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Marketing in the Boardroom: The Role of Cultural Differences in Marketing and Innovation Spending

Master's thesis Marketing FEM11069-17

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Date: June, 2018

Abstract

This thesis article investigates if CEO cultural background influences the level of firm investment in advertising and R&D. More specifically, this research focuses on whether or not there is a significant change in spending when there is a change in CEO of a different cultural background. The model is estimated using panel data for 185 CEOs from 118 different S&P 500¹ firms for the period of 2010 to 2016 by means of ordinary least squares. It was found that CEO culture indeed influences the level of firm investment in both advertising and R&D. It appears that, on the one hand, CEOs from individualistic countries and long-term oriented countries tend to invest more in advertising and in R&D. On the other hand, CEOs from countries with high uncertainty avoidance and countries high in masculinity, tend to invest less in advertising and R&D. Finally, CEOs from countries with high power distance, tend to invest more in advertising but tend to invest less in R&D.

JEL classification: M310, M14, O32

Keywords: Marketing, Advertising, Innovation, R&D, Culture, Management

¹ The Standard & Poor's 500

1. Introduction

The inability of marketers to identify and measure the value that investment in advertising brings to the firm leads to difficulties in determining how much exactly to spend on it (Seggie, 2007). Approximately 61% of the firms in the US that are advertising the most, overspend by an average of 34% (Cheong, 2014). Moreover, advertising elasticity appears to be low (Sridhar, 2017). According to the Cheong (2014), this tendency to overspend has only been increasing over the past decades. Contrarily, there seems to be a tendency among firms to underinvest in R&D. This is especially the case for investments in radical innovation (Henderson, 1993).

Arguably, the most important marketing and innovation spending decisions, are the overall marketing and R&D budget allocation in a given year, decisions that are determined at the boardroom level (Mitchell, 1993). This means that senior executives, in particular the CEO, may have a strong influence on the overall level of spending in marketing vs. innovation. Often, top management determines the budget allocation by the use of heuristics such as the percentage of sales method (Fischer, 2011). A main factor determining how individuals use heuristics is their national culture (Bailey, 2006). According to Schneider and de Meyer (1991), national culture influences individual's perceptions and therefore concludes that there exists cultural differences in terms of how individuals from different countries of origin interpret and react to strategic issues and decision making within a firm. Hofstede (2003) defines culture as the collective programming of the mind that distinguishes the members of one group or category of people from another.

Culture in the business environment

Over the past decades, globalization has led firms to become increasingly multicultural with diverse top management teams with different cultural backgrounds (Nielsen, 2013). These cultural differences within a firm enable knowledge sharing and multiple insightful approaches to business problems. However, multinational firms often have a hard time dealing with these cultural differences. Some managers may view certain norms and values as common and accepted which might not be the case for other managers with different cultural backgrounds (Hult, 2017). Therefore, it is crucial for a firm to understand the different values defining an individual's culture in order to understand why managers with contrasting cultural backgrounds may make opposite decisions.

Culture & Marketing

Advertising has both a direct and indirect effect on the value of the firm (Joshi, The direct and indirect effects of advertising spending on firm value, 2010). On the one hand, through sales and profits, advertising has a direct impact on the value of the firm. On the other hand, advertising builds brand-related intangible assets such as brand equity. However, as mentioned above by Sridhar (2017), advertising elasticities appear to be low meaning that increases in firm spending in advertising do not generate much additional sales. Nonetheless, firms typically tend to overinvest in advertising (Cheong, 2014). According to the literature, this overinvestment may be caused, among other drivers, by cultural characteristics such as short-term orientation, risk avoidance and power distance.

As mentioned by Joshi (2010), investment in advertising is a major factor making up the value of a firm. Therefore, it is important to know whether CEOs with different cultural backgrounds and therefore different incentives, tend to invest differently in advertising. While most of the marketing literature focuses on the role of the CMO (Nath, 2008), the CEO is actually the most powerful executive in the boardroom as the strategy literature clarifies (Buyl, 2011). Despite this, and the fact that the CEO plays a pivotal role in strategic marketing decisions (Canning Jr, 1988), the role of the CEO in these decisions has been kind of neglected in the marketing literature. Especially CEO's cultural background has been clearly neglected. Imposed changes that are inconsistent with the CEO's personal characteristics will likely go unsupported, as leaders may be unable or unwilling to make decisions consistent with the required changes. As a result, perhaps organizations need to "change leaders" to match the conditions of evolving organizational requirements (Giberson, 2009). If a firm were to change CEO, it would be helpful for shareholders and board members to know whether his or her specific cultural background makes him or her reluctant to invest a sufficient amount of the firm's budget into advertising or not.

Culture & Innovation

It is well-known that a unique combination of resources, innovation and entrepreneurship allows a firm to survive, grow, profit, and achieve a competitive advantage in a dynamic business environment (Wang, 2010). One could say that innovation is the key to firm performance. However, firms typically tend to underinvest in R&D (Henderson, 1993). Research has shown that

managers causing underinvestment in R&D often share common cultural values such as short-term orientation (Latham, 2010).

Moreover, according to Papadakis (1998), the role of the CEO is crucial in firm innovation. In most organizations the CEO is typically viewed as the ultimate decision-maker (Datta, 1998). According to the author, there is a relationship between the CEO's personal characteristics and the level of technological innovation of the firm. One could therefore assume that innovation incentives partly depend on CEO characteristics (Papadakis, 1998) which in turn, according to the literature, are defined and shaped by the person's cultural background (Wang, 2010).

While a lot of research has been performed on the relationship between culture and innovation, little has been analyzed regarding the relationship between firm advertising and firm R&D spending and the connection to Hofstede's cultural values. This research will therefore analyze the following research question:

Does the CEO's cultural background influence the level of advertising and R&D spending? In other words, is there a significant change in spending when there is a change in CEO of different nationality?

In order to assess whether CEO's cultural background influences the level of investment in advertising and R&D, the following sub-question needs to be considered beforehand:

Do firms have a tendency to overspend or underspend on advertising and R&D? If yes, how generalized is the problem?

This research aims at improving the understanding of the effect that the CEO's cultural background has on advertising and R&D spending. To answer the research questions, a model will be used by means of OLS² with yearly panel data over the period of 2010 to 2016 for 185 CEOs from 118 S&P 500 firms.

This paper is organized in six different sections. Section 2 reviews the theoretical background. Section 3 defines the hypotheses. Section 4 analyzes the data used and defines the model to be tested. Section 5 reports the empirical findings of the research. Section 6 discusses the results.

² Ordinary least squares

Section 7 points out the managerial implications of the findings and finally section 8 defines the limitations of the research and suggestions for future research.

2. Research Background

2.1 Budgeting in the boardroom

There exist two budgeting components that a firm needs to decide upon. The first component is the *determination of the overall (marketing or innovation) budget* which is decided at the boardroom level. Most of the firms use a centralized decision-making process regarding the budgeting or in other words, a top-down decision-making process in which the top management level determines the budget (Mitchell, 1993). The second decision that the firm has to make involves the *allocation of the budget to specific investment options* (e.g., different advertising channels or products for the marketing budget; different types of innovation for the innovation budget). In this thesis, I assume that this second layer decision is typically handled below the board level at the specific department concerned, which could be both a central department (e.g., the marketing or innovation/R&D department) or a specific business unit. This technique is referred to as a bottom-up process (Fischer, 2011). During the bottom-up process for marketing budgeting, for instance, marketing managers typically use models, such as the market response model (Fischer, 2011) to ensure a correct budget allocation. However, according to Fischer (2011), even at lower levels in the organization, where specialists have access to troves of data and analytical models to improve their decisions, managers often use heuristic methods when it comes to determining the marketing budget. Given time and attentional constraints of senior executives, the spending decisions they make at the boardroom level, such as the overall budget determination, are even more likely to be made through the usage of heuristics than decisions made by specialists who sit below the board level. Heuristics are rules such as the "percentage-of-sales," "objective and-task," and "affordability" methods that help simplify and speed up the budgeting decision, when compared to more deliberate normative rules, such as the usage of optimization techniques and econometric/statistical models for the optimization of the budgeting decisions. Taken-for-granted elements within the culture give rise to a sort of "automaticity" (Jones, 2007). By using these rules, firm budgets are far from optimal and therefore do not maximize profits. Heuristic decisions imply greater errors than do "rational" decisions as defined by logic or statistical models (Gigerenzer, 2011). The latter could imply that top-down decisions, given that they are done at the

board level and that they are using heuristics, are prone to non-rational influences in decision-making, such as the role of culture.

2.2 Advertising overspending

Over-advertising relates to the fact that firms could spend less on advertising and in the end, obtain the same level of sales. This is referred to as inefficient advertising (Cheong, 2014). According to Cheong (2014), close to 61% of the firms in the US that are advertising the most are inefficiently using their advertising budget and are overspending by an average of 34%. The author argues that over the last centuries, firms are increasingly inefficient in advertising spending. Approximately 67% of the biggest US advertisers are inefficiently using their advertising budget with the consequence of lower profit margins and sales losses (Cheong, 2014). Advertising efficiency can be measured by advertising elasticity, which is the percentage increase in sales or market share for a 1% increase in advertising (Sethuraman, 2011). According to Sethuraman (2011), advertising elasticity has declined over the past decades, which is in line with the findings of Cheong.

Sales response to advertising levels is of diminishing returns meaning that after a certain point, investment in advertising is not profitable anymore (Simon, 1980). On the contrary it will decrease sales instead of increasing it. It is problematic for firms to not optimally invest in advertising because according to Joshi (2010), it has both a direct and indirect effect on the valuation of the firm. Indirectly, advertising affects the value of the firm through sales revenue, profit response and, ultimately, shareholder value. Moreover, advertising has a direct and positive, long-term impact on the firm's market capitalization and may have a negative impact on the valuation of a competitor of comparable size (Joshi A. , 2010). Some authors argue that most of the investment in advertisement is wasted. Sometimes, the waste can be as high as 40% percent of the firm's net income (Bass, 1979). Therefore, it is important to understand why firms tend to overinvest as it may have important consequences for the value of the firm and its shareholders.

As mentioned before, there actually is an optimal point behind which it is not efficient anymore to continue spending on advertising (Sasieni, 1971). The issue is that it is not easy to identify this point and therefore it is difficult to know for managers how much they should invest in advertising. Moreover, it appears that managers in long term-oriented cultures tend to attach more value to advertising's long-term brand-building potential relatively to managers in short-term-oriented

cultures (Deleersnyder, 2009). This can be explained by the fact that investment in advertising will only bear the fruits at the long term and does not necessarily show any results in the short term. Another cultural dimension that can possibly explain the tendency of managers to overspend in advertising is power distance. According to Deleersnyder (2009), cultures defined by high power distance tend to attach high importance to social class. In these cultures, consumers wish to express their social class by brands. Because of the latter, managers tend to invest more in brand advertisement.

