Diverse More Than Ever

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Abstract: The results of prior research on the impact of top management team (TMT) diversity on corporate performance have been varied and inconsistent. In this study, the operational definitions of TMT and diversity were checked in academic papers published between 2005 and 2020 on TMT diversity. The results confirmed three patterns for the operational definition of TMT: (a) extracted by title rank, (b) selected by CEO or equivalent top manager, and (c) executives announced in the company's public information/database. As for diversity, in addition to the studies that use conventional indices that express the various attributes of executives, it was confirmed that there exist many studies that consider diversity from the aspects of separation and disparity. Such “diversity” in the operational definition is considered the cause of the lack of consistency between TMT diversity and corporate performance.

Keywords: top management team, diversity, upper echelons theory

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Introduction

The top management team (TMT) is the strategic decision-making unit of a company, within which situations are interpreted and decisions are made based on the cognitive ability and characteristics of the executives involved (Hambrick & Mason, 1984; Neely, Lovelace, Cowen, & Hiller, 2020). This has led to a recognition of the need for research on the impact of TMT executive diversity on organizational performance (Nielsen, 2010a), and research is still ongoing. However, it has been noted that the results of studies examining the ultimate impact of TMT diversity on firm-level outcomes, such as performance, are varied and inconsistent (Neely et al., 2020; Nielsen, 2010a).

In response to this situation, this study extracted 47 empirical research papers on TMT diversity published over the last 15 years in order to examine the operational definitions of TMT and diversity. The review of these 47 papers found that the definition of TMT as a strategic decision-making unit of a company, wherein the situation is judged based on the cognition and characteristics of the executives, was consistent. However, the operational definitions used in prior empirical studies differed from study to study, and it became clear that the operational definition of TMT can be categorized into three patterns depending on how the scope of executives that make up the TMT is set.

As for diversity, in line with the definition of diversity as the distribution of personal attributes among members (Jackson, Joshi, & Erhardt, 2003), Herfindahl-Hirschman Index (HHI) and Blau's (1977) index were used in many cases as variables to express the degree of distribution for those attributes that can be categorized. For other indicators that can be expressed by continuous and discrete variables, standard deviation and coefficient of variation were used in many cases.

In addition, the overall tendency for variable settings is that there

are a greater number of variables related to deep-level diversity (Joshi & Roh, 2009), such as tenure and functional background, which are linked to skills and abilities, rather than superficial attributes such as gender.

In addition, some studies consider diversity from the perspective of disparity and separation, clarifying that the indicators of diversity in TMT are not limited to demographic characteristics but are becoming more diverse in both type and scale.

Method

This study was conducted on EBSCOhost using, as a reference, the methodology of Nielsen (2010a) that reviewed empirical studies published between 1984 and 2005 on the diversity of TMT and its effects, and the papers were extracted by searching for those that use seven keywords—"upper echelons," "top management," "TMT," "board of directors," "corporate boards," "chief executive officer," and "CEO"—that appear in the *Academy of Management Journal*, *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of International Business Studies*, *Journal of Management*, *Journal of Management Studies*, *Organization Science*, *Management International Review*, *Management Science* and *Strategic Management Journal*. The period covered in this study was 2005 to 2020 or the period after 1984 and 2005 that was covered by Nielsen (2010a).

As a result of the above-mentioned search, 840 papers were extracted. The list was then narrowed down to those related to TMT and TMT diversity, heterogeneity, and team characteristics, and finally, 47 papers were selected for this review. As the study covered TMT alone, papers that dealt with the board but were not related to TMT were not considered.

Operational Definition of TMT

Now, let us verify the actual definition of TMT used in the 47 papers. All the papers were based on the upper echelons theory (Carpenter, Geletkanycz, & Sanders, 2004; Cho & Hambrick, 2006; Finkelstein, Hambrick, & Cannella, 2009; Hambrick, 1994; Hambrick & Mason, 1984) that states that TMT is the strategic decision-making unit of a company that is responsible for interpreting situations and making decisions based on the cognitive abilities and characteristics of executives. In other words, the definition that TMT is the corporate strategic decision-making unit in which the characteristics and capabilities of the executives who make up the unit are important factors was consistent across all of the papers.

However, in the operational definition of TMT that is used in empirical studies, we found that the scope of TMT varies from study to study, depending on the extent to which executives are specifically covered. Table 1 summarizes the three patterns that were identified.

