

TOP MANAGEMENT TEAM DIVERSITY AND FIRM PERFORMANCE IN DIGITAL ERA

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Abstract: The paper sheds light on impactful diversity dimensions of upper echelons across German companies and their impact on the appointment of Chief Digitalization/Information Officer during the turbulent years of internet of things and digitalization in the second decade of the twenty-first century. The study consists of a literature review on diversity across senior management of German firms in a digital era characterized by global business technological digital disruption. The paper discusses how the emerging phenomena of diversity across top management affect firm performance during the period of incremental innovation and turbulent digital transformation of multinational firms. The novelty of the study is nested in the fact that it provides evidence from top management teams' diversity from the advanced markets, such as Germany, where digitalization is one of the priorities of the German government but also of the German business in order to drive long-term firms' performance and firms' sustainability. The motivation behind conducting the research on top management teams' diversity across top German companies in the digital era is the fact that the crucial importance of senior management skills, competencies and knowledge are key factors for firm performance and prosperity. Moreover, in Germany, many of the most successful firms have appointed executive positions in their top management in order to manage the rapid shift towards more digitalized business and higher firm performance in a volatile global business environment. Study results show that top management team diversity positively affects the appointment of Chief Digitalization/Information Officer. Also, the paper results show that firms with incumbent Chief Digital Officers in their top management team tend to be more intact with the digital era than firms that have not appointed any Chief Digitalization Officer.

Key words: top management team, diversity, chief digitalization officer, digital era

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Introduction

In recent years, the strategic importance of digitalization and digital skills have emerged as multinational firms have to operate intact with the latest trends and phenomena in data governance and management by hiring top managers who possess solid digital skills, and they can drive firm performance in the era of digitalization and fast innovation (Pouri and Hilty, 2021, Vojvodic et al., 2022). Also, different

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businesses have integrated their operations in order to serve the customers better and to generate better profit (Radavičius and Tvaronavičienė, 2022). For many top managers, it is quite comfortable and reasonable if they come from different professional backgrounds, and they contribute to finding ad hoc solutions and making strategic decisions by bringing in various knowledge, previous experience and perspectives (Velinov and Gueldenberg, 2016). However, in business reality, this is not very common practice. Previous studies by Carpenter and Sanders (2004) on upper echelons failed to provide consistent evidence for the positive effects of diversity. Also, other bodies of research by Finkelstein and Hambrick (1996) and Isugi (2019) bring evidence that diversity is not always profitable for companies. For example, studies by Lyon and Dess (1999) bring ambiguous results on diversity's positive role in driving firm success due to the critical role of top team strategic decision-making and leadership. Other authors suggest that the link between TMT diversity and organization performance is not linear but curvilinear (Richard et al., 2004; Lee and Chae, 2017).

Literature Review

A body of research on upper echelons suggests that the impact of diversity is dependable on the conditions under which the senior management operates, with homogeneous TMTs performing better in predictable environments, while the heterogeneous managerial elites being more profitable in environments comprising of high ambidexterity and uncertainty (Cooper et al., 2014).

Another study by McMohon (2010) suggests that the low number of empirical studies on the positive impact of diversity is that in the framework of upper echelons theory, diversity is researched as a stigmatized construct regardless of the specifics of its dimensions to which it is statistically and theoretically implied. The literature review often studies diversity without mitigation from a theoretical perspective among various diversity dimensions, such as gender, nationality, dominant function diversity, firm tenure, etc. The majority of diversity pillars in the upper-echelon framework are anticipated to steer the same results, offer similar advantages, and lead to the same negative consequences. Jackson (2004) suggested that while diversity is presented as a general construct in the theoretical framework, it is crucial to decompose the construct to the level of separate attributes. Similarly, Hambrick et al. (2015) argue that when implied to the upper echelons of research, the heterogeneity assumption naturally leads to questions about what particular heterogeneity dimensions are meaningful and how they affect TMT strategic decisions.

The conception of multi-dimensional group diversity (Trezza, 2008) not only mitigates the spectrum of diversity dimensions but also shifts the assumption that diversity dimensions are independent of each other. The contemporary approach to empirical examination and discussion of results on different diversity dimensions are shown in a few studies. They are based on the concept that the impact of each

diversity dimension is independent of the presence of other diversity aspects (Bass, 2019).

The body of empirical research shows that each diversity dimension in the organizations is interdependent with other diversity dimensions (Stahl et al., 2006). For example, it is plausible that the level of adaptation to which a foreign executive will be integrated with and contribute to a top management team will be dependable on the length of international experience and mindset of his/her peers.