2.3 Innovation underspending

The most common measure of firm innovation are expenditures on research and development (R&D). R&D expenditures have large, positive and consistent influences on the market value of the firm (Chauvin, 1993). According to Chauvin (1993), firm investment in R&D is a way to signal a potential future increase in firm cash flow to investors. The latter enables investors to form expectations about the future value of the firm. Therefore, it is problematic for firms to fail to invest a sufficient amount in R&D.

The literature argues that short-termism or myopic behavior might be a major cause of underinvestment in R&D (Latham, 2010). Executives are sometimes viewed as being more interested in improving a company's short-term performance than in maximizing its long-term value (Jacobs, 1991). In most situations, deciding on some action that is most profitable over the long run has an opposite outcome in the short term (Laverly, 1996). Because managers are under pressure to generate short-term profitability, which, in turn, determines their compensation, they avoid considering long-term potential profits from investing adequately in R&D (Graber, 2003). According to Graber (2003), firms appear to invest higher amounts in R&D when there is lower management turn-over. In other words, the longer a CEO holds his position within a firm, the higher the degree of investment will be in R&D. Another evident reason for managers to not invest sufficiently in R&D is the risk it involves. There is a high level of uncertainty involved with innovation and therefore, CEOs from countries with a high uncertainty avoidant culture may be more reluctant to spend on it compared to CEOs from countries with a low uncertainty avoidant culture (Van Everdingen, 2003).

In sum, firms tend to make high-level budget allocation decisions in a top-down manner, which means that the overall marketing and innovation budget is determined at the boardroom. Moreover, empirical evidence suggests that most firms tend to overspend in advertising but tend to underspend in innovation.

3. Hypotheses development

For both investment in advertising and investment in R&D, as stated above, it appears that managerial behavior has a significant effect on the tendency to sub-optimally invest. The key argument of my thesis is that, given that the overall budgeting for marketing and advertising is set at the boardroom level, this tendency for firms to overspend in marketing and underspend in innovation may be at least partially driven by the cultural background of the CEO. Culture enables people to deal with information overload and to understand complex and ambiguous situations.

The well-known Dutch social psychologist Geert Hofstede extensively researched cultural differences in the business environment and defines the latter as follows: “Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others”. The author came up with 5 cultural dimensions with different scores for each country: *power distance* (PDI), *individualism* (IDV) vs. collectivism, *masculinity* (MAS) vs. femininity, *uncertainty avoidance* (UAI) and *long-term orientation* (LTO) vs. short term orientation (Table 1 Appendix 1). Those indices measure the extent to which one country’s culture is similar to, or different from, another country’s culture (Imm Ng, 2007). In his research, Tse (1988) argues that the cultural background of the CEO has a significant effect on the decision making of firm executives (Tse, 1988). For instance, openness to innovation and degree of entrepreneurship, determining the level of R&D, have been found to vary significantly across countries along Hofstede’s “individualism-collectivism” dimension (Shane, Cultural influences on national rates of innovation, 1993). Graph 1 & 2 in appendix A show scatterplots with the cultural dimension on one axis and the level of firm spending in advertising and R&D on the other axis.

Power Distance

According to Hofstede, organizations in countries with high *power distance* (PDI) are often characterized by centralized decision making, authority and hierarchy (Van Everdingen, 2003).

This index refers to the extent to which less powerful members of an organization accept and expect that power is distributed unequally (Hofstede G. , 1984). In cultures defined by high *power distance* (PDI), managers tend to invest more in brand advertisement because of the importance of social class expression (Deleersnyder, 2009). A status-conscious market is more likely to be affected by the symbolic characteristics of a brand (O'cass, 2002). However, as hierarchy restricts the ability of sharing information, the firm might have less opportunities to understand which marketing instruments to use and which ones work best. The latter creates uncertainty regarding the effectiveness of different marketing instruments, thereby exacerbating the usage of heuristics. Therefore, CEOs from cultures with high *power distance* (PDI) may increase the extent to which heuristics play an important role in marketing budgeting and the degree of preventive investments, i.e. spending to avoid missing opportunities, subsequently increasing a firm's tendency to overspend on advertising. Likewise, successful knowledge sharing is necessary in order for a firm to be innovative (Teece, 1993). In firms with CEOs from hierarchical cultures, the communication with subordinate managers may not be optimal because they might feel less inclined to share new information about the market or technology limiting the firm's capacity to discover opportunities to invest in innovation. Therefore, CEOs from high-power distance cultures may trigger practices that restrict information sharing which, in turn, could lower the level of firm innovation and, therefore, the level of firm investment in R&D. In line with this, the following hypothesis is developed:

H1: The higher the PDI score of the CEO culture, (a) the higher the level of investment in advertising of the firm and (b) the lower the level of investment in R&D.

Uncertainty Avoidance

CEOs from cultures with high *uncertainty avoidance* (UAI) tend to be more risk averse than CEOs from cultures with low *uncertainty avoidance* (UAI). Given that the returns of advertising and innovation decisions are, by definition uncertain and risky as discussed (Erickson G. , 1992), CEOs from cultures with high *uncertainty avoidance* (UAI) will be less willing to embrace such risks as compared to CEOs from cultures with low *uncertainty avoidance* (UAI). Hence, the following is hypothesized:

H2: The higher the UAI score of the CEO culture, (a) the lower the level of investment in advertising and (b) the lower the level of investment in R&D of the firm.

Individualism (vs. Collectivism)

According to Hofstede (1984), individualistic societies are characterized by a loosely knit social framework in which people are supposed to take care of only themselves and of their immediate families. In collective societies, there is a preference for a tightly-knit framework in which individuals can expect their relatives or members of a particular group to look after them in exchange for unquestioning loyalty. Moreover, firms in collectivistic societies are characterized by collective decisions, which may lead to a delay in the adoption decision process (Van Everdingen, 2003). On the contrary, in individualistic societies, people make their own decisions. When the market moves quickly, firms need to adapt their marketing strategy accordingly. A CEO from a collective society will be less decisive in adapting the strategy than a CEO from an individualistic society because of a need to compromise in order to make a collective decision which may delay the process. As a consequence, it may not be worth investing in advertising anymore as the market might have moved on.

Innovation investments are highly uncertain (Erickson G. , 1992) and thus tend to be contentious (i.e., to generate disagreement). Disagreements tend to lead to inertia in contexts where leaders are diplomatic and try to balance the interests of everyone and compromise. However, when managers can make autonomous decisions instead of having to compromise or be diplomatic, bold innovation investment decisions might be more likely to be made. Manifestations of this tendency are the fact that patents are more often granted in individualistic than in collectivistic societies (Hofstede, 2001). Therefore, the following hypothesis is developed:

H3: The higher the IDV score of the CEO culture, (a) the higher the level of firm investment in advertising and (b) the higher the level of firm investment in R&D.

Long-Term (vs. Short-Term) Orientation

Short-term oriented cultures prefer to maintain time-honored traditions and norms while viewing societal change with suspicion. On the contrary, long-term oriented cultures encourage thrift and efforts in modern education as a way to prepare for the future (Hofstede G. , 1984). According to

van Everdingen (2003), cultures with a long-term orientation are focused on future results. Both investment in advertising and in R&D only yield results in the long term (Chauvin, 1993). Therefore, as explained by Deleersnyder (2009), managers in long term-oriented cultures tend to attach more value to advertising's long-term brand-building potential relatively to managers in short-term-oriented cultures. Similarly, it is expected that CEOs from cultures with a long-term orientation are expected to invest more in R&D and are therefore more innovative. Latham (2010) points out the fact that short-termism or myopic behavior might be a major cause of underinvestment in R&D. Therefore, the following hypothesis will be tested:

H4: The higher the LTO score of the CEO culture, (a) the higher the level of investment in advertising and (b) the higher the level of investment in R&D of the firm.

Masculinity (vs. Femininity)

A national culture can either be characterized by feminine values or masculine values. Feminine values typically refer to cooperation, the quality of life, caring and modesty. In contrast, masculine values are usually determined by competitiveness, assertiveness, achievement and heroism (Hofstede, 1993). According to Hofstede (2003), organizations characterized by masculine values focus on competition, rewards and recognition of performance which are characteristics related to innovativeness. Given that some of the heuristics used by the boards to set marketing and innovation budget are, indeed, competitive-oriented, a cultural background that is more 'masculine' may lead CEOs to influence the board to spend more on marketing and innovation out of competitive concerns. Therefore, the following is hypothesized:

H5: The higher the MAS score of the CEO culture, (a) the higher the level of investment in advertising and (b) the higher the level of investment in R&D of the firm.

4. The Model & Data

4.1 The model

In order to assess all five hypotheses, the following log-linear models will be tested. The first relationship reflects the effect of the CEO's cultural background, prior experience as a CEO, prior experience in the industry in which he or she currently is employed, tenure at the firm, the university rank, the years since graduation, whether or not the CEO has an MBA and finally the

gender and age on the ratio of advertising expenditures over firm's sales (or *advertising intensity*). The second relationship is very similar to the first one with the only difference being the dependent variable which is the ratio of R&D over firm sales (or *R&D intensity*). I chose to use a log-linear model for easier interpretation of the results. I decided not to put the independent variables in log form because their unit of measurement is either in years or units which cannot be interpreted in percentages.

$$\begin{aligned} \ln(\text{MS}_{\text{fit}}^3) = & \alpha_0 + \lambda_f + \gamma_t + \alpha_1 (\text{PDI}_i) + \alpha_2 (\text{UAI}_i) + \alpha_3 (\text{IDV}_i) + \alpha_4 (\text{LTO}_i) + \alpha_5 (\text{MAS}_i) + \alpha_6 (\text{Experience}_i) \\ & + \alpha_7 (\text{Uni rank}_i) + \alpha_8 (\text{Years since graduation}_i) + \alpha_9 (\text{Tenure industry}_i) \\ & + \alpha_{10} (\text{Tenure firm}_i) + \alpha_{11} (\text{D_MBA}_i) + \alpha_{12} (\text{D_Gender}_i) + \alpha_{13} (\text{Age}_i) + \alpha_{14} (\text{GDPgr}_t) + \varepsilon_{1\text{fit}} \end{aligned} \quad (1)$$

$$\begin{aligned} \ln(\text{RDS}_{\text{fit}}) = & \beta_0 + \lambda_f + \gamma_t + \beta_1 (\text{PDI}_i) + \beta_2 (\text{UAI}_i) + \beta_3 (\text{IDV}_i) + \beta_4 (\text{LTO}_i) + \beta_5 (\text{MAS}_i) + \beta_6 (\text{Experience}_i) \\ & + \beta_7 (\text{Uni rank}_i) + \beta_8 (\text{Years since graduation}_i) + \beta_9 (\text{Tenure industry}_i) \\ & + \beta_{10} (\text{Tenure firm}_i) + \beta_{11} (\text{D_MBA}_i) + \beta_{12} (\text{D_Gender}_i) + \beta_{13} (\text{Age}_i) + \beta_{14} (\text{GDPgr}_t) + \varepsilon_{2\text{fit}} \end{aligned} \quad (2)$$

4.2 Data sources and data collection process

This paper will test the model's predictions by using panel data for 185 CEOs (table 2, appendix A) from 118 firms and over the period 2010 to 2016. All variables included in the models are summarized in table 3. The summary statistics also shows the expected sign per coefficient for the variables in each model. Moreover, table 4 presents an overview of the variables and data sources used in this research.

