they are responsible for setting the overall policy and strategic direction of the hospital and overseeing its implementation, providing leadership and being

accountable for the organisational performance (Veronesi et al., 2013). Moreover, a number of studies have already focused on hospitals as a setting to explore the impact of governing board heterogeneity (see for example Büchner, Schreyögg, and Schultz (2014) and Naranjo-Gil et al. (2008)). These studies suggest that public hospitals are highly susceptible to the influence of more heterogeneous TMTs, therefore making them ideal test cases to further explore the impact of internal mediating factors.

Focusing on the case of English public hospitals, the study explores both the links between board heterogeneity and performance and the possible mediating impact of the effectiveness of line managers and levels of staff satisfaction. Following calls from literature reviews on UE (Carpenter et al., 2004; Finkelstein & Hambrick, 1996; Nielsen, 2010), the study adopts an extensive notion of TMT, which includes the organisation top senior managers (the traditional focus of much UE research) and the other board directors, namely the non-executive members. TMT and governing board are, henceforth, used interchangeably.

The empirical approach adopted in this paper innovates in two key aspects. First, unlike many previous studies of board heterogeneity, the paper uses a wider range of performance outcomes including staff satisfaction, offering a more comprehensive set of measures than used in prior research (Büchner et al., 2014; Carpenter et al., 2004). Second, answering calls made in previous reviews of the field (Carpenter et al., 2004; Nielsen, 2010), for the first time in this area of study, the methodological approach employs Partial Least Squares (PLS) path modelling to explore the multi-level nature of relationships between boards, the styles and practices of line managers, staff satisfaction and aggregate performance outcomes. Like covariance-based structural equation modelling techniques, PLS is a second generation statistical technique that simultaneously assesses the measurement model and the structural theoretical model (Naranjo-Gil et al., 2008). However, unlike covariance-based algorithms, PLS concentrates on the prediction and explanation of variance in dependent variables and

resembles ordinary least squares regression with regard to output and assumptions (Chin, 2010).

The paper proceeds as follows. The next section provides an overview of the literature on board heterogeneity, the role of line managers, antecedents and outcomes of staff satisfaction and their impact on organisational performance. Section two then presents the data and describes the methodology adopted, while section three summarises the main empirical results and the outcome of the robustness tests conducted. Lastly, section four discusses the significance of the findings, the theoretical and practical implications of the study and its limitations.

2. LITERATURE REVIEW AND HYPOTHESES

In this section, we first outline briefly some of the main assumptions of UE theory, before turning to our more specific concerns about possible mediating influences. As noted, a baseline assumption of this approach is that the experiences, resources and cognitive styles of TMTs have marked implications for their behaviour and strategic choices (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984). These positive outcomes are frequently explained in terms of the cognitive, symbolic and communicative consequences of heterogeneity (Milliken & Martins, 1996). Starting with the cognitive dimension, it is argued that different task related backgrounds of board members – for instance, their functional expertise or job tenure within organisations or sectors – results in different cognitive styles and information processing capabilities. Such heterogeneity may increase the breadth of knowledge available to a group, potentially leading to greater 'decision comprehensiveness' (Kim & Rasheed, 2014; p. 123). Another possibility is that cognitive heterogeneity will stimulate more constructive debate within TMTs, in the process generating creativity and openness (Hambrick & Mason, 1984).

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By contrast, the symbolic consequences of heterogeneity relate more to the way in which the composition of social groups (such as TMTs) may have symbolic significance for other groups in an organisation, increasing the likelihood that they will change their behaviour. Focusing on gender diversity, for example, Milliken & Martins (1996) note that the reason '…achieving diversity in the composition of…top management groups…may be important is that people behave differently when they perceive that they have access to power and opportunity than they do when the organisation seems less supportive of their advancement' (p. 417).

Lastly, it is suggested that communication-oriented consequences of heterogeneity are those arising from the tendency of members of diverse groups to 'communicate more frequently with those outside the group' (Milliken & Martins, 1996; p. 417). In this respect, TMT heterogeneity may lead to an increase in the volume of communication that these teams engage in with diverse external and (crucially) internal stakeholders. Such communication, in turn, may ensure that TMTs are able to access better quality information, helping to reinforce the cognitive dimension (noted above) and the likelihood that strategic decisions will be implemented more effectively (Tian, Haleblian, & Rajagopalan, 2011).

While it is sometimes noted that TMT heterogeneity can be a 'double edged sword' (Hambrick, Cho, & Chen, 1996), there is now a substantial body of research highlighting the way these cognitive, symbolic and communicative consequences of heterogeneity impact on performance (Boone & Hendriks, 2009; Bunderson, 2003; Carpenter, 2002). For example, using a panel of 1,489 U.S. firms from 1999 to 2011, Harjoto, Laksmana, & Lee (2014) conclude that more heterogeneous boards are positively associated with increasing corporate social responsibility performance. Likewise, Kim & Rasheed (2014) find that more heterogeneous functional backgrounds of boards improve decision quality, while Naranjo-Gil et al. (2008) show that heterogeneity is important in moderating the relationship between strategic change and operational performance. As such, from the available research and

theory, there are strong reasons to expect that the benefits of TMT heterogeneity for a range

of organisational outcomes will outweigh its risks, leading to the following hypothesis:

H_1: There is a positive relationship between increasing heterogeneity of TMTs and the

performance of organisations.

However, while it seems reasonable to assert a direct relationship between TMT

heterogeneity and performance, UE theory still remains vague on details of how this process

works. This shortcoming is especially true with regard to the internal dynamics of

organisations and the factors that are likely to mediate the translation of TMT policies and

decisions into changing practices and behaviours at more operational levels. As we saw

earlier, much of the literature adopts an 'internal focus' on TMTs, although new avenues

have been suggested, focusing in particular on the possible mediating impact of employee

attitudes (including satisfaction) and the role of line management styles and practices (Raes et

al., 2011; Raes et al., 2013).

To theorise the impact of these mediating factors, it is helpful to first return briefly to the

points made above concerning cognitive, symbolic and communicative consequences of

TMT heterogeneity. Taken together, the cognitive consequences especially impact on

performance by improving the quality of decisions made by TMTs. However, as we

suggested, the communicative and symbolic consequences may also serve to improve the

likelihood that decisions will be well received, supported and implemented. This point is

frequently made in the literature. For example, Naranjo-Gil et al. (2008) emphasise how

'more organisational participants are likely to identify with heterogeneous TMTs than with

homogeneous TMTs and accept their strategies and action plans' (p. 224). Similar

conclusions have been drawn about how heterogeneity can improve employees' assessments

of TMT credibility (Kim, Bateman, Gilbreath, & Andersson, 2009; Mayer & Gavin, 2005)

with more general implications for an 'organisation's climate of productive energy' (Raes et al., 2013). As such, it might be argued that TMT heterogeneity feeds directly into more open, participative organisational climates which, as other research has shown, can increase the responsiveness and engagement of lower level staff (Schneider, Ehrahrt, & Macey, 2013). Schneider, Ehrahrt, & Macey (2011), for example, note that 'when workers perceive that their organisation is concerned about their well-being through its emphasis on fairness, diversity, ethics, trust, and so forth, they are more amenable to the efforts of management to focus on strategic outcomes of value to the organisation' (as explained in Schneider et al., 2013; p. 367). Such perceptions of concern for fairness, diversity and trust, we argue, are likely to be accentuated by TMTs that are more heterogeneous.

Taking this argument a step further, one can argue that these consequences of heterogeneous TMTs (for more open and participative organisational climates) are also important for understanding the role played by internal mediating factors such as employee satisfaction and line manager styles and practices. In simple terms, the communicative and symbolic consequences of TMT heterogeneity will have positive effects on employee satisfaction levels and the styles and practices of line managers and, in doing so, will contribute to overall performance. In what follows, we develop this argument more fully and articulate three central hypotheses that flow from it.