First, in Category I, TMT is extracted by title rank. This method is primarily used for listed companies for which archival data is available. Among these companies, there is a difference in whether the scope of TMT is defined as Vice President (VP) and above or upper-class vice presidents like Executive Vice President (EVP) and above or Senior Vice President (SVP) and above. Related to this difference in operational definitions, Certo, Lester, Dalton, and Dalton (2006) suggested the possibility that the inconsistent relationship between TMT diversity and corporate performance may be due to the different operational definitions of TMT across studies. Category I is a way of strictly separating the scope of TMT mechanically using the title rank of each executive. In addition, there were differences in the delimitations of VP, EVP, and SVP among the studies. It is safe to say that that as long as the way VPs, EVPs, and SVPs are involved in

Table 1.

How TMT specified	Category I: Title Rank Identification	Category II: Specified by CEO/Top managers	Category III: Specified by public information/database	Others: Country specific
Description	TMT: CXO, VP, or above TMT: CXO, EVP, SVP, or above	TMT members are selected by CEO/Top managers who are the respondents of questionnaire.	Top manager specified in Annual Report, Proxy Statement, ExecuComp, Standard & Poor's Register of Corporations, Directors and Executives, etc.	"Raad van bestuur" in Netherland, "Vorstand" in Germany, "Geschäftsleitung" in Switzerland, etc.
Literatures	<p><u>VP or above:</u> Cannella, Park, and Lee (2008)*, Cho and Hambrick (2006), Guldiken, Mallon, Painsmidt, Judge, and Clark (2019), Kor (2006), Lee and Park (2008)*, Narayan, Sidhu, and Volberda (2021), Richard, Wu, Markoczy, and Chung (2019), Siegel and Hambrick (2005)</p> <p><u>EVP/SVP or above:</u> Carter (2006), Cooper, Patel, and Thatcher (2014)*, Gong (2006), Hambrick, Humphrey, and Gupta (2015), Marcel (2009), Yoo, Reed, Shin, and Lemak (2009)</p>	<p>Alexiev, Jansen, Van den Bosch, and Volberda (2010), Athanassiou and Roth (2006), Boone and Hendriks (2009), Buyl, Boone, Hendriks, and Matthysens (2011), Cao, Simsek, and Zhang (2010), Elenkov, Judge, and Wright (2005), Friedman, Carmeli, and Tishler (2016), Heavey and Simsek (2015), Heavey and Simsek (2017), Lin and Shih (2008), Ling and Kellermanns (2010), Mihalache, Jansen, Van den Bosch, and Volberda (2012), Ou, Seo, Choi, and Hom (2017), Souitaris and Maestro (2010), Qian, Cao, and Takeuchi (2012), Singh, Gaur, and Schmid (2010), Smith, Collins, and Clark (2005), Wei and Wu (2013), Zhang, Li, Ullrich, and van Dick (2015)</p>	<p>Dezsö and Ross (2012), Higgins and Gulati (2006), Ndofor, Sirmon, and He (2015), Nielsen (2010b), Nielsen and Nielsen (2013), Patel and Cooper (2014), Steinbach, Holcomb, Homes, Devers, and Cannella (2017), Triana, Miller, and Trezebiatowski (2014)</p>	<p>Barkema and Shvyrkov (2007), Boone, Lokshin, Günter, and Belderbos (2019), Hutzschenreuter and Horsikotte (2013), Kaczmarek and Ruigrok (2013), Nadolska and Barkema (2014), Schubert and Tavassoli (2020)</p>

Note: *Board of directors included

strategic decision making is different in each company, and as long as the scope of TMT is mechanically divided and its criteria are not standardized across studies, the differences in operational definitions presented by Certo et al. (2006) remain unresolved at the present time.

Next, Category II is defined as TMT in which the CEO or equivalent top manager selects executives who are involved in strategic decision making (Knight, Pearce, Smith, Olian, Sims, Smith, & Flood, 1999; Smith, Smith, Olian, Sims, O'Bannon, & Scully, 1994). This definition is used for companies for which archival data cannot be obtained, such as unlisted companies and small- and medium-sized companies, rather than listed companies, and for questionnaire surveys. In fact, since the CEO or equivalent top manager of each company selects the executives who are involved in strategic decision making as TMT, it can be argued that there is no difference between the conceptual definition of TMT as a strategic decision-making unit and the selected executive and the operational definition.