Table 3. *Summary statistics*

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>	<i>Expected sign per model</i>	
					<i>(1)</i>	<i>(2)</i>
PDI	42.14	9.44	31	104	+	-
UAI	49.43	10.95	29	112	-	-
IDV	85.38	16	13	91	+	+
LTO	31.90	16.75	7	93	+	+

³ The subscript "f" signifies that the variable varies per firm. The subscript "i" signifies that the variable varies per individual, which accommodates the fact that in my dataset several firms have more than one CEO in the time period I observe. The subscript "t" signifies that the variable varies per year.

MAS	60.93	7	5	70	+ +
Experience	1.5	4.15	0	27	+ +
Uni rank	205	357.64	1	4121	+ +
Years graduation	24.86	9.65	0	58	+ +
Tenure industry	20.05	10.84	0	58	+ +
Tenure firm	12.25	11.20	0	58	+ +
D_MBA	0.32	0.47	0	1	+ +
D_Gender	0.94	0.23	0	1	
Age	48.74	8.211	20	66	+ +
GDPgr	2.14	0.5	1.5	2.9	+ +

Table 4. *Data sources*

Variable name	Measure	Source data
Firms		Fortune 500
CEOs		Bloomberg / LexisNexis
Advertising spending	Advertising / Sales	COMPUSTAT
R&D spending	R&D / Sales	COMPUSTAT
Culture	Hofstede dimensions	Hofstede
Experience	Years of experience as a CEO before current position	Bloomberg / LexisNexis
Years since graduation	Years of work experience	Bloomberg / LexisNexis
Uni rank	Rank of university highest degree	Top University Rankings
Tenure industry	Tenure in the industry before current position	Bloomberg / LexisNexis
Tenure firm	Tenure in the firm before current position	Bloomberg / LexisNexis
D_MBA	Whether or not individual has an MBA	Bloomberg / LexisNexis
D_Gender		Bloomberg / LexisNexis
Age		Bloomberg / LexisNexis
GDP growth		World Bank Data

The firms used in this analysis are part of the S&P 500 firms (table 2, appendix A). All data was available for only 118 out of all the S&P500 firms and therefore, only those firms will be included in this research. The data for firm advertising spending, R&D spending and sales was extracted from the COMPUSTAT database. Both the level of investment in advertising and in R&D have been divided by the level of firm sales of the corresponding year, generating the variables MS^4 and RDS^5 , in order to take into account, the variance in sales which could explain the variance in the level of investment.

In line with prevailing theories of culture, I proxy for CEO cultural background his or her country of origin and the corresponding cultural values (Hofstede, 2003). These values have been extracted from Hofstede's website. Table 5 in appendix 1 depicts the countries of origin of the CEOs in the sample and shows the corresponding scores for each cultural dimension.

Several control variables have been added to the model in order to obtain more precise results. To control for the health of the economy, the US GDP growth is included and was extracted from the World Bank Data. Furthermore, some demographic variables have been added such as gender and age (Graph 4, appendix 1). The variable gender is included as a dummy variable and equals to 1 if the CEO is male and equal to 0 if the CEO is female.

The CEO specific data was collected by hand from different sources. The data mainly comes from Bloomberg executive profiles, corporate newsletters whenever there was a change in CEO or from the LexisNexis database. The variable experience refers to the experience of the individual as a CEO prior to becoming CEO at the firm in question. The variables years since graduation, tenure at the firm and tenure in the industry all refer to the experience of the individual before taking on the position as CEO at the firm in question. The dummy variable MBA indicates whether or not the person has obtained an MBA. The variable Uni rank refers to the ranking of the university that the person has graduated from according to Top University Rankings. Figure 1 in Appendix A depicts the world map with the country of origin of the CEOs.

⁴ Ratio of firm advertising expenditures over sales.

⁵ Ratio of firm R&D expenditures over sales.

4.3 Applied statistical techniques

Fixed effects have been added to the regressions for the variables CEO and firm with the inclusion of the following dummy variables “i.CEO” and “i.Firm”. By adding a fixed effect for the variable firm, firm specific issues that may drive spending (e.g., macroeconomic or regulatory shocks and incentives that may not be fully captured by my control variables) are taken into account. The latter is captured by the variable γ_t . α_{0i} and β_{0i} capture CEO-specific characteristics, over and above those I control for in my model, that may drive spending decisions but are invariant over time.

After performing a Breusch-Pagan test in order to test for heteroscedasticity in the model, I decided to add robust standard errors to the analysis. In the case of heteroskedasticity present in the model, the results of the regression analysis might be influenced causing least square estimators that are no longer best with incorrect standard errors. Heteroskedasticity implies that the variance of the error is not constant causing coefficients that could be different from zero while in fact they are not. The null hypothesis of the test states that the regression is homoscedastic and the alternative hypothesis states that it is heteroskedastic. The outcome of the test (table 6, appendix B) implies that there is in fact heteroscedasticity present in the model. By adding robust standard errors to the regression, the standard errors for all coefficients will increase mitigating the impact of heteroscedasticity in my statistical inferences.

4.4 Data Preparation

In order to obtain working datasets, certain actions needed to be taken. First was the firm data on R&D and advertising spending extracted from COMPUSTAT for all S&P500 firms. Then, all firms with missing data were deleted from the dataset. Unfortunately, 382 firms out of the S&P 500 firms do not make their numbers public and therefore did not have information about advertising or R&D spending. The next step was to find the CEO in position for each firm in each year and collect all CEO specific data by hand. I painstakingly conducted this data gathering exercise over a period of 3 months. The dataset is available upon request to my email: paulien.h.brandma@gmail.com. By means of a common identifier, namely, a variable created composed by the company ID and the specific year, the two datasets were merged. After the two datasets were merged, a third dataset with the values per cultural dimension per country were linked to each individual. Finally, a last merger was performed adding the US GDP growth rate

for every year in the dataset. The latter variable was taken for the US given that all firms operate in the US. The final dataset consists of 7 years of data per firm (2010-2016) and therefore, with 118 firms included, there is a total of $N = 820$ observations in the dataset.

5. Empirical results

The effect of CEO culture and experience on firm investment in advertising

Column 1 in table 7 presents OLS regressions of the first model, which is predicting the effect of the CEO's cultural background, prior experience as a CEO, prior experience in the industry in which he or she currently is employed, tenure at the firm, the university rank, the years since graduation, whether or not the CEO has an MBA and finally the gender and age on the ratio of advertising expenditures over sales of the firm. The high R-square suggests that the model fits the data well. Several variables of the model seem to have a significant impact on the ratio of firm advertisement over sales, the exceptions being the university rank, the CEO tenure in the industry and the GDP growth rate. Most significant coefficients have a 1% significance level except for the variable age which is only significant at the 10% level.

Regarding the first cultural dimension, *power distance* (PDI), it appears that a 1 unit increase in the index increases MS by 3.27%. The latter is in line with the assumption made in hypothesis 1. A 1 unit increase in *uncertainty avoidance* (UAI) decreases MS by 0.16%. This finding confirms the assumption made in the second hypothesis. A 1 unit increase in *individualism* (IDV) increases MS by 1.02%. This result was expected and confirms hypothesis 3. A 1 unit increase in *long-term orientation* (LTO) increases MS by 0.06%. The latter outcome confirms hypothesis 4. A 1 unit increase in *masculinity* (MAS) decreases MS by 0.78% which is not in line with the assumption made in hypothesis 5.

In terms of the control variables, I find that if the CEO has obtained a MBA, the firm ratio of investment in advertising over sales decreases by 10.08%. This result appears to be logical, as having a MBA increases knowledge on how best to invest in advertising. Every additional year of experience as a CEO prior to obtaining the CEO position at the current firm increases MS by 0.63%. The latter result is not in line with my expectations because I would suppose that having more experience as a CEO leads to better knowledge on how best to invest in advertising. Since graduating, each year leading up to achieving the CEO position at the current firm decreases MS

by 0.002%. This result is in line with my expectations as more work experience allows a better judgement on how to invest in advertising. Every additional year of CEO tenure at the firm where he or she is currently in position increases MS by 0.65%. The latter could be explained by the fact that a CEO with longer tenure may be more likely to ignore the threat of overspending if the costs of such overspending are only visible at a later stage and thus another CEO will need to bear them instead. A one-year increase in the CEOs age increase MS by 0.01%. This result is against the expectations that the older the CEO becomes, the more experienced he or she will be leading to better decision making. If the CEO is a male instead of a female, MS decreases by 8.06%. The latter result might not be very accurate as only 8 out of 185 CEOs are females.

Table 7. OLS estimates for both models

The effect of CEO culture and experience on firm investment in advertising and R&D

INDEPENDENT VARIABLES	DEPENDENT VARIABLE	
	Advertising (1)	R&D (2)
PDI	3.27*** (0.44)	2.78*** (0.57)
IDV	1.02*** (0.15)	0.99*** (0.19)
MAS	-0.78*** (0.08)	-0.64*** (0.13)
UAI	-0.16*** (0.01)	-0.04* (0.02)
LTO	0.06*** (0.01)	0.10*** (0.02)
Rank university	-0.0 (0.00)	0.00 (0.00)
D_MBA	-10.08*** (2.88)	-13.54*** (2.81)
Years experience	0.63*** (0.19)	-0.13 (0.18)
Years graduation	-0.002*** (0.00)	-0.00 (0.00)
Tenure firm	0.65*** (0.11)	0.63*** (0.14)
Tenure industry	-0.15 (0.09)	-0.24 (0.08)

Age	0.01*	-0.00
	(0.09)	(0.00)
Gender	-8.06***	-12.23***
	(2.23)	(2.15)
GDPgr	0.005	0.02
	(0.01)	(0.01)
Observations	820	820
R-squared	0.9841	0.9867

Notes: Robust standard errors in parentheses. *, ** and *** denotes significance at the 10%, 5% and 1%-level respectively. The dependent variable is the log of the ratio of the firm's investment in advertising over sales.