Starting with satisfaction, there is a growing body of research identifying links between the way employees perceive TMTs and overall levels of satisfaction (Cho & Ringquist, 2011; Ellis & Shockley-Zalabak, 2001). While some TMT characteristics and behaviours may have negative consequences for employee morale (Choi, 2013; Milliken & Martins, 1996), those associated with heterogeneous TMTs – generating open and communicative organisational climates – are more likely to be positive. Based on a survey of 60 organisations in the US and Italy, Ellis & Shockley-Zalabak (2001), for example, find that trust in top management is strongly associated with both satisfaction and effectiveness. Similarly, Cho & Ringquist

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(2011) find that levels of 'trustworthiness of managerial leadership' are strongly and positively associated with a variety of organisational outcomes, including employee satisfaction. The findings of these and other studies (Kim, 2005), have potential implications for how one explains the impact of TMT heterogeneity. If, as suggested above, TMT heterogeneity helps to engender greater trust and a more open organisational climate, it is reasonable to assume that heterogeneity will have (positive) consequences for employee satisfaction (Raes et al., 2013). These relationships are also noted in the specific literature on organisational climate. Indeed, as Kuenzi & Schminke (2009) suggest 'climates that are generally viewed as positive (e.g., those that are fair, supportive, ethical, participative) have emerged as reliable predictors of positive attitudes' (p. 691).

Taking this reasoning a step further, it can be argued – as studies investigating the impact of employee satisfaction on organisational performance have shown (Cho & Ringquist, 2011; Kim, 2005) - that more satisfied employees will be more engaged and willing to implement TMT decisions. Consequently, it seems reasonable to assume that levels of employee satisfaction are both an outcome of TMT heterogeneity and a decisive factor in explaining why TMT heterogeneity is frequently associated with higher performance. As such, it can be hypothesised that:

H$_2$: The relationship between increased heterogeneity of TMTs and organisational performance is mediated by employee satisfaction.

Turning to our second, mediating factor - the styles and practices of line managers – it can be argued that these also shape the relationship between TMT heterogeneity and performance (Raes et al., 2011). Researchers focusing on line managers consistently emphasise the crucial 'linking pin' role line managers play both in strategy formulation and implementation (Wooldridge, Schmid, & Floyd, 2008). Where HRM policies are concerned, for example, Purcell & Hutchinson (2007) note that 'the HR practices perceived or experienced by

employees will, to a growing extent, be those delivered or enacted by line managers, especially front line managers with direct supervisory responsibility' (p. 3). In this way, line managers play a crucial role determining the extent to which lower level staff are engaged with and committed to the wider strategies and policies of the organisation (Hong, Liao, Hu, & Jiang, 2013). Important here is the way line managers communicate policies to staff and also their leadership styles, in terms of fairness towards staff and levels of support. In both respects, the ways in which line managers behave are likely to have major consequences for how strategies (set by TMTs) are received and translated by staff on the ground and therefore also on performance outcomes (Hassan & Hatmaker, 2014; Liao, Toya, Lepak, & Hong, 2009). On the one hand, line management styles and practices could reinforce commitment to strategic priorities and policies set by TMTs, while on the other hand, they could have precisely the opposite impact, leading to employee cynicism and disengagement.

This arguably crucial linking pin role of line managers in supporting and translating strategic goals raises the wider question of what conditions are likely to encourage such behaviour? Fully addressing this concern is beyond the scope of this paper, although it has been suggested that the characteristics of TMTs may make a difference. Specifically, it has been noted the more open and participative organisational climates generated by heterogeneous TMTs can help to align the styles and practices of line managers in ways that support, rather than detract from wider organisational strategies. Focusing on German public hospitals, for example, Büchner et al. (2014) suggest that more diverse TMTs are better able to communicate with line managers, increasing trust and co-operation. Precisely, they note that 'because of their diversity-related varied ideas, creativity, and innovativeness, governing board members may be open-minded to new ideas generated by hospital managers' and that 'this positive attitude of boards decreases the potential for conflict in their collaboration with hospital managers and fosters intergroup cooperation' (p. 11). Raes et al. (2011) develop a similar argument about how more heterogeneous TMTs, and the open organisational climate

they generate, can 'install in line managers a strong sense of organisational recognition, individual ownership, and motivation for decision implementation' (p. 107). Hence, this research implies that greater heterogeneity of TMTs has direct consequences for the extent to which line managers become willing to collaborate with TMTs and align themselves with wider strategic priorities. This, in turn, suggests that line managers will enact leadership styles (in terms of fairness and support) which tend to reinforce staff commitment to organisational goals and enhance performance. As such our third main hypothesis is as follows:

H_3: The relationship between increased heterogeneity of TMTs and organisational performance is mediated by the styles and practices of line managers.

Obviously, when making these assertions about the potential mediating effects of job satisfaction and management styles and practices, it is important to recognise that these two variables are likely to be connected. Research on line managers consistently emphasises their role in shaping the psychological contract of employees with implications for trust and job satisfaction (Ellis & Shockley-Zalabak, 2001; Nishii & Wright, 2008). Focusing on the English NHS, West, Dawson, Admasachew, & Topakas (2011) find that line management practices, including well-structured appraisals, team environment and supportive supervisory styles generally foster higher levels of staff engagement and satisfaction. Indeed, Purcell & Hutchinson (2007) suggest that in high performing organisations a virtuous circle exists between line management practices and more satisfied employees. Hence, the final hypothesis states that:

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H[4]: The relationship between increased heterogeneity of TMTs and organisational performance is sequentially mediated by the styles and practices of line managers and levels of staff satisfaction.

To summarise, while the theoretical links between the characteristics of TMT and performance outcomes appear strong – leading to our first hypothesis - there are reasons to expect that this relationship will be internally mediated by factors such as the level of employee satisfaction and line managers' styles and practices. In both cases, it can be argued that the communicative and symbolic consequences of TMT heterogeneity (leading to more open and participative climates) are having positive consequences for satisfaction and the behaviour of line managers. These relationships in turn could help to ensure that strategic decisions are better translated and implemented, thus contributing to enhanced performance. In what follows we now investigate these concerns empirically, focusing on the illustrative case of hospital trusts in the English NHS.

3. METHODOLOGY

3.1. Sample

To test our hypotheses, the study focuses on the case of governing boards of acute public hospital trusts in the English NHS. Trusts are organisational forms introduced at the beginning of 1990s that comprise one or more hospitals, with semi-autonomous status and, similarly to corporate sector organisations, governed by a board of directors. Formally part of the public sector, trusts are theoretically allowed to compete for contracts from primary sector organisations responsible for commissioning health care services. To this end, considerable emphasis has been placed on improving their governance through boards of directors accountable for the overall performance of the organisation (Veronesi & Keasey, 2011). As mentioned, boards establish the strategic direction and outline objectives and plans to

implement it, monitor the executive management, oversee the quality and safety of the service provided, bear the responsibility for the use of trust resources and have a duty of transparency towards the public (Veronesi et al., 2013). They are unitary and comprise executive and non-executive (independent) members, selected every three years.

Due to the absence of a central repository of information on the governance of hospital trusts, data on board composition are taken from manually working through the websites and official documents (e.g. annual reports) of hospital trusts. A unique dataset has been created profiling the main professional qualifications (for example doctor, nurse or career manager), job titles and a number of individual characteristics of each director. The governance data refer to the financial year 2010/11 and cover 102 hospital trusts (out of 162) for a total of 1,290 director profiles. The average size of boards is 12.65 board members. The sample includes solely boards that provided full information on their composition and characteristics of directors. The data related to hospital performance are publicly available information published by the English Health and Social Care Information Centre (HSCIC).

