

The cultural diversity of German companies' executive boards and the success of their internationalisation

ABSTRACT

The sociocultural composition of executive boards has a long-term relevance for the success of their companies and their organisation's internationalisation. Companies must weigh up the possible advantages of having employees from different cultural backgrounds against possible inefficiencies caused by cultural misunderstandings. Using a panel analysis, this article analyses the effect of the level of cultural diversity in the boards of the DAX30 companies on their success in internationalising. A slight but significant correlation is evident.

Keywords: Upper-Echelon theory, Cultural diversity, Internationalisation success, Top Management Teams

1. INTRODUCTION

In the last few years the proportion of different nationalities in the higher levels of German companies has risen. Simon Kucher & Partners' eleven year long study of DAX companies' executive boards noted an increase from 13.3% in 2000 to 27.8% in 2011 (2011). This increase is not least because of the requirement for corporate governance boards to internationalise under the German corporate governance *codex* (cf. Regierungskommission Deutscher Corporate Governance Kodex 2012, Zif. No. 5.1.2 and 5.4.1) [1]. According to Hambrick and Mason's 'Upper Echelons' Theory (1984, cf. see also e.g. Hambrick et al. 1996 [2]; Athanassiou and Nigh 2002 [3]; Lee and Park 2006 [4]; Nielsen 2010 [5]), *characteristics* of the senior management team have a decisive influence on the performance and success of a company. Studies of this perspective argue that the composition of the higher management levels strongly influences companies' ability to internationalise (Jans 2004, p. 4 [6]; Stumpf 2005 [7]; cf. Lee and Park 2006, p. 195 [4]; van Knippenberg and Schippers 2007, p. 518 [8]; Fernández-Ortiz and Lombardo 2009, p. 132 [9]; Nakui et al. 2011, p. 2328 [10]).

This study aims to contribute to the as yet little researched correlation between cultural diversity and internationalisation success. Schmid and Dauth refer to a very restricted number of empirical studies which investigate the influence of the international diversity of the managing board on the level of internationalisation companies achieve (N=19) or on their commercial success (N=9) (cf. Schmid und Dauth 2012, pp. 780–781 [11]). They note that '...so far there has been little research into internationality of German boards and management teams' (cf. Schmid and Dauth 2012, p. 781 [11]). Only the studies by van Veen and Elbertsen (cf. 2008 [12]), Biemann and Wolf (cf. 2009 [13]) and Arnegger et al. (cf. 2010 [14]) focus on German companies' executive boards (cf. Schmid and Dauth 2012, p. 781 [11]).

In order to answer the research question this study will examine the DAX30 companies over a period of 11 years using a panel analysis, which will research the correlation between the cultural composition of their senior management teams and the international performance of the firms. It will therefore enrich the current state of the research into the connection between cultural diversity and companies' success in internationalising.

2. THEORETICAL BASIS

2.1 Cultural diversity in senior management teams

The concept of the senior management team (SMT) first appeared in management literature at the start of the eighties and has since attracted increasing interest as a research topic (cf. see also e.g. Bourgeois 1980, p. 234 [15]; cf. Hambrick 1994, p. 172 [16]). A SMT is comprised of a small group of managers who are at the top of the organisational hierarchy and therefore exert a significant influence on the company (cf. Hambrick and Mason 1984, p. 193 [17]; Pettigrew 1992, p. 163 [18]; Finkelstein and Hambrick 1996, p. 8 [19]). In this study the executive boards take the function of SMTs, because in listed companies they serve as the responsible body for the strategic direction of the business.

Cultural diversity has been defined in numerous ways from different perspectives (cf. Jackson et al. 1995 [20]; Mannix and Neale 2005 [21]; Harrison and Klein 2007 [22]). The most widely known definition is that of Jackson et al. (cf. 1995, p. 217 [20]), which includes readily detectable characteristics, such as culture, age or gender, and underlying ones, such as values, attitudes, capabilities or education.

Within the framework of this study cultural diversity is defined as the heterogeneity of culture as well as national characteristics within a unit, i.e. within the SMTs (cf. Trice and Beyer 1993, pp. 82–83 [23]; Hofstede 2001, pp. 11–12 [24]).

Opinions on the effects of the demographic composition of the SMT follow different strands of argument. On the one hand, diversity can be considered as a valuable resource (resource perspectives) but on the other, it can be seen as the source of conflict in the team process (process perspectives) (cf. Jans 2004, p. 4 [6]).

