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Article

The time game: cracking the code of TMT age versus tenure in driving organizational performance

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The time game: cracking the code of TMT age versus tenure in driving organizational performance

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ABSTRACT

This study investigates how age, tenure, and network of the top management team (TMT) affect organizational performance, using public data of listed IT companies from the USA. The Theory of Organizational Socialization (TOS) and Upper Echelon Theory (UET) lay the foundation for the research and a quantitative analysis approach is used. The findings show that TMT age has a positive interplay with organizational performance, suggesting the importance of wisdom and decision-making prowess accumulated through experience. Conversely, TMT tenure shows a negative impact on organizational performance, advocating a possible lack of flexibility or reluctance to adapt could lead to unfruitful business outcomes. Moreover, the TMT network, by promoting effective communication, collaboration, and knowledge-sharing, creates a strong social environment among the members and ultimately enhances the organization's performance.

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1. Introduction

Organizational performance plays a crucial role in determining a corporation's business's position compared to its competitors. The rapid change in the global economy requires businesses to explore ways to maximize their profits. Such ways need the drive from the TMT - this refers to a select group of very prominent managers who are responsible for developing appropriate strategies. Therefore, the TMT should demonstrate sensitivity and possess the ability to promptly select appropriate approaches to adapt to changing requirements (Naranjo-Gil et al., 2008). TMT has been recognized as the main driver of a company's strategic decision-making in top management research (Hambrick, 2007; Papadakis & Barwise, 2002). The function of TMT has been paid attention widely for the past decades (Wu et al., 2019). UET stated that organizational performance and strategy choice depend on the characteristics of TMT (Hambrick & Mason, 1984; Nielsen, 2010; Zhou & Rosini, 2015). The UET literature views TMT composition as a potential predictor of business growth, and academics have researched the relationship between company profitability and TMT, building on this hypothesis.

According to UET, the values, experience, age, and education of TMT can have a substantial influence on how they understand situations and make strategic decisions, which will ultimately have an impact on the success of organizations. There are various studies linking TMT and organizational performance (Hambrick & Mason, 1984). Results from prior research typically focused on experiences (Zhou et al., 2021), gender and age (Tanikawa et al., 2017), tenure (Tihanyi et al., 2000), or education (Díaz-Fernández et al., 2019) separately. Especially, firms with lower TMT tenures or younger ages experience more rapid strategy shifts (Barron et al., 2011; Wiersema & Bantel, 1992), and this condition is exacerbated in emerging entrepreneurial enterprises (Liu et al., 2012). Previous research frequently associates age and tenure as two dimensions representing the same phenomenon, aiming to demonstrate a significant correlation

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between the two (Ng & Feldman, 2010; Vasconcelos, 2018). This study asserts that age and tenure are two distinct concepts, each impacting organizational performance in a unique manner. Age pertains to a personal chronic development that remains unrelated to the work context and the executives' mission, whereas tenure is commonly associated with the length of time someone has been in a particular position or organization (Dobrow et al., 2018).

To enhance the perception of the correlation of age and tenure within the top management team on the performance of organizations, this research's first goal is to examine the intricate relationships among TMT age and tenure, and their impact on organizational performance, address a critical gap in UET research. While age and tenure are usually studied separately, and their interaction is infrequently examined together, even though their potential interactions might be complex (Finkelstein et al., 2009). Age exhibits generational influences and life experiences, while tenure, on the other hand, represents firm or work-related knowledge and the embeddedness in organizational routines (Hambrick & Mason, 1984).

For the second purpose, this study targeted investigating how the TMT network influences the connection between demographic compositions of TMT members (such as age and tenure) and organizational performance. The presence of the TMT network as a moderating variable in this study's model plays a crucial role for several reasons. First of all, while age and tenure represent internal characteristics of the TMT, the TMT network represents the external social capital that possibly modifies the impact of these characteristics on organizational performance (Peng & Luo, 2000). By examining the TMT network as a moderating factor, it helps to explore how external connections increase or mitigate the effects of age and tenure on firm outcomes (Carpenter & Westphal, 2001). Secondly, this approach allows to investigate the contingent nature of UET, addressing calls for more nuanced studies of how TMT characteristics influence organizational performance (Hambrick, 2007).

Finally, this moderating perspective bridges individual-level characteristics (age and tenure) with team-level dynamics and external environmental influences, providing a more holistic view of the upper echelons' impact on organizational performance (Zaheer et al., 2010). Examining these variables collectively might yield fruitful insights into the dynamics of the TMT, thus offer the potential of identifying the ideal combinations of age, tenure, and network attributes for some specific organizational contexts or strategic objectives. This research increases building upon the current corpus of research on UET (Hambrick & Mason, 1984) as well as the theory of organizational socialization (TOS) (Van Maanen & Schein, 1979). Such research not only advances UET but also provides practical implications for board members and executives in making and developing high-performing TMT. The dataset used in this