3.2. Measures

3.2.1. Board heterogeneity

Board heterogeneity is a composite construct (BH) that measures diversity with respect to a number of indicators related to the background of board members. Specifically, the study employs the Blau's index (1977) of heterogeneity. The Blau's index is the most commonly accepted measure of diversity-as-variety (Harrison & Klein, 2007) and is extensively used in governance research to measure categorical variables. Following this approach, we use six indicators (manifest variables) to model board heterogeneity as a formative construct.

First, is the average number of years from the date of appointment of each director to the board measures directors' overall tenure. Tenure is a proxy for a director embeddedness with the organisation, essentially the deep knowledge and understanding of an organisation's

resources and capabilities (Sundaramurthy, Pukthuanthong, & Kor, 2014). Longer tenure offers directors the capacity to better understand the common language of the organisation and the ability to effectively employ their individual knowledge in strategic decision-making (Zald, 1969).

A second variable uses the ratio of board directors with significant professional expertise in a comparable role in the private sector. Board members with directorship expertise in commercial settings bring to their board the knowledge of the internal decision making of 'for profit' organisations (Bailey & Helfat, 2003). This expertise has become increasingly crucial following reforms to make the management of public hospitals more 'business like' and focused on the efficient allocation of resources (Hillman, Cannella, & Paetzold, 2000).

Thirdly we have sought to captures the ratio of board members with a professional background in medicine (in terms of education and practical experience). Doctors have a deep understanding of the core business of hospitals and possess knowledge of regulation, technology and organisational constraints that is essentially 'sector-specific' (Kor, 2003).

A fourth variable operationalises the differentiation between executive and non-executive members on the board. Executive directors have stronger internal relationships, essentially a more developed network of information and personal ties linking a director to the organisation as a whole (Adler & Kwon, 2002). Due to these closer ties with lower level managers, they directors can communicate more effectively the decisions taken at the board level (Kor & Sundaramurthy, 2009).

As our fifth variable we use the total count of directors' formal memberships on other governing boards. Formal inter-organisational connections can generate a range of opportunities for the organisation (Hillman & Dalziel, 2003). They increase directors' exposure to a range of strategic and governance issues and, consequently, enhances their ability to face and successfully tackle a diverse range of problems and solutions (Kor & Sundaramurthy, 2009).

Finally, the distribution of director functional backgrounds on governing boards is accounted for by differentiating between four categories: health care (doctor, nurse, etc.), science (mathematician, physician, engineer, etc.), law-economics (lawyer, economist, auditor, etc.) and social work (social worker, police officer, teacher, etc.). Heterogeneity in functional backgrounds increases the breadth of a TMT's cognitive perspectives, which provides diversity of knowledge, experience and information-processing behaviours (Finkelstein & Hambrick, 1996), but it also offers the capacity to more directly interrelate with a range of internal constituencies.

In combination, this choice of variables offers a useful all round measure of TMT heterogeneity. Specifically, it allows us to identify more heterogeneous boards which are likely to have the effects that are predicted in the literature. Improvements in the quality of decisions, for example, might follow from the mix of different functional and professional backgrounds (especially with regard to clinical involvement) and insider and outsider perspectives. Where the latter is concerned, these measures capture boards that are able to combine deep knowledge of the organisation (long tenure) and external perspectives, through formal involvement in other organisations or experience in the private sector. For hospital trusts, a familiarity with community representatives and social interest groups outside the traditional channels of the organisation may be especially important (Hillman, Cannella, & Paetzold, 2000). In addition, these dimensions of heterogeneity are likely to have consequences for the ability and willingness of boards to communicate with and represent different stakeholders - helping to foster more open and participative organisational climates. This is especially true with regard to the involvement of doctors in senior executive roles which, as other research has shown (see Veronesi et al., 2013), is important in terms of opening communication channels with rank and file clinical professionals and thus helping to raise the legitimacy of strategic decisions. The mix of functional backgrounds and split

between executive and non-executive directors may have very similar consequences for the ability of boards to communicate and connect with different internal stakeholders.

A final caveat to make here is our decision not to include gender diversity in our composite measure of heterogeneity. Overall, NHS boards fare well in terms of gender representativeness (with a median of 35.71% of board directors being female), with little variation between trusts. Gender diversity was not included in the study since it has low importance in the formation of the board heterogeneity construct. Indeed, the gender indicator has a negative and non-significant weight (the weights of all the other indicators are significant at the 10% level) and, therefore, following the advice of Henseler, Hubona, & Ray (2016), it has been disregarded in the determination of board heterogeneity.

3.2.2. Overall hospital performance

Four indicators made available by the HSCIC capture overall hospital performance. These objective performance data provide an encompassing assessment of a hospital activity. First, the Reference Cost Index (RCI) represents a proxy for the financial efficiency of the hospital. The RCI compares the average cost of the case-mix of each hospital trust with the cost of that case-mix based on average unit costs. The index is embedded in Payment by Results, the funding formula under which a hospital trust will only be paid the national average cost for a procedure, thus incentivising efficiency.

Second, the Summary Hospital-level Mortality Indicator (SHMI) captures the overall quality of the service provided. Specifically, the SHMI measures quality as lower unexpected death count at the hospital level across England and it is available from the Hospital Episode Statistics dataset. The indicator is calculated as the ratio between the actual number of patients who die following hospitalisation and the number that would be expected to die on the basis of average England figures, given the characteristics of the patients treated.

A third indicator of hospital performance comes from one of the core findings included in the NHS Staff Survey (see section 3.2.3 for a description of the survey). Specifically, Key Finding (KF) 5 assesses the level of work pressure felt by employees in a trust and comprises a score ranging from 1 (minimum) to 5 (maximum). The inverse value of the score is employed in the analysis. Therefore, the study includes an assessment of hospital performance also from the perspective of the staff employed in the organisation.

The final indicator of overall performance is the summary score of the views of patients on the overall quality of the care received. The NHS patient experience survey, which as has run since 2001, covers a sample of 850 adult (16+) patients (excluding maternity and psychiatry patients) for each hospital trust and comprises a set of questions that range from the explanations on side effects of medications provided by clinical staff to the comfort of the facilities. The four measures are modelled to be manifest indicators of a formative construct called overall performance (OP).

3.2.3. Staff satisfaction

The reflective construct staff satisfaction (SS) is modelled on the basis of three indicators extracted from the NHS Staff Survey (year 2011/12). The NHS Staff Survey is an annual survey of NHS employee first conducted by the Care Quality Commission since 2003. It covers employees of all hospital trusts in England and provides a range of information regarding employment relations and workplace experiences including organisation of work, job design and, crucially, employee attitudes and well-being. There is an established line of research linking staff satisfaction to organisational performance (Judge, Thoresen, Bono, & Patton, 2001; Ziegler, Hagen, & Diehl, 2012). This is particularly true in the health care sector settings, where previous research shows how employees' job satisfaction (and engagement) is an important determinant of organisational effectiveness (West & Dawson, 2012). As such, the first indicator refers to KF35, which captures the overall level of staff

motivation working in a hospital trust. The second indicator relates to KF34, which measures the predisposition of staff to recommend the hospital trust as a (good) place to work or receive treatment. Third, staff job satisfaction (KF32) is the indicator that offers a comprehensive measurement of employee attitudes in relation to their workplace. All the KFs comprise a score ranging from 1 (minimum) to 5 (maximum).

3.2.4. Line managers styles and practices

The perceived effectiveness of line managers' styles and practices is measured using a reflective construct (LME) modelled through three KFs (manifest variables) taken from the NHS Staff Survey. The first indicator from the survey is KF22, which refers to fairness and effectiveness of reporting procedures for errors, near misses and incidents. Essentially, this indicator captures the overall level of fairness and credibility of line managers in applying policies and procedures (Kim et al., 2009). KF15 comprises the second indicator, which gauges the perceived support received by an employee from his/her immediate line managers. This indicator is a proxy for the level of trust between a line manager and a subordinate (Mayer & Gavin, 2005). Finally, the third indicator corresponds to KF6, which measures the percentage of staff feeling that they are working in a well-structured team environment. Given that line managers play a key role in shaping work organisation within teams (Purcell & Hutchinson, 2007), this measure is taken as a further proxy for the effectiveness of management styles and practices.