Firstly, following the resource perspective, the cognitive theory states that demographic diversity is accompanied by cognitive diversity (cf. Cox et al. 1991, p. 829 [25]; Certo et al. 2006, S. 870 [26]), and therefore a culturally heterogeneous management team has a wide range of different experiences, capabilities and values at its command (cf. Jans 2004, p. 4 [6]; van Knippenberg and Schippers 2007, p. 518 [8]). Secondly, according to the theory of social capital, a culturally diverse team has access to a broader range of information, thanks to the different social networks and contacts that the team members possess outside the company (cf. Adler and Kwon 2002 [27]; Certo et al. 2006, p. 817 [26]). The array of perspectives, knowledge and information in culturally diverse SMTs leads to a better assessment of future events, more potential trade alternatives and a better knowledge of the likely consequences thereof (cf. Hambrick and Mason 1984, p. 195 [17]). This has a positive effect on the company's adaptability and flexibility in new competitive and problematic situations (cf. van Knippenberg and Schippers 2007, p. 518 [8]).

From the process perspective, diversity leads to a higher instance of conflict, less communication and little social integration (cf. Jans 2004, p. 518 [6]). On the individual level this is caused by the natural affinity and ties which people with similar (cultural) characteristics share, and on the collective level by the effect of categorisation and identification processes with socially similar people (cf. Jans 2004, p. 5 [6]). Theoretical explanations are provided by Tajfel and Turner's theory of social identity [28] as well as Byrne's similarity-attraction hypothesis [29]. People with comparable life experiences develop relatively similar attitudes, values and beliefs. Through these the interpersonal attractiveness of the interaction partner is reinforced (cf. Jans 2004, p. 518 [6]; Mannix and Neale 2005, p. 39 [21]). Building on this, the theory of 'social identity' describes the way in which people differentiate between 'in-group' and 'out-group' people. The resultant fault lines (lines of tension) between the groups decrease their interpersonal attractiveness (cf. Thatcher et al. 2003, p. 219 [30]; van Knippenberg and Schippers 2007, p. 518 [8]; Ruigrok et al. 2010, pp. 7–8 [31]) and increase the risk of emotional conflict or less cooperation (cf. Ellwart et al. 2010, p. 17 [32]).

The organisation of the SMTs must identify and develop conditions in which the positive effects overcome the negative ones (cf. Ruigrok et al. 2010, pp. 6–7 [31]), so that the benefits of cultural diversity can be used to their maximum potential. The survival and competitiveness of companies are dependent on their ability to successfully meet the challenge of internationalisation (cf. Gomez-Mejia and Palich 1997, p. 313 [33]; Sanders and Carpenter 1998, p. 158). The necessary collection of information and processing competence (cf. Sanders and Carpenter 1998, p. 158 [34]; Lee and Park 2006, p. 197 [4]) can be supported by the cultural diversity within the management team. The team members' different experiences make a significant contribution to a better understanding and interpretation of the international environment (cf. Tacheva 2007, p. 139 [35]), which optimises their interaction with it.

2.2 The influence of SMTs on the success of internationalisation

Many studies have considered possible methods for measuring how successfully companies have internationalised (e.g. Jaw und Lin 2009 [36]; Kaczmarek 2009 [37]; Lu und Beamish 2004 [38]; (cf. e.g. Tallman und Li 1996 [39]; Lu und Beamish 2004 [38]; Jaw und Lin 2009 [36]; Kaczmarek 2009 [38], for an overview cf. Schmid and Dauth 2012, pp. 774–777 [11]). It has been shown that internationalisation should be measured on the basis of multiple indicators, and that non-financial factors, e.g. geographical distribution, can also be useful.

Building on Cyert and March's 1963 'Behavioral Theory of the Firm' [40] (cf. Hambrick et al. 1996, p. 662 [2]; Nielsen 2010, p. 303 [5]) and Hambrick and Mason's 1984 'Upper Echelons' theory [17], a group of people at the top of the company can be used as an object of analysis (cf. Carpenter et al. 2004, pp. 752–753 [41]). The success of a company can be seen as a variable dependent on the strategic decisions of dominant groups - the top management - within the organisation (cf. Hambrick and Mason 1984, pp. 194–196 [17]), which is influenced by the traits and characteristics of the SMT members and their resultant heterogeneity (cf. Hambrick and Mason 1984, p. 193 [17]; Finkelstein and Hambrick 1990 [42]; Hambrick et al. 1996 [2]). Figure 1 shows this presumed correlation.