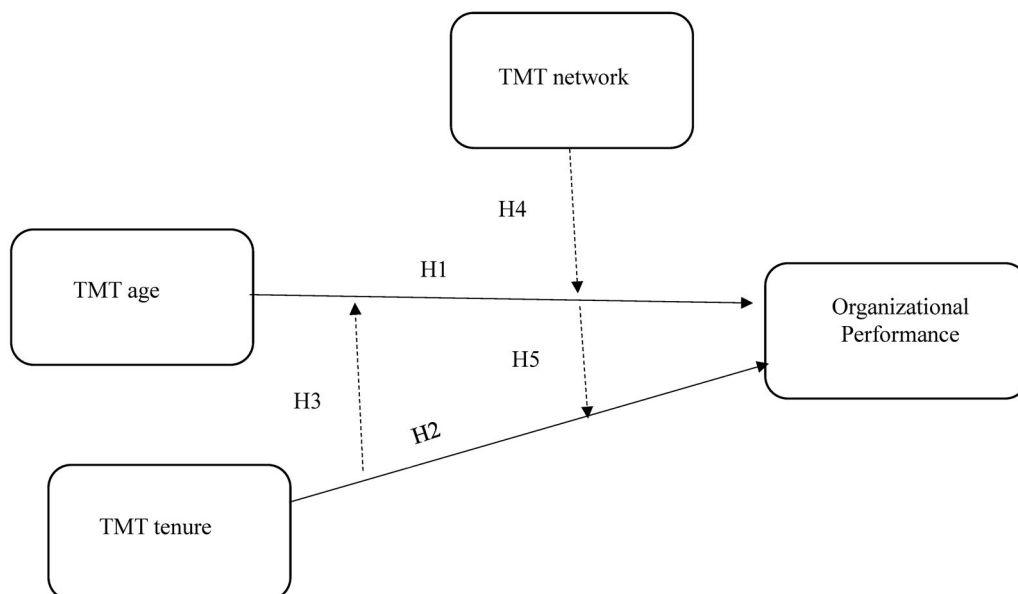


Figure 1. Conceptual model.

analysis contains samples from 442 IT companies that are publicly listed in the United States. The study's conceptual model is portrayed in [Figure 1](#).

The format of this research is as follows: Part 2 consists of a comprehensive analysis of existing literature and the formulation of research hypotheses. Part 3 offers the research methodology, measurements, and model design for testing. Part 4 gives the findings of this paper and Parts 5 and 6 are the discussion and conclusion.

2. Literature review and hypothesis development

2.1. Literature review

TMT implies a small group of top leaders including the CEO, executive, or directors (Hambrick & Mason, 1984), who provide instructions and strategies for decision-making. There has been a long time of attention to the crucial function of TMT in organizational performance (Kolev & McNamara, 2022; Ma et al., 2021), especially TMT attributes (Tanikawa et al., 2017; Wu et al., 2019). TMT age has demonstrated a vital role in organizational performance (Sutarti et al., 2021). Research conducted by Kanfer and Ackerman (2004) indicates that the managerial performance of managers is significantly affected by age-related alterations in personality, mood, and affect. To be more explicit, emotion control improves with age (Parry & Urwin, 2011). Bantel and Jackson (1989) stated that the age diversity of TMT impacts performance. However, there are concerns regarding the adverse consequences of age diversity on performance since it could hinder TMT members' coordination, cohesion, and agreement-seeking, which may make them slower and less effective (Knight et al., 1999; Williams & O'Reilly, 1998). Likewise, Tanikawa et al. (2017) found that the older the TMT members are, the worse their organizational performance. Sutarti et al. (2021) discovered that age variety has a beneficial impact on business outcomes. According to certain studies (Rivas, 2012; Zimmerman, 2008), there is no correlation between TMT age and organization outcomes.

In addition, prior studies have shown that the duration of a TMT collaboration influences their performance (Katz, 1982; Pelled et al., 1999). Other studies on TMT dynamics have shown that the effectiveness of a TMT is contingent upon the duration of time that the members have been collaborating (Katz, 1982; Pelled et al., 1999). In addition, TMT tenure, communication and interaction within the team are improved and reduce conflict (Nielsen & Nielsen, 2013). According to Bougrain and Haudeville (2002), the outcome of the firm results from several contributions from diverse actors operating in a TMT. Firms with shorter TMT tenures or younger ages experience more rapid strategy shifts (Barron et al., 2011; Wiersema & Bantel, 1992), and this condition is exacerbated in emerging entrepreneurial enterprises (Liu et al., 2012).

Despite the increasing number of studies on TMT age's impact on organizational business outcomes (Bantel & Jackson, 1989; Sutarti et al., 2021; Tanikawa et al., 2017), there are conflicting results in these relationships. Carpenter (2002) indicated that TMT characteristics should be considered with the social text of TMT. While prior research has inspected the influence of TMT age along with TMT tenure on organizational business outcome, there is a deficiency of studies that focus on the way TMT tenure influences the correlation between TMT age and organizational performance. Furthermore, some research examines the extent to which the TMT network provides valuable information and resources for organizational performance. Prior studies suggested that the network is favorable for innovation results (Heavey et al., 2015; Kemper et al., 2013). Kraft and Bausch (2018) discovered that TMT networks are more helpful for innovation, whereas varied networks encourage innovation in more stable environments in situations with frail political, regulatory, and financial foundations. However, TMT networks have not yet been considered moderators in the connection between TMT age and the performance of the organization.

2.2. Hypothesis development

2.2.1. Theoretical background

TMT study supports a reasonable theoretical argument for businesses, which states that TMT is considered to contribute to enhancing performance (Naranjo-Gil et al., 2008; Nielsen, 2010). Specifically, Bantel and Jackson (1989) stated that the variety of TMT ages may lead to improved performance of businesses.