[TABLE 1 ABOUT HERE]

3.3. Partial Least Square path modelling

Partial Least Square (PLS) is a highly suitable statistical technique for explanatory applications and iterative procedures using least squares estimation for single and multi-component models. By applying these procedures, the algorithm aims to minimize the variance of all the dependent variables (Chin, 2010). Accordingly, the cause-and-effect directions between all the variables need to be clearly defined (Huber, Herrmann, Frederik, Vogel, & Vollhardt, 2007). The quality of the model improves when more indicators are used to explain the latent variables (LVs), since a higher number of indicators can better explain a LV's variance (Huber et al., 2007). Thus, in the first stage, the scores of the latent constructs are iteratively estimated (reliability and validity of the measurement model). In the second stage, the final estimates of coefficients (outer weights, loadings, and path coefficients) are calculated using the ordinary least squares method for each partial regression in the model (for a detailed description of the PLS algorithm, see Tenenhaus, Esposito-Vinzi, Chatelin, & Lauro (2005)). The paper employs both SmartPLS software version 3.0. and R software (function plspm) to perform PLS analysis, where the cross-validation procedure is carried out exclusively in R.

3.4. Cross-validation strategy

Since one of the disadvantages of PLS is linked to how to test the robustness and stability of models (Shmueli, Ray, Velasquez-Estrada, & Chatla, 2016), this study implements a cross-validation procedure (Stone, 1974). Using this strategy of validation ensures that the PLS model yields a substantial explanatory power (Sarstedt, Ringle, Henseler, & Hair, 2014; Shmueli, 2010).

The objective of the cross-validation procedure is to reduce the implicit bias that involves using the same data to estimate the path coefficients of the measurement model and to test its generalisation. Consequently, with cross-validation is possible to assess how the results of a model will generalise to an independent data set. Empirically, the data is split into 10 subsets,

and the hold-out method is repeated 10 times (10-fold cross-validation). Each time, one of the 10 subsets is used as the test set (also known as hold-out or validation sample) and the other 9 (10-1) subsets are put together to form a training set (also referred to as in-sample). The training set is used on the model for each parameter configuration and the test set is used for the assessment of the generalisation error of the final chosen model. The advantage of this approach is that the way in which the data is divided is of no significance. Every data point appears in a test set only once, and in a training set 10-1 times (i.e., all the data is used for training and testing the model) which enhances the robustness and reliability of the evaluation.

4. RESULTS

4.1. Validity and reliability of the measurement model

Following to Roldán & Sánchez-Franco (2012), the measurement model for reflective constructs needs assessment in terms of individual item (internal) reliability, construct reliability, convergent validity (Table 2), and discriminant validity (Table 3). Table 2 shows that (i) all indicators have factor loading greater than 0.7 and, (ii) the composite reliability is higher than 0.8. Therefore, our PLS model has internal and construct reliability. Secondly, values of the average variance extracted (AVE) greater than 0.50 confirm the existence of convergent validity. Lastly, as shown in Table 3, both the traditional Fornell-Larcker criterion and the Heterotrait-Monotrait ratio of correlations (HTMT) show evidence of discriminant validity (Henseler, Ringle, & Sarstedt, 2015).

[TABLE 2 ABOUT HERE]

[TABLE 3 ABOUT HERE]

4.2. Structural model and mediation analysis

In accordance with the literature, we employ path coefficients, R^2 of endogenous latent variables, standardised root mean square residual (SRMR) and goodness of fit (GoF) to evaluate the structural model (Henseler, Dijkstra, Sarstedt, Ringle, Diamantopoulos, Traub, Ketchen, Hair, Hult, & Calantone, 2014; Tenenhaus et al., 2005). Moreover, in order to gauge the statistical significance of the path coefficients, both the bootstrapping procedure with 5,000 resamples (Hair, Ringle, & Arstedt, 2011) and the percentile bootstrap at the 95% confidence interval (Chin, 2010) are used in the analysis.

[TABLE 4 ABOUT HERE]

[FIGURE 1 ABOUT HERE]

The main direct effect of the model is associated to H_1 (Board heterogeneity → Overall performance). The findings show that greater heterogeneity in governing boards generates a direct, positive and significant effect on overall hospital performance (c´= 0.173, p<0.05, [0.7654;0.8986]). Furthermore, to test the three mediation hypotheses (H_2, H_3, and H_4), the indirect effects between these two constructs are also analysed. Precisely, the study examines three indirect effects (**H_2**: a_2b_2; **H_3**: a_1b_1; **H_4**: $a_1a_3b_2$) of the independent variable (i.e., board heterogeneity) on the dependent variable (i.e., overall hospital performance) (Preacher & Hayes, 2008; Taylor, MacKinnon, & Tein, 2008). For this reason, following Williams & MacKinnon (2008), we analyse the mediating role that LME and SS perform in the relationship between the BH and OP of hospitals.

Applying the same criteria adopted for the direct effects, a 95% confidence interval is accepted for the mediators SS (H_2), LME (H_3), and LME-SS (H_4). Thus, the indirect effect is significantly different from zero with 95% confidence level if the interval for a mediation

hypothesis does not contain zero. As Fig. 1a and Table 5 show, BH has a significant total effect on OP ($c = 0.541$; $p < 0.001$; $R^2 = 0.2930$). However, when the mediators enter the model (Fig. 1b), the explanatory power of variances in OP increases substantially, from 0.2930 to 0.6320, which suggests that the influence of board heterogeneity is shared with both line managers styles and practices and staff satisfaction. Indeed, for the full model (fig. 1b), the SRMR is equal to 0.077 (hence lower than 0.080), which indicates an overall adequate model fit (Henseler et al., 2014).

Following Henseler and Sarstedt (2013), the results of GoF, R^2_{inner}, and average R^2 are also reported as performance measurement, where: $GoF = \sqrt{Com \cdot R^2_{inner}}$, R^2_{inner} is the average R^2 of the endogenous LVs (R^2_{SS}, R^2_{LME}, and R^2_{OP}), and Com is the average proportion of variance explained when regressing the reflective indicators on their LVs. For the training sample: GoF= 0.4847; Com= 0.4434; R^2= 0.3974; R^2_{inner}= 0.5298; R^2_{BH}= 0; R^2_{SS}= 0.7733; R^2_{LME}= 0.1705; R^2_{OP} = 0.6456. This means that both LME and SS provide a powerful mediation in the relationship between BH and OP in hospitals. Precisely, the three mediations of BH on OP via SS (**H2**), LME (**H3**), and the combined use of both mediators, LME+SS (**H4**), generate statistically significant mediations that largely increase R^2 (up to 0.6320) of the resulting structural model. In other words, the findings show that there is a direct and positive relationship between BH and OP, but crucially that the indirect effects between both dimensions are significantly more relevant. These results firmly highlight the importance of line managers styles and practices and the overall level of staff satisfaction on organisational performance.

Finally, the magnitude and importance of the indirect effects is estimated. To this end, following Iacobucci and Duhachek (2003), the study employs the VAF (Variance Accounted For) value, which represents the ratio of an indirect effect to the total effect:

$$VAF = \frac{Indirect\ effect}{Total\ effect}$$

As shown in Table 5, all the mediating effects here tested are statistically significant at the 95% confidence level and perform a substantial mediating influence on the relationship between board heterogeneity and overall hospital performance. The results show that for H_3 and H_4 there is a powerful partial mediation, and consequently LME and LME-SS partially mediate the relationship between BH and OP. In contrast the indirect effect via SS (H_2) is limited due to a VAF lower than 20%. Lastly, the total indirect effect achieves a VAF of 56.19% and, consequently, these findings confirm that the relationship BH-OP is partially mediate by LME and SS.

