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Eldon Y. Li, Ph.D.

Tongji University, China

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National Chengchi University, Taiwan



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Editorial

Eldon Y. Li
Wei-Hsi (Frank) Hung

Editorial Objective

JBM is a double-blind refereed, authoritative reference addressing working or potential business and management theories/practices as well as the emerging issues of interest to academics and practitioners. The primary editorial objective of the *JBM* is to provide a forum for the dissemination of theory and research in all areas of business, management, and organizational decisions. We invite research articles, comprehensive reviews, and case studies that provide insights into the business phenomena occurring every day. Authors of *JBM* are always encouraged to offer recommendations to readers exemplifying the applicability of their research findings.

Research Topics

In this issue of *JBM*, we have included four research articles. The first article is "Social Media Adoption and National Culture: The Dominant and Nuanced Effect of Individualism-Collectivism," co-authored by Rodney L. Stump and Wen Gong. The second one is "Impact of Neuromarketing Applications on Consumers," reported by Surabhi Singh. The third one is "Growing Pains: Success Strategies for Rural Entrepreneurs to Grow beyond Their Limited Local Markets," examined by David D. Snow. Finally, Helmut Birnleitner presents a study on "Macroeconomic Determinants of FDI Decisions in the Automotive Industry: Theoretical Foundations and Empirical Evidence."

We thank the authors very much for sharing their knowledge through the research projects and the reviewers for taking their precious time to review the articles and offer improvement suggestions to the authors. Special thanks go to Chung Yuan Christian University and National Chengchi University in Taiwan for the administrative support and Western Decision Sciences Institute (WDSI) for the financial support during the past twenty years. A special hearty welcome to International Consortium for Electronic Business (ICEB) for being a partner that makes *JBM* the official publication since starting this issue, Vol. 26, No. 2. As ICEB is celebrating its 20th anniversary this December, the release of this first journal issue of ICEB official publication makes the celebration more complete.

Please note that the publication of *JBM* is not sustainable without the institutional partners and the contributing scholars. Also, the views expressed in these articles belong to the authors and neither the editors, editorial board, *JBM*, ICEB in the U.S., National Chengchi University, Chung Yuan Christian University, National Chung Cheng University in Taiwan, nor Tongji University in China. We hope the articles are interesting to read and useful to your future research. On behalf of the Editorial Board, I thank you very much for your continuous support. Finally, we

would like to take this opportunity to wish you all to be safe and healthy under the recent epidemic of coronavirus. We hope the contagion will end soon and we, the people, can get back to our normal living conditions.

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Social Media Adoption and National Culture: The Dominant and Nuanced Effect of Individualism-Collectivism

Rodney L. Stump
Wen Gong

Abstract

Purpose – This study mainly examines how individualism-collectivism influences the country-level adoption of social media (SM). It synthesizes Hofstede’s national cultural framework with Roger’s diffusion of innovations and Granovetter’s tie strength theories.

Method – It relies on country-level secondary data assembled from reputable sources. Hierarchical regression is used.

Findings – Results reveal that the impact of individualism-collectivism is curvilinear and that this dimension also moderates the effect of long-term orientation. No significant main or moderated effects were found for the remaining cultural dimensions. Significant effects of three demographic and technological control variables were also found.

Limitations – Limitations related to the use of secondary data, the country-level unit of analysis, and cross-sectional design are recognized.

Implications/recommendations – While cultural factors are germane, not all need to be considered when targeting and designing marketing strategies to employ with SM.

Originality/Contribution – This study is believed to be the first to test and provide evidence of the curvilinear relationship of the individualism-collectivism cultural dimension, giving credence to the proposition that different culturally instilled social processes may be driving country-level SM adoption.

Keywords: social media adoption, cultural dimensions, individualism-collectivism, tie strength, hierarchical regression, quadratic

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Introduction

Social media is a general concept used to describe web-based platforms designed for individuals and communities to share information, facilitate discussion, and publish content (Kietzmann *et al.*, 2011). Its potential to influence how people interact and make decisions is widely recognized. While some may be passive content consumers, other social media users are active content generators/contributors. Firms increasingly recognize that social media is no longer an isolated marketing communications channel that can be used to promote their products or services but has evolved to become a significant touchpoint and integral part of the brand experience itself (Newman, 2016). Its increasing relevance and importance have pressured digital marketers to invest more in social media to make their brands more accessible, engaging, and shoppable.

Despite its overwhelming global reach, sizable variations exist among country adoption levels and how the populace of different nations engages with social media (Chen & Zhang, 2010; De Mooij, 2011; Gretzel *et al.*, 2008; Kemp, 2017; Nielsen, 2012; Sawyer, 2011). Furthermore, certain social media platforms are significantly more popular in some areas than in others, even outside of areas where Internet censorship is currently enforced (Dahl, 2015). While Facebook is indisputably the most popular (Statista, 2020), its global user base is by no means universal or equally distributed. For instance, Facebook has a relatively low penetration in countries where domestic social media platforms seem more engaging and generate more traffic, such as Line in Japan (Illmer, 2016), WeChat and Renren in China (Dick, 2017; Gupta *et al.* 2018), Kakao Talk in South Korea (Fauquenot, 2016), VKontakte in Russia and a handful of its neighbors (Zinovieva, 2014). The success of these home-grown social media can be at least partially accredited to their cultural appropriateness (Goodrich & De Mooij, 2014).

Echoing these observations, findings from an increasing body of literature reveal direct or indirect associations between various aspects of Internet-mediated technology adoption and use and a nation's underlying cultural values and social interaction patterns (e.g. Dinev & Hart, 2006; Yoon, 2009; Udo & Bacghi, 2011; Hoehle *et al.*, 2015; Huang *et al.*, 2017; Lin & Ho, 2018). Unlike other technologies that are mainly designed as commercial applications, social media is used for both personal and commercial purposes. Since personal use may involve social or asocial activities or some combination of both (Zhao, 2006), cultural factors may play a greater role in influencing consumers' social media behaviors than previously known.

The present study addresses the gap in the extant literature by incorporating multiple cultural dimensions, along with demographic and technological variables. Specifically, we take an eclectic approach and draw upon multiple theoretical bases, including Hofstede's national cultural framework (2001), Roger's diffusion of innovations (1983), and Granovetter's notions of tie strength and embeddedness (1973,

1983). We aim to further the theory of social media adoption at the country level by examining whether cultural dimensions account for significant variations in social media adoption. We focus on the individualism/collectivism dimension since it is the most widely studied and dominant dimension to advance our appreciation of the underlying processes that they may represent. People derive different meanings from social interactions in the physical world due to cultural variations, but far less is known regarding how cultural traits may influence processes related to virtual online venues. Thus, the current research contributes to theory by advancing our knowledge of cultural factors influencing the adoption of social media and proposes an expanded theoretical framework to explain the adoption of social media from the perspective of tie strength and embeddedness.

This study provides managerial implications for both digital marketers and social media technology designers and suppliers. For the former, it contributes to an understanding of the relationship between people's adoption of social media and their cultural orientations, which can lead to more sound social media marketing strategies. For the latter, it provides greater insights into what cultural dimensions may facilitate or inhibit the adoption of their platforms.