Also, Tanikawa et al. (2017) found the role of TMT characteristics in organizational performance. In line with prior studies, Shrader and Siegel (2007) posited that part of a firm capability relies on human capital. Hence, human capital has a strong effect on economic growth at the macro level and firm growth at the micro level (Shrader & Siegel, 2007). Therefore, when explaining the performance of organizations, TMT should be considered to have deeper understanding.

UET states that the outcome of an organization depends on the attributes of key decision-makers (Hambrick & Mason, 1984). UET posits that TMT attributes play a crucial part in the processes of making decisions, which in turn influence organizational performance (Carpenter et al., 2004). Such characteristics include age, gender, education, and experiences, which may affect the way TMT explains the situation and chooses decisions. In Addition, UET mentions that the manager's background can partly explain the outcomes of an organization, as these shape executives' interpretations of strategic situations and influence their decision-making processes (Hambrick, 2007). Regarding TMT age, UET suggests that older executives bring more diverse life experiences and accumulated wisdom when making strategic decisions, potentially leading to more considered and effective strategies (Tihanyi et al., 2000). This often translates into a constructive correlation between TMT age and organizational performance (Carpenter et al., 2004). Conversely, UET also plays the role of an indicator that fuels the identification of the correlation of TMT tenures on firm performance. Even though longer tenure can enhance team cohesion and improve decision-making efficiency (Zenger & Lawrence, 1989), UET argues that longer tenure may also have an adverse effect, which is the strategic persistence and reduced sensitiveness of the organization when reacting to environmental changes (Finkelstein & Hambrick, 1990). This effect can lead to a negative correlation between TMT tenure and organizational performance, especially in more dynamic business environments (Boeker, 1997). The UET, therefore, offers a clearer view of how these demographic attributes can have contrasting impacts on organizational outcomes. Furthermore, the UET recognizes that these linkages are not universal but are dependent on various aspects such as industry context and the dynamics of the business environment (Carpenter, 2002), which further highlights its critical role of considering moderating factors such as TMT networks in research designs.

The TOS (Van Maanen & Schein, 1979) furnishes a framework for further understanding of how TMT networks moderate the connections between TMT age, tenure, and organizational performance. TOS suggests that TMT members acquire knowledge, skills, and social capital through interactions not only from within but also from outside their organizations (Chao et al., 1994). When it comes to TMTs, the networks represent a fundamental mechanism for this ongoing socialization process (Cao et al., 2010). As a moderator, TMT networks can influence the relationship between age and performance by affecting how TMT members leverage their accumulated experiences and wisdom (Geletkanycz & Hambrick, 1997). Similarly, networks may moderate the tenure-performance relationship by shaping how long-serving executives adapt to changing environments and access new information (McDonald & Westphal, 2003). This moderating effect aligns with TOS's emphasis on continuous learning and adaptation throughout an individual's organizational life (Ashforth et al., 2007). By integrating TOS with the concept of TMT networks as a moderator, we can gain more knowledge of how external social capital (network) interacts with executives' demographic characteristics (age and tenure) to influence organizational performance.

2.2.2. TMT age, TMT tenure, and organizational performance

According to UET (Hambrick & Mason, 1984), age is a crucial demographic attribute of TMT, which has been proven to manipulate the performance of the company (Cohen & Dean, 2005; Zimmerman, 2008). Ages are viewed as markers of TMT members' attitudes, values, and opinions (Bantel & Jackson, 1989), and several scholars regard it as a crucial determinant of corporate performance. Sutarti et al. (2021) posited that the age diversity of TMT exerts an influence on the experience and knowledge of members. Older executives typically possess a wealth of accumulated knowledge, diverse experiences, and refined decision-making skills that can contribute to more effective strategic choices (Tihanyi et al., 2000). As TMT members age, they tend to develop better emotional regulation and interpersonal skills, which not only help enhance team dynamics but also stakeholder relationships (Kor, 2006). Moreover, older TMT members tend to have a far more extensive professional networks, thus providing access to valuable resources that beneficial for the organization (Geletkanycz & Hambrick, 1997). Age-related increases in crystallized intelligence can lead to improved

problem-solving abilities in complex business environments (Sturman, 2003). Additionally, older executives may be more capable of viewing the business landscape in a longer-term perspective, which can lead to more sustainable strategic decisions (Wiersema & Bantel, 1992). Also, the more the senior management team matures, the more the organization tends to grow more inclined to avoid risks and caution against hazardous initiatives (Agnihotri & Bhattacharya 2019). While some studies have suggested potential drawbacks to increased age, such as reduced risk-taking (Serfling, 2014), the overwhelming body of data suggests that TMT age and organizational performance are positively correlated. Then we propose:

H1: TMT age has a positive effect on organizational performance.