[TABLE 5 ABOUT HERE]

4.3. Analysis of the explanatory capacity of the model

As mentioned in Section 3.4., the cross validation method is used to analyse the explanatory capability of the PLS model here fitted. Table 6 shows the results, in terms of GoF, R^2_{inner}, and average R^2, of a 10-fold cross validation (Henseler and Sarstedt, 2013). The performance of the model in the test sub-samples is similar to the results produced by the training sample, which indicates that the explanatory capacity of the model is powerful and that its path coefficients are stable and robust (average GoF = 0.5130 and average R^2_{inner} = 0.5593). Consequently, this is further evidence that the PLS model obtained in this study is theoretically justified and is strongly oriented towards explaining the variables that influence the overall performance of hospitals.

[TABLE 6 ABOUT HERE]

5. DISCUSSION AND CONCLUSION

The main starting point for this paper was the argument developed by UE theory concerning the impact of TMT heterogeneity on organisational performance. It was noted that, to date, only limited attention has been given to internal organisational conditions that mediate any relationship between more heterogeneous boards and outcomes. Focusing on two such conditions – employee satisfaction and the styles and practices of line managers – our aim was to advance this debate, looking at the specific empirical case of hospital trusts in the English NHS. Our analysis yields two main contributions.

First, the results lend strong support for the hypothesis (H_1) that there is a positive relationship between increasing heterogeneity of TMTs and the performance of organisations. While the literature highlights possible negative consequences of TMT heterogeneity (Carmeli & Sheaffer, 2009; Homberg & Bui, 2013; Milliken & Martins, 1996), the analysis suggests that this negative influence is negligible in the context of public hospitals. Confidence in this finding is also reinforced by the multiple outcome measures used – going beyond the approach taken in many previous studies (Büchner et al., 2014) – to focus on performance from the patient, manager and staff perspectives. What transpires from the findings is that the cognitive, symbolic and communicative consequences of TMT heterogeneity, as theorised by Milliken & Martins (1996), have a positive impact on the overall performance of hospitals and, more in general, organisations. The cognitive consequences of TMT heterogeneity are likely to increase the breadth of knowledge available in the upper echelon and, hence, to generate greater 'decision comprehensiveness' (Kim & Rasheed, 2014) as well as leading to more creativity and openness (Hambrick & Mason, 1984), which, in turn, positively influence organisational performance.

Building on these results, a second major contribution of the study is to provide a deeper insight into how TMT heterogeneity influences performance and the factors that mediate this link (Raes et al., 2011). The UE literature notes that more diverse TMTs may generate a more

open and participative organisational climate, improving communication and having symbolic consequences which help to engage lower level staff (Cho & Ringquist, 2011; Naranjo-Gil et al., 2008; Raes et al., 2013). The analysis lends support to this argument, suggesting that the impact of TMT heterogeneity on performance is greatly enhanced by the mediating role of line managers (H_3) and, to a certain extent, by levels of staff satisfaction (H_2). The communicative and symbolic consequences of TMT heterogeneity are likely to increase employees' assessments of its credibility (Kim, Bateman, Gilbreath, & Andersson, 2009; Mayer & Gavin, 2005), which can foster an organisation's climate of productive energy (Raes et al., 2013), in the process improving lower echelons' perceptions of fairness, diversity and trust and, ultimately, leading to greater responsiveness and engagement (Schneider, Ehrahrt, & Macey, 2013). The more open and participative organisational climates generated by the symbolic and communicative consequences of heterogeneous TMTs also appear to better align the styles and practices of line managers in support to wider organisational strategies (Raes et al., 2011), emphasising the crucial 'linking pin' role that line managers play both in strategy formulation and implementation (Wooldridge, Schmid, & Floyd, 2008), the latter specifically relevant to overall staff engagement and commitment (Hong, Liao, Hu, & Jiang, 2013).

Perhaps not surprising it is also the finding that line management styles and practices and staff satisfaction are mutually reinforcing and, in combination, make useful progress to explaining why TMT heterogeneity is having marked consequences for performance. As such, the paper extends insights reported elsewhere (Büchner et al., 2014; Raes et al., 2013) about the need to extend UE research beyond the inner circle of TMTs and gives greater consideration to other steps in the chain linked to the internal organisational context (Nielsen, 2010). As suggested by Carpenter et al. (2004) and confirmed by the findings here reported, future studies would need to account for the possible existence of an indirect relationship between TMT composition and performance outcomes. More research is, additionally,

needed to unpick the processes and mechanisms underpinning the mutually reinforcing virtuous circle of influence between line managers and employees that mediate the TMT influence on organisational performance.

In addition to these contributions to theory and research, the analysis has implications for management practice. The results show that organisations, and hospitals in particular, would be better off increasing the overall level of heterogeneity in their boardrooms as this leads to improved overall organisational performance. This finding is particularly significant given the increasing pressures on public sector organisations, and specifically hospitals, to not only improve the quality of services and the efficient use of resources, but also to improve the experience of patients (Veronesi, Kirkpatrick, & Altanlar, 2015). Furthermore, the study emphasises how line managers play a crucial role in relation to staff satisfaction in particular with reference to motivation levels of employees, their perception of the organisation as a positive place to work in and, in general, their contentment with the managerial styles and practices adopted. Consequently, internal resources and HRM policies should be focused in providing line managers with adequate means to pursue and foster employees' motivation and wellbeing. Confirming prior research, managerial support, fairness of internal procedures and team work design appears to be key determinant of staff satisfaction (Hassan & Hatmaker, 2014; Wooldridge et al., 2008). Moreover, the evidence reinforces the view that line managers are important translators of the values and priorities that board members set through their decision making. Indeed, the findings highlight the way line managers directly impact on organisational outcomes, therefore reinforcing the need for boards to ensure that line manager goals are aligned with the overall strategy and policies set at the board level.

Of course, when noting these conclusions and implications it is useful to highlight a number of limitations and directions for future research. First, the soft modelling approach employed is geared more toward prediction than causality. Thus, the use of a longitudinal database would enable to test the hypotheses (and, hence, corroborate the findings) in a truly

causal sense, for example employing alternative methodological approaches such as time-series pooled regression analysis which would also offer the opportunity to control for endogeneity issues. Unlike causality, predictability ensures only a partial ability to control events. This means that employing an extended database with multiple observation points would allow to control for the existence of confounding factors and/or potential alternative explanations. Measuring the constructs analysed at several points in time would also take into account of possible changes in the organisational climate. Furthermore, the statistical technique (PLS) also assumes a linear relationship between the latent variables. However, it might be that the nexus between board heterogeneity and organisational performance is curvilinear, where greater heterogeneity leads to better performance up to a tipping point where the positive impact is progressively diminishing or becomes negative. Furthermore, the model relies on a cross-sectional design, limiting the potential explanatory impact of board-level variables, as strategic decision may need a longer time to influence organisational performance. Thus, future studies could employ lag values of the independent variable to account for the delayed impact of board heterogeneity. Lastly, the selection of the antecedents and outcomes in the model by definition represents a limitation as other indicators could generate different results. So, one possibility would be to test the robustness of the results by using alternative measures of performance or employing different indicators of, say, line managers' effectiveness.

A different concern relates to the choice of English public hospitals as a case study. While hospital governance has been transformed in recent years – moving closer to a corporate model (Veronesi et al., 2013) – hospitals remain very distinctive organisations often dominated by powerful clinical interests. This fact means that the styles and practices of line managers – a majority of whom are doctors or nurses – will be a crucial mediating factor, perhaps more so than in other settings (for example, non-professional organisations in the private sector). In a similar way, there is the potential to explore these relationships in other

national contexts to enhance our understanding of how the impact of TMT heterogeneity is mediated by external environmental factors, for instance considering whether public sector organisations have more freedom to exercise their autonomy or they have different governance structures. Furthermore, the use of qualitative approaches would enable to understand more fully the dynamics that assist line managers in exercising their mediating role between boards and the rest of the workforce.