The remainder of the paper is structured as follows. In Section 2, we expound on the theoretical frameworks upon which our research hypotheses are developed. In Section 3, we lay out our hypotheses. In Section 4, we describe our research design, data set and respective sources, and analytical methods. Section 5 presents our empirical results. Section 6 concludes with a discussion of the findings and implications, as well as limitations and directions for future research.

Theoretical Background

Adoption of Technological Innovations

Rogers' (1983) diffusion of innovations (DOI) theory has long been used to address how adoption takes place within a social system. According to DOI, the main four elements that can influence the spread of a new idea include the innovation itself, the communication channel, time, and the social system.

Analyses can be conducted at the individual level, which has spawned a large body of research that has focused on individuals' acceptance, behavioral intentions, actual use of technological innovations as well as users' attitudes and perceptions of product attributes, such as perceived usefulness and perceived ease of use, which are important constructs found in the Technology Acceptance Model (TAM) (e.g. Bagozzi *et al.*, 1992; Davis, 1985, 1989; Venkatesh & Davis, 2000; Alarcon-del-Amo *et al.*, 2016) and

human-computer interaction (HCI) literature (e.g., Helander, 1988; Shackel, 2009). More recently, this literature has recognized that attitudes may have cultural origins and studies have begun to investigate espoused cultural values as possible moderators (e.g., Hoehle *et al.*, 2015; Yoon, 2009).

Analyses can also be conducted at the system level to compare the adoption of various innovations as well as the relative degree to which a particular innovation is adopted within social systems of different demographic, economic, technological, and cultural characteristics (Maitland & Bauer, 2001; Rogers, 1995). At higher social levels, diffusion can be viewed as a prolonged social process through which new cultural elements, such as technological innovations, are presented to the society and, if accepted by its people, are further integrated into a pre-existing culture (Dearing, 2009).

National Culture

People's behaviors are both a component and a reflection of the culture in which they are embedded (Baligh, 1994). Hofstede (1991) defines national culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another". His original framework included four dimensions: individualism vs. collectivism, femininity vs. masculinity, power distance, and uncertainty avoidance (Hofstede, 1980, 2001), but has since been expanded with two more: long-term vs. short-term orientation and indulgence vs. restraint. Ratings on these dimensions for many countries are provided on his website (Hofstede Insights, 2019).

Hofstede's framework has been employed by numerous adoption studies both at the country (e.g., Desmarchelier & Fang, 2016; Dwyer *et al.*, 2005; Ganesh *et al.*, 1997; Kumar & Krishnan, 2002; La Ferle *et al.*, 2002) and individual levels (e.g., Faqih & Jaradat, 2015; Hoehle *et al.*, 2015; Van Everdingen & Waarts, 2003; Yoon, 2009) and robust relationships, have been reported, between cultural dimensions and the penetration of high-tech products such as the Internet, cellular phones, and PCs.

The use of Hofstede's cultural dimensions in academic research is not without its critics (see Beugelsdijk, 2019; Jones, 2007; Shaiq *et al.*, 2011 for recent reviews of these arguments). Culture is a macro-level phenomenon (Srite & Karahanna, 2006), which underscores one of the recurrent criticisms of Hofstede's work, namely the cultural homogeneity argument, i.e., the assumption that domestic populations are homogeneous wholes when, in reality, nations comprise groups of different ethnic units (Nasif *et al.* 1991; Redpath, 1997; Khastar *et al.*, 2011). On the other hand, nations do reflect a collective of shared historical experiences that undergirds national identity and dominant cultural values (Beugelsdijk, 2019). Thus, where the country is the unit of analysis, Hofstede's measures may be construed as representing averages derived from population samples. As such, it has been an acceptable and frequently used means to capture cultural values for several decades.

Tie Strength, Diffusion, Culture, and Social Networks

In his seminal article, “The Strength of Weak Ties”, Granovetter (1973) defined tie strength as a characteristic of interpersonal relationships and distinguished between strong ties versus weak ties. Strong ties exist among close friends, family members, or others who are most like oneself, i.e., people whom an individual really trusts and whose social circles tightly overlap with their own. Strong ties function as a *bond* to provide greater motivation to be of assistance and are typically more easily accessible (Granovetter, 1983; Gilbert & Karahalios, 2009).

Weak ties are more likely to comprise mere acquaintances. They provide access to novel information because acquaintances travel in different circles and have different social networks. Weak ties act as a *bridge* connecting groups of more distant friends and acquaintances, hence, providing access to information and resources unattainable in one’s own social circle (Granovetter, 1983; Panovich *et al.*, 2012).

Granovetter has further suggested application of the argument on weak ties to the study of innovation diffusion, not only focused on new products, such as the adoption studies by Rogers (1983) and Rogers and Kincaid (1981), but also investigated the diffusion of ideas, information, and culture (Granovetter, 1983). More recently, Schultz and Breiger (2010) have reinforced this recognition of tie strength implications for culture in their call for research that extends the strength of weak social ties to the study of cultural objects and relations.

In recent years, tie strength has served as the theoretical underpinning for several studies relating to interpersonal relationships mediated by social network sites. These include maintaining social networks (Boase *et al.*, 2006), using Facebook profile characteristics to model tie strength (Gilbert & Karahalios, 2009), attention-seeking behaviors and online network size and composition (Rosen *et al.*, 2010), question and answer behaviors (Panovich *et al.*, 2012), and usefulness of electronic weak ties for technical advice (Constant *et al.*, 1996).

While the theoretical connection between tie strength and culture has been established, it must be recognized that the latter construct has only been conceptualized at the more abstract global level. In the ensuing section, we seek to develop a better understanding of whether and how tie-strength may relate to a particular cultural dimension, individualism-collectivism.

Hypotheses

Within the existing literature on social media adoption, some have tested contingency hypotheses, where one or more cultural dimensions were included as moderators of the effects of socioeconomic factors and vice versa (e.g., Yeniyurt & Townsend, 2003; Smith *et al.*, 2010). Scales capturing espoused cultural dimensions have also been posed as moderators of TAM variables (e.g., Hoehle *et al.*, 2015; Huang *et al.*, 2017). However, to the best of our knowledge, no studies have tested for curvilinear effects among any of these cultural dimensions, nor examined whether there are interaction effects among the six Hofstede's cultural dimensions.

While national culture has indeed been conceptualized as a multidimensional phenomenon, there are compelling theoretical arguments and growing empirical evidence that the individualism/collectivism dimension is the major one (Beugelsdijk, 2019; Granovetter, 1973, 1978, 1983; Gudykunst, 1998; Hu *et al.*, 2014; Triandis, 1989, 1995; Triandis *et al.*, 1988; Zhang & Gelb, 1996). Drawing on the extant literature, we posit a rationale for this national culture dimension below and later provide insights into the remaining dimensions.

Individualism-Collectivism (IDV)

This dimension describes the relationship between the group and the individual and appears to be the most germane to Granovetter's notion of tie strength. It reflects the extent to which people view themselves as being independent or identify themselves within groups (Triandis & Gelfand, 2012). Individualist cultures are oriented around the self, value personal freedom, and encourage individual decision-making. In contrast, collectivistic cultures are characterized by emphasizing on communal goals and group conformity that should come before individual desires or pursuits in these societies.