TMT tenure refers to the length of time the executives have served as top management managers within an organization (Carpenter et al., 2004). While longer tenure in TMTs can result in benefits such as enhanced team cohesion and organizational knowledge, UET suggests that stretched tenure may also lead to negative consequences on organizational performance (Hambrick & Mason, 1984). As TMT members' tenure increases, they often develop fixed mental models and routines that can result in strategic strictness and are more likely resistant to change (Finkelstein & Hambrick, 1990). Prolonged tenure may also lead to group-thinking behavior and reduced cognitive conflict within the TMT, which potentially limits the diversity of perspectives when the TMT makes a strategic decision (Wiersema & Bantel, 1992). Furthermore, long-tenured executives may become overly committed to existing strategies and less receptive to new concepts or external ideals, which is known as 'strategic persistence' (Boeker, 1997). Additionally, as tenure increases, TMT members may prioritize maintaining the status quo and protecting their positions, potentially leading to risk aversion and suboptimal decision-making (Matta & Beamish, 2008). Another perspective is offered by Hambrick et al. (1993), who suggest that extended TMT tenure can lead to increased political behavior within the organization. Long-serving executives may accumulate power and influence, potentially leading to decisions that prioritize personal interests over organizational goals. Tihanyi et al. (2000) further argue that longer-tenured TMTs may become more homogeneous in their thinking and less likely to pursue risky strategies such as international diversification, which could limit a firm's growth opportunities and overall performance. From the above arguments, it leads us to propose the following hypothesis:

H2: TMT tenure has a negative effect on organizational performance.

2.2.3. Effect of TMT age and tenure on organizational performance

Building on UET (Hambrick & Mason, 1984), we propose that tenure moderates the relationship between TMT age and organizational performance in the IT industry. TMT age is generally associated with positive firm outcomes due to the accumulated experience, extensive networks, and enhanced decision-making capabilities of older executives (Heavey & Simsek, 2017; Kor, 2006). These age-related benefits often translate into superior strategic choices and improved firm performance (Carpenter et al., 2004). However, we argue that the positive influence of TMT age on performance may diminish as team tenure increases. Longer team tenure can lead to strategic rigidity, groupthink, and resistance to change (Finkelstein & Hambrick, 1990; Katz, 1982), potentially neutralizing the advantages of age-related experience. In the rapidly evolving IT sector, where adaptability is crucial, extended tenure might make teams less receptive to new ideas and changing market conditions, regardless of their age-related wisdom (Heyden et al., 2015; Kor & Mesko, 2013). Furthermore, as tenure increases, the cognitive diversity initially brought by varied ages may converge due to shared experiences and socialization processes within the firm (Michel & Hambrick, 1992). This convergence can reduce the positive impact of age diversity on team decision-making and innovation (Naranjo-Gil et al., 2008; Nielsen & Nielsen, 2013). Additionally, longer-tenured teams may become more committed to established strategies and less likely to initiate strategic change, even when environmental shifts demand it (Boeker, 1997; Wiersema & Bantel, 1992).

The IT industry's dynamic nature amplifies these tenure-related challenges. Rapid technological advancements and market changes require constant adaptation and innovation (Tushman & O'Reilly, 1996). While age-related experience is valuable, it may become less relevant if not continuously updated,

a process that can be hindered by prolonged tenure in a single firm context (Dezsö & Ross, 2012). Therefore, we hypothesize that TMT tenure will moderate the correlation between the age of TMT and organizational performance, such that the positive influence of TMT age on the organization's performance will be weaker for teams with longer tenure.

H3: TMT tenure weakens the positive interplay between TMT age and organizational performance.

2.2.4. Effect of TMT age, tenure and TMT network on organizational performance

The term 'network' is discussed in various ways in different fields of study, such as sociology, psychology, and management literature. In this study, we draw on the TOS, following Van Maanen and Schein's (1979) definition as 'the process by which an individual acquires the social knowledge and skills necessary to assume an organizational role.' It is a joint process whereby the organization pursues the influence or shaping its members, while the distinct employee/team member tries to learn and understand his or her roles and responsibilities, organizational norms, values and power dynamics (Bauer & Erdogan, 1998; Fisher, 1986). Buyl et al. (2014) defined the TMT networks as the time, counted by years, in which the TMT members who have been with the business the longest overlap. Within the framework of TMT decision-making, the interconnectedness of team members can foster the exchange of information and perspectives that shape their viewpoints (Sidle, 2007) and this can enhance members' comprehension of one another and promote the exchange of ideas and cooperation, which are crucial for effective team-based decision making. The interaction between TMT age and network can be synergistic from a TOS perspective. Older executives, with their extensive individual socialization experiences, may be better positioned to contribute to and benefit from the collective socialization process that occurs during these overlapping years (Nahapiet & Ghoshal, 1998). We believe that TMT networks are more effective in enhancing the effectiveness of the process of absorbing knowledge when trying to use the many knowledge resources that each TMT member possesses (Fernández-Mesa et al., 2023). Simultaneously, a well-developed TMT network can enhance the socialization process for older executives by providing a platform for continuous learning and adaptation within the specific context of their firm and industry (Kor & Mesko, 2013). Subsequently, the improvement in the performance of TMT is directly associated to the combination of diverse information and different viewpoints, and this improvement is more pronounced when the TMT has a more robust network. Then we suggest the following hypothesis:

H4: TMT network strengthens the positive interplay between TMT age and organizational performance.

While TMT tenure can initially benefit firms through accumulated knowledge, extended tenure may lead to strategic rigidity and groupthink, particularly problematic in the dynamic IT sector (Finkelstein & Hambrick, 1990; Heyden et al., 2015). However, we dispute that a strong TMT network can counteract these negative effects. TOS suggests that socialization is ongoing, and a robust network facilitates continuous learning and adaptation among team members (Fisher, 1986; Morrison, 2002). Strong networks promote diverse knowledge integration, enhance adaptability, and foster an environment where challenging existing norms are encouraged (Edmondson, 1999; Kor, 2006). Furthermore, networks help maintain connections to external realities, balancing the inward focus often associated with long tenure (Carpenter & Westphal, 2001). In the rapidly evolving IT industry, this ability to stay connected to new realities is crucial. Therefore, we hypothesize that TMT network moderates the correlation between TMT tenure and organizational performance, with the negative impact of tenure on performance being weaker for teams with more extensive networks.