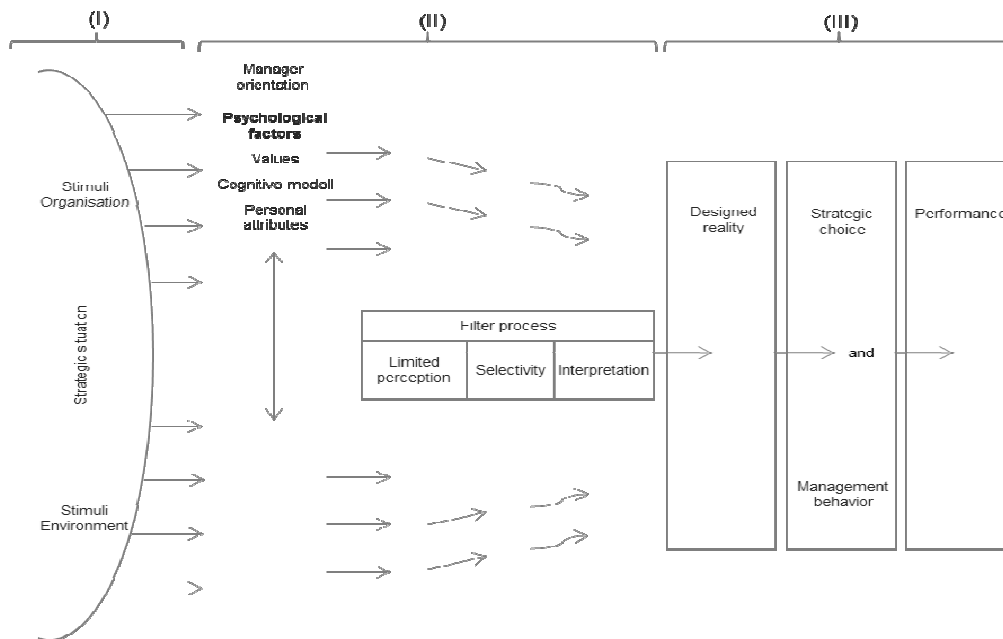


Fig. 1. Model of strategic choice in SMTs, taking *bounded rationality* into account.

Source: based on Finkelstein and Hambrick (1996, p. 42) [19]

Existing studies on the diversity of SMTs and their companies' performance portray a mixed picture. Positive (cf. e.g. Caligiuri et al. 2004 [43]; Boone and Hendriks 2009 [44]), negative (cf. Tsui et al. 1992 [45]) or no correlations (cf. Olson et al. 2006 [46]), as well as simultaneous positive and negative connections (cf. Hambrick et al. 1996 [2]; Richard and Shelor 2002 [47]), can be identified. An explanation of this is the very different ways in which the topic has been approached and treated (cf. Harrison and Klein 2007, p. 1200 [22]; Fernández-Ortiz and Lombardo 2009, p. 134 [9]). The literature does not usually differentiate between the various different aspects of diversity (cf. Tacheva 2007, p. 62 [35]), but treats it as a general construct. Every feature of diversity is assigned to the same effect, regardless of the disparity between them (cf. Hambrick and Mason 1984 [17]; Finkelstein and Hambrick 1996 [19]; Tacheva 2007 [35]). Further causes of these dissimilar results could be the difference in the dependent variables, definitions used, and context factors considered (cf. Nielsen 2010, p. 301 [5]; Nakui et al. 2011, p. 2328 [10]). Furthermore, there are studies with a decided focus on cultural diversity in SMTs (cf. Elron 1997 [48]; Heijltjes et al. 2003 [49]; Caligiuri et al. 2004 [43]), as well as those with thematically similar variables, such as international experience (cf. Athanassiou and Nigh 2002 [3]; Tacheva 2007 [35]; Kaczmarek 2009 [37]) which can be understood as synonymous with knowledge of 'foreign' countries and the understanding of values and backgrounds of practices and needs (cf. Athanassiou and Nigh 2002, p. 475 [3]; Kaczmarek 2009, p. 176 [37]; Crisp and Turner 2011, p. 257 [50]). However, in the last ten years the discussion about the effect of cultural diversity in SMTs has widened from purely looking at companies' performance to other aspects of companies' diversity (cf. Herrmann and Datta 2005, p. 69 [51]; Tacheva 2007, p. 137 [35]).

3. THE RESEARCH CONCEPT

3.1 Research hypotheses

Internationalisation leads to more complexity and as such to higher demands on the SMTs. Cultural diversity in the SMTs can therefore be conducive to dealing with complex factors in the most effective way.