There is growing evidence that IDV values serve as indicators of how people form their social networks, use strong/weak ties as behavioral references, and engage in collective actions (Beugelsdijk, 2019; Granovetter, 1973, 1978, 1983; Hu *et al.*, 2014; Triandis 1995; Triandis *et al.*, 1988). This dimension has further implications for the adoption of social media, as revealed in the structures of online social networks (i.e., size and relative presence of strong versus weak ties) and the underlying bridging versus bonding roles that they play (Choi *et al.* 2011; Hu *et al.*, 2014; Rosen *et al.*, 2010).

Because of their prioritization and emphasis on personal needs, audiences of individualist cultures tend to prize autonomy, differentiation, and uniqueness (Aaker & Maheswaran, 1997), and their identity is largely defined by their roles in various social relationships. In this respect, social networking can be seen as a manifestation of one's identity and a means of self-expression. For instance, Rosen *et al.* (2010) found a proclivity to engage in more attention-seeking behaviors via social media in individualistic cultures. Specifically, social media users from such cultural backgrounds have larger networks of

friends and that a greater proportion of which have not been met face-to-face, as opposed to users who identify with more collectivist cultural backgrounds.

In contrast, members from collectivistic societies are more likely to join and participate in social media to enhance their sense of belonging, fulfill group duties, and achieve interpersonal harmony. Gangadharbatla (2008) found that the need to belong has a positive effect on a person's attitude toward social media and willingness to join them. Kim and Yun (2007) reported that most Koreans who participated in social media were doing so to keep close ties with a small number of friends instead of befriending new people.

This divergence of motivations to embrace social media between individualistic versus collectivistic cultures is consistent with the notions of bridging versus bonding roles of social ties. The former emphasizes the prevalence of weak ties within online and offline social networks, which gives greater access to information from distant parts of the social systems (Granovetter, 1983). Conversely, the latter involves the creation and maintenance of social capital arising from strong ties that provide emotional support and a sense of belonging between social network members (Choi *et al.*, 2011; Valencia, 2011). There is also growing evidence that individuals in collectivistic cultures tend to trust strong ties more (Triandis, 1995; Triandis *et al.*, 1988) and hold larger strong-tie networks (Choi *et al.*, 2011; Gudykunst *et al.*, 1992) than do their counterparts from individualistic cultures.

Based on the above discussion, the theoretical connection between culture and tie strength is readily apparent in the context of social media adoption, yet plausible arguments can be made for both individualism and collectivism in the sense that while people from individualist cultures seem to have more freedom to be innovative and use social media for self-expression than those in collectivistic societies, members from collectivistic cultures may be more likely to adopt social media to gain a sense of belonging, fulfill group obligations and achieve group harmony.

The extant research further distinguishes between innovation mechanisms, which occur when individuals learn of a new product and subsequently decide to adopt it irrespective of the influence of others, versus imitation mechanisms, where adoption decisions are driven in part by social pressure, which increases with the number of previous adopters (Rogers, 1995; Min *et al.*, 2018). These two processes better explain how country adoption levels are achieved since individualistic countries are apt to show greater growth rates in early stages, whereas collectivistic countries are expected to have greater adoption rates during later stages when a greater critical mass of adopters exist (Haapaniemi & Mäkinen, 2009). Since social media adoption and use are so uneven across nations, we reason that IDV also influences the underlying growth rates at different stages of the adoption process.

In light of the compelling arguments that differing motivations and adoption behaviors exist, each aligned with cultural tendencies toward individualism versus collectivism, we propose that this dimension's effect may be curvilinear rather than merely being linear. Operationally, this can be accomplished by adding a quadratic term to the equation to determine whether the effect is U-shaped or an inverted U-shape. Thus, we propose this initial hypothesis:

H1: The IDV cultural dimension will have a curvilinear effect on the country-level of social media adoption.

Remaining Cultural Dimensions

Masculinity-Femininity (MAS)

This cultural dimension focuses on the extent to which a society stresses achievement or nurture and is closely related to societal expectations of gender roles (Hofstede, 2011). Masculine cultures value achievement and material success more and tend to have clearer role distinctions between males and females. In contrast, feminine cultures value caring and nurturing behaviors, are concerned with the quality of life, and apt to have more fluid gender roles (Hofstede, 1980, 2001). Individuals from feminine cultures tend to pay more attention to the availability of technologies that are expected to influence the quality of their lives (Tarhini *et al.*, 2017). The social aspects of social media seem to be more germane in feminine cultures where the nurturing of personal relationships is more appreciated (Hoehle *et al.*, 2015; Magnusson *et al.*, 2014; Ribiere *et al.*, 2010; Singh 2006). We thus propose:

H2: The MAS cultural dimension will be negatively associated with the country-levels of social media adoption.

Power Distance Index (PDI)

This cultural dimension is designed to measure the acceptance of power established in relationships within institutions and organizations of a society (Hofstede, 1991) and is related to conservatism and maintaining the status quo (Steenkamp, 2001). Countries with high PDI tend to be less innovative because people in such cultures are more likely to be in accordance to a hierarchy where everyone has a place, follow directions and avoid standing out through original thinking (Herbig & Miller, 1992), prefer to be told what to do, and rely more on opinions from reference groups, all of which may influence their adoption decision-making (Hofstede, 2011; Daniels & Greguras, 2014; Zhang *et al.*, 2018). In lower PDI cultures characterized by more democratic or consultative relations, individuals have more autonomy and are less

worried about status, thus more innovative behaviors can be expected and new ideas may be adopted more freely (Hofstede, 2011; Im *et al.*, 2011; Capece *et al.*, 2013; Zhang *et al.*, 2018). To date, a greater degree of empirical evidence indicates a negative relationship (La Ferle *et al.*, 2002; Yenyurt & Townsend, 2003; Van Everdingen & Waarts, 2003). Hence, we propose:

H3: The PDI dimension will be negatively associated with country-levels of social media adoption.

Uncertainty Avoidance Index (UAI)

This cultural dimension depicts how societies differ on the degree of tolerance they have of unpredictability and has been used in cross-cultural studies to understand why some ideas and business practices work better in some countries than others. Cultures with high UAI exhibit value stability, established rules, and a formality to the structure of life. Their citizens are generally more averse to change, tend to avoid the unconventional way of thinking and behaving, and are more likely to be concerned that widespread dissemination of information might lead to intentional or unintentional information distortion (Bettis-Outland, 1999). Therefore, the cultural environment in these societies is less conducive to innovativeness. Research has found a negative impact of uncertainty avoidance on the penetration of the Internet and other technological innovations (e.g., La Ferle *et al.*, 2002; Lynn & Gelb, 1996; Yenyurt & Townsend, 2003). Accordingly, we propose:

H4: The UAI dimension will be negatively associated with the country-levels of social media adoption.