H5: TMT network mitigates the negative interplay between TMT tenure and organizational performance.

3. Method

3.1. Samples and data

We created a dataset with 661 public listed in the U.S., IT-related corporates that operated in 2016. The selection of the IT sector in the US is based on the growing trend of American technology companies experiencing an increase in the representation of senior executives with diverse demographic characteristics. These

individuals are now occupying top-level positions within the executive teams of these companies. After the initial review of the entire dataset, we removed 153 samples that had less than three members from the management board. In a second-phase review, we deleted 66 samples that didn't meet our requirement, which is lacking ROA (our measure of organizational performance). The study is conducted with a sample set including 442 companies with a total of 5450 TMT members. We obtained organizational performance data from the OSIRIS global database, which is recognized as one of the most extensive and commercially accessible databanks of publicly listed companies (Shao et al., 2010) and one that has been increasingly used by international business and management researchers (Banalieva & Dhanaraj, 2013)

3.2. Measurements

Various definitions have been put forth in previous studies regarding the TMT. According to Wiersema and Bantel (1992), the top team management encompasses individuals those has the roles as the highest position in the organization, like the chairman of the BOD, the CEO, the president, the COO, as well as other executives in the subsequent highest tier. Other studies consider individuals who have positions higher than the VP (Sambharya, 1996), individuals in the highest two tiers of a company's hierarchy (Carpenter & Fredrickson, 2001), or managers selected by the CEO (Athanassiou & Nigh, 2000) as part of the TMT. For the purposes of this study, we adhere to the classification stipulated by Wiersema and Bantel (1992), wherein the TMT comprises the head of the board, the CEO, the president, the COO, as well as executives in the next highest tier, such as the CFO. Our final sample includes only enterprises with more than three employees.

3.2.1. Dependent variable

Key financial performance indicators, including ROA, ROE, and ROS are the most used methodologies for measuring organizational performance (Michael Geringer et al., 1989; Crabtree & DeBusk, 2008). In this paper, we opt for Return on Assets (ROA) as the metric to gauge organizational performance.

3.2.2. Independent variables

TMT age: in this study, each TMT members' age in a company is used to calculate the mean age, which is then used as the measurement for TMT age (Tihanyi et al., 2000).

TMT tenure: *Tenure* was calculated as a logarithmic transformation of the average number of years each TMT member maintained their position, adopted from Tihanyi et al. (2000).

TMT network: In accordance with the methodology established by Buyl et al. (2011), we assess the TMT network by identifying the duration of overlapping working years among the members of the TMT. During these periods, TMT members function within a social network, collaborating while exchanging experiences and cultivating strong relationships among themselves.

Control variables: firm age, TMT size, are control variables in this research. Firm age is the period the company has survived since the foundation, counted by year, while TMT size is decided by how many members there are in the board (Lee & Park, 2006)

4. Result

Table 1 demonstrates the mean, standard deviation, and correlations among the variables of the study. The variables exhibit a minimal degree of correlation. Therefore, no indications of collinearity were identified.

Table 2 presents the results from the regression analysis.

Model 1 incorporates solely the control variables.

Model 2 assesses Hypotheses 1 and 2 and displays the significant results of all two variables on organizational performance, particularly the age of the TMT members ($\beta=0.11$, $p < .05$), as well as the TMT tenure ($\beta = -0.13$, $p < .05$). Then, from this testing model H1 and H2 are supported.

Model 4 and model 5 examine H3, H4, and H5, the influence of TMT tenure on the correlation of the age of TMT and organizational outcome (H3), and the influence of the TMT network on the correlation of TMT age and TMT tenure on organizational performance (H4 and H5), which are all moderating effects.

Table 1. Descriptive statistics and correlation coefficients.

		Mean	SD	1	2	3	4	5	6
1	Organizational performance	-10,976	1,931,252	1.000					
2	TMT tenure	67,994	349,940	-.056	1.000				
3	TMT age	594,521	519,506	.042	.507**	1.000			
4	TMT network	103,955	565,681	.189**	-.097*	-.080	1.000		
5	TMT size	89,231	288,236	.217**	.053	-.004	.185**	1.000	
6	Firm age	189,729	886,700	.059	.037	-.076	.012	.076	1.000

Note.

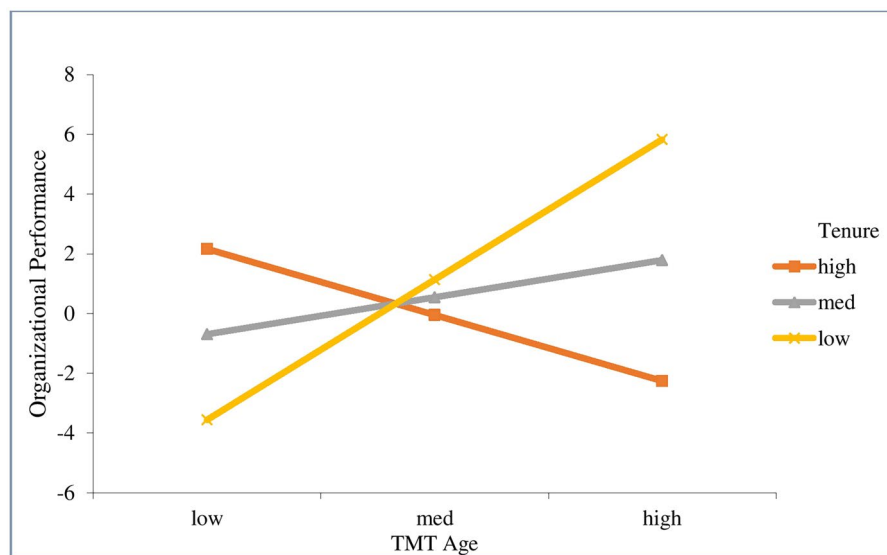
**Correlation is significant at the 0.01 level.