Studies have shown that in the long term, negative operational effects caused by cultural diversity reduce the level of cooperation within an SMT. However, this study assumes that cultural diversity has a positive effect on information gathering and processing in SMTs, as SMTs usually work together for several years, so this negative influence has less of

an effect on operations. Therefore a positive correlation between the diversity of SMTs and their companies' success in internationalising is anticipated.

The expression 'internationalisation success' is not explicitly used in management literature, but the nature of the aspects being researched makes it clear, that as a rule the degree of internationalisation is synonymous with its success. Drawing on Sullivan 1994 [52], the degree of internationalisation is used as the factor for determining success. This leads to the following hypothesis:

Hypothesis 1: There is a positive correlation between cultural diversity in SMTs and the level of internationalisation attained by their companies.

Based on Sullivan 1994 [52], a company's level of internationalisation can be divided into success-based, structure-based and behaviour-based dimensions. Relying on existing studies (cf. e.g. Lu und Beamish 2004 [38]; Jaw und Lin 2009 [36]) that build on Sullivan's work the behaviour-based dimension should be ignored. Doing so should not impair the research of the breadth (scale of the company's international diversification) or the depth (the significance of the overseas branches for the company), as the success-based dimension reflects the depth, and the structure-based dimension the breadth, of the internationalisation (cf. Jaw und Lin 2009, p. 226 [36]). As the proportion of foreign sales gives a success-based figure, and the number of foreign subsidiary companies offers a structure-based indicator, the following hypotheses can be reached:

Hypothesis 1a: There is a positive correlation between cultural diversity in SMTs and the proportion of a company's foreign country revenues.

Hypothesis 1b: There is a positive correlation between cultural diversity in SMTs and the proportion of a company's foreign country affiliates.

3.2 Research design

3.2.1 Sample

The preliminary sample of the 30 DAX companies as of October 2011 was reduced to 28 after the removal of the banks taking financial crisis into account. German insurance groups remain included assuming that they did not suffer from financial crisis organisationally as banks. Therefore SMT composition of insurance groups is less influenced by externalities and can still be regarded as strategic choice. The companies included are all active internationally and function as limited companies with an executive board. Because the companies have different representative branches the results can be either be generalised or focused on a single branch (cf. Lee and Park 2006, p. 200 [4]). The data from the DAX 30 companies was compiled over a period of 11 years, from 2000 – 2010. It was predominantly taken from the relevant reports from the companies, supplemented by their official websites as well as online databases (e.g. LexisNexis, MunzingerOnline, WirtschaftsWocheOnline) when information was missing. Additionally, direct contact with the relevant employees was attained in some cases (Investor Relations). The final sample was reduced to 17 companies, because some lacked data. So overall this yielded a sample with U=17 companies, with a research period of T=11 and N=187 observations.

3.2.2 Putting the research into operation

Level of internationalisation (LI): The level of internationalisation is usually analysed using multidimensional measurements, in order to boost its validity. This approach will be followed and the degree of internationalisation will be measured as the average of the proportion of a company's revenues coming from abroad and the quantity of foreign subsidiaries. The construct 'level of internationalisation' takes a value from 0 (no internationalisation) to 1 (a high level of internationalisation).

Proportion of foreign revenues (FR): the proportion of a company's foreign country revenues was measured by Sullivan 1994 [52] as the ratio of foreign revenues in relation to a company's total revenue (cf. Sanders und Carpenter 1998 [34]; Lu und Beamish 2004 [38]; Lee und Park 2006 [4]; Jaw und Lin 2009 [36]). This variable can take a value between 0 (no foreign revenues) and 1 (where a company's total revenue all comes from abroad).

The proportion of foreign affiliates (FA): the measurement of the proportion of subsidiary companies which are foreign was also inspired by previous studies (see above) and is defined as the ratio of foreign subsidiary companies to the total number of subsidiary companies (Sullivan 1994 [52]), taking a value between 0 (no foreign subsidiaries) and 1 (all subsidiaries abroad). Subsidiaries of the companies were only chosen if they were fully included in the consolidated

balance sheet in the company's report, as per the German commercial code (§ 294, § 310) and the International Finance Reporting Standards (IAS 27).

Cultural diversity (CD) in SMTs: cultural diversity refers to the composition of the executive board and is defined here in reference to the nationality of the board members. Citizenship *passes* here for a person's characteristics as well as morals (cf. Kaczmarek 2009, p. 59 [37]) and ensures the accessibility of the data (cf. for more and broader coverage of Cultural Diversity in Senior Management Teams Schmid and Dauth 2012 [11]).