Long-term Orientation (LTO)

This cultural dimension captures the notion of Confucian dynamism, i.e., how societies view time and whether they focus on the present, past, or the future (Ford *et al.*, 2009). Populations with long-term orientation subscribe to the values of persistence, perseverance, saving, being able to adapt and a strong work ethic, i.e., long-term rewards are expected because of today's hard work. Trust and reciprocity are encouraged to build and maintain relationships, thereby reducing future risks and possible opportunistic behaviors (Hallikainen & Laukkanen, 2018; Wang *et al.*, 2015). Short-term oriented societies consider the present or past more important than the future and value tradition and the current social hierarchy and are apt to emphasize on achieving quick results and be more sensitive to social trends (Hofstede, 2011; Yoon, 2009; Zhang *et al.*, 2018). Hence, we propose:

H5: The LTO dimension will be negatively associated with the country-levels of social media adoption.

Indulgence-Restraint (IND)

This latest dimension looks at a culture's tendencies concerning the fulfillment of desires and has, to date, not yet been widely applied to academic research nor for intercultural training (www.communicaid.com, 2018). Scores for this dimension are available for fewer countries than the previous dimensions. Countries on the indulgence end allow or encourage relatively free gratification of basic and natural human desires related to enjoying life and having fun. Their populations consider freedom of speech to be important, perceive themselves to have control of their personal life, and declare themselves as happy. Conversely, populations from countries toward the restraint end tend to suppress gratification of needs, are regulated through strict social norms, and be more pessimistic and carry perceptions of helplessness (Lu *et al.*, 2018; Hofstede insights, 2020). Thus, the following is proposed:

H6: The IND dimension will be positively associated with the country-levels of social media adoption.

Moderating Effect of Individualism-Collectivism

Tests of the main effects of cultural dimensions have been the mainstay of the extant literature that has focused on the cultural influences of country-level adoptions of technological innovations. While only a few studies have tested contingency hypotheses involving cultural dimensions, Hofstede's measures have only been included as moderators of the effects of socioeconomic factors and vice versa (e.g., Yenyurt & Townsend; 2003; Smith *et al.*, 2010). Our literature review has not revealed any studies that have examined whether the effect of any cultural dimension may be moderated by another dimension.

Given the dominance of individualism-collectivism, we posit that the effects of the remaining dimensions may be conditioned on its level. In the absence of strong theoretical justifications to explicate these potential interactions, we propose the following exploratory hypothesis:

H7: The IDV dimension will moderate the effect of other cultural dimensions on country-levels of social media adoption.

Control Variables, i.e., Country Contextual Variables

The diffusion literature shows that adoption and diffusion processes are influenced by a variety of socio-economic factors and that the social, economic technological infrastructures of countries play a major role in how culture is manifested in consumer behavior. For example, Udo and his colleagues (2008), in their study of ICT diffusion among four developing countries, found that the difference in diffusion may be attributed to factors such as poor infrastructure, income inequality, and adult illiteracy; Forman (2005) and Billon *et al.* (2009) reported that increase in population size and density leads to decrease in ICT adoption costs, thus, facilitating the adoption and diffusion of social media; Beise (2004) and Jha and Majumdar (1999) revealed that countries with higher incomes have a demand advantage for innovations and greater affordability for more members of their populations. As such, three social-economic variables representing urbanization percentage (URBAN), literacy rate (LITERACY), wealth (GDPppp) are incorporated in our model. We also include Internet penetration levels (IPTR) since Internet access is a necessary precursor for social media adoption and use.

Research Methodology

Data Sources

This study examines the culture’s impact on the global adoption of social media. Due to the difficulty in collecting country-level data for a multivariate analysis on a global scale, we utilize secondary data from several reputable sources, namely Hofstede’s cultural dimension scores (Hofstede Insights, 2019); We Are Social’s ‘Digital in 2017 Yearbook’ (Kemp, 2017), which is the basis for our country-level dependent variable, social media penetration level (measured by active social users as a percentage of the total population based on monthly active users reported by the most active social media platform in each country), and the Internet penetration control variable; the CIA World Factbook for urban population data (CIA, 2016) and World Bank Group (2019) and World Population Review (2019) for literacy rates. Data were compiled for 101 countries, which are listed in Appendix A. Correlations and descriptive statistics are presented in Table 1.

Table 1: Correlations & Descriptive Statistics

	SMU	URBAN	LITERACY	GDPppp	IPTR	IDV	MAS	PDI	UAI	LTO	IND
SMU	1.000										
URBAN	0.778**	1.000									
LITERACY	0.711**	0.590**	1.000								
GDPppp	0.080	0.044	0.106	1.000							
IPTR	0.803**	0.742**	0.754**	0.065	1.000						
IDV	0.271**	0.389**	0.355**	0.149	0.549**	1.000					
MAS	-0.027	0.018	-0.018	0.217*	0.028	0.046	1.000				

PDI	-0.250*	-0.319**	-0.254**	-0.009	-0.467**	-0.618**	0.113	1.000			
UAI	0.168‡	0.252*	0.163‡	-0.145	0.142	-0.091	0.043	0.134	1.000		
LTO	0.195‡	0.164	0.416**	0.220*	0.401**	0.243*	0.075	-0.140	0.083	1.000	
IND	0.167	0.268*	0.107	-0.066	0.132	0.069	-0.056	-0.232*	-0.168	-0.451**	1.000
Mean §	0.478	0.663	89.922	1220.040	0.640	38.725	47.147	64.583	64.029	42.836	47.836
Standard Deviation	0.209	0.219	13.993	3321.720	0.243	21.681	18.378	20.711	21.279	23.218	23.738

Correlations (two-tailed) and descriptive statistics are based on original values for independent variables.

** = Correlation is significant at the 0.01 level.

* = significant at the 0.05 level.

‡ = significant at the 0.10 level.

§ = Descriptives for GDPppp expressed in billions.

Hypotheses Tests

The ordinary least squares (OLS) regression was used to test the hypotheses regarding the effects of the cultural dimensions in a hierarchical fashion. Multiple models were run for the dependent variable, country-level social media adoption levels. We began with a Baseline Model, where only the main effects of the control variables were regressed on the dependent variable. Following that, the main effects of the six cultural dimensions were added and the model was re-estimated (i.e., Main Effects Model). We then added the quadratic term for the *individualism-collectivism* dimension and the interaction terms to test the curvilinear and moderation hypotheses (Quadratic & Moderation Model). Given that moderated regression models and regressions involving polynomial terms can suffer from interpretational problems, we mean-centered each of the independent variables (Aiken and West, 1991; Jaccard *et al.*, 1990).

Empirical Findings

The overall *F*-values of the three models, i.e., Baseline, Main Effects, and Quadratic & Moderation Models, are all significant, thus indicating that interpretation of the individual regression models and parameter estimates for the independent variables is warranted. Regression results are presented in Table 2. The linear and quadratic curve estimates are depicted in Appendix B.