The effect of CEO culture and experience on firm investment in R&D

Column 2 in table 7 represents OLS regressions predicting the second model, namely, the effect of the CEO's cultural background, prior experience as a CEO, prior experience in the industry in which he or she currently is employed, tenure at the firm, the university rank, the years since graduation, whether or not the CEO has an MBA and finally the gender and age on the ratio of R&D expenditures over sales of the firm. In the case of the second model, the R-squared of the model equals 0.9867 meaning that the model fits the data well. All variables seem to have a significant impact on the ratio of firm advertisement over sales except for the university rank, years of experience as a CEO, years since graduation, the tenure in the industry, age and the GDP growth rate. All significant coefficients have a 1% significance level except for the *uncertainty avoidance index* (UAI) variable which is only significant at the 10% significance level.

Regarding the first cultural dimension, *power distance* (PDI) it appears that a 1 unit increase in the index increases RDS by 2.78%. The latter result is not in line with the assumption made in the first hypothesis. A 1 unit increase in *uncertainty avoidance* (UAI) decreases RDS by 0.04%. The latter finding confirms the assumption made in the second hypothesis. A 1 unit increase in *individualism* (IDV) increases RDS by 0.99%. Similarly, as for the *power distance* (PDI) index, this result is in line with the assumption made in the second hypothesis. A 1 unit increase in *long term orientation* (LTO) increases RDS by 0.1% as is assumed in the fourth hypothesis. A 1 unit increase in *masculinity* (MAS) decreases RDS by 0.64%. Again, the latter result does not confirm the assumption made in hypothesis 5.

If the CEO has obtained a MBA, the firm ratio of investment in R&D over sales decreases by 13.54%. Similarly, for investment in advertising, this finding is in line with the expectations. Every additional year of tenure at the firm where the current CEO is in position increases RDS by 0.63%. Likewise to investing in advertising, the costs of overspending in R&D are only visible later on and thus another CEO will need to bear them instead. If the CEO is a male instead of a female, RDS decreases by 12.23%. As mentioned before, this result might not be accurate due to the low percentage of females in the data.

Overall results for both models

Table 8 summarizes the results of both models. Of all five hypotheses, two were at least partially *rejected* and three were *not rejected*, namely hypotheses 2, 3 and 4. In short, my empirical findings show that:

- The higher the score for the *uncertainty avoidance* (UAI) index of the CEO's country of origin, the lower the level of investment in R&D and advertising (in line with H2).
- The higher the scores for the *individualism* (IDV; H3) and *long-term orientation* (LTO; H4) indices of the CEO's country of origin, the higher a firm's level of investment in R&D and in advertising.
- Regarding the first hypothesis, my results suggest that it needs to be partially rejected. Specifically, I find that the higher the *power distance* (PDI) score of the CEO culture, the higher, instead of lower, the level of investment in R&D (leading me to reject H1b) but the higher the level of investment in advertising (which means I do not reject hypothesis H1a).
- Finally, I reject the fifth hypothesis (both H5a and H5b). It appears that the higher the *masculinity* (MAS) score of the CEO culture, the lower both the level of investment in R&D and the level of investment in advertising, in contrast with what I had hypothesized. Below, in the discussion section, I offer some insights into why this may be the case.

Table 8. Summary results hypotheses

Hypothesis	Expected sign	Standardized β	P-value	Rejected
<i>H1: The higher the PDI score of the CEO culture, (a) the higher the level of investment in advertising and (b) the lower the level of investment in R&D of the firm.</i>	(a) +	(a) 3.27	0.00	(a) No
	(b) -	(b) 2.78	0.00	(b) Yes
<i>H2: The higher the UAI score of the CEO culture, (a) the lower the level of investment in advertising and (b) the lower the level of investment in R&D of the firm.</i>	(a) -	(a) -0.16	0.00	(a) No
	(b) -	(b) -0.04	0.02	(b) No
<i>H3: The higher the IDV score of the CEO culture, (a) the higher the level of firm investment in advertising and (b) the higher the level of firm investment in R&D.</i>	(a) +	(a) 1.02	0.00	(a) No
	(b) +	(b) 0.99	0.00	(b) No
<i>H4: The higher the LTO score of the CEO culture, (a) the higher the level of investment in advertising and (b) the higher the level of investment in R&D of the firm.</i>	(a) +	(a) 0.06	0.00	(a) No
	(b) +	(b) 0.10	0.00	(b) No
<i>H5: The higher the MAS score of the CEO culture, (a) the higher the level of investment in advertising and (b) the higher the level of investment in R&D of the firm.</i>	(a) +	(a) -0.78	0.00	(a) Yes
	(b) +	(b) -0.64	0.00	(b) Yes

6. Discussion

Managers appear to have difficulties in deciding upon the optimal level of investment in advertising and R&D. As a consequence, the top board, who determines the budget, often uses heuristics to make budget related decisions. The latter could imply that top-down decisions, given that they are done at the board level and that they are using heuristics, are prone to non-rational influences in decision-making, such as the role of culture. This research examines the effect of CEO culture on the level of firm investment in R&D and advertising. In order to conduct this study, a sample of 185 CEOs from 118 S&P500 firms was assessed over the period of 2010 to 2016. It was expected to find evidence for differences in spending behavior for firms having CEOs in position with different cultural backgrounds. There was evidence found confirming the influence of culture on spending.

It appears that, on the one hand, CEOs from individualistic countries, long-term oriented countries and cultures with high power distance tend to invest more in advertising and in R&D. Individualistic cultures are more efficient in adopting new marketing strategies when the market moves quickly requiring a firm to react fast. Because managers do not have to wait for a green light from all different parties but can just take decisions without having to compromise too much, investment in R&D is facilitated. Because both investment in R&D and in advertising only bears fruit in the long term, the higher the score of this index, the more likely it is that CEOs recognize the importance of investing in it. One of the main features of a culture with high power distance is the importance of social status. Brands reflect the latter and therefore these cultures tend to invest more in advertising to express social status. Regarding investment in R&D, it was expected to find that CEOs from high power distant countries tend to invest less due to restricted knowledge sharing impeding innovation. However, the opposite appears to be the case. According to Shane (1993), the negative relationship between power distance and innovation is an old theme. There has been an important change in the social order with the development of the Third World countries.

On the other hand, CEOs from countries with high uncertainty avoidance and countries high in masculinity, tend to invest less in advertising and R&D. If I were to speculate why this is the case, I would suggest that a possibility is that as CEOs from cultures high in masculinity are focused on rewards and recognition of performance and investment in R&D only bears fruit in the long term,

they prefer to make investments with direct results to show their achievement. The fact that uncertainty avoidant CEOs are reluctant to invest a substantial amount of the budget into these areas makes sense as the outcomes from investing in advertising and R&D are highly uncertain. Contradictory to what was expected, power distance seems to foster innovation. Future research should examine these potential explanations to further advance our knowledge on how a CEO's culture influences marketing and innovation decisions.

7. Managerial implications

The literature concludes that there are no straightforward recommendations for directors when appointing a CEO (Carpenter, 2004) (Graffin S. D., 2011). Moreover, Khurana states that ‘... it is difficult, if not impossible, to know ex ante what characteristics in a CEO are needed to improve performance, [so] directors are left to guess about which criteria are likely to be associated with success’. My empirical findings suggest that, when deciding on the appointment of a new CEO, the board of directors should take into consideration the cultural values associated with the CEO's background and whether the “average tendencies” exhibited by certain cultures fit or do not fit with the desired strategy for the firm. Obviously, as I discuss below in the limitations section, not every member of a society shares exactly the same values. Hofstede's dimensions capture the “average” cultural norms in a country, but each individual may deviate from this average. Moreover, some CEOs may have their origins in a country but may have spent several years, in their career, elsewhere which could lead them to adapt to new cultures. Still, the fact that I find significant effects of culture on spending decisions controlling for many variables and including fixed effects, suggests that the prevailing culture of the country of origin of a CEO is still informative about her propensity to spend in R&D and advertising. In order to drive overspending on advertising down and underspending on innovation up, it is crucial to understand the CEO's culture as it influences the decision-making process on budget determination. If for instance, a firm overspends on advertising, it might be the case that the CEO in questions has a national culture that does not fit with the current strategy and needs of the firm. There needs to be a fit between the CEO's culture and the current goals of the firm. During the hiring process of a new CEO, the board should analyze the current goals of the firm regarding investment in R&D and advertising and consequently relate them to the cultural values in line with them. Once that is clear, the board has a better idea of what kind a person from which cultural background to hire (Graffin S. D., 2013).

8. Limitations & future research

As in all academic studies, there are limitations to the conducted research that are worth mentioning, several of which may indicate interesting areas for future research. First of all, 80.5% of the CEOs are American. This is the disadvantage of using the S&P500 firms as most of the top firms are American owned. It would have been more accurate to have a dataset composed of equal amounts of nationalities, however, it is difficult to find public data on firm spending. Moreover, the fact that only 118 firms out of the S&P500 firms are included in the data might introduce a problem of selection bias.

Secondly, most of the CEOs are male and therefore the sample is also biased with respect to the gender dimension. The latter also explains why gender does not significantly impact the level of firm investment in either R&D or advertising.

Furthermore, the variable tenure at the firm could be 0 for a certain CEO while, in fact, that specific CEO is the founder of the firm, such as Jeff Bezos, the founder and current CEO of Amazon. Therefore, instead of assuming that the CEO did not know much about the firm at the time he came into position, in fact, he did.

On top of that, even though the CEO usually has the final saying in decisions taken within a firm, other players in the top management team play a crucial role in marketing and innovation spending decisions. For instance, the CFO is a key player in all spending decisions and, as such, CFOs may play a crucial role in budgeting decisions (Graham, 2002). In addition, several firms have a CMO⁶ who might make the ultimate decision regarding the level of investment in advertising, and probably also play a role in innovation budgeting decisions. However, if it was already difficult to find personal information about CEOs, it is much more challenging to find such information about CFOs and CMOs. Moreover, not all firms have a CMO, which makes the problem even more challenging. Still, it would be very interesting if future research on marketing and innovation budgeting could consider not only the role of the CEO but also of these other key players, namely the CFO and the CMO.