Finally, Category III defines TMT as executives whose names appear in the company's public information, such as annual reports, proxy statements, web sites, and databases such as ExecuComp, Standard & Poor's Register of Corporations, and Directors and Executives. Even though the executives whose names are publicized by companies may not be very highly involved in strategic decision making at some companies, this would be a more reliable method than uniformly dividing by title rank as in Category I.

The majority of the studies that were included in this study was focused on U.S. companies.¹ For non-U.S. companies, particularly in the case of German, Dutch, and Swiss companies, there are examples that are defined by country-specific terms such as "Vorstand," "Raad

¹ The locations of the companies studied were the U.S. in 26 papers, Europe in 14 papers, China in 6 papers, and Taiwan in 1 paper.

van Bestuur,” and “Geschäftsleitung,” respectively, which are summarized as “others” in Table 1. For example, the corporate governance structure in Germany is two-tiered with the “Vorstand,” the executive board, and the “Aufsichtrat,” the supervisory board, and it should not be a problem to regard “Vorstand” as TMT either in conceptual definition or in operational definition.

Operational Definition of Diversity

Table 2 summarizes the main variables² representing diversity and their measurement methods that were found to be used in the 47 papers.

According to Jackson et al. (2003), diversity is defined as “the distribution of personal attributes among interdependent members of a work unit” (Jackson et al., p. 802).

As per the definition of diversity given by Jackson et al. (2003), the papers extracted for our study adopted the approach of observing the distribution of attributes of executives that make up the TMT as diversity. As measurement methods, the HHI (Herfindahl-Hirschman Index) or Blau’s (1977) index (1 minus the HHI) was used for those that could be categorized, and for other continuous and discrete variables, standard deviation, coefficient of variation, and mean values were generally used.

As for the attributes of diversity, functional background was the most frequently used (19 papers), followed by team tenure (18 papers) and education (16 papers). For functional background and education, most papers categorized each attribute and used HHI or Blau’s index to measure the degree of distribution. In some cases, educational history was measured in years, and the standard deviation and

² Categorization was made based on measurement metrics, and the list below shows those that were confirmed to have two or more of them.

Table 2. (1/3)

Index	Number of literature	Measurement	Literatures
Functional background	19	HHI, Blau's index	Boone, Lokshin, Günter, and Belderbos (2019), Cannella, Park, and Lee (2008), Cho and Hambrick (2006), Cooper, Patel, and Thatcher (2014), Hambrick, Humphrey, and Gupta (2015), Heavey and Simsek (2015), Higgins and Gulati (2006), Kor (2006), Lee and Park (2008), Marcel (2009), Ndofor, Simon, and He (2015)*, Patel and Cooper (2014), Qian, Cao, and Takeuchi (2012), Smith, Collins, and Clark (2005), Wei and Wu (2013)
		HHI, Blau's index/n	Cannella, Park, and Lee (2008), Heavey and Simsek (2017)*
		Txy (Attreave, 1959) % of output function	Boone and Hendriks (2009), Buyl, Boone, Hendriks, and Matthysens (2011) Carter (2006)*
Team Tenure	18	Coefficient of variation, S.D.	Barkema and Shvyrkov (2007), Boone, Lokshin, Günter, and Belderbos (2019), Cannella, Park, and Lee (2008), Elenkov, Judge, and Wright (2005)*, Hambrick, Humphrey, and Gupta (2015), Heavey and Simsek (2017)*, Lee and Park (2008), Marcel (2009), Nadolska and Barkema (2014), Ndofor, Simon, and He (2015)*, Souitaris and Maestro (2010), Zhang, Li, Ullrich, and van Dick (2015)
		Average	Cannella, Park, and Lee (2008), Carter (2006)*, Lin and Shih (2008), Ling, and Kellermanns (2010), Nadolska and Barkema (2014), Richard, Wu, Markoczy, and Chung (2019), Souitaris and Maestro (2010), Wei and Wu (2013)
		Median	Nielsen and Nielsen (2013)*
Education	16	HHI, Blau's index	Barkema and Shvyrkov (2007), Cannella, Park, and Lee (2008), Cooper, Patel, and Thatcher (2014), Lee and Park (2008), Lin and Shih (2008), Nadolska and Barkema (2014), Nielsen and Nielsen (2013), Patel and Cooper (2014), Wei and Wu (2013), Zhang, Li, Ullrich, and van Dick (2015)
		Coefficient of variation, S.D.	Souitaris and Maestro (2010), Hambrick, Humphrey, and Gupta (2015)
		Average years of education	Friedman, Carmeli, and Tishler (2016), Heavey and Simsek (2015), Souitaris and Maestro (2010)
Gender	9	Score	Carter (2006)*
		Teachman's Entropy Index	Schubert and Tavassoli (2020)
		HHI, Blau's index	Lin and Shih (2008), Patel and Cooper (2014), Triana, Miller, and Trezbiatowski (2014)*, Zhang, Li, Ullrich, and van Dick (2015)
		Dummy	Cannella, Park, and Lee (2008), Dezaś and Ross (2012), Wei and Wu (2013)
		% of female	Guldiken, Mallon, Fainshmidt, Judge, and Clark (2019), Hambrick, Humphrey, and Gupta (2015)