The extent of cultural diversity can be measured using different *dispersion measurements* (cf. Allison 1978 [53]; Jans 2004, p. 9 [6]; van Knippenberg and Schippers 2007, p. 522 [8]; Mayr 2010, S. 33–34 [54]). The Blau Index (BI) has been chosen for this study, as it is commonly used in diversity studies (cf. Kilduff et al. 2000 [55]; Richard and Shelor 2002 [47]; Olson et al. 2006 [46]; Houghton et al. 2010, p. 102 [56]; MacCurtain et al. 2010 [57]; Nielsen 2010, p. 309 [5]). The BI considers the different behaviours associated with belonging to minorities or majorities within a team (cf. Mannix and Neale 2005, p. 37 [21]) and is calculated as:

$$BI = 1 - \sum_{j=1}^n (a_j)^2 \quad (0 \leq BI \leq 1).$$

The BI is therefore the representative number of the proportion of people belonging to a certain nationality within the group as a whole. The BI can theoretically take a value between 0 and 1. The bigger the value is, the more diverse the group (the SMT) is with respect to the considered characteristic (nationality).

Boards lasting less than a year were not included in the analysis. Following (Ruigrok et al. 2010 [31]), people with dual nationality were coded as 'half nationalities' using the respective nationality j , so that the proportion was shared between both nationalities.

3.2.3 Control variables

In this investigation the sizes of the management team and the company will act as the control variables. These have already been applied in many studies and have proved relevant (cf. e.g. Hambrick et al. 1996 [2]; Athanassiou and Nigh 2000 [58]; Tihany et al. 2000 [59]; Richard and Shelor 2002 [47]; Olson et al. 2006 [46]; Fernández-Ortiz and Lombardo 2009 [9]).

Team size: the size of the SMT can influence the level of heterogeneity. Larger teams can consist of more members with different nationalities. In contrast, smaller teams can be more volatile, in that one additional member with a different nationality will have a greater influence on the group's makeup (cf. Tihany et al. 2000, p. 1169 [59]).

Company size: the size of the company can have an influence on its strategic initiatives. Larger companies have the personnel and the resources to enter the international market (cf. Tihany et al. 2000, p. 1168 [59]). The size of the company will be measured by the amount of members in each respective year of the report (cf. e.g. see also Tihany et al. 2000 [59]; Fernández-Ortiz and Lombardo 2009 [9]).

3.2.4 Statistical analysis

There are observations for all 17 of the included companies and all the measurement points, so this study is comprised of a balanced panel of 187 observations. A panel analysis offers noteworthy advantages (cf. Schröder 2009, p. 315 [60]) as it offers a broader information base (cf. e.g. Tacheva 2007, p. 82 [35]; Schröder 2009, p. 315 [60]) compared to pure longitudinal data (cf. Tacheva 2007, p. 82 [35]; Schröder 2009, p. 315 [60]). Information about the chronological sequence of conditions and events can be obtained, which allows unobserved individual heterogeneity to be scrutinised (cf. Schröder 2009, p. 315 [60]; Wooldridge 2009, pp. 11–12 [61]).

Building on a simple model (the zero model), which provides basic conclusions about the data structure, a model with fixed effects (FE model) was applied to the relationship being investigated. The review of the *assumptions* of the linear mixed model used was accomplished using a linear regression (cf. Field 2009, p. 739 [62]).

4. DATA INTERPRETATION AND RESULTS

4.1 Descriptive statistics

The average size of the companies was 151,635 employees, with a range from 9,645 to 520,112. The average size of the SMTs (executive boards) was 6.89 members, with a variation between 4 and 14 members. The mean values, standard deviation, domain (Min./Max.) and the correlation of the different variables are shown in Table 1.

The SMTs had an average cultural diversity value of .205, with a range between .000 and .720. The high standard deviation of the cultural diversity value is particularly noteworthy, as it highlights a wide variation in the cultural composition of the executive boards ($M=.205$, $SD=.199$). The correlations are positively biased, since the present panel data structure cannot be factored in the Pearson product-moment correlation. Likewise, significance cannot be used as a valid measure. The high values for the correlation between the level of internationalisation and the dependent variables are explained by the way the construct is formed.

The results of the Durbin-Watson statistics show the presence of positive auto-correlation ($DW_{FR}=.372$; $DW_{FA}=.300$; $DW_{LI}=.395$). Auto-correlation is a well-known problem with panel data. Furthermore, the regression has considerable weaknesses with respect to the quality of the conformance. The proportion of the explained variance in relation to the total variance only accounts for 14%, 12% and 17% ($r^2_{FR}=.144$; $r^2_{FA}=.116$; $r^2_{LI}=.171$).