Table 2: Regression Results

DV: Social Media Adoption Rate (SMU)	BASELINE MODEL		MAIN EFFECTS MODEL		QUADRATIC & MODERATION MODEL	
	(main effects of demographic, economic & technological variables)		(main effects of cultural dimensions added)		(quadratic & interaction terms added)	
		t-value & VIF		t-value & VIF		t-value & VIF
Constant		44.236**		41.610**		28.930**
URBAN (demographic control variable)	0.391	5.039** 2.236	0.413	5.039** 2.552	0.384	5.050** 2.742
LITERACY (demographic control variable)	0.214	2.694** 2.344	0.216	2.800** 2.588	0.210	2.770** 2.730
GDPppp (economic control variable)	0.016	0.316 1.012	0.068	1.305 1.186	0.008	0.143 1.365
IPTR (technology control variable)	0.350	3.677** 3.374	0.530	5.291** 4.349	0.553	5.536** 4.730
IDV [coupled with IDV ²] (H1)			-0.190	-2.788** 2.012	-0.242	-3.216** 2.681
MAS (H2)			-0.042	-0.838 1.099	-0.047	-0.861 1.397
PDI (H3)			0.043	0.668 1.830	0.044	0.691 1.888
UAI (H4)			-0.053	-1.005 1.215	-0.020	-0.356 1.528
LTO (H5)			-0.117	-2.040* 1.432	-0.140	-2.396* 1.615
IND (H6)			-0.061	-1.156 1.207	-0.063	-1.114 1.437
IDV ² [quadratic term coupled with IDV] (H1)					0.188	2.275* 3.234
IDV*MAS [interaction term] (H7-a)					-0.010	-0.179 1.516
IDV*PDI [interaction term] (H7-b)					0.097	1.269 2.794
IDV*UAI [interaction term] (H7-c)					0.033	0.540 1.721
IDV*LTO [interaction term] (H7-d)					-0.177	-3.289** 1.368
IDV*IND [interaction term] (H7-e)					-0.026	-0.475 3.234
F-value (df1,df2)						
	F_(4,97)=68.646**		F_(10,91)=34.311**		F_(16,85)=24.292**	
R² (Adjusted R²)						
	.739 (.728)		.790 (.767)		.821 (.787)	
F-value (versus prior model)						
			F=3720**		F=2.382‡	
R²						
			R²=,002		R²=,036	

** = significant at the 0.01 level.

* = significant at the 0.05 level.

‡ = significant at the 0.10 level.

The results of the Baseline Model show positive and significant coefficients for the URBAN ($b = .39, p < .01$), LITERACY ($b = .21, p < .01$), and IPTR ($b = .35, p < .01$) control variables, while the coefficient for GDPppp control variable was non-significant. The patterns of the coefficients for these variables remained consistent across all models.

The addition of the main effect terms relating to the cultural dimensions resulted in a significant improvement in the explanatory power of the Main Effects Model, i.e., R^2 showed significant improvement by increasing from .74 to .79. Only two of the cultural dimensions had significant coefficients for their main effects, IDV ($b = -.19, p < .01$) and LTO ($b = -.12, p < .05$). The LTO result reflects support for H5. MAS, PDI, UAI, and IND all had non-significant coefficients; thus, H2, H3, H4 & H6 were not supported.

The addition of quadratic and interaction terms resulted in a further significant improvement in the explanatory power of the Quadratic & Moderator Model, i.e., R^2 showed significant improvement by increasing from .79 to .82. On closer inspection of the regression coefficients, the IDV and LTO main effects ($b = -.24, p < .01$; $b = -.14, p < .01$, respectively) were found to be significant. Likewise, the quadratic term ($b = .23, p < .05$) and IDV*LTO interaction term ($b = -.18, p < .01$) were found to be significant. This conveyed support for H1 and H4-c, respectively. None of the remaining interaction terms were found to be significant. The significant coefficients lead us to conclude the following:

- Individualism/collectivism (IDV) was found to have a negative main effect and a significant positive coefficient for the quadratic. Thus, H1 (the curvilinear argument) was supported. These results indicate the overall effect is U-shaped and support the premise that social media adoption may represent different motivations and social processes that are aligned with the opposites of the cultural traits of individualism versus collectivism.
- LTO was found to have a negative main effect, which is indicative that countries that are more short-term oriented are more conducive to the adoption of social media. Moreover, the significant interaction with IDV suggests that this effect is heightened in countries with tendencies of individualism.

None of the main effects for MAS, PDI, UAI, and IND, nor the interaction terms were found to be significant, which meant that H2, H3, H4, H6, H-7a, H7-b, H7-c, and H7-e were not supported.

Discussion

Culture is everything. "This dominance of technology over culture is an illusion. The software of the machines may be globalized, but the software of the minds that use them is not" (Hofstede *et al.*, 2010, p. 391). Numerous studies have provided empirical evidence to support this statement to various degrees – and the present study provides additional credence to it.

Theoretical Implications

This study contributes to the extant literature in three important ways. First, by taking into consideration the entire array of six cultural dimensions articulated by Hofstede (2010) and to provide empirical evidence of which dimensions significantly influence country-level adoption of social media. Second, by integrating Granovetter's (1978, 1983) tie strength theory we provide a more thorough understanding of the motivations and processes underlying cultural dimensions, particularly individualism-collectivism. Third, by employing a quadratic term, we provide empirical evidence of the curvilinear effect of individualism-collectivism, which suggests that different processes may be driving the results and in doing so supports the tie strength premises of bonding versus bridging (Granovetter, 1978; Choi *et al.*, 2011; Hu *et al.*, 2014). Forth, we provide preliminary evidence of the contingent effect of IDV on other cultural dimensions, in this case on LTO, but not the remaining dimensions. All in all, our results underscore the need to consider cultural aspects when selecting targets and developing social media applications that are specifically intended for global audiences and the marketing strategies to attract users to them.

It's interesting to note the non-significant effects of MAS, PDI, UAI, and IND on social media adoption revealed in the present study, some of which contradict the findings from prior studies. For example, Gong *et al.* (2014) found MAS and UAI to be significant predictors for social media adoption. One possible explanation is that the current study embraced far more countries than the earlier study, potentially making it more representative of global social media adoption tendencies. Another explanation concerning the impact of MAS is that as more people have adopted social media, the user base has grown to be more representative of the overall global population, and gaps in gender differences may have become less apparent (Pew Research Center, 2019). Although individuals from masculine versus feminine cultures may turn to social media for different purposes, the adoption of social media may be more a function of it simply being an additional communications tool rather than being regarded as means of expressing achievement/material success or enhancing the quality of life.

Within the context of social media, uncertainty avoidance is increasingly seen as being related to online security and privacy. With the phenomenal growth of ICT in recent years and enhanced privacy offered at various levels by social media platforms, users' concerns may have been lessened to a great extent. The non-significant impact of this cultural dimension might also be explained by the so-called "privacy paradox" (Chamorro-Premuzic & Nahai, 2017) in that individuals may be making simple risk-reward assessments, concluding that the perceived benefits of using free sites, coupled with enhanced control over disclosing personal information, overshadow the perceived risks.

Managerial Implications

From a managerial point of view, one implication is that while cultural factors are germane, not all of them need to be considered when evaluating and selecting targets, as well as determining positioning and the marketing strategies to employ. Our finding of the significant effect of individualism-collectivism provides additional justification to concentrate on this cultural dimension since our study builds on previous studies that showed significant results for this dimension as a main effect. However, our finding of a significant curvilinear effect is indicative of more complex social processes taking place. Moreover, our findings also provide evidence that social media adoption is not influenced by the remaining cultural dimensions in their own right or moderated by IDV. The exception to this was long-term orientation, whose effect was conditioned on individualism-collectivism. Taken together, this suggests that marketers engaging in social media strategies need to employ more nuanced approaches.