Note: * Used as moderator variables

Table 2. (2/3)

Index	Number of literature	Measurement	Literatures
Age	8	Coefficient of variation, S.D. Average	Ndofor, Simmon, and He (2015)*, Nielsen and Nielsen (2013), Soutaris and Maestro (2010), Triana, Miller, and Trezbiatowski (2014), Wei and Wu (2013) Heavy and Simsek (2015), Higgins and Gulati (2006), Marcel (2009), Soutaris and Maestro (2010)
Firm tenure	8	HHI Coefficient of variation, S.D. Average	Patel and Cooper (2014) Kor (2006), Marcel (2009), Zhang, Li, Ulrich, and van Dick (2015) Friedman, Carmeli, and Tishler (2016), Heavy and Simsek (2015), Higgins and Gulati (2006), Yoo, Reed, Shin, and Lemak (2009)
Faultline†	7	HHI, Blau's index Faultline strength	Cooper, Patel, and Thatcher (2014) Barkema and Shrivikow (2007), Cooper, Patel, and Thatcher (2014), Hutzschenreuter and Horstkotte (2013), Nedelska and Barkema (2014), Ndofor, Simmon, and He (2015)*, Ou, Seo, Choi, and Hom (2017)*, Richard, Wu, Markoczy, and Chung (2019)
Nationality	6	Faultline distance HHI, Blau's index	Hutzschenreuter and Horstkotte (2013) Athanasios and Roth (2006), Boone, Lokshin, Günter, and Belderbos (2019), Gong (2006), Kaczmarek and Ruigrok (2013), Nielsen (2010b), Nielsen and Nielsen (2013)
Cohesiveness†	4	Nationality % other than home country Questionnaire: TMT shared vision	Mihalache, Jansen, Van den Bosch, and Volberda (2012)* Wei and Wu (2013)*
Power decentralization	4	Questionnaire: Team cohesion Questionnaire: Behavioral Integration Questionnaire: Collaborative behavior Polarization measures based on categories Questionnaire: Power decentralization	Friedman, Carmeli, and Tishler (2016) Boone and Hendriks (2009) Cao, Simsek, and Zhang (2010)*, Patel and Cooper (2014) Boone and Hendriks (2009)
CEO relationship	3	Vertical gradations: Social stratification TLAP: Shared experience between TMT and CEO CEO/COO duo Questionnaire: CEO-TMT communication Questionnaire: CEO-TMT functional complementarity	Boone, Lokshin, Günter, and Belderbos (2019)* Buyl, Boone, Hendriks, and Matthysens (2011)* Marcel (2009) Cao, Simsek, and Zhang (2010)* Cao, Simsek, and Zhang (2010)*
Internationality†	3	Standardizing various factors HHI, Blau's index Years spent abroad	Lee and Park (2008) Boone, Lokshin, Günter, and Belderbos (2019) Athanasios and Roth (2006)

Note: * Used as moderator variables; † Diversity variables not covered in the review of Nielsen (2010a)

Table 2. (3/3)