According to Resource dependence theory, board members' international experience is one of the key factors for acquiring exposure and knowledge of international managerial best practices and emerging business strategies (Al Mamun and Seaver, 2021). A higher ratio of executives and non-executive members with international experience positively influences companies' access to essential resources, such as advice regarding international best practices (Al Mamun and Seaver, 2021). Previous studies on TMTs show that firms with internationally experienced TMT members can better implement and promote international business policies (Al Mamun and Seaver, 2021), including diversity and inclusion practices. Promoting diversity and inclusion across the firm improves stakeholder engagement and offers corporations a competitive managerial advantage over their competitors (Nguyen et al., 2022), which reduces the cost of capital, strengthens market position and enhances profitability (Shahbaz et al., 2020). Foreign directors can bring their cultural values and perspectives on companies' role in society and stakeholder view of business into communication in boards (Syed/Ozbilgin, 2019). Foreign board members are also more focused on shaping visions and more sustainable-oriented business (Harjoto et al., 2018). This foreign board members' presence brings new different views, experiences, or access to networks (Beji et al., 2021). Harjoto et al. (2018) published one of the few studies focused on the link between nationality diversity and firm performance. They find that TMT nationality diversity leads to higher firm performance.

A body of research on TMT's influence on corporate strategy has been conducted using Hambrick and Mason's (1984) upper-echelon theory that argues firm outcomes, non-market strategies and firm performance are the result of the reflections of the TMT perceptions and cognitive fundamentals of influential agents in the organization (Abatecola and Cristofaro, 2018). The main argument is that the theoretical model is not the only motive beyond strategic decisions in organizations (Hambrick and Mason 1984), but rather, strategic decisions are the outcome of both the current status and the dimensions of top management team members in the firm. Moreover, Hambrick and Mason (1984) suggest that while top managers make strategic decisions, they are exposed to continuous incentives, and their cognitive fundamentals and perception sift out and give misleading perceptions to the decision maker, which subsequently affects their strategic choice. Thus, TMT characteristics such as cognitions, mindset, rational behind strategic decisions and perceptions are challenging to be observed and measured. This is the main reason TMT members' demographic characteristics have been investigated rather than psychological

aspects for upper echelons theory development (Hambrick and Mason, 1984; Jiang F. et al., 2018).

Upper echelon theory

Based on upper-echelon theory, many previous studies have theoretically and empirically tested the impact of individual characteristics of senior managers in the ongoing process of making strategic decisions (Talke et al., 2011). The outcomes of the latter studies serve as support that TMT demographic diversity has an impact on decision-making. Similarly, studies on upper echelon theory have recently revealed more dimensions among top managers, which research the management enlists in the same framework as TMTs (Hassan and Marimuthu, 2018). Furthermore, in terms of top management teams, previous studies argue that top managers' strategic preferences are affected by their perceptions and gained professional experience with company strategy (Huo et al., 2020). After the year 2000, several studies have applied agency and the upper echelon theories to explain the TMT's role in strategic planning and execution. Their study results showed that both TMT position and demography characteristics are essential factors affecting strategy formation and execution. On the contrary, a study by Oduor and Kilika (2018) examined TMT demographic diversity and its impact on decision-making processes in top management. The study has proposed a future research venue for measuring the heterogeneity among TMT members.

Generally, the theory of upper echelons advocates both objective situations and TMT characteristics, such as individuals' values, mentality, perceptions and psychological cognitive fundamentals affect the strategic decision-making process and influence organization performance. Research on TMT diversity stems from the strategy literature and is normally linked to studies of strategy execution and board leadership that are predominantly contextualized within the upper echelons concept of the organization (Hambrick and Mason, 1984). As the paper sheds light on TMT characteristics (management and supervisory boards of directors within German firms with two-tier corporate structure) and its impact on firm performance in the period of intensive industries digitalization, upper echelon theory is considered to contribute to the understanding of the influence of TMT diversity dimensions, such as TMT gender diversity, TMT age diversity, TMT Nationality diversity, etc., on firm performance. Similarly, in regard to the TMT gender diversity impact on firm performance, the real contribution of a female team member to firm performance could depend on the level of her similarity to male counterparts in TMT as of level of education, career length, nationality, social status, professional networking and international experience, etc. (Dezso and Ross, 2012).