*Correlation is significant at the 0.05 level.

Table 2. Regression model: organizational performance, TMT age, TMT tenure and moderating variables.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent variable	Organizational performance	Organizational performance	Organizational performance	Organizational performance	Organizational performance
	Coefficients (t-value)	Coefficients (t-value)	Coefficients (t-value)	Coefficients (t-value)	Coefficients (t-value)
Constant	-15.64 (-4.62)***	-36.44 (-3.09)***	-41.74 (-3.55)***	-99.79 (-4.83)***	-4 (-0.17)
<i>Control variables</i>					
Firm Age	.04 (.93)	0.06 (1.2)	0.06 (1.21)	0.05 (1.08)	0.06 (1.22)
TMT Size	.21 (4.58)***	0.22 (4.73)***	0.19 (4.08)***	0.21 (4.52)***	0.2 (4.16)***
<i>Independent variables</i>					
TMT Age		0.11 (2.06)**	0.12 (2.18)**	0.4 (4.24)***	-0.06 (-0.52)
TMT Tenure		-0.13 (-2.33)**	-0.11 (-2.09)**	1.8 (3.44)***	-0.1 (-0.98)
TMT network			0.15 (3.24)***		-0.92 (-1.58)
<i>Moderating variables</i>					
Interaction age and tenure				-2.09 (-3.7)***	
Interaction age and network					1.09 (1.75)*
Interaction tenure and network					-0.02 (-0.15)
<i>Model indices</i>					
F-value	11.29	7.32	8.07	8.76	6.32
Adjusted R-square	0.04	0.05	0.07	0.08	0.08
R-square	0.05	0.06	0.09	0.09	0.09
Sign.	0.00	0.00	0.00	0.00	0.00

1. Number of samples = 442.

2. * $p < .1$; ** $p < .05$; *** $p < .01$.**Figure 2.** Moderating effect of TMT tenure between TMT age and organizational performance.

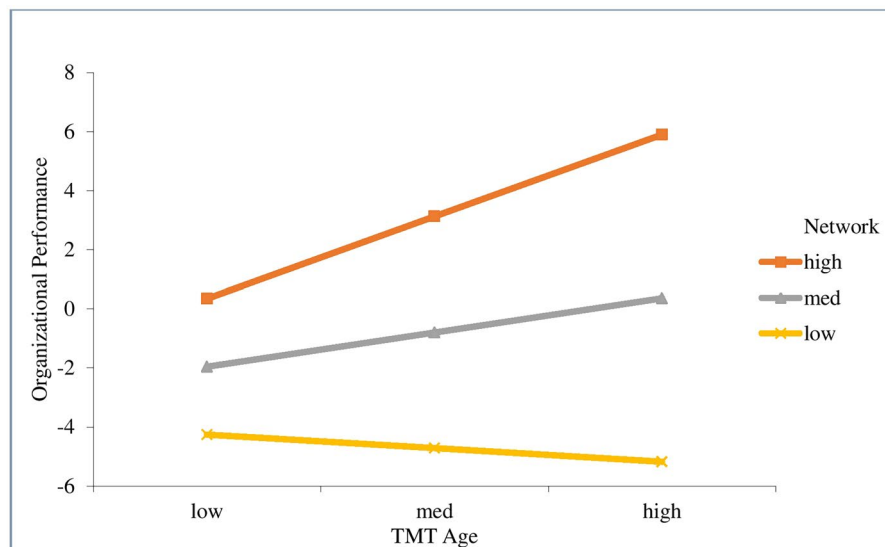


Figure 3. Moderating effect of TMT Network between TMT age and organizational performance.

The results display that the duration of TMT tenure diminishes the influence of TMT age on organizational performance ($\beta = -2.09$, $p < .01$). Thus, H3 is supported (Figure 2). The TMT network strengthens the correlation between the age of TMT members and organizational performance with $\beta = 1.09$, $p < .1$, so H4 is supported (Figure 3). The impact of the TMT network on the connection between TMT tenure and organizational performance is not substantial, thus, H5 is not supported.

5. Discussion

This research makes a substantial contribution to the body of current literature on TMT in the IT industry, particularly in relation to UET and the TOS. While Hambrick and Mason (1984) and Wiersema and Bantel (1992) suggested that junior executives are more adaptable and better suited for dynamic industries, this study, on the contrary, finds that higher TMT age is associated with higher organizational performance, at least in the IT sector. This result aligns more closely with Tushman and O'Reilly (1996) result, which emphasizes the value of experience in navigating complex business environments. It also extends the work of Carpenter et al. (2004), who examined how various TMT characteristics interact to influence organizational outcomes.