Index	Number of literature	Measurement	Literatures
Pay disparity	3	Several measures of executive pay disparities Coefficient of variation, S.D. Gini coefficient	Siegel and Hambrick (2005) Richard, Wu, Markoczy, and Chung (2019) Steinbach, Holcomb, Homes, Devers, and Cannella (2017)*
Shared team experience†	3	Overlapping tenure within TMT: TLAP Sum of shared experiences across all dyads	Barkema and Shvrykov (2007) Kor (2006)
Reward interdependence†	2	Years TMT remained unchanged Average % of incentive pay Average incentive pay amount	Naravan, Sidhu, and Volberda (2021)* Steinbach, Holcomb, Homes, Devers, and Cannella (2017) Steinbach, Holcomb, Homes, Devers, and Cannella (2017)
Industry tenure	2	Several measures of bonus Coefficient of variation, S.D. Average	Hambrick, Humphrey, and Gupta (2015) Cho and Hambrick (2006) Cho and Hambrick (2006), Singh, Gaur, and Schmid (2010)*
Cognitive diversity	2	Blau's Index Questionnaire	Naravan, Sidhu, and Volberda (2021) Wei and Wu (2013)*
Interdependence within TMT†	2	Horizontal/Vertical interdependence	Hambrick, Humphrey, and Gupta (2015)

Note: * Used as moderator variables; † Diversity variables not covered in the review of Nielsen (2010a)

coefficient of variation were calculated and considered as the degree of distribution of educational history. As for team tenure, patterns were seen that in some cases, the distribution was verified using the standard deviation and the coefficient of variation, and in some other cases, using the mean number of years since each executive became a TMT member.

For gender, which was the next most frequently used variable (9 papers), as in the cases of other diversity variables, the pattern of using HHI or Blau's index and the pattern of calculating the percentage of a specific gender (e.g., female) were observed. Incidentally, this method of using the percentage of a particular category is also used for other diversity indicators. In the case of, for example, nationality, there were papers in which the percentage of people who come from places other than the company's home base was measured (Nielsen & Nielsen, 2013), and it can be said that this method is used when focusing on a specific attribute.

The use of any of the diversity variables discussed so far was confirmed in 33 of the 47 papers that were reviewed in this study. These are orthodox methods of measuring diversity that look at the distribution of attributes of each executive, as defined by Jackson et al. (2003). In addition, the diversity variable tends to focus more on deep-level diversity (Joshi & Roh, 2009), which is related to executive skills and knowledge, rather than demographic attributes such as gender.

Then, a method called faultline (Lau & Murnighan, 1998) was also used to measure imaginary fault lines within the group by combining these individual attributes as one or more variables.

For the remaining variables, not only the demographic and labelable attributes of each executive (attribution), such as the degree to which each executive shares the same vision, the directionality of each executive, and indicators of disparity such as power decentralization and pay disparity, but also indicators of the

executive's status were used. In addition, these indicators were frequently used not only as explanatory variables but also as moderator variables (e.g., Boone, Lokshin, Günter, & Belderbos, 2019; Cao, Simsek, & Zhang, 2010).

Harrison and Klein (2007) argued that there are three types of diversity within a work unit: separation, variety, and disparity. It could be argued that the main variable in prior researches on diversity has been variety. However, when the reviewed studies were compared to the types of diversity suggested by Harrison and Klein (2007), many studies attempted to measure diversity from the perspective of separation, which refers to differences in position and opinion, and disparity, which refers to disparities in valuable social assets and resources, such as salary and positions, in order to capture the status of each executive. This clarified that there is a growing focus on these indicators.

Conclusion

This study confirms the operational definitions of TMT and diversity in major studies on TMT and diversity conducted from 2005 to 2020. The results showed that the operational definitions of TMT differed in prior researches and could be categorized into three patterns.

In terms of diversity, not only demographic attributes of executives but also deep-level diversity indicators related to skills and abilities (Joshi & Roh, 2009) were often used. These findings show diversity as the variety of attributes held by each executive, which is consistent with the definition of diversity as the degree of distribution of attributes (Jackson et al., 2003). At the same time, this study also confirmed that there are many cases in which TMT diversity is measured using the aspects of separation and disparity, as proposed by Harrison and Klein (2007).

Diversity research has spread from the U.S. to the rest of the world, and the measurement methods used are becoming more diverse. In future research, a more careful consideration of the context of country,³ industry, and firms to be analyzed, as well as theory and measurement levels, will be required.

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³ The differences between firms in different countries have been emphasized in various fields, not only in TMT research. Examples of studies that focus on the characteristics of Japanese firms include Takahashi (2014, 2015) and Takahashi, Ohkawa, and Inamizu (2014).

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