⁶ Chief executive marketing

Finally, this thesis focuses on the main effects of culture. However, there are important contingency factors and differences across industries and over time that might also influence the amount firms decide to invest in R&D and advertising. For instance, it appears that firms tend to overspend on R&D and advertisement during periods of recession (Srinivasan, 2011).

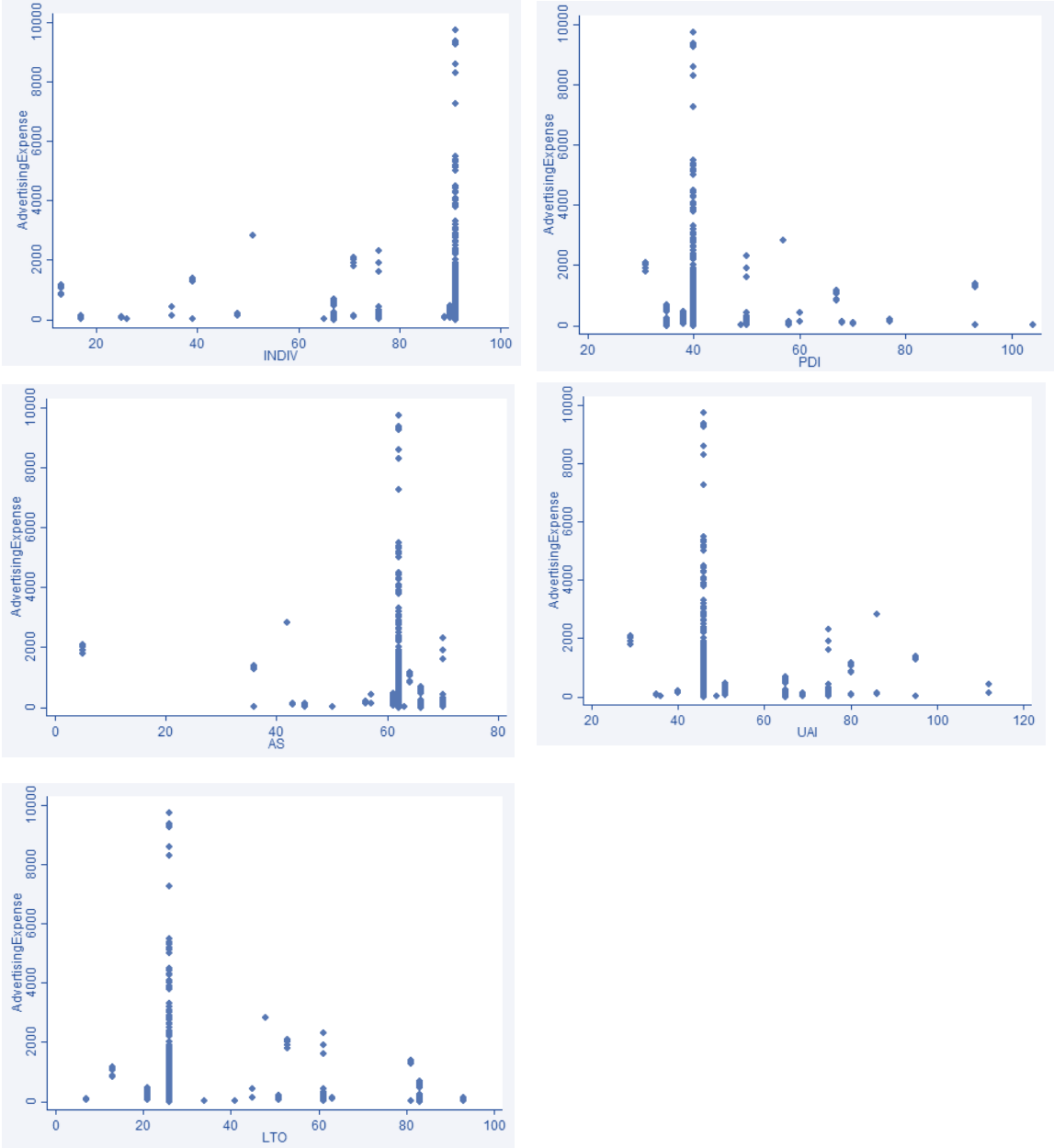
For further research, I would suggest that further examination needs to be undertaken regarding the data in order to obtain a more varied dataset including more firms with non-American CEOs and more female CEOs. Moreover, I recommend exploring the different ways in collecting the data about firm CMOs and CFOs as it would be more interesting to analyze the effect that the cultural background of these other members of the top management team may have on advertising and innovation budgeting decisions, instead of a sole focus on the CEO's cultural background. It might also be interesting to see if an increase in the CEO's total tenure as a CEO at the firm, in other words, a decrease in management turnover, will increase the level of investment in advertising and R&D as was suggested by Graber (2003). Finally, it would be interesting to know how culture interacts with some of the contingency effects such as times of recession.

Appendix A: Descriptive statistics

Table 1 – Hofstede's cultural dimensions

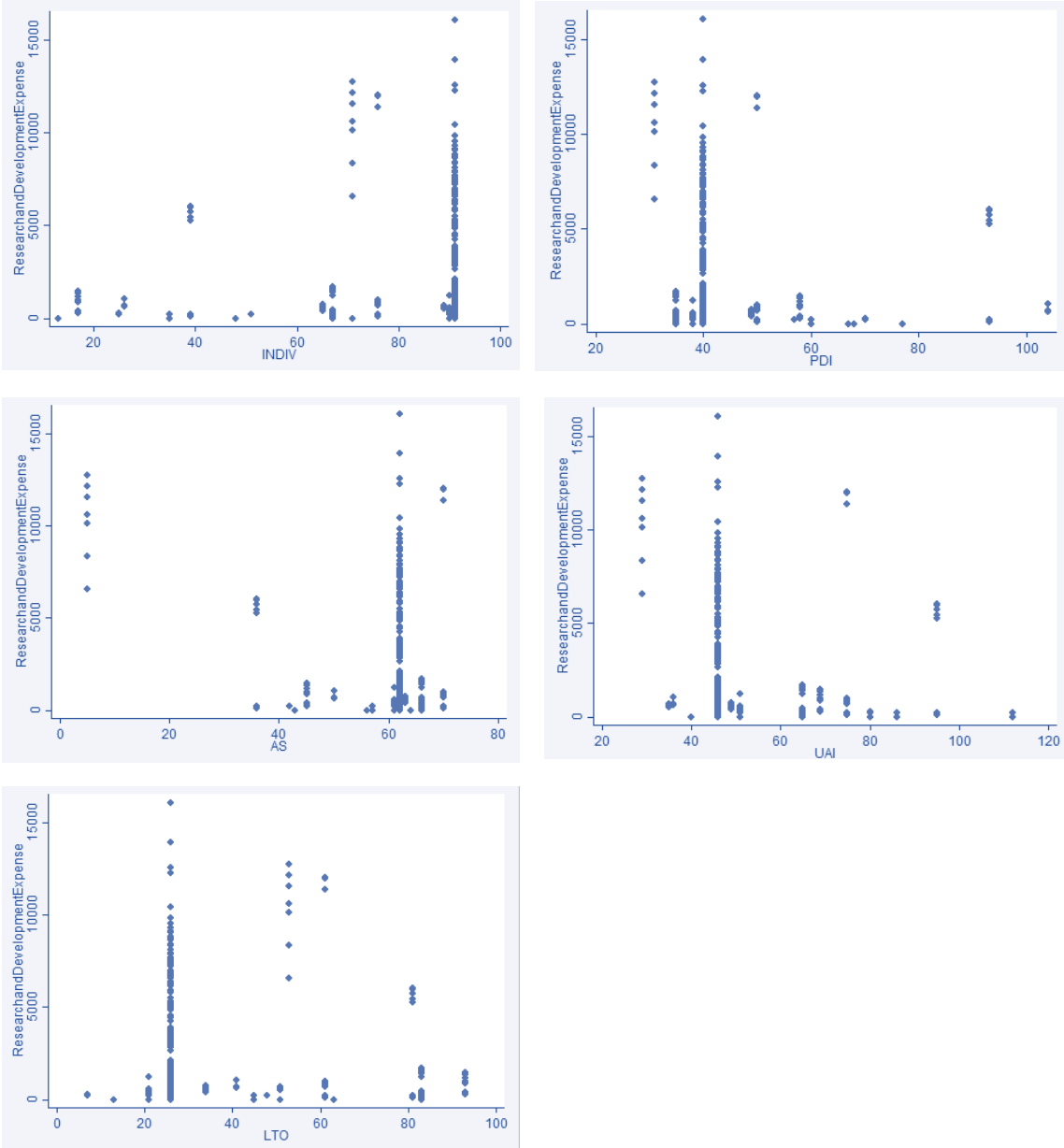
Index	Definition
Power distance (PDI)	<p>The extent to which less powerful members of an organization accept and expect that power is distributed unequally.</p>
Individualism (1) vs. Collectivism (2) (IDV)	<p>(1) Loosely knit social framework in which people are supposed to take care of only themselves and of their immediate families.</p> <p>(2) Preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular group to look after them in exchange for unquestioning loyalty.</p>
Uncertainty avoidance (UAI)	<p>The degree to which a society feels threatened or uncomfortable with uncertainty and ambiguous situations.</p> <p>(1) Characterized by competitiveness, assertiveness, achievement and heroism.</p>
Masculinity (1) vs. Femininity (2) (MAS)	<p>(2) Characterized by cooperation, the quality of life, caring and modesty.</p> <p>(1) Prefer to maintain time-honored traditions and norms while viewing societal change with suspicion.</p>
Short-term orientation (1) vs. Long-term orientation (2) (LTO)	<p>(2) Encourage thrift and efforts in modern education as a way to prepare for the future.</p>

Graph 1. Scatterplot of firm advertising expense and the cultural dimensions



Note: Top left: IDV. Top right: PDI. Middle left: MAS. Middle right: UAI. Bottom left: LTO.

Graph 2. Scatterplot of firm R&D expense and the cultural dimensions



Note: Top left: IDV. Top right: PDI. Middle left: MAS. Middle right: UAI. Bottom left: LTO.