REFERENCES

Adler, P.S., Kwon, S. (2002). Social capital: Prospects for a new concept. Academy of Management Review, 27(1), 17-40.

Bailey, E.E., & Helfat, C.E. (2003). External management succession, human capital, and firm performance: An integrative analysis. Managerial and Decision Economics, 24(4), 347-369.

Blau, P.M. (1977). Inequality and Heterogeneity: A primitive theory of social structure. New York: The Free Press.

Boone, C., & Hendriks, W. (2009). Top management team diversity and firm performance: Moderators of functional-background and locus-of-control diversity. Management Science, 55(2), 165-180.

Büchner, V.A., Schreyögg, J., & Schultz, C. (2014). The impact of the board's strategy-setting role on board-management relations and hospital performance. Health Care Management Review, 39(4), 305-317.

Bunderson, J.S. (2003). Team member functional background and involvement in management teams: Direct effects and the moderating role of power centralization. Academy of Management Journal, 46(4), 458-474.

Carmeli, A., & Sheaffer, Z. (2009). How leadership characteristics affect organisational decline and downsizing. Journal of Business Ethics, 86(3), 363-378.

Carpenter, M.A. (2002). The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance. Strategic Management Journal, 23, 275-284.

Carpenter, M.A., Geletkanycz, M.A., & Sanders, W.G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. Journal of Management, 30(6), 749-778.

Chin, W.W. (2010). How to write up and report PLS analyses. In V. Vinzi, W.W. Chin, J. Henseler, & H. Wang (Eds.), Handbook of partial least squares: Concepts, methods and application (pp. 645-689). Germany: Springer, Germany.

Cho, Y.J., & Ringquist, E.J. (2011). Managerial trustworthiness and organisational outcomes. Journal of Public Administration Research and Theory, 21(1), 53-86.

Choi, S. (2013). Demographic diversity of managers and employee job satisfaction: Empirical analysis of the federal case. Review of Public Personnel Administration, 33(3), 275-298. doi: 10.1177/0734371x12453054.

Daily, C.M., Dalton, D.R., & Cannella Jr., A.A. (2003). Corporate governance: Decades of dialogue and data. Academy of Management Review, 28, 371-382.

Ellis, K., & Shockley-Zalabak, P. (2001). Trust in top management and immediate supervisor: The relationship to satisfaction, perceived organisational effectiveness, and information receiving. Communication Quarterly, 49(4), 382-398.

Finkelstein, S., & Hambrick, D.C. (1996). Strategic Leadership: Top Executives and Their Effects on Organisations. St. Paul, MN: West.

Forbes, D.P., & Milliken, F.J. (1999). Cognition and corporate governance: Understanding boards of directors as strategic decision-making groups. Academy of Management Review, 24(3), 489-505.

Hair, J.F., Ringle, C.M., & Arstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19(2), 137-149.

Hambrick, D., & Mason, P. (1984). Upper echelons: The organisation as a reflection of its top managers. Academy of Management Review, 9(2), 193-206.

Hambrick, D.C., Cho, T.S., & Chen, M. (1996). The influence of top manager heterogeneity on firms' competitive moves. Administrative Science Quarterly, 41, 659-684.

Hambrick, D.C. (2007). Upper echelons theory: an update. Academy of Management Review, 32(2), 334-343.

Harrison, D.A., & Klein, K.J. (2007). What's the difference? diversity constructs as separation, variety, or disparity in organisations. Academy of Management Review, 32(4), 1199-1228.

Hassan, S., & Hatmaker, D.M. (2014). Leadership and performance of public employees: Effects of the quality and characteristics of manager-employee relationships. Journal of Public Administration Research and Theory, 25, 1127-1155.

Harjoto, M., Laksmana, I., & Lee, R. (2014). Board diversity and corporate social responsibility. Journal of Business Ethics, 132(4), 641-660. doi: 10.1007/s10551-014-2343-0.

Henseler, J., Hubona, G., & Ray, P.A. (2016). Using PLS path modeling in new technology research: Updated guidelines. Industrial Management & Data Systems, 116(1), 2-20.

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115-135. doi: 10.1007/s11747-014-0403-8.

Henseler, J., Dijkstra, T.K., Sarstedt, M., Ringle, C.M., Diamantopoulos, A., Straub, D.W., Ketchen, D.J., Hair, J.F., Hult, G.T.M., & Calantone, R.J. (2014). Common beliefs and reality about PLS: Comments on Rönkkö & Evermann (2013). Organisational Research Methods, 17(2), 182-209. doi:10.1177/1094428114526928.

Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. Computational Statistics, 28(2), 565-580.

Hillman, A.J., Cannella, A.A., & Paetzold, R.L. (2000). The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. Journal of Management Studies, 37, 235-255.

Hillman, A.J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. Academy of Management Review, 28, 383-396.

Homberg, F., & Bui, H.T.M. (2013). Top Management team diversity: A systematic review. Group & Organisation Management, 38(4), 455-479.

Hong, Y., Liao, H., Hu, J., & Jiang, K. (2013). Missing link in the service profit chain: A meta-analytic review of the antecedents, consequences, and moderators of service climate. Journal of Applied Psychology, 98(2),237-267.

Huber, F., Herrmann, A., Frederik, M., Vogel, J., & Vollhardt, K. (2007). Kausalmodellierung mit Partial Least Squares-Eine anwendungsorientierte Einführung. Wiesbaden: Gabler.

Iacobucci, D., Saldanha, N., & Deng, X. (2007). A meditation on mediation: Evidence that structural equations models perform better than regressions. Journal of Consumer Psychology, 17(2), 139-153.

Judge, T.A., Thoresen, C.J., Bono, J.E., & Patton, G.K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. Psychological Bulletin, 127(3): 376-407.

Kim, K.H., & Rasheed, A.A. (2014). Board heterogeneity, corporate diversification and firm performance. Journal of Management Research, 14(2), 121-139.

Kim, S. (2005). Individual-level factors and organisational performance in government organisations. Journal of Public Administration Research and Theory, 15(2), 245-261.

Kim, T.Y., Bateman, T.S., Gilbreath, B., & Andersson, L.M. (2009). Top management credibility and employee cynicism: A comprehensive model. Human Relations, 62(10), 1435-1458.

Kor, Y.Y. (2003). Experience-based top management team competence and sustained growth. Organization Science, 14, 707-719.

Kor, Y., & Sundaramurthy, C. (2009). Experience-based human and social capital of outside directors. Journal of Management, 35(4), 981-1006.

Kuenzi, M., & Schminke, M. (2009). Assembling fragments into a lens: A review, critique, and proposed research agenda for the organizational work climate literature. Journal of Management, 35(3), 634-717. doi: 10.1177/0149206308330559.

Liao, H., Toya, K., Lepak, D.P., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. Journal of Applied Psychology, 94(2), 371-391.

Mayer, R.C., & Gavin, M.B. (2005). Trust in management and performance: Who minds the shop while the employees watch the boss? Academy of Management Journal, 48(5), 874-888.

Milliken, F.J., & Martins, L.L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organisational groups. The Academy of Management Review, 21(2), 402-433.

Naranjo-Gil, D., Hartmann, F., & Maas, V.S. (2008). Top management team heterogeneity, strategic change and operational performance. British Journal of Management, 19(3), 222-234.

Nielsen, S. (2010). Top management team diversity: A review of theories and methodologies. International Journal of Management Reviews, 12(3), 301-316.