Another implication suggested by our results is that marketers should make discriminating use of culturally sensitive themes when engaging in social media marketing. The extent to which social media marketing strategies and tactics align with a culture may be an important determinant of the relative success or failure of those efforts in a foreign country. For example, given the significance of individualism-collectivism as a main effect and quadratic, different promotional themes might be employed (Choi *et al.*, 2011; Valencia, 2011). In more individualistic cultures, themes emphasizing bridging, or the enhancement of information mobility and the ability to interact with a larger (weak tie) network of people may be more appropriate. In more collectivist cultures, bonding can be stressed as a means of sustaining social capital that is built based on strong ties that provide emotional support and a sense of belonging between members in one's social network.

Cultural positioning cues might also be used when designing and promoting apps. For example, when targeting users in a collectivist society, application interfaces could emphasize features that facilitate the ability to network with strong tie others on the mobile platform and have content that highlights the ability to collaborate with these others using the mobile application.

Limitations and Directions for Future Research

We recognize several limitations to this study. First is the use of secondary country-level data obtained from different sources, which has been criticized for being inconsistent and unreliable (Yeniyurt & Townsend, 2003). Second is the use of aggregated country-level data at a single point, which may not fully capture what might be considerable variations of behavior by individuals or ethnic subgroups within a country (Srite & Karahanna, 2006; Khastar *et al.*, 2011). Third, we only employed main effects, a

single quadratic term, and individualism-collectivism as the moderator of other cultural dimensions, so we were not able to address whether the remaining cultural dimensions operate independently of one another or in a contingent fashion to enhance or retard the adoption of mobile social media in particular countries.

This research can be extended by involving parallel studies across several nations representing different spectrums of individualism-collectivism to examine the size, composition, and interaction patterns of persons' social media networks and using a longitudinal design and time-series data available from credible sources to enhance generalizability. These studies could also incorporate demographic questions and measures of espoused cultural values to enable subgroup analyses. Other potentially interesting research could explore whether these cultural dimensions may serve as moderators of demographic, economic, or technological factors in social media adoption.

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Appendix A: Data Table

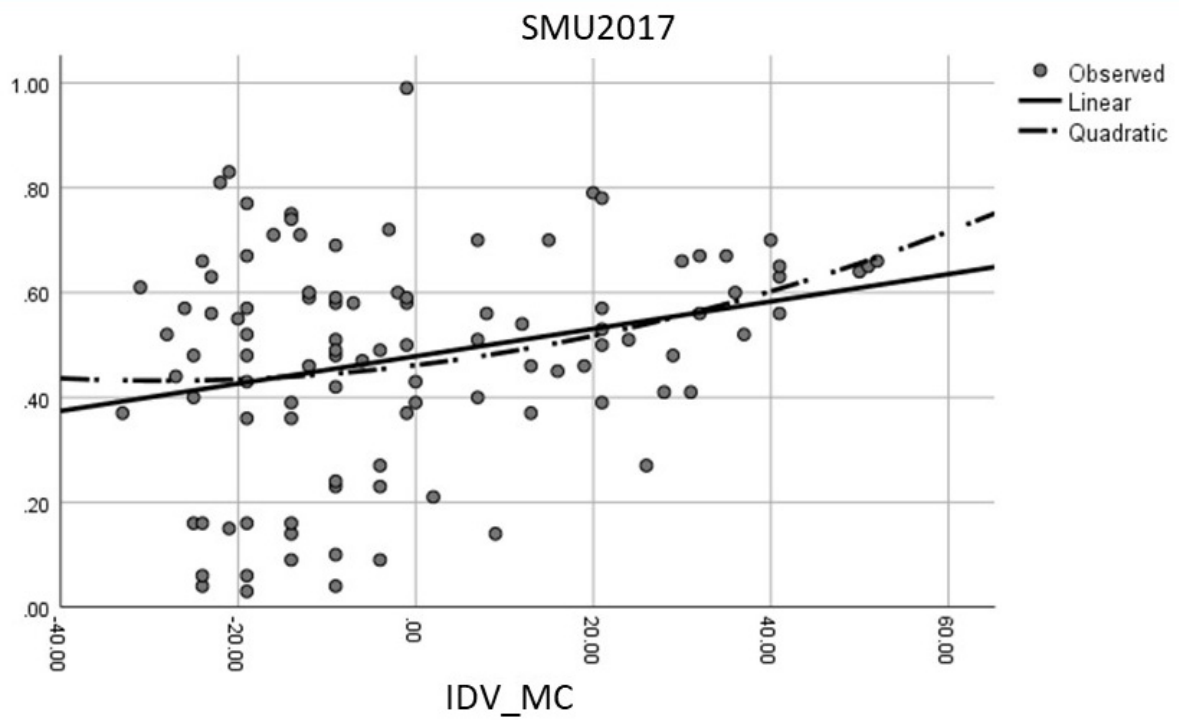
Sample Statistics and Descriptive Statistics before Mean Centering											
	Dependent Variable	Control Variables				Substantive Variables					
COUNTRY	SMU	URBAN	LITERACY	GDPppp	IPTR	IDV	MAS	PDI	UAI	LTO	IND
Albania	0.52	0.59	98.00	36.01	0.63	20	80	90	70	61	15
Angola	0.15	0.45	66.00	193.60	0.23	18	20	83	60	15	83
Argentina	0.70	0.92	99.00	922.10	0.79	46	56	49	86	20	62
Australia	0.65	0.90	99.00	1,248.00	0.87	90	61	36	51	21	71
Austria	0.45	0.66	99.00	441.00	0.84	55	79	11	70	60	63
Bangladesh	0.16	0.35	74.00	690.30	0.39	20	55	80	60	47	20
Belgium	0.60	0.98	99.00	529.20	0.88	75	54	65	94	82	57
Bhutan	0.37	0.40	67.00	7.21	0.40	52	32	94	28		
Brazil	0.58	0.86	93.00	3,248.00	0.66	38	49	69	76	44	59
Bulgaria	0.51	0.74	98.00	153.50	0.59	30	40	70	85	69	16
Burkina Faso	0.04	0.31	41.00	35.85	0.11	15	50	70	55	27	18
Canada	0.63	0.82	99.00	1,774.00	0.91	80	52	39	48	36	68
Cape Verde	0.43	0.67	87.00	3.78	0.43	20	15	75	40	12	83
Chile	0.71	0.90	96.00	452.10	0.77	23	28	63	86	31	68
China	0.57	0.57	97.00	25,360.00	0.53	20	66	80	30	87	24
Colombia	0.57	0.77	95.00	711.60	0.58	13	64	67	80	13	83
Costa Rica	0.66	0.78	98.00	83.94	0.87	15	21	35	86		
Croatia	0.47	0.59	99.00	102.10	0.75	33	40	73	80	58	33
Czech Republic	0.46	0.73	99.00	375.90	0.88	58	57	57	74	70	29
Denmark	0.67	0.88	99.00	287.80	0.96	74	16	18	23	35	70
Dominican Republic	0.48	0.80	94.00	173.00	0.57	30	65	65	45	13	54
Ecuador	0.61	0.64	93.00	193.00	0.82	8	63	78	67		
Egypt	0.37	0.43	71.00	1,204.00	0.37	38	53	80	68	7	4
El Salvador	0.55	0.67	88.00	51.17	0.55	19	40	66	94	20	89
Estonia	0.50	0.67	100.00	41.65	0.92	60	30	40	60	82	16
Ethiopia	0.03	0.20	52.00	200.60	0.12	20	65	70	55		
Fiji	0.48	0.54	99.00	8.63	0.48	14	46	78	48		
Finland	0.51	0.84	99.00	244.90	0.93	63	26	33	59	38	57
France	0.56	0.80	99.00	2,856.00	0.88	71	43	68	86	63	48
Germany	0.41	0.76	99.00	4,199.00	0.89	67	66	35	65	83	40
Ghana	0.16	0.55	79.00	134.00	0.28	15	40	80	65	4	72
Greece	0.49	0.78	97.00	299.30	0.67	35	57	60	100	45	50
Guatemala	0.37	0.52	81.00	138.10	0.37	6	37	95	99		
Honduras	0.36	0.56	87.00	46.30	0.36	20	40	80	50		
Hong Kong	0.75	1.00	99.00	480.50	0.85	25	57	68	29	61	17
Hungary	0.56	0.72	99.00	289.60	0.80	80	88	46	82	58	31