Research model

The starting point of the paper is the goal to empirically test the influence of top management team diversity on organization performance in the digital era, which started after the year 2000. The paper conducted an extensive literature review on upper echelon theory, and in the paper, data collection was conducted on top managers from selected German multinational corporations (MNCs). Similarly,

three paper's goals are set to logically investigate the phenomenon of emerging dimensions in the top management team. Firstly, the need to examine TMT diversity as a critical and emerging phenomenon, which takes place not only in firms from emerging and developed markets, but it is an issue for business and society. Furthermore, TMT diversity needs to be researched as heterogeneous factor for the firm prosperity and success, as TMT diversity is more than simply discovering the influence of main TMT characteristics such as age, gender, function background, education level, etc. Secondly, it is critical to realise its antecedents by discovering the impact of upper echelons diversity on organization performance. Thirdly, study on upper echelons is inevitably multilevel/hierarchical by nature as different stakeholders are involved, such as TMT members, firms, and other participants from the internal and external business environment. Therefore, mapping out how TMT characteristics refer to upper echelon theory and analytically examining their impact on firm business success is important for writing the paper.

The paper's research questions are the following:

1. How does the Chief Information/Digitalization/Technology Officer, if available, affect the relationship between TMT diversity and firm performance across German firms?
2. How does the emerging role of Chief Digitalization officer and TMT diversity dimensions contribute to the development of upper echelons theory?

For the purpose of the study, there were developed three hypotheses as follows (Figure 1):

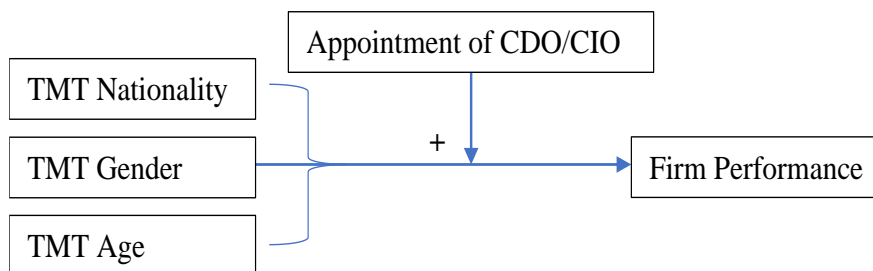


Figure 1: Research model
Source: Authors' own elaboration

Hypothesis 1: The appointment of Chief Information Officer or Chief Digitalization Officer positively moderates the relationship between TMT Nationality and Firm Performance

Recent studies on Chief Digitalization Officer emergence across multinational firms suggest that the CDOs are agents for tackling digitalization and firm strategy by contributing positively to company performance (Kunisch, S., Menz, M. and Langan, 2020).

Hypothesis 2: The appointment of Chief Information Officer or Chief Digitalization Officer positively moderates the relationship between TMT Gender and Firm Performance. A previous study by Gfrerer, A.E., Rademacher, L., and Dobler, S. (2021) argues that the need for gender diversity is increasing to manage digital leadership and drive firm success.

Hypothesis 3: The appointment of Chief Information Officer or Chief Digitalization Officer positively moderates the relationship between TMT Age and Firm Performance. The appointment of Chief Digital officer in the company supports strategic decision-making in the area of digital innovation and digital transformation. The study by Firk, S., Gehrke, Y., Hanelt, A., and Wolff, M. (2022) suggests that Top Management Teams characteristics, such as age, gender and functional background, positively influence the entire firm functioning, which is crucial, especially in the digital era, where the managerial and business changes are swift and sporadic.

Chief Digitalization/Information Officer's role has emerged in business practice thanks to the digitalization emergence across the Globe. This senior position plays considerable importance, especially when the senior management has to make long-impact strategic decisions, which affect not only firm development but also the relationship among the top managers. Thus, CDO has been promoted in multinational firms as an agent who drives firm success and deals with the continuous digital challenges and threats from the external environment.

Top management team digitalization

Since the start of the 21st century, an emerging number of automatization and robotization have penetrated a wide variety of businesses by introducing digitalization processes, which served as springboards for multinational corporations to emphasize creating competitive advantage through disruptive innovation and strategic shifts to developed and emerging global markets (Butollo, 2021 Dobrzanski et al. 2021). The digitalization era (2001-ongoing) is characterized by the emerging role of hardware, middleware and software, a disruptive global supply chain, and unbundled networking via internet and global mobile technologies. Therefore, digitalization goes much further into innovative disruptions in increasing the quality of physical and information technology infrastructure, as well as the demanded technical digitalized processes during "Fourth Industrial Revolution" (Petrillo et al., 2018).