Nishii, L.H., & Wright, P. (2008). Variability at multiple levels of analysis: Implications for strategic human resource management. In D. B. Smith (Eds.), The people Make the Place (pp. 225-248). Mahwah, NJ: Erlbaum.

Preacher, K.J., & Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods, 40(3), 879-891.

Purcell, J., & Hutchinson, S. (2007). Front-line managers as agents in the HRM-performance causal chain: Theory, analysis and evidence. Human Resource Management Journal, 17(1), 3-20.

Raes, A.M., Bruch, H., & De Jong, S.B. (2013). How top management team behavioural integration can impact employee work outcomes: Theory development and first empirical tests. Human Relations, 66(2), 167-192.

Raes, A.M.L., Heijltjes, M.G., Glunk, U., & Roe, R.A. (2011). The interface of the top management team and middle managers: A Process model. Academy of Management Review, 36(1), 102-126.

Roldán, J.L., & Sánchez-Franco, M.J. (2012). Variance-based structural equation modeling: Guidelines for using partial least squares in information systems research. In M. Mora, O. Sarstedt, M., Ringle, C., Henseler, J., & Hair, J. (2014). On the emancipation of PLS-SEM: A commentary on Rigdon (2012). Long Range Planning, 47(3), 154-160.

Schneider, B., Ehrhart, M.G., & Macey, W.H. (2013). Organizational climate and culture. Annual Review of Psychology, 64(1), 361-388. doi: doi:10.1146/annurev-psych-113011-143809.

Schneider, B., Ehrhart, M.G., & Macey, W.H. (2011). Perspectives on organizational climate and culture. In APA handbook of industrial and organizational psychology (Eds.), Building and developing the organization (pp. 373-414). Washington, DC: American Psychological Association.

Shmueli, G., Ray, S., Velasquez-Estrada, J.M., & Chatla, S.B. (2016). The elephant in the room: The predictive performance of PLS models. Journal of Business Research, Forthcoming. doi:10.1016/j.jbusres.2016.03.049.

Shmueli, G. (2010). To Explain or To Predict? Statistical Science, 25(3), 289-310.

Sundaramurthy, C., Pukthuanthong, K., & Kor, Y. (2014). Positive and negative synergies between the CEO's and the corporate board's human and social capital: A study of biotechnology firms. Strategic Management Journal, 35(6), 845-868.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. Journal of Royal Statistical Society, Serie B 39, 111-147.

Taylor, A., MacKinnon, D., & Tein, J. (2008). Tests of the three-path mediated effect. Organisational Research Methods, 11(2), 241-269.

Tenenhaus, M., Esposito-Vinzi, V., Chatelin, Y., & Lauro, C. (2005). PLS path modeling. Computational Statistics and Data Analysis, 48(1), 159-205.

Tian, J., Haleblian, J., & Rajagopalan, N. (2011). The effects of board human and social capital on investor reactions to new CEO selection. Strategic Management Journal, 32(7), 731-747. doi: 10.1002/smj.909.

Veronesi, G., & Keasey, K. (2011). National health service boards of directors and governance models. Public Management Review, 13(6), 861-885.

Veronesi, G., Kirkpatrick, I., & Vallascas, F. (2013). Clinicians on the board: What difference does it make? Social Science & Medicine, 77(0), 147-155.

Veronesi, G., Kirkpatrick, I., & Altanlar, A. (2015). Clinical leadership and the changing governance of public hospitals: Implications for patient experience. Public Administration, 93(4), 1031-1048. doi: 10.1111/padm.12183.

West, M., Dawson, J., Admasachew, L., & Topakas, A. (2011). NHS staff management and health service quality: Results from the NHS staff survey and related sata. London: Department of health.

West, M.A., & Dawson, J.F. (2012). Employee engagement and NHS performance. London: King's fund.

Williams, J., & MacKinnon, D.P. (2008). Resampling and distribution of the product methods for testing indirect effects in complex models. Structural Equation Modeling, 15(1), 23-51.

Wooldridge, B., Schmid, T., & Floyd, S.W. (2008). The middle management perspective on strategy process: Contributions, synthesis, and future research. Journal of Management, 34(6), 1190-1221.

Zald, M.N. (1969). The power and functions of boards of directors: A theoretical synthesis. American Journal of Sociology, 75(1), 97-111.

Ziegler, R., Hagen, B., & Diehl, M. (2012). Relationship between job satisfaction and job performance: Job ambivalence as a moderator. Journal of Applied Social Psychology, 42(8), 2019-2040.

FIGURES

A. Model with total effect
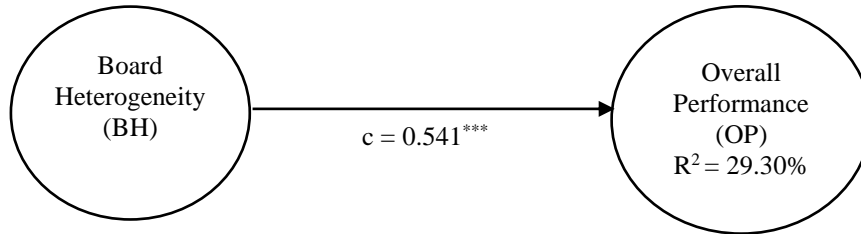
B. Model with a three-path mediated effect

$$\text{SRMR}_{\text{composite factor model}} = 0.077$$
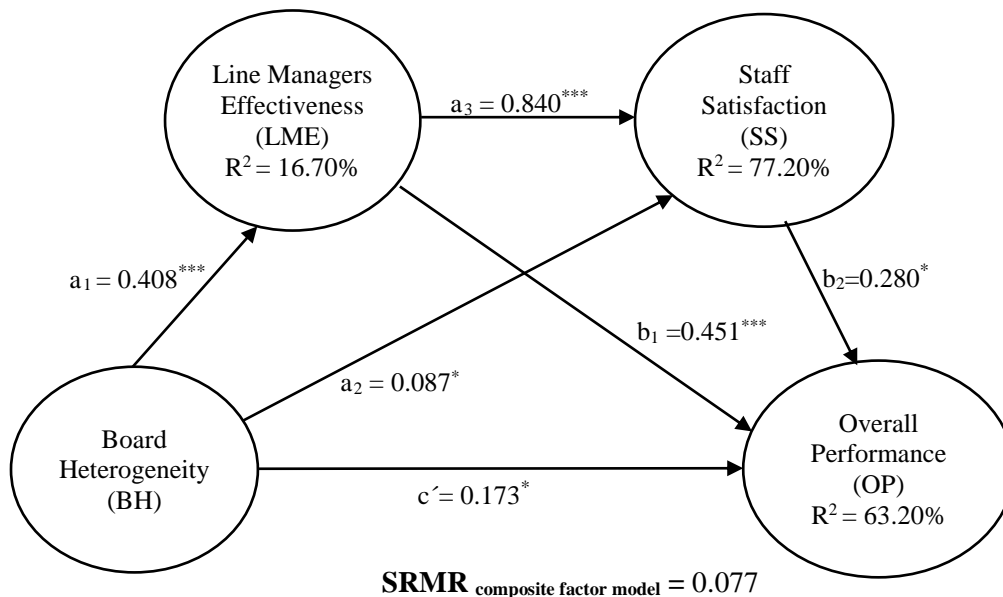
H_1= Board heterogeneity → Overall performance = c´
H_2= Board heterogeneity → Staff satisfaction → Overall performance = $a_2 b_2$
H_3= Board heterogeneity → Line Managers Effectiveness → Overall performance = $a_1 b_1$
H_4= Board heterogeneity → Line Managers Effectiveness → Staff satisfaction → Overall performance = $a_1 a_3 b_2$
*p<0.05; **p<0.01; ***p<0.001.

Figure 1. Structural model: three-path mediation model.