The study's exploration of TMT tenure as a moderating factor builds upon earlier work by Finkelstein and Hambrick (1990), in which the effects of TMT tenure on strategic persistence and organizational performance are tested. However, this research contributes further by taking into consideration how tenure interacts with age to influence outcomes, providing a more comprehensive view of TMT composition effects in the context of the IT industry.

The most novel contribution of this study could be its identification of TMT network as a critical moderating factor. This discovery makes a substantial contribution to the expanding corpus of research on social capital and network effects at UET, as explored by scholars such as Adler and Kwon (2002) and Cao et al. (2010). It proposes that the benefits of experience and age in TMTs can be further enhanced through strong internal networks.

The study also innovatively extends TOS, originally developed by Van Maanen and Schein (1979), by applying it at the TMT level. Traditionally, TOS focused on individual socialization processes while this research demonstrates how these processes within the TMT, particularly through network formation, can influence organizational performance, a new direction in understanding how team dynamics at the TMT levels of an organization can impact its overall performance.

The study also offers a new way to understand how effective TMT is by combining ideas from UET and TOS. This all-around method, which looks at how demographics, socialization, and network structures all work together, gives a more complete picture of how TMT works compared to previous studies.

The link between a TMT's age and performance going up, especially when strong networks are present, is related to research on organizational learning and knowledge sharing within TMTs. This finding aligns with research by Argote and Miron-Spektor (2011) on how organizational experience translates into performance through social processes but extends it specifically to the context of TMTs in the IT industry.

5.1. TMT age has a positive effect on organizational performance

The results reveal a positive coefficient in the correlation between TMT age and organizational performance. The reason may be that the diverse age could show the difference in experience, knowledge, or effectiveness (Van Knippenberg & Van Ginkel, 2010). While some studies observed that younger managers have more innovation and efficiency, some studies showed that can help businesses survive for a long time due to their experience (Stamov-Roßnagel & Herel, 2010; Ng & Feldman, 2010). This result is in contrast with prior studies, which indicated that TMT age may have a negative effect (Sutarti et al., 2021; Tanikawa et al., 2017), and no effect (Nielsen & Nielsen, 2013) on organizational performance. Therefore, this result deepens the understanding of the TMT age's role in organizational performance.

5.2. TMT tenure has a negative effect on organizational performance

The findings signify that TMT tenure can decrease organizational performance. TMT members who have spent a long time working together may become socialized with commitment, experience common perceptions and 'group think' development (Van Knippenberg & Schippers, 2007). Therefore, TMT decisions are limited to becoming less diverse, leading to a reduction in organizational performance. This conclusion is in contrast with Narayan et al. (2021), who discovered that TMT with endurance could reduce the negative effect of diversity in TMT, thereby positively affecting organizational performance. The reason may be that although longer-tenure TMT can make trusted strategies, they can reduce the potential to continue to transfer new knowledge, thereby decreasing organizational performance.

5.3. TMT tenure weakens the positive interplay between TMT age and organizational performance

The outcome shows that TMT tenure has moderating effects on the correlation between TMT age and organizational performance. The outcome also indicates a longer TMT tenure tends to be diminishing the correlation of the diversity of their age on organizational performance. According to previous studies, the duration of collaboration among TMT members lessened the impact of the demographic variety on the cohesiveness of work groups (Harrison et al., 2003; Michel & Hambrick, 1992). Wrede and Dauth (2020) indicated that the conservatism of TMT may increase with longer tenure. Hence, they may narrow resources of knowledge due to the similarity in value and experiences (Bantel & Jackson, 1989). Also, Finkelstein and Hambrick (1990) found that if TMT has a longer tenure, they have the same viewpoint and mitigate the diversity of personal values. Therefore, this research contributes to explaining TMT tenure's moderating impact on diminishing the positive correlation between TMT age and organizational performance.

5.4. TMT network strengthens the positive interplay between TMT age and organizational performance

With the TMT network, communication and interaction within the team are improved and reduce conflict (Nielsen & Nielsen, 2013). According to Bougrain and Haudeville (2002), the outcome of the firm results from several contributions from diverse actors operating in a TMT, thus, the TMT network could strengthen the correlation between TMT age and organizational performance. On the other hand, the study of Gillen and Cheshire (2015) found that by building the TMT network, firms will be able to create more links as well as strengthen them within TMT, which then speeds up the process of

deciding. The correlation between TMT age and organizational performance could be strengthened through the TMT network. Likewise, in a study by Bougrain and Haudeville (2002), the success of a firm is the outcome of contributions from diverse actors operating within the TMT. In case the TMT network has a strong foundation, it can fuel the collaboration and coordination among TMT members of different ages, utilizing the expertise and experience of senior members while profiting from the fresh perspectives and innovative thinking of junior members. This synergistic interaction within the TMT network may result in improved strategic decision-making, modernization, and ultimately, organizational performance.

5.5. TMT network has no moderating effect on the negative interplay between TMT tenure and organizational performance

This paper discovered that the TMT network's moderating influence in mitigating the detrimental influence of TMT tenure on organizational performance lacks statistical significance. This result indicates that there's no distinction between a higher TMT network and a lower TMT network when considering the correlation between the span of time that the TMT has been in their positions and the overall performance of the organization. Indeed, even though TMT networks are expected to increase the ability to communicate and contribute novel ideas of members, the network does not affect TMT members, who have long-term working together. These members had enough time to understand each other and form their way of communication, which will be maintained throughout the tenure.