The Digital era is characterized by swift and unpredictable digital transformation; thus, multinational firms are putting much effort into driving artificial intelligence and digitalization throughout all levels of management (Holmund, 2017).

Research Methodology

Paper's methodology is based on the resource-based theory and upper echelon theory, as the top managers and their characteristics have been a driver for firm success, but only in case, these TMT diversity dimensions have been converted as a competitive advantage (Auh and Menguc, 2006). Therefore, the paper builds on

these two theories by investigating the moderating role of the strategically important role of Chief Digitalization Officer in affecting the relationship between TMT diversity and firm performance.

The paper represents a quantitative approach to TMT Diversity in relevant firms from Western Europe. The data collection covers the 100 largest stock-listed companies by market capitalization on 31st December 2021 in Germany. The eligibility criteria are applied in order to avoid the inclusion of companies that are not operative or have very small actual business operations. It is also important that the companies in the sample are deemed to be capable of making independent strategic decisions (in particular, that the companies in our sample have a potential charter to move into foreign markets without being restricted by the interests of a parent company or any other affiliated company). There were collected 1944 top management team members from a hundred German corporations. At the beginning of the paper, during the first phase, the data collection was gathered at the end of the year 2021 from secondary information sources such as multinational firms' annual reports, Eurostat and databases LinkedIn, XING, Munzinger.com, Wirtschaft Knopf and Thomson Reuters.

The paper considers executives and non-executive directors into account because these senior managers make top firm decisions and align the strategic directions. The non-executive directors are responsible for monitoring and advising the TMT. Without underestimating the importance of this role, executive directors are seen as having a larger influence on a firm's actions (Marimuthu and Kolandaisamy, 2009). Therefore, non-executive directors are excluded.

Additionally, data on Chief Information/Digitalization/Technology Officer (CIO/CDO/CTO) and TMT profiles were collected directly from the annual reports of the respective companies. Statistical operationalization in STATA IC 16.1 was applied after collecting secondary data. The empirical part of the paper applied a correlation matrix with the selected variables from the hypotheses above, random-effects regression on CIO/CDO/CTO existence on boards and firm performance.

Control variable

Existence (Appointment) of Chief Information/Digitalization/Technology Officer

Over time, the role of the Chief Digitalization Officer (CDO) has been increasingly covered by media outlets, academia and practitioner-oriented journals (Honegsberg et al., 2019). Therefore, organizations might have got the impression that shareholders will encourage them as an organization pioneering digital initiatives and driving digital innovation if they create the position of the CDO. Similarly, the appointment of a CDO might express a new management trend in the 21st century across varieties of industries, which is defined as a relatively transitory collective belief that a management approach leads to rational management progress Korhonen (2015) suggests in case that organizations appoint CIO/CDO/CTOs to please shareholders, the creation of the new position is likely not to be the product of an overall digital transformation strategy and occur without considering the underlying organizational conditions (e.g., existence of CIO position, CDO's role profile). As a

result, multinational firms may not benefit from such an appointment, and, in turn, shareholders will no longer perceive the appointment of a CDO as a positive strategic move. In Table 1, all the variables are presented with detailed explanations.

Table 1. Descriptions of variables

Variable - Description
(Dependent) Company Performance – Ratio of Foreign Sales to Total Sales
Control Appointment of Chief Information Officer/Chief Digitalization Officer/Chief Technology Officer in Top Management Team
(Independent) TMT Members Gender (Independent) – Absolute member of executive and non-executive in TMT
Top Management Team Members Age

Source: Authors' own elaboration

Research Results and Discussion

When looking at the presence of CIO or CDO in the TMT of the selected firms, it can be noticed that around 50% of the firms have orientation towards firm digitalization. Analogically, a recent study by Firk, Hanelt, Oehmichen, and Wolff (2021) suggests that firms with appointed CDO tend to centralise their digital transformation, and thus they increase long-term digital orientation. The descriptive statistics of the TMT indicate that its nationality diversity has a mean of .85, although it is crucial to underline that this variable was measured at the country level rather than at a regional level. The average number of different nationalities represented in the TMT is fifteen members, and the typical TMT has approximately 10.78 members. Of these, 91% are male executives (Table 2).