Table 2. *Firms & CEOs*

Firm	CEO	Nationality	Tenure at firm before becoming CEO
3M CO	George W. Buckley	British	3
	Inge Thulin	Swedish	33
ABBVIE INC	Miles D. White	American	14
	Richard A. Gonzalez	American	35
ACCENTURE PLC	William D. Green	American	58
	Pierre Nanterme	French	30
ACTIVISION BLIZZARD INC	Robert A. Kotick	American	0
ACUITY BRANDS INC	Vernon J. Nagel	American	2
ADOBE SYSTEMS INC	Shantanu Narayen	Indian	9
ADVANCE AUTO PARTS INC	Darren R. Jackson	American	0
AGILENT TECHNOLOGIES INC	William Sullivan	American	10
	Michael R. McMullen	American	13
ALIGN TECHNOLOGY INC	Thomas M. Prescott	American	0
	Joseph M. Hogan	American	0
ALPHABET INC	Larry Page	American	10
ALTRIA GROUP INC	Michael Szymanczyk	American	0
	Martin Barrington	American	17
AMAZON.COM INC	Jeff Bezos	American	0
ANALOG DEVICES	Raymond Stata	American	0
	Vincent Roche	American	26
AT&T INC	Randall Stephenson	American	3
AUTODESK INC	Carl Bass	American	2
AUTOZONE INC	William C. Rhodes	American	11
BRISTOL-MYERS SQUIBB CO	Lamberto Andreotti	Italian	2
	Giovanni Caforio	Italian	15
CADENCE DESIGN SYSTEMS INC	Lip-Bu Tan	Malaysian	5
CAMPBELL SOUP CO	Doug Conant	American	24
	Denise Morrison	American	18
CARMAX INC	Thomas Joseph Folliard	American	13
CHIPOTLE MEXICAN GRILL INC	Steve Ells	American	0
CISCO SYSTEMS INC	John T. Chambers	American	23
	Chuck Robbins	American	17
CITRIX SYSTEMS INC	Mark B. Templeton	American	6
	Kirill Tatarinov	Russian	0
CLOROX CO/DE	Donald Knauss	American	0
	Benno O. Dorer	German	9
COLGATE-PALMOLIVE CO	Ian M. Cook	British	31
CONAGRA BRANDS INC	Gary Rodkin	American	0
	Sean Connolly	American	0
CVS HEALTH CORP	Thomas M. Ryan	American	20
	Larry Merlo	American	21
DARDEN RESTAURANTS INC	Clarence Otis Jr.	American	9
	Gene Lee	American	8
DEERE & CO	Samuel R. Allen	American	34

DOLLAR GENERAL CORP	Richard W. Dreiling	American	0
	Todd J Vasos	American	7
DOLLAR TREE INC	Bob Sasser	American	5
DOVER CORP	Robert A. Livingston	American	25
EBAY INC	Meg Whitman	American	10
	Devin Wenig	American	4
ELECTRONIC ARTS INC	John Riccitiello	American	13
	Andrew Wilson	Australian	13
EXTRA SPACE STORAGE INC	Spencer F. Kirk	American	5
F5 NETWORKS INC	John McAdam	British	0
FACEBOOK INC	Mark Zuckerberg	American	0
FLIR SYSTEMS INC	Earl Lewis	American	1
	Andrew C. Teich	American	13
FOOT LOCKER INC	Kenneth C. Hicks	American	0
	Johnson Richard. A	American	3
FORD MOTOR CO	Alan Mulally	American	0
	Mark Fields	American	25
FORTUNE BRANDS HOME & SECUR	Christopher J. Klein	American	7
GAP INC	Glenn K. Murphy	Canadian	2
	Arthur Peck	American	10
GARMIN LTD	Min Kao	Taiwanese	13
	Clifton A. Pemble	American	24
GENERAL MILLS INC	Ken Powell	American	30
GENERAL MOTORS CO	Daniel Akerson	American	1
	Mary Barra	American	34
GENUINE PARTS CO	Thomas C. Gallagher	American	14
GILEAD SCIENCES INC	John Martin	American	6
	John F. Milligan	American	26
GOODYEAR TIRE & RUBBER CO	Richard J. Kramer	American	10
GRAINGER (W W) INC	James T. Ryan	American	29
	Donald G. Macpherson	American	1
HANESBRANDS INC	Richard A Noll	American	4
HARLEY-DAVIDSON INC	Keith E. Wandell	American	0
	Matthew S Levatich	American	21
HASBRO INC	Brian Goldner	American	8
HERSHEY CO	David J. West	American	6
	John P. Bilbrey	American	8
HOLOGIC INC	Robert A. Cascella	American	7
	Stephen P. MacMillan	American	0
HOME DEPOT INC	Frank Blake	American	16
	Craig A. Menear	American	17
HORMEL FOODS CORP	Jeffrey Ettinger	American	18
HP INC	Léo Apotheker	German	0
	Dion Weisler	Australian	3
IDEXX LABS INC	Jonathan W. Ayers	American	0
ILLINOIS TOOL WORKS	David Speer	Canadian	27
	Ernest Scott Santi	American	29
ILLUMINA INC	Jay Flatley	American	12
INTEL CORP	Paul Otellini	American	31

	Brian Krzanich	American	31
INTL BUSINESS MACHINES CORP	Samuel J. Palmisano	American	29
	Ginni Rometty	American	31
INTUIT INC	Brad D. Smith	American	5
JOHNSON & JOHNSON	William C. Weldon	American	31
	Alex Gorsky	American	24
JUNIPER NETWORKS INC	Kevin R. Johnson	American	0
	Rami Rahim	American	17
KELLOGG CO	David Mackay	Australian	21
	John A. Bryant	Australian	13
KIMBERLY-CLARK CORP	Thomas J. Falk	American	19
KOHL'S CORP	Kevin Mansell	American	26
KROGER CO	David B. Dillon	American	23
	Rodney McMullen	American	36
LAUDER (ESTEE) COS INC -CL A	Fabrizio Freda	Italian	1
LOWE'S COMPANIES INC	Robert Niblock	American	12
MACY'S INC	Terry Lundgren	American	6
MATTEL INC	Robert Eckert	American	0
	Bryan Stockton	American	12
	Christopher A. Sinclair	American	19
MCCORMICK & CO INC	Alan D. Wilson	American	15
	Lawrence E. Kurzius	American	12
MGM RESORTS INTERNATIONAL	James Murren	American	20
MICROSOFT CORP	Steve Ballmer	American	20
	Satya Nadella	Indian	22
MONDELEZ INTERNATIONAL INC	Irene Rosenfeld	American	4
MONSANTO CO	Hugh Grant	British	22
NETFLIX INC	Reed Hastings	American	0
NEWELL BRANDS INC	Mark D. Ketchum	American	1
	Michael B. Polk	American	2
NORDSTROM INC	Peter E. Nordstrom	American	22
NVIDIA CORP	Jensen Huang	Taiwanese	0
ORACLE CORP	Larry Ellison	American	0
	Mark Hurd	American	4
O'REILLY AUTOMOTIVE INC	Gregory L. Henslee	American	21
PEPSICO INC	Indra Nooyi	Indian	12
PFIZER INC	Ian Read	British	32
PHILIP MORRIS INTERNATIONAL	Louis C. Camilleri	Egyptian	24
	André Calantzopoulos	Grec	28
PHILLIPS 66	Jim Mulva	American	31
	Greg C. Garland	American	32
PPG INDUSTRIES INC	Charles E. Bunch	American	36
	Michael H. McGarry	American	34
PROCTER & GAMBLE CO	Robert McDonald	American	29
	A.G. Lafley	American	23
	David S. Taylor	American	35
RALPH LAUREN CORP	Ralph Lauren	American	1
	Stefan Larsson	Swedish	0
RED HAT INC	Jim Whitehurst	American	0
SALESFORCE.COM INC	Marc Benioff	American	2

SCHEIN (HENRY) INC	Stanley M. Bergman	South African	9
SEAGATE TECHNOLOGY PLC	Stephen Luczo	American	16
SHERWIN-WILLIAMS CO	Christopher M. Connor	American	16
SIMON PROPERTY GROUP INC	David Simon	American	5
SMITH (A O) CORP	Paul W. Jones	American	1
	Ajita G. Rajendra	Indian	8
SMUCKER (JM) CO	Richard K. Smucker	American	25
	Mark T. Smucker	American	18
SNAP-ON INC	Nicholas T Pinchuk	American	5
STANLEY BLACK & DECKER INC	John F. Lundgren	American	0
	James M. Loree	American	17
SYMANTEC CORP	Enrique Salem	Colombian	19
	Steve Bennett	American	2
	Michael Brown	American	10
	Greg Clark	Australian	0
TARGET CORP	Gregg Steinhafel	American	29
	Brian Cornell	American	0
TEXAS INSTRUMENTS INC	Rich Templeton	American	24
TJX COMPANIES INC	Carol M. Meyrowitz	American	24
	Ernie Herrman	American	27
TRACTOR SUPPLY CO	James F. Wright	American	7
	Gregory A. Sandfort	American	6
TYSON FOODS INC -CL A	Donnie Smith	American	29
UDR INC	Thomas W Toomey	American	0
ULTA BEAUTY INC	Carl S. Rubin	American	0
	Mary Dillon	American	0
VERISK ANALYTICS INC	Frank J. Coyne	American	3
	Scott G. Stephenson	American	12
VERTEX PHARMACEUTICALS INC	Matthew Emmens	American	3
	Jeffrey Marc Leiden	American	6
WAL-MART STORES INC	Lee Scott	American	21
	Doug McMillon	American	30
WATERS CORP	Douglas A. Berthiaume	American	6
	Christopher J. O'Connell	American	0
WESTERN DIGITAL CORP	John F Coyne	Irish	24
	Stephen D. Milligan	American	11
WHIRLPOOL CORP	Jeff M. Fettig	American	23
WYNN RESORTS LTD	Steve Wynn	American	0
YUM BRANDS INC	David Colin Novak	American	0
	Greg Creed	Australian	14
ZOETIS INC	Ian C. Read	British	32
	Juan Ramon Alaix	Spanish	0

Table 5. *CEO nationalities & country scores*

Country	Score					
	CEO	PDI	UAI	IDV	LTO	MAS
USA	149	40	46	91	26	62
Australia	6	36	51	90	21	61
Great Britain	6	35	35	89	51	66
Canada	2	39	48	80	36	52
Colombia	1	67	80	13	13	64
Egypt	1	70	80	25	7	45
France	1	68	86	71	63	43
Germany	2	35	65	67	83	66
Greece	1	60	100	35	45	57
India	4	77	40	48	51	56
Ireland	1	28	35	70	24	68
Italy	3	50	75	76	61	70
Malaysia	1	100	36	26	41	50
Russia	1	93	95	39	81	36
South Africa	1	49	49	65	34	63
Spain	1	57	86	51	48	42
Sweden	2	31	29	71	53	5
Taiwan	2	58	69	17	93	45