Table 1. Mean (M), standard deviation (SD), domain (Min./Max.) and product-moment correlation according to Pearson

Variables	M	SD	Min	Max	1	2	3
1. Cultural Diversity (CD)	.205	.199	.000	.720			
2. Share of foreign country revenues (FR)	.653	.161	.190	.905	.289***		
					(.000)		
3. Share of foreign country affiliates (FA)	.728	.134	.293	.954	.318***	.424***	
					(.000)	(.000)	
4. Level of Internationalization (LI)	.690	.125	.383	.929	.358***	.873***	.811***
					(.000)	(.000)	(.000)

$N = 187$, $^{\dagger} P = .10$, $^* P = .05$, $^{**} P = .01$, $^{***} P < .001$

The application of the linear mixed model (cf. Table 2) is corroborated by the high values of the calculated intraclass-correlation coefficients ($ICC_{FR}=.865$; $ICC_{FA}=.866$; $ICC_{LI}=.858$), which show that circa 86% of the total variance in each model can be traced back to the difference between the companies.

The total mean values (TMV) of the dependent variable show a relatively high average level of international activity across all the companies and measurement points. The average proportion of foreign revenues accounted for 65% of the total, the average amount of foreign subsidiary companies 73% and the level of internationalisation was, on average, 69% ($TMV_{FR}=.653$; $TMV_{FA}=.728$; $TMV_{LI}=.690$). Furthermore, it can be shown that a small but significant variation in the time series of each company is predominant ($\sigma^2_{W,FR}=.003$, $P<.001$; $\sigma^2_{W,FA}=.002$, $P<.001$; $\sigma^2_{W,LI}=.002$, $P<.001$). Alongside this there are significant differences between each of the companies, which, compared to the variations in the companies' time series, are much more substantial ($\sigma^2_{B,FR}=.022$, $P=.01$; $\sigma^2_{B,FA}=.016$, $P=.01$; $\sigma^2_{B,LI}=.013$, $P=.01$).

Table 2. Zero model

	FR	FA	LI
Constant Term (total mean)	.653***	.728***	.690***
	(.037)	(.030)	(.028)
Within-Variance: σ^2_W	.003***	.002***	.002***
	(.000)	(.000)	(.000)

Between-Variance: σ_B^2	.022**	.016**	.013**
	(.008)	(.005)	(.005)
Total Variance: σ_{Total}^2	.026	.018	.016

Intraclass-correlation coefficient

(ICC): .865 .866 .858

$$ICC = \frac{\sigma_B^2}{(\sigma_B^2 + \sigma_W^2)}, 0 \leq ICC \leq 1$$

-2LL ⁺	-454.743	-524.913	-541.641
AIC ⁺	-448,743	-518,913	-535,641

N=187, methode: inclusion, [†]P=.10, *P=.05, **P=.01, ***P<.001

Non-standardised coefficient with standard errors in brackets.

4.2 Examination of the hypotheses

Table 3. Linear mixed model – FE model (fixed effects model)

	FR		FA		LI	
	model 1	model 2	model 1	model 2	model 1	model 2
Team size	-.002	-.003 [†]	.001	.000	-.001	-.001
	(.002)	(.002)	(.002)	(.002)	(.001)	(.001)
Company size	.000**	.000*	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Cultural diversity		.031 [†]		.037 [†]		.036*
		(.019)		(.021)		(.016)
Measurement iterations	.991***	.990***	.978***	.977***	.985***	.984***
(ARH1 rho)	(.004)	(.005)	(.008)	(.009)	(.007)	(.007)
-2LL	-744.955	-747.652	-716.452	-719.440	-809.905	-814.453
AIC	-714,955	-715,652	-686,452	-687,440	-779,905	-782,453

N=187, [†]P=.10, *P=.05, **P=.01, ***P<.001

Non-standardised coefficient with standard errors in brackets.

The FE models show significant positive correlations between cultural diversity and the proportion of a company's revenues coming from abroad, as well as the amount of subsidiary companies based abroad (CD_{FR}-FE=.031, P=.10; CD_{FA}-FE=.037, P=.10). However, the strength of the correlation is not especially pronounced. Assuming the effects are fixed, hypotheses 1a and 1b can be confirmed by a minor positive correlation. The empirical results are reflected in the assumed positive correlation between cultural diversity and the construct 'the level of internationalisation of companies' of

hypothesis 1 ($CD_{LI}-FE=.036$, $P=.05$). Only a slight correlation is shown here, but in comparison to previous studies it is clearly more substantial. Hypothesis 1 can therefore also be supported, assuming the effects are fixed. The substantially more significant correlation and the decided increase in the quality of the conformance compared to the first two models (proportion of foreign revenues and amount of foreign subsidiaries) confirm the observation into the construct (level of internationalisation) which has been carried out ($-2LL_{LI}=-814.453$ compared to $-2LL_{FR}=-747.652$ and $-2LL_{FA}=-719.440$).