Table 2. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
TMT Gender	1,944	.9093718	.2871536	0	1
TMT Age	1,184	66.44848	8.933343	44	91
CDO/CIO	1,944	.5555556	.4970318	0	1
Firm performance	1,944	.6296862	.1577076	.23	.9

Source: Authors' own elaboration in STATA Software

As in the literature, this study argues that TMT diversity influences a firm's success (Aboramadan, 2020). The findings confirm that TMT and international experience diversity further affect firm performance (Table 3).

Firstly, the control variable CIO/CDO was introduced to observe its effects on the dependent variable of firm performance. A previous study by Roepke (2019) suggests that when companies appoint Chief Digitalization Officers, they increase their performance thanks to CDO's improvement of the firms' technology processes and digital infrastructure. Similarly, a study by Singh and Hess (2017) shows that

firms with appointed CDOs are more successful in digital transformation than companies without CDOs.

Table 3. Multivariate correlation

Firm Performance	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]
TMTGender	.0185612	.0343232	-0.54	-.0859471	.0488247
TMTAge	-.0000205	.0015439	-0.01	-.0030517	.0030107
CIO/CDO/CTO	-.002087	.0109419	-0.19	-.023569	.0193949
_cons	.4594897	.0758548	6.06	.310566	.6084133

Note: Significance if $p < 0,05$

Source: Authors' own elaboration through STATA software, 2022

Afterwards, the independent variable and interaction terms were added one at a time to observe their additional explanatory power (Table 4). Accordingly, the authors run a total of one model. The model tests the hypotheses with the control variable of CIO/CDO existence in the TMT in all three hypotheses. The models assess the hypotheses by using Hierarchical Linear Modelling (Carpenter, 2004) and subsequently checking for the individual effects on the dependent variable.

Although previous research by Scuotto, V., Magni, D., Theofilos, T., and Del Giudice examined links between the TMT and certain performance variables (Scuotto et al., 2022), to the authors' best knowledge, there are no studies that have addressed the relationship between the TMT diversity dimensions such as education level, career length, team tenure, company tenure and TMT nationality diversity and a firm's performance through the moderating role of TMT size and CIO/CDO/CTO appointment in the TMT. Therefore, this method of measuring emerging TMT diversity dimensions and firm performance allows the collection of current information and constitutes the paper's first contribution. Second, the study supports the hypothesis that, based on TMT demographics, companies will have a greater or lower propensity for further expansion (Hsu and Chang, 2021). The upper echelons theory was an appropriate conceptual framework for analyzing this strategic issue (Truant et al., 2021). The study finds that an appointment of Chief Digitalization/Information/Technology officer moderates the relationship between gender and age diversity and firm performance.

Study implications

This study has twofold implications. The paper discusses important aspects of upper echelons theory, where the paper mainly contributes to the importance of appointment and continuity of Chief Digitalization/Information Officer as essential measures taken by top management to sustain firm growth. In terms of managerial implications, the paper gives directions and identifies key aspects of how the firms should successfully manage the digital transformation from senior management perspectives by increasing the diversity across top management teams and by

appointing Chief Digitalization Officer who will be the agent for managing smoothly digital transformation of the company.

Table 4. Hypotheses test

	Beta	t	Sig.	Supported or Not Supported
Constant	0.60	16.12	0.00	Supported
Hypothesis 1: <i>The presence of CIO or CDO positively moderates the relationship between TMT Nationality and Firm Performance</i>	-0.05	-0.54	0.59	Not Supported
Hypothesis 2: <i>The presence of CIO or CDO positively moderates the relationship between TMT Gender and Firm Performance.</i>	-0.04	-0.28	0.78	Not Supported
Hypothesis 3: <i>The presence of CIO or CDO positively moderates the relationship between TMT Age and Firm Performance</i>	0.08	0.60	0.55	Not Supported

Note: Significance if $p < 0,05$

Source: Authors' own elaboration in STATA Software, 2022)

Conclusion

The study underlines that its authentic theoretical access to the quantification could be applied in the comparative managerial study of TMT diversity within firms from different industries. The empirical findings of this study showed that TMT diversity

possesses an important impact on firm performance. These results propose some conceptual and practical implications about the relationship between TMT diversity and company performance via the iteration of the existence of CIO/CDO/CTO. Furthermore, the findings of this study suggested that TMT diversity and appointment of CDO should be considered for firms that desire to foster firm performance, especially during the digital era. In this study, the relationship between TMT characteristics and firm performance was elucidated. Many previous studies have shown that TMT characteristics critically affect organizational outcomes and contextual factors such as firm culture, climate, and knowledge base. In addition, many scholars have studied the social and contextual factors that influence company performance. However, few studies have examined the direct relationship between TMT diversity and organizational performance, as most of the existing studies are concerned with a group impact on firm performance.