Graph 4. Age and gender distribution

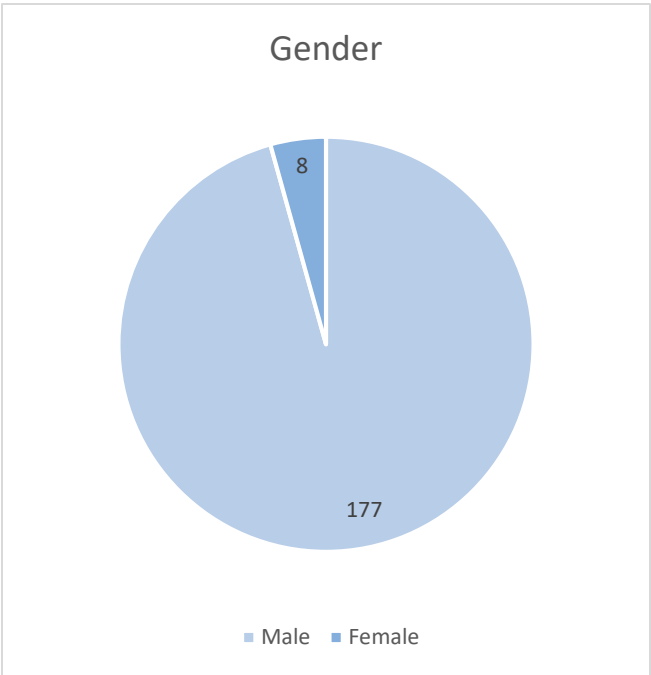
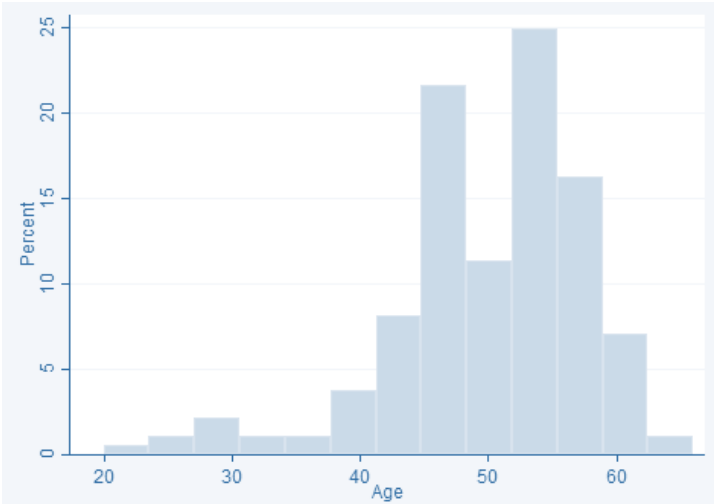


Figure 1. *CEO country of origin*



Appendix B – Post regression test

Table 6. *Breusch-Pagan heteroscedasticity test-results*

<i>Estimated regression</i>	<i>Chi2 test statistic</i>	<i>Probability</i>
Ln(MS)	2164.72	0.00
Ln(RDS)	32.45	0.00

Stata commands

```
import excel "\\campus.eur.nl\users\home\480228pb\Documents\Thesis articles\Compustat complete list S&P active firms.xlsx", sheet("WRDS") firstrow
encode CommonID, generate(CommonID2)
drop CommonID
drop IndustryFormat
drop if missing( AdvertisingExpense )
xtset CompanyID Year
    panel variable: CompanyID (unbalanced)
    time variable: Year, 2009 to 2017, but with gaps
    delta: 1 unit
drop if Year==2009 | Year==2017
bysort Company : drop if _N<7
drop if missing( ResearchandDevelopmentExpense )
bysort Company : drop if _N<7
(drop if variable=="value")
(sum Firm)
(tabulate Firm_num)
keep if Firm_num==2010 | Firm_num==2011 | Firm_num==2012
```

```
import excel "\\campus.eur.nl\users\home\480228pb\Documents\MASTER THESIS\Stata data files\CEO stata.xlsx", sheet("Sheet1") firstrow
encode Firm, generate(Firm2)
encode CEO , generate(CEO2)
encode Country , generate(Country2)
encode Nationality , generate(Nationality2)
encode Hofstede , generate(Hofstede2)
encode Gender , generate(Gender2)
encode University , generate(University2)
encode TickerSymbol , generate( TickerSymbol2 )
drop Firm CEO Country Nationality Hofstede Gender University TickerSymbol StandardIndustryClassification
rename StandardIndustryClassification2 StandardIndustryClassification
rename Firm2 Firm
rename CommonID3 CommonID
rename CEO2 CEO
rename Country2 Country
rename Nationality2 Nationality
rename Hofstede2 Hofstede
rename Gender2 Gender
rename University2 University
rename CommonID2 CommonID
rename TickerSymbol2 TickerSymbol
```

```
xtset Firm Year
```

```
merge m:1 CommonID3 using "\\campus.eur.nl\users\home\480228pb\Documents\MASTER THESIS\Stata data files\NO SPACE---Recent data current SP (active, 2010-2016, panel).dta"
drop in 827/854
gen MS_ratio = Adv_Expense / SalesTurnoverNet
gen RDS_ratio = RD_Expense / SalesTurnoverNet
gen ln_RDS=ln( RDS_ratio)
generate male = Gender==2
rename male Gender_dummy

reg ln_MS PDI INDIV MAS UAI LTO Rank_Uni MBA Years_exp Years_graduation Tenure_Firm Tenure_Industry Gender Age
GDPgr i.CEO i.Firm, robust
reg ln_RDS PDI INDIV MAS UAI LTO Rank_Uni MBA Years_exp Years_graduation Tenure_Firm Tenure_Industry Gender Age
GDPgr i.CEO i.Firm, robust
```

Screenshot data

Year	Change	Nationality	Hofstede	Adm_Expense	RD_Expense	SalesTurno*	Stockholder-1	MAIC	CompanyID	CommentID	GDPR	_merge	TickerSymbol	MS_ratio	Country			
1	2010	0	British	University of Southampton	647.27	179.982	5867.195	2628.584	322220	7495	7435 2010	matched (3)	NDV	.1105274	Great Britain			
2	2011	0	GBR	University of Southampton	699.247	179.982	6266.037	2610.608	322220	7495	7435 2011	matched (3)	NDV	.1115992	Great Britain			
3	2012	1	Swedish	University of Gothenburg	717.803	195.07	6420.881	3067.044	322220	7495	7435 2012	matched (3)	NDV	.111792	Sweden			
4	2013	0	Swedish	University of Gothenburg	750.205	201.942	6484.892	3251.559	322220	7495	7435 2013	matched (3)	NDV	.111695	Sweden			
5	2014	0	Swedish	University of Gothenburg	793.243	209.467	6021.819	2949.071	322220	7495	7435 2014	matched (3)	NDV	.111739	Sweden			
6	2015	0	Swedish	University of Gothenburg	717.882	217.816	5702.613	2639.254	322220	7495	7435 2015	matched (3)	NDV	.1126812	Sweden			
7	2016	0	Swedish	University of Gothenburg	634.947	215.304	5456.65	2407.782	322220	7495	7435 2016	matched (3)	NDV	.1163621	Sweden			
8	2010	0	American	Stanford University	6.43	0	290.998	999.071	328414	16101	16101 2010	matched (3)	ABV	.0218709	USA			
9	2011	0	American	Stanford University	5.988	0	342.994	1073.761	328414	16101	16101 2011	matched (3)	ABV	.0179706	USA			
10	2012	1	American	University of Houston	6.026	0	457.551	1545.331	325414	16101	16101 2012	matched (3)	ABV	.0131701	USA			
11	2013	0	American	University of Houston	6.482	0	580.997	1991.995	328414	16101	16101 2013	matched (3)	ABV	.0110113	USA			
12	2014	0	American	University of Houston	8.37	0	660.175	1911.988	328414	16101	16101 2014	matched (3)	ABV	.0128287	USA			
13	2015	0	American	University of Houston	8.539	0	805.799	2377.604	325414	16101	16101 2015	matched (3)	ABV	.0105971	USA			
14	2016	0	American	University of Houston	12.867	0	1094.677	2956.166	328414	16101	16101 2016	matched (3)	ABV	.0118593	USA			
15	2010	0	American	Rabson College	71.157	389.7	28994.078	3274.728	541511	143897	143897 2010	matched (3)	ACN	.0030912	USA			
16	2011	1	French	ESSSC Business school	69.767	503.222	27935.914	4380.872	541511	143897	143897 2011	matched (3)	ACN	.0025906	France			
17	2012	0	French	ESSSC Business school	81.64	559.611	29777.985	4624.428	541511	143897	143897 2012	matched (3)	ACN	.0027416	France			
18	2013	0	French	ESSSC Business school	90.31	715.094	30394.285	5427.829	541511	143897	143897 2013	matched (3)	ACN	.0029713	France			
19	2014	0	French	ESSSC Business school	87.559	639.513	31971.678	6285.337	541511	143897	143897 2014	matched (3)	ACN	.002737	France			
20	2015	0	French	ESSSC Business school	79.899	625.541	32914.424	6647.571	541511	143897	143897 2015	matched (3)	ACN	.0024275	France			
21	2016	0	French	ESSSC Business school	80.601	649.407	34797.661	8189.376	541511	143897	143897 2016	matched (3)	ACN	.0023183	France			
1	-2.202492	-3.51662	35	67	66	65	89	102	0	8	36	3	3	1	66	2.5	George W. Buckley	SH CO
2	-2.192895	-3.555614	35	67	66	65	89	102	0	8	36	3	3	1	66	1.6	George W. Buckley	SH CO
3	-2.191115	-3.439952	40	91	62	46	26	102	1	0	34	33	33	1	59	2.2	Inge Thulin	SH CO
4	-2.168994	-3.46925	40	91	62	46	26	102	1	0	34	33	33	1	59	1.7	Inge Thulin	SH CO
5	-2.105999	-3.358911	40	91	62	46	26	102	1	0	34	33	33	1	59	2.6	Inge Thulin	SH CO
6	-2.072416	-3.266029	40	91	62	46	26	102	1	0	34	33	33	1	59	2.9	Inge Thulin	SH CO
7	-2.151049	-3.292899	40	91	62	46	26	102	1	0	34	33	33	1	59	1.5	Inge Thulin	SH CO
8	-3.822398	0	40	91	62	46	26	2	1	18	14	14	14	1	43	2.5	Miles D. White	ABVTE INC
9	-4.053978	0	40	91	62	46	26	2	1	0	35	35	35	1	43	1.6	Miles D. White	ABVTE INC
10	-4.329905	0	40	91	62	46	26	106	0	0	35	35	35	1	58	2.2	Richard A. Gonzalez	ABVTE INC
11	-4.500696	0	40	91	62	46	26	106	0	0	35	35	35	1	58	1.7	Richard A. Gonzalez	ABVTE INC
12	-4.378986	0	40	91	62	46	26	106	0	0	35	35	35	1	58	2.6	Richard A. Gonzalez	ABVTE INC
13	-4.547178	0	40	91	62	46	26	106	0	0	35	35	35	1	58	2.9	Richard A. Gonzalez	ABVTE INC
14	-4.494639	0	40	91	62	46	26	106	0	0	35	35	35	1	58	1.5	Richard A. Gonzalez	ABVTE INC
15	-5.971417	-3.995847	35	89	66	35	51	96	0	2	58	58	58	1	52	2.5	William D. Green	ACCENTURE PLC
16	-5.971417	-3.995847	35	89	66	35	51	96	0	2	58	58	58	1	52	1.6	William D. Green	ACCENTURE PLC
17	-5.899205	-3.974283	35	89	66	35	51	96	0	2	30	30	30	1	53	2.2	Pierre Nantema	ACCENTURE PLC
18	-5.819782	-3.749596	35	89	66	35	51	96	0	2	30	30	30	1	53	1.7	Pierre Nantema	ACCENTURE PLC
19	-5.899205	-3.90886	35	89	66	35	51	96	0	2	30	30	30	1	53	2.6	Pierre Nantema	ACCENTURE PLC
20	-6.020903	-3.969049	35	89	66	35	51	96	0	2	30	30	30	1	53	2.9	Pierre Nantema	ACCENTURE PLC
21	-6.067794	-3.990528	35	89	66	35	51	96	0	2	30	30	30	1	53	1.5	Pierre Nantema	ACCENTURE PLC
22	-4.214814	-4.243559	40	91	62	46	26	21	0	0	5	0	0	1	28	2.5	Robert A. Koelck	ACTIVISION BLIZZARD INC
23	-4.204982	-4.321419	40	91	62	46	26	21	0	0	5	0	0	1	28	1.6	Robert A. Koelck	ACTIVISION BLIZZARD INC
24	-4.173814	-4.328552	40	91	62	46	26	21	0	0	5	0	0	1	28	2.2	Robert A. Koelck	ACTIVISION BLIZZARD INC
25	-4.273972	-4.241695	40	91	62	46	26	21	0	0	5	0	0	1	28	1.7	Robert A. Koelck	ACTIVISION BLIZZARD INC
26	-4.216586	-4.230418	40	91	62	46	26	21	0	0	5	0	0	1	28	2.6	Robert A. Koelck	ACTIVISION BLIZZARD INC
27	-4.09114	-4.148561	40	91	62	46	26	21	0	0	5	0	0	1	28	2.9	Robert A. Koelck	ACTIVISION BLIZZARD INC
28	-4.18797	-4.1304	40	91	62	46	26	21	0	0	5	0	0	1	28	1.5	Robert A. Koelck	ACTIVISION BLIZZARD INC