TABLES

Table 1. Descriptive statistics of the measures

	N	Mean	Std. dev.	Min	Q1	Q2	Q3	Max
bh1: Blau´s index board tenure	102	0.606	0.222	0	0.476	0.660	0.760	1
bh2: Blau´s index business expertise	102	0.670	0.305	0	0.489	0.788	0.926	0.99
bh3: Blau´s index doctor professional background	102	0.391	0.162	0	0.284	0.331	0.490	0.95
bh4: Blau´s index executive director	102	0.982	0.026	0.860	0.977	0.994	1	1
bh5: Blau´s index membership of other boards	101	0.850	0.219	0	0.816	0.938	0.992	1
bh6: Blau´s index functional background	100	0.667	0.149	0	0.576	0.675	0.761	0.992
op1: Financial efficiency (RCI including excess bed days)	102	0.010	0.001	0.008	0.009	0.010	0.011	0.115
op2: Quality of the service provided (SHMI)	102	1.002	0.108	0.801	0.937	0.972	1.048	1.408
op3: Work pressure felt by staff	102	1.938	0.112	1.660	1.870	1.930	2.010	2.240
op4: Patient experience summary score	102	75.041	2.545	67.400	73.575	75.100	77.025	79.800
ss1: Staff motivation at work	102	3.831	0.082	3.600	3.780	3.840	3.880	4.100
ss2: Staff recommendation of the trust	102	3.584	0.218	2.900	3.447	3.600	3.700	4.070
ss3: Staff job satisfaction	102	3.576	0.081	3.34	3.520	3.580	3.640	3.77
lme1: Fairness and effectiveness of procedures	102	3.507	0.094	3.170	3.438	3.505	3.570	3.710
lme2: Support from immediate managers	102	3.607	0.103	3.260	3.550	3.620	3.680	3.800
lme3: Effective team working	102	3.719	0.079	3.520	3.660	3.720	3.770	3.910

Table 2. Measurement model

Item description	Variance inflation factor (VIF)	Weight	Loading	Composite reliability (CR)	Average variance extracted (AVE)
Board heterogeneity (BH) (formative constructs)				N.A.	N.A.
bh1: Blau´s index board experience duration	1.144	0.814			
bh2: Blau´s index business experience	1.121	0.227			
bh3: Blau´s index doctor	1.120	0.353			
bh4: Blau´s index executive director	1.019	0.228			
bh5: Blau´s index membership of other boards	1.173	0.144			
bh6: Blau´s index speciality area	1.082	0.136			
Overall performance (OP) (formative constructs)				N.A.	N.A.
op1: Financial efficiency (organisation-wide index including excess bed days)	1.023	0.158			
op2: Overall quality of the service value (quality measured as lower unexpected death count)	1.070	0.217			
op3: Work pressure felt by staff	1.061	0.919			
op4: Patient experience (summary score for hospital care)	1.024	0.074			
Staff satisfaction (SS) (reflective constructs)				0.934	0.824
ss1: Staff motivation at work			0.870		
ss2: Staff recommendation of the trust as a place to work or receive treatment			0.910		
ss3: Staff job satisfaction			0.942		
Line managers effectiveness (LME) (reflective constructs)				0.911	0.773
lme1: Fairness and effectiveness of procedures for reporting errors, near misses and incidents			0.887		
lme2: Support from immediate managers			0.917		
lme3: Effective team working			0.831		

N.A.: Not applicable.

Table 3. Fornell-Larcker criterion and heterotrait-monotrait ratio

	BH	OP	SS	LME
BH	**N.A.**			
OP	0.477	**N.A.**		
SS	0.429	0.749	**0.908**	
LME	0.408	0.767	0.875 **HTMT = 0.889 (0.911;0.989)**	**0.879**

BH: Board heterogeneity; OP: Overall performance; SS: Staff satisfaction; LME: Line managers effectiveness. The diagonal elements (**bold**) are the square root of the AVEs; off-diagonal elements are the correlations among constructs. N.A.: Not applicable.

Table 4. Effects on endogenous variables.

Effects on endogenous variables	Theoretical sense (support)	Direct effect (path coefficient)	t-Value (bootstrap)	Percentile 95% confidence intervals	Explained variance
SS ($R^2 = 0.772$)					
BH (a_2)	+ (Yes)	0.087	1.713* Sig.	[0.0463;0.5358] Sig.	3.73%
LME (a_3)	+ (Yes)	0.840	24.872*** Sig.	[0.3087;0.5822] Sig.	73.50%
LME ($R^2 = 0.166$)					
BH (a_1)	+ (Yes)	0.408	5.835*** Sig.	[0.1865;0.6833] Sig.	16.65%
OP ($R^2 = 0.638$)					
H₁: BH ($c´$)	+ (Yes)	0.173	1.796* Sig.	[0.7654;0.8986] Sig.	8.25%
LME (b_1)	+ (Yes)	0.451	3.515*** Sig.	[0.0127;0.3780] Sig.	34.59%
SS (b_2)	+ (Yes)	0.280	2.214* Sig.	[0.0061;0.1913] Sig.	20.97%

BH: Board heterogeneity; OP: Overall performance; SS: Staff satisfaction; LME: Line managers effectiveness. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ (based on t(4999), one-tailed test); t(0.05; 4999) = 1.964726835; t(0.01; 4999) = 2.585711627; t (0.001; 4999) = 3.310124157. Sig. denotes a significant direct effect at 0.05; Nsig. denotes a non-significant direct effect at 0.05.

Table 5. Summary of the mediating effect tests

Total effects of BH on OP (c)			Direct effects of BH on OP (c´)		Indirect effects of BH on OP			
Coef.	t-value		Coef.	t-value		Point estimate	Percentile bootstrap 95% Confidence Interval	VAF (%)
0.541	8.454*** Sig.	H_1= c´	0.173*	1.796	Total	0.304	[0.1190;0.3840] Sig.	56.19
					$H_2 = a_2 b_2$ (via SS)	0.024	[0.0010;0.0684] Sig.	4.44
					$H_3 = a_1 b_1$ (via LME)	0.184	[0.0800;0.3333] Sig.	34.01
					$H_4 = a_1 a_3 b_2$ (via LME + SS)	0.096	[0.0011;0.0475] Sig.	17.74

*** $p < 0.001$. $t(0.05, 4999) = 1.645158499$, $t(0.01, 4999) = 2.327094067$, $t(0.001, 4999) = 3.091863446$.

Table 6: Results of 10-fold cross validation

k-fold	GoF	R^2_{inner}	Com	$R^2_{average}$	R^2_{BH}	R^2_{MS}	R^2_{SS}	R^2_{OP}
1	0.4697	0.4535	0.4865	0.3402	-	0.2380	0.6554	0.4672
2	0.5228	0.5458	0.5008	0.4093	-	0.1125	0.9006	0.6241
3	0.3581	0.3360	0.3817	0.2520	-	0.2212	0.5370	0.2497
4	0.4705	0.5528	0.4005	0.4146	-	0.3984	0.8228	0.4371
5	0.5217	0.6024	0.4518	0.4518	-	0.1554	0.8030	0.8489
6	0.5853	0.5833	0.5873	0.4375	-	0.0015	0.9189	0.8297
7	0.5963	0.7131	0.4986	0.5348	-	0.5680	0.7600	0.8112
8	0.6318	0.7607	0.5247	0.5705	-	0.3841	0.9585	0.9396
9	0.5005	0.5271	0.4752	0.3954	-	0.2074	0.6641	0.7099
10	0.4729	0.5188	0.4310	0.3891	-	0.0602	0.7500	0.7460
Mean	**0.5130**	**0.5593**	**0.4738**	**0.4195**	**-**	**0.2347**	**0.7770**	**0.6663**
Std. dev.	**0.0788**	**0.1205**	**0.0607**	**0.0904**	**-**	**0.1723**	**0.1322**	**0.2190**