The significance and the size of the correlation between cultural diversity and the amount of foreign subsidiaries stand out in comparison to that of the proportion of foreign revenues. In turn, the information criteria only have a low conformance, while neither of the two models may be given a preference regarding the results. The results for the control variables are particularly notable. None of the models show a noteworthy correlation between the management team or company size with their respective dependent variables. The disparate significance of the control variable stands out, but it is not within the scope of this study to investigate which reasons lie behind this.

The analysis of the FE model confirms the positive correlation between cultural diversity and the level of internationalisation, the proportion of a company's revenue coming from abroad and the amount of subsidiary companies which are foreign, as posited in hypotheses 1, 1a and 1b. Following on from that, the positive connection between cultural diversity and success in internationalising can be supported by empirical evidence.

When comparing FE models and models with random effects (RE models), it was found that they only differ slightly from each other in terms of the quality of their conformance. The RE models show a trend towards a better conformance, but this confirms the conjecture that in comparison to the FE models the estimators are slightly distorted.

The results of the FE and RE models show similar behaviour with respect to the proportion of foreign revenues and the amount of foreign subsidiary companies, but not in terms of the level of internationalisation. In reference to hypotheses 1a and 1b both models come to the same conclusion. With the RE model no conclusion could be reached for hypothesis 1, but the simplified model (FE model) confirmed the hypothesis.

5. DISCUSSION AND IMPLICATIONS

In the descriptive statistics the low mean value (.205) and the high standard deviation stand out. In comparison, previous studies showed higher average values for cultural diversity (e.g. Tacheva 2007 [35] with .34 or Kilduff et al. 2000 [55] with an average of .37 cultural diversity). A reason for this is the data this study was based on. Companies who displayed little or no cultural diversity over the observation period were wholly included in the analysis. With a relatively small sample and a comparatively long observation period this would have a significant effect on the mean value. In total 73 of the 187 observation values showed a cultural diversity of zero, meaning that with 39% of the observation points the boards showed no diversity.

With the linear mixed models the small sample and the lower level of diversity could also be reasons for the low strength of the correlation between cultural diversity and the dependent variables. In previous studies the correlation between cultural diversity and the dependent variables was found to be stronger. Elron 1997 [48] established a correlation value of .18 and Caligiuri et al. 2004 [43] even found values from .30 to .49. Both studies had bigger samples and used American companies as the basis for their data. Furthermore, they both conducted cross-sectional analyses, while a panel analysis was used in this study. It is obvious that the influence of the sample size, the different companies and countries examined and the differing analysis methods were the reasons for the difference here.

With respect to proving the hypotheses the empirical results show a significant correlation between cultural diversity and the proportion of a company's revenues coming from abroad, as well as with the amount of subsidiary companies based abroad.

Foreign subsidiary companies represent the highest level of market integration but also the highest level of risk in foreign countries (cf. Meckl 2010, pp. 16–17 [63]). A company with international subsidiary companies is therefore better established on the international market than a company with trade-based internationalisation (cf. Meissner and Gerber 1980, p. 224 [64]; Kutschker und Schmid 2011, p. 907 [65]). The experience and knowledge about 'foreign' markets (cf. Hambrick and Mason 1984, p. 195 [17]; van Knippenberg and Schippers 2007, p. 518 [8]), which a culturally diverse team possesses, can increase a company's readiness to take risks or invest. Consequently there is a stronger correlation between cultural diversity and the proportion of foreign subsidiary companies than between cultural diversity and the proportion of revenues coming from abroad.

The correlation between cultural diversity and the construct 'the level of internationalisation' can also be confirmed. The correlation is comparably strong, though it is clearly stronger than in the one dimensional models.