6. Conclusions

The researchers expected to examine the associations between the age and tenure of TMT, their networks, and the efficiency of the organization. The findings shed light on how these factors interact and influence the financial performance of organizations. The outcomes demonstrate that TMT age has a progressive impact on organizational performance, implying that seniority and experience within the top management team contribute to better financial outcomes. Furthermore, TMT tenure shows a negative effect on organizational performance, suggesting that prolonged tenure may hinder financial performance. Additionally, the study reveals that TMT tenure weakens the positive correlation between TMT age and organizational performance, thus, implying that as tenure increases, the positive influence of age on financial performance diminishes. The result also recommends that balancing experience and new perspectives within TMT is crucial for companies that want to optimize their performance. In contrast, the study highlights the significance of TMT networks in fortifying the supportive correlation between TMT age and organizational performance. TMT network expedites improved communication, collaboration, and decision-making within the team. By leveraging the collective knowledge and expertise of team members, the TMT network improves strategic decision-making processes, and innovation, and ultimately contributes to better performance of the organization. However, this paper finds no supportive evidence to propose that the TMT network mitigates the adverse interplay between TMT tenure and organizational performance. This suggests that while the TMT network has a supportive correlation with financial outcomes, they are not as effective in mitigating the adverse impacts of long-term leadership on performance. Overall, this study offers foremost insights into the intricate interplays among TMT age, TMT tenure, TMT network, and organizational performance. By knowing these correlations, organizations can make informed decisions regarding leadership composition, team dynamics, and strategies to optimize organizational performance.

6.1. Theoretical and managerial implications

6.1.1. Theoretical implications

The findings of this study have significant theoretical contribution, especially regarding the frameworks of the UET and the TOS. As for the UET, this paper provides supportive evidence of the concept of the attributes of top management, such as age and tenure, play a weighty impact on organizational

outcomes. The supportive interplay between TMT age and organizational performance confirms the notion that senior TMT members bring valuable knowledge, decision-making skills, and strategic insights that contribute to better performance of the organization. On the contrary, the inverse correlation between TMT tenure and organizational performance suggests that lengthy tenure may lead to complacency or a resistance to change, inhibiting organizational success. These results reinforce and expand our understanding of the UET. In addition, the research addresses the TOS by exploring the role of the TMT network in determining the socialization process within the TMT. The results also highlight the significance of the TMT network in facilitating effective communication, collaboration, and knowledge-sharing among team members. This finding aligns with the theory's principle that socialization processes, including communication patterns and information exchange, is a vital input of individual and organizational outcomes. The study underscores the importance of fostering strong TMT networks to enhance socialization within TMT, leading to better decision-making and, ultimately, influencing organizational performance.

6.1.2. Practical implications

The findings of this study have numerous significant managerial ramifications for IT companies. A combination of senior managers and fresh board members with new perspectives can fuel a better decision-making process, which in turn improves the overall performance of the organization. Organizations can adopt a set of structured portfolios of TMT members' age distribution and tenure diversity and consider it as a suggestive policy for TMT recruitment. A mentorship program, in which experienced TMT members offer advice to more junior members could also be beneficial for succession planning. Prioritizing the development of TMT networks is crucial and can be accomplished by introducing formal network mapping tools, scheduling monthly cross-functional projects, implementing digital platforms for TMT communication, and organizing quarterly off-site retreats focused on team building. Strategic tenure management is essential and can be addressed through biannual TMT performance reviews including peer evaluations and 360-degree feedback, developing customized leadership programs, implementing rotational assignments every 3-5 years, and setting up external advisory boards. To ensure continuous learning and innovation, companies should allocate specific budgets for executive education, establish quarterly innovation challenges, and implement reverse mentoring programs.

Performance metrics and incentives should be reevaluated, developing balanced scorecards that include metrics on innovation, network strength, and adaptability, and tying compensation to these new performance metrics. Organizational structure and communication can be improved by redesigning to promote more frequent interactions between TMT members and various departments, implementing quarterly open forums, and establishing cross-functional innovation hubs. Finally, strong succession planning and talent pipeline management should consider not only individual skills but also their network fit and the chance to improve the TMT dynamics. This can be done by making high-potential programs to train future TMT members and putting in place phased retirement programs for senior TMT members. By implementing these specific practices, IT companies can effectively manage TMT composition, strengthen internal networks, mitigate the potential negative effects of prolonged tenure, and ultimately enhance organizational performance in the dynamic IT industry.

6.2. Limitations and future research

While this research offers helpful insights, it is crucial to recognize its limits. The focus on United States public companies in the IT sector restricts the applicability of the results to many industries and countries with varying cultural and legal environments. Future research should address these limitations by conducting comparative studies across multiple sectors and countries, considering diverse ownership structures and cultural variables. Moreover, expanding the scope to include non-financial performance indicators like innovation, employee engagement, or social responsibility would offer a more inclusive understanding of the impact of TMT age, tenure, and networks on organizational success. By addressing these areas, future research can overcome the limitations, broaden the knowledge base, and provide practical insights for organizations operating in various contexts.

Authors contribution

Son-Tung Nguyen: data collection, methodology, software, and writing – reviewing.

Hsin-Mei Lin: supervision and reviewing.

Thuy-Dzung T. Pham: conceptualization, modeling, data analysis, and writing.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, Thuy-Dzung T. Pham, upon reasonable request.

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