Study limitations and future study directions

The study limitation is the sample size, which includes only firms from Germany. Thus, the study is relevant only for advanced markets and firms from Western economies, where the diversity in the Top Management Teams has been considered for many years. Therefore, future research interests will be the need to study diversity in Top Management Teams from emerging markets and how that companies perform.

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RÓŻNORODNOŚĆ ZESPOŁU NAJWYŻSZEGO KIEROWNICTWA A WYNIKI FIRMY W ERZE CYFROWEJ

Streszczenie: Artykuł rzuca światło na istotne wymiary różnorodności zespołu najwyższego kierownictwa w niemieckich firmach oraz ich wpływ na powoływanie dyrektora ds. digitalizacji / informacji w burzliwych latach Internetu rzeczy i cyfryzacji w drugiej dekadzie XXI wieku. Badanie składa się z przeglądu literatury w tematyce różnorodności wśród kadry kierowniczej wyższego szczebla niemieckich firm ery cyfrowej, charakteryzującej się globalnymi zakłóceniami technologicznymi i cyfrowymi. W artykule omówiono, w jaki sposób pojawiające się zjawiska różnorodności w obrębie najwyższego kierownictwa wpływają na wyniki firm w okresie innowacji przyrostowych i burzliwej transformacji cyfrowej firm międzynarodowych. Nowością w badaniu jest fakt, że dostarcza ono dowodów pochodzących z różnorodnych zespołów najwyższego kierownictwa z rynków rozwiniętych, takich jak Niemcy, gdzie cyfryzacja jest jednym z priorytetów niemieckiego rządu, ale także niemieckiej gospodarki ukierunkowanej na napędzanie długoterminowych wyników firm i ich trwałości. Motywacją do przeprowadzenia badania dotyczącego różnorodności zespołów zarządzających w czołowych niemieckich firmach w erze cyfrowej jest fakt, że umiejętności, kompetencje oraz wiedza kadry zarządzającej wyższego szczebla są kluczowymi czynnikami wpływającymi na wyniki i bogactwo t firmy. Ponadto w Niemczech wiele firm odnoszących największe sukcesy wyznaczyło stanowiska kierownicze, aby zarządzać szybką zmianą w kierunku bardziej zdigitalizowanej gospodarki i lepszych wyników firm w niestabilnym globalnym środowisku biznesowym. Wyniki badania pokazują, że różnorodność kadry najwyższego kierownictwa pozytywnie wpływa na powołanie dyrektora ds. digitalizacji / informacji. Ponadto, wyniki badania pokazują, że firmy, które mają w swoim zespole dyrektora ds. digitalizacji, wydają się być bardziej odporne na erę cyfrową niż firmy, które nie powołały dyrektora ds. cyfryzacji.

Słowa kluczowe: zespół najwyższego kierownictwa, różnorodność, dyrektora ds. cyfryzacji, era cyfrowa

数字化时代高层管理团队的多样性与企业绩效

摘要：本文揭示了在二十一世纪第二个十年中，在物联网和数字化的动荡年代，德国公司高层的多样性影响因素及其对首席数字化/信息官任命的影响。该研究包括一个关于在以全球商业技术数字破坏为特征的数字时代，德国公司高级管理层多样性的文献回顾。本文讨论了在跨国公司的渐进式创新和动荡的数字化转型时期，新出现的跨高层管理的多样性现象是如何影响公司业绩的。本研究的新颖之处在于，它提供了来自德国等先进市场的高层管理团队多样性的证据，数字化是德国政府和德国企业的优先事项之一，以推动企业的长期绩效和企业的可持续性。对数字时代德国顶级公司的高层管理团队的多样性进行研究的动机是，高级管理技能、能力和知识的极端重要性是公司业绩和繁荣的关键因素。此外，在德国，许多最成功的公司都在其高层管理中任命了高管职位，以便在动荡的全球商业环境中管理向更多数字化业务的快速转变和更高的公司绩效。研究结果显示，高层管理团队的多样性对首席数字化/信息官的任命有积极的影响。同时，论文结果显示，高层管理团队中有现任首席数字化官的企业往往比没有任命任何首席数字化官的企业更适应数字化时代的发展

关键词：高层管理团队，多样性，首席数字化官，数字化时代