References

- Bailey, A. (2006). Cultural heuristics in risk assessment of HIV/AIDS. *Culture, health & sexuality*, 465-477.
- Bass, F. M. (1979). Advertising spending levels and promotion policies: profit potential for the application of management science. *Institute for Research in the Behavioral, Economic and Management Sciences, Krannert Graduate School of Management, Purdue*.
- Buyl, T. B. (2011). Top management team functional diversity and firm performance: The moderating role of CEO characteristics. *Journal of management studies*, 151-177.
- Canning Jr, G. (1988). Is your company marketing oriented? *Journal of Business Strategy*, 34-36.
- Carpenter, M. A. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of management*, 749-778.
- Chatterjee, S. L. (1992). Cultural differences and shareholder value in related mergers: Linking equity and human capital. . *Strategic management journal*, 319-334.
- Chauvin, K. W. (1993). Advertising, R&D expenditures and the market value of the firm. *Financial management*, 128-140.
- Cheong, Y. D. (2014). Advertising spending efficiency among top US advertisers from 1985 to 2012: Overspending or smart managing? *Journal of Advertising*, 43(4), 344-358.
- Datta, D. K. (1998). Industry structure and CEO characteristics: An empirical study of succession events. *Strategic Management Journal*, 833-852.
- Datta, S. a.-D. (2014). Upper-Echelon Executive Human Capital and Compensation: Generalist vs Specialist Skills. *Strategic Management Journal*.
- Deleersnyder, B. D. (2009). The role of national culture in advertising's sensitivity to business cycles: An investigation across continents. *Journal of Marketing Research*, 46(5), 623-636.
- Erickson, G. (1992). Gaining comparative advantage through discretionary expenditures: The returns to R&D and advertising. *Management Science*, 1264-1279.
- Fischer, M. A. (2011). Practice prize winner—dynamic marketing budget allocation across countries, products, and marketing activities. *Marketing Science*, 568-585.
- Giberson, T. R. (2009). Leadership and organizational culture: Linking CEO characteristics to cultural values. *Journal of Business and Psychology*, 24(2), 123-137.
- Gigerenzer, G. &. (2011). Heuristic decision making. *Annual review of psychology*, 451-482.

- Graber, R. S. (2003). Management turnover and under-investment in R&D: An agency theory explanation for under-investment in research and development in some corporations. *The Journal of Social, Political, and Economic Studies*, 28(3), 295. .
- Graffin, S. D. (2011). What's all that (strategic) noise? Anticipatory impression management in CEO succession. *Strategic Management Journal*, 748-770.
- Graffin, S. D. (2013). Examining CEO succession and the role of heuristics in early-stage CEO evaluation. . *Strategic Management Journal*, 383-403.
- Graham, J. (2002). How do CFOs make capital budgeting and capital structure decisions? *Journal of applied corporate finance*, 8-23.
- Haggi, M. K. (1990). Cost uncertainty and budget overspending: a safety-first perspective. *Journal of Accounting and Public Policy*, 9(4), 257-270.
- Henderson, R. (1993). Underinvestment and incompetence as responses to radical innovation: Evidence from the photolithographic alignment equipment industry. *The RAND Journal of Economics*, 248-270.
- Hofstede. (1993). Cultural constraints in management theories. *The Academy of Management Executive*, 7(1), 81-94.
- Hofstede. (2003). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage publications.
- Hofstede, G. (1984). Cultural dimensions in management and planning. *Asia Pacific journal of management*, 81-99.
- Hult. (2017). *How cultural differences impact international business in 2017*. Retrieved from HULT: <http://www.hult.edu/blog/cultural-differences-impact-international-business/>
- Imm Ng, S. A. (2007). Are Hofstede's and Schwartz's value frameworks congruent? *International Marketing Review*, 24(2), 164-180.
- Jacobs, T. O. (1991). Executive leadership. *Handbook of military psychology*, 431-447.
- Jones, T. M. (2007). Ethical theory and stakeholder-related decisions: The role of stakeholder culture. *Academy of Management Review*, 137-155.
- Joshi, A. (2010). The direct and indirect effects of advertising spending on firm value. *Journal of Marketing*, 20-33.
- Khurana, R. (2004). Searching for a corporate savior: The irrational quest for charismatic CEOs. *Princeton University Press*.

- Kwon, J. K. (2016). A Comparative Study of National Culture and Innovation: Effects of Cultural Dimensions on Traditional Innovation and Online Innovation. *In System Sciences*.
- Latham, S. (2010). Does short-termism influence firm innovation? An examination of S&P 500 Firms, 1990-2003. *Journal of Managerial Issues*, 368-382.
- Laverty, K. J. (1996). Economic "short-termism": The debate, the unresolved issues, and the implications for management practice and research. *Academy of Management Review*, 21(3), 825-860. .
- Mitchell, L. A. (1993). An examination of methods of setting advertising budgets: practice and the literature. *European Journal of Marketing*, 5-21.
- Nath, P. (2008). Chief marketing officers: A study of their presence in firms' top management teams. *Journal of Marketing*, 65-81.
- Nielsen, B. B. (2013). Top management team nationality diversity and firm performance: A multilevel study. *Strategic Management Journal*, 34(3), 373-382.
- O'cass, A. (2002). Status brands: examining the effects of non-product-related brand associations on status and conspicuous consumption. . *Journal of product & brand management*, 67-88.
- Papadakis, V. (1998). The chief executive officer as corporate champion of technological innovation: aii empirical investigation. *Technology Analysis & Strategic Management*, 10(1), 89-110.
- Rogers Everett, M. (1995). *Diffusion of innovations*. New York.
- Rohit Deshpande, F. E. (1989, 01). Organizational Culture and Marketing: Defining the Research Agenda. *Journal of marketing*, 53(1), 3-15.
- Sasieni, M. W. (1971). Optimal advertising expenditure. *Management Science*, P-64.
- Schneider, S. a. (1991). Interpreting and responding to strategic issues: The impact of national culture. *Strategic management journal*, 307-320.
- Seggie, S. H. (2007). Measurement of return on marketing investment: A conceptual framework and the future of marketing metrics. *Industrial Marketing Management*, 36(6), 834-841.
- Sethuraman, R. T. (2011). How well does advertising work? Generalizations from meta-analysis of brand advertising elasticities. *Journal of Marketing Research*, 48(3), 457-471.
- Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing*, 59-73.
- Simon, J. L. (1980). The shape of the advertising response function. *Journal of Advertising Research*.
- Song, M. (2006). A cross-national investigation of the R&D–marketing interface in the product innovation process. *Industrial Marketing Management*, 35(3), 308-322.

- Sridhar, S. N. (2017). Metrics unreliability and marketing overspending. *International Journal of Research in Marketing*, 761-779.
- Srinivasan, R. L. (2011). Should firms spend more on research and development and advertising during recessions? *Journal of Marketing*, 49-65.
- Teece, D. J. (1993). Information sharing, innovation, and antitrust. . *Antitrust LJ*, 62-465.
- Tse, D. K. (1988). Does culture matter? A cross-cultural study of executives' choice, decisiveness, and risk adjustment in international marketing. *The Journal of Marketing*, 81-95.
- Van Everdingen, Y. M. (2003). The effect of national culture on the adoption of innovations. *Marketing Letters*, 14(3), 217-232.
- Wang, S. G. (2010). When R&D spending is not enough: The critical role of culture when you really want to innovate. *Human Resource Management*, 49(4), 767-792.