In this study, the investigated causality is based on the 'Upper-Echelons' Theory. However, in reality the direction of the correlation between cultural diversity and success in internationalising must remain open to debate. Are culturally diverse SMTs responsible for the international alignment and success of their companies or does increasing internationalisation lead to a company having a culturally diverse SMT (cf. Tacheva 2007, p. 142 [35])? Studies which examined the influence of internationalisation success on cultural diversity, rather than the other way round, also found this correlation (cf. Kaczmarek 2009 [37]). In this case reference to the selection process for the SMTs was made. Therefore it would have to be considered, whether certain board members were chosen because they had a different nationality or whether their nationality was a coincidental result of choosing the best person for the job (cf. Tacheva 2007, p. 68 [35]). As a rule nationality is not the only criterion used to make a decision, meaning that the best person for a job is not solely defined by their nationality. It would consequently make sense to examine further aspects of diversity both in isolation and as a whole construct, as well as integrating other relevant elements (e.g. CV, international experience, etc.), into future studies on this topic. To this end, the measurement of internationalisation recommended by Schmid and Dauth could be a useful point of departure for further research (cf. Schmid and Dauth 2012, p. 785 [11]).

In this study only one deciding aspect of cultural diversity was researched, as nationality was the only 'proxy variable' (cf. Tacheva 2007, p. 140 [35]). In other studies several variables were examined. Generally, they were investigated in relation to the demographic characteristics of SMT members (cf. Herrmann and Datta 2005 [51]; Marimuthu and Kolandaisamy 2009 [66]; Ruigrok et al. 2010 [31]) and were often analysed as a construct rather than in isolation (cf. Hambrick and Mason 1984 [17]; Finkelstein and Hambrick 1996 [19]; Tacheva 2007 [35]). As a counter to any criticism of the partial analysis carried out in this study, it can be argued that every demographic characteristic can have a different effect and as such must be researched separately (vgl. Mayr 2010, p. 39 [54]).

It can be questioned whether the demographic variable 'nationality' is a suitable proxy variable for the psychological characteristics and the behaviour of SMT members (cf. Edmondson et al. 2003, p. 4 [67]; Lee and Park 2006, p. 196 [4]; Schmid and Dauth 2012, p. 773 [11]), as people's values, beliefs and behaviour can strongly differ within a national group (cf. Kilduff et al. 2000, p. 22 [55]). Although this criticism seems partly valid, nationality has proved itself as a classic variable of intercultural management research, as due to its observability and implicit relationship with cultural variables it has often shown a sufficient approximation of the researched correlation.

In considering an overall evaluation of the correlation, the fact that SMTs are influenced by numerous internal and external factors must also be mentioned (cf. Bültel 2009, p. 91 [68]). Internal capacities and goals are not the only factors which play a role; external circumstances, for example the overall financial position or the market demand, also do so in equal measure. These internal and external influences have an effect both on the SMTs' decisions as well as the performance of a company. Variables often used in this research field, such as the size of the management team or company, were therefore integrated into this study.

Management team members do not make purely rational decisions, but are additionally constrained in their decision-making by the interactive tensions between the team members. A team member's perceptions of and attitudes to diversity or mutual trust can change the way they interact with their colleagues (cf. Tacheva 2007, p. 141 [35]; van Knippenberg and Schippers 2007, p. 531 [8]; Nakui et al. 2011, p. 2328 [10]). As a result the formation of different groups is common, due to this perception and identification with colleagues who are similar. Within a team there are so-called faultlines (cf. Thatcher et al. 2003 [30]) which have a negative impact on teamwork. Such internal processes within the SMTs and their individual members could be a possible explanation for the small correlation found in this study (cf. Bezrukova et al. 2009, p. 35 [69]).

6. CONCLUSION

The assumed positive correlation (based on Hambrick und Mason's 'Upper-Echelon' theory, 1984 [17]) between cultural diversity and the level of internationalisation, the proportion of revenues from abroad and the amount of subsidiary companies abroad was researched using 17 DAX companies and a data collection over a period of 11 years, and was evaluated using linear mixed models.

The empirical results confirmed the suggested hypotheses, as a small correlation was found in this study, as in other studies. However, it remains to be seen whether the small correlation can be attributed to a weak effect of cultural diversity in German companies or whether the small size of the sample, the different data basis or the statistical methods of analysis applied had an effect on the strength of the correlation.

In consideration of further research efforts into this thematic area a larger sample size could be used. In addition the focus could be directed towards certain sectors, so any possible differences can be identified. Further studies could analyse the opposite direction of the correlation researched here or investigate non-linear correlations.

The numerous studies about SMTs and their influence on the success of a company show the special position of the theme. However, an optimal arrangement of the SMTs using demographic variables would be difficult. On the one hand the internal processes are not known well enough; on the other there are many different influences on the level and success of internationalisation in internal and external company environments. Nevertheless this study showed that the cultural diversity of an SMT has a positive effect on the success of a company's internationalisation. It can therefore be used as a point of departure for further conceptual and methodical research into both diversity and senior management teams.

COMPETING INTERESTS

All Authors declare that there are no competing interests.

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