Iceland	0.78	0.94	99.00	18.18	0.98	60	10	30	50	28	67
India	0.14	0.33	74.00	9,474.00	0.35	48	56	77	40	51	26
Indonesia	0.40	0.55	96.00	3,250.00	0.51	14	46	78	48	62	38
Iran	0.21	0.69	86.00	1,640.00	0.70	41	43	58	59	14	40
Iraq	0.42	0.70	50.00	649.30	0.42	30	70	95	85	25	17
Israel	0.70	0.92	92.00	317.10	0.79	54	47	13	81	38	
Italy	0.52	0.69	99.00	2,317.00	0.66	76	70	50	75	61	30
Jamaica	0.43	0.55	88.00	26.06	0.56	39	68	45	13		
Japan	0.51	0.94	99.00	5,443.00	0.93	46	95	54	92	88	42
Jordan	0.69	0.84	98.00	89.00	0.73	30	45	70	65	16	43
Kenya	0.14	0.26	82.00	163.70	0.67	25	60	70	50		
Kuwait	0.74	0.98	96.00	289.70	0.82	25	40	90	80		
Latvia	0.41	0.67	100.00	54.02	0.84	70	9	44	63	69	13
Lebanon	0.58	0.88	95.00	88.25	0.76	30	45	70	65	16	43
Libya	0.50	0.79	86.00	61.97	0.50	38	52	80	68	23	34
Lithuania	0.53	0.67	100.00	91.47	0.84	60	19	42	65	82	16
Luxembourg	0.57	0.91	99.00	62.11	0.97	60	50	40	70	64	56
Malawi	0.04	0.17	66.00	22.42	0.09	30	40	70	50		
Malaysia	0.71	0.76	94.00	933.30	0.71	26	50	104	36	41	57
Malta	0.79	0.96	95.00	19.26	0.80	59	47	56	96	47	66
Mexico	0.59	0.80	95.00	2,463.00	0.59	30	69	81	82	24	97
Morocco	0.40	0.61	74.00	298.60	0.58	46	53	70	68	14	25
Mozambique	0.06	0.33	61.00	37.09	0.09	15	38	85	44	11	80
Namibia	0.23	0.48	91.00	26.60	0.23	30	40	65	45	35	
Nepal	0.24	0.19	68.00	79.19	0.49	30	40	65	40		
Netherlands	0.65	0.91	99.00	924.40	0.95	80	14	38	53	67	68
New Zealand	0.70	0.86	99.00	189.00	0.89	79	58	22	49	30	
Nigeria	0.10	0.49	62.00	1,121.00	0.51	30	60	80	55	13	84
Norway	0.66	0.81	99.00	381.20	0.97	69	8	31	50	35	55
Pakistan	0.16	0.39	59.00	1,061.00	0.18	14	50	55	70	50	-
Panama	0.52	0.67	95.00	104.10	0.70	11	44	95	86		
Peru	0.63	0.79	94.00	430.30	0.63	16	42	64	87	25	46
Philippines	0.58	0.44	98.00	877.20	0.58	32	64	94	44	27	42
Poland	0.39	0.61	99.00	1,126.00	0.72	60	64	68	93	38	29
Portugal	0.59	0.64	96.00	314.10	0.70	27	31	63	99	28	33
Puerto Rico	0.60	0.94	92.00	130.00	0.83	27	56	68	38	19	99
Romania	0.49	0.55	99.00	483.40	0.58	30	42	90	90	52	20
Russia	0.39	0.74	100.00	4,016.00	0.73	39	36	93	95	81	20
Saudi Arabia	0.59	0.83	95.00	1,775.00	0.70	38	53	80	68	36	52
Senegal	0.16	0.44	52.00	54.80	0.46	25	45	70	55	25	
Serbia	0.39	0.56	98.00	105.70	0.65	25	43	86	92	52	28

Sierra Leone	0.06	0.41	43.00	11.55	0.06	20	40	40	50		
Singapore	0.77	1.00	97.00	528.10	0.82	20	48	74	8	72	46
Slovakia	0.46	0.53	99.00	179.70	0.85	52	100	100	51	77	28
Slovenia	0.46	0.50	100.00	71.23	0.73	27	19	71	88	49	48
South Africa	0.27	0.66	87.00	767.20	0.52	65	63	49	49	34	63
South Korea	0.83	0.92	98.00	2,035.00	0.90	18	39	60	85	100	29
Spain	0.54	0.80	98.00	1,778.00	0.82	51	42	57	86	48	44
Sri Lanka	0.23	0.18	92.00	275.80	0.30	35	10	80	45	45	
Suriname	0.56	0.66	94.00	8.69	0.56	47	37	85	92		
Sweden	0.67	0.86	99.00	518.00	0.93	71	5	31	29	53	78
Switzerland	0.48	0.74	99.00	523.10	0.88	68	70	34	58	74	66
Syria	0.27	0.56	81.00	50.28	0.30	35	52	80	60	30	
Taiwan	0.81	0.78	96.00	1,189.00	0.88	17	45	58	69	87	
Tanzania	0.09	0.27	78.00	162.50	0.14	25	40	70	50	34	38
Thailand	0.67	0.52	93.00	1,236.00	0.67	20	34	64	64	32	45
Trinidad and Tobago	0.56	0.08	99.00	42.85	0.69	16	58	47	55	13	80
Turkey	0.60	0.74	96.00	2,186.00	0.60	37	45	66	85	46	49
U.S.A.	0.66	0.82	99.00	19,490.00	0.88	91	62	40	46	26	68
Ukraine	0.36	0.70	100.00	369.60	0.49	25	27	92	95	55	18
United Arab Emirates	0.99	0.86	90.00	696.00	0.99	38	53	80	68	23	34
United Kingdom	0.64	0.83	99.00	2,925.00	0.92	89	66	35	35	51	69
Uruguay	0.72	0.96	99.00	78.16	0.72	36	38	61	99	26	53
Venezuela	0.44	0.89	97.00	381.60	0.62	12	73	81	76	16	100
Vietnam	0.48	0.34	95.00	648.70	0.53	20	40	70	30	57	35
Zambia	0.09	0.42	87.00	68.93	0.21	35	40	60	50	30	42
Mean	0.48	0.66	89.92	1,220.04	0.64	38.73	47.15	64.22	64.03	42.84	47.51
Standard Deviation	0.21	0.22	13.99	3,321.72	0.24	21.68	18.38	20.47	21.19	23.22	23.74
n	102	102	102	102	102	102	102	102	102	87	80

Secondary Data Sources for Variables	
Source	Variables
(Hofstede Insights, 2019);	Index values for each cultural dimension --IDV (Individualism-Collectivism), MAS (Masculinity-Femininity), PDI (Power Distance), AUI, LTO (Long Term Orientation, IND (Indulgence-Restraint)
We Are Social's 'Digital in 2017 Yearbook' (Kemp, 2017)	Social Media Penetration Level (SMU2017), Internet Penetration Level (ITPR2017)
CIA World Factbook (CIA, 2016)	Urban Population Percentage (URBAN)
World Bank Group (2019) & World Population Review (2019)	Literacy Rates (LITERACY)

Appendix B: Linear and Quadratic Curve Estimates



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Impact of Neuromarketing Applications on Consumers

Surabhi Singh

Abstract

Purpose – The impact of Neuromarketing for the businesses and the country is relevant. Its implicit and automatic processes lead to the consumer decision-making process, and it reveals the hidden information about the behavior of the consumer. The study proposed to research the impact of advertising inputs on consumer minds in online retailing. The further aim is to examine the role of gaze points, fixation counts, heat maps, and emotions of consumers in response to the stimuli of advertising campaigns. The advertising campaign acts as the stimulus and the consumer shows the response to it.

Method – The paper employs a stimulus-based instrument for measuring the impact of Neuromarketing on a consumer in response to the advertising inputs of online retailers.

Findings – The finding suggests that Neuromarketing tools provide insights into measuring the effectiveness of advertising campaigns in making an impact on the consumers in online retailing.

Limitations and Implications – The study limits itself to the use of eye-tracking, mouse tracking, and emotion measurement. The other tools like brain imaging or EEG, FMI, Positron Emission Tomography (PET), ECG, EMG could not be employed owing to the high costs involved.

Implications – The researchers may take up further studies into the impact of Neuromarketing on other marketing inputs like the product, price, and distribution. The results would enhance the existing knowledge of Neuromarketing's effect on the advertising inputs used by online retailers.

Originality – The study is the first to examine Neuromarketing applications on the online consumer.

Keywords: neuroscience, consumer, retailing, Neuromarketing, online shopping.

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Introduction

There have been vast works of literature on customer perception and consumer attitude, but the study of neuroscience is complicated and extensive. Neuroscience helps to understand those hidden elements of the decision process. The enhanced use of Neuromarketing techniques for the evaluation of customer preferences and decision-making processes are advantageous for customers and marketers. More than 90 % of the information is processed subconsciously in the human brain (Zurawicki, 2010). Neuromarketing and consumer neuroscience research reveals reality better than traditional methods of analysis based on questionnaires and interviews (Falk *et al.*, 2012). Shiv and Yoon (2012) studied on some areas in which neuroscience contributes to providing opportunities and guidelines to facilitate theoretical development. The study also assisted new empirical tests of standard unsubstantiated claims.

Further, this explained the variations among the groups of consumers; and new techniques in consideration of physiological aspects and the biological factors, including hormones and genes, on consumer preferences and decisions. The significance of Neuromarketing has grown considerably since its origin in 2002. The spread of the same amongst companies, marketers, and advertisers are enormous (Morin, 2011).

Neuromarketing cannot compensate for traditional approaches; the advanced tools, i.e., fMRI (functional magnetic resonance imaging), will upgrade the productivity of marketing strategies (Huettel *et al.*, 2009). The impact of Neuromarketing for companies and society is significant because there is potential to discover implicit and automatic processes that decide the consumer decision-making process, and that it will reveal secret information about consumer behavior. This was not possible by using traditional methods (Tusche *et al.*, 2010). The landscape of retail is changed considerably, and the market's evolution presents numerous opportunities for all online retailers. The online retailers identify the new purchasing patterns with consumer neuroscience.

The role of emotions in online retail environments is looked to exploit the opportunities and challenges of the modern consumer experience. The leaders of various brands explored the latest developments within retail. The researcher examined the human brain complications and the way of changing the purchase process. The retailers may be able to equip themselves to address better consumer needs, given the evolving, complex e-commerce and traditional brick and mortar environment (Marci, 2008). The online retailers adjust their prices in response to the price change of the competitors. The steps in the consumer neuroscience model of branding are representation, attention, predicted value, experienced value, remembered importance, and learning (Plassmann *et al.*, 2015).

Personal relevance and emotional engagement are essential. Retailers consider the entire path to purchase and understand how best to influence consumers along their buying journey. It is crucial to create an experience for shoppers so that emotional responses get generated & and facilitate the rewards process to increase customer repurchase. The researcher has described three critical points within the shopper journey. In retail, marketing communications, and word of mouth experiences help retailers make a connection and generate an emotional response with consumers that get stored for future use. In retail, the purchase becomes a memory for the customers. In post-tail, consumers develop the mind with the product in a fulfillment experience. During the post-tail experience, buyers also act as advocates, further setting up future buyers and reinforcing their relationship to the brand, product, or service.

The digital world is higher than ever, with more distractions as platforms and content proliferate. Each digital environment offers its challenges from page layout to product visualization to integrating recommendations and reviews – emotion matters in any situation. The study aims to explore the various Neuromarketing tools for online retailing.

Literature Review

Neuromarketing is a new field in marketing research. The area is based on the study of consumers' senses, cognitive, and affective responses to marketing stimuli. The human brain has a network of one hundred billion neurons. Nemorin (2017) stated in the research that the Consumer responds to the advertising stimuli. Currently, it lacks a thorough command of how the brain operates and how a brain's complex operation produces highly specific human behavior (Donoghue, 2015). The search to gain a broad authority in understanding human mental behavior is going on. This has led to the synergy between the biological and social sciences. These collaborative research efforts of the natural and social scientists have helped in fostering significant advances along various fronts of social, behavioral, physiological, and managerial sciences.

The insights on a human decision that leads to individual choices were studied in the paper (Shiv & Yoon, 2012). The use of functional magnetic resonance imaging by the researchers to measure changes in activity in parts of the brain. The use of electroencephalography and Steady-state topography are in the measurement of specific regional spectra of the brain. The response and sensors are in measuring the changes in the physiological state or biometrics. They also study the heart rate and respiratory rate, galvanic skin response, and learn why consumers decide and which brain areas are responsible.

Neuromarketing research is spreading rapidly in both the academic and business sectors. Individual companies with large-scale ambitions need to predict consumer

behavior. They invest in their laboratories, science personnel, or partnerships with academia. Consumer researchers certainly need more insights into how our senses help us in creating decisions for product choice; for example, what is the best scent to be sprayed in the retail store targeted at senior consumers? How can the consumer brain process the taste of the food get served in an airplane flying at the height of 30,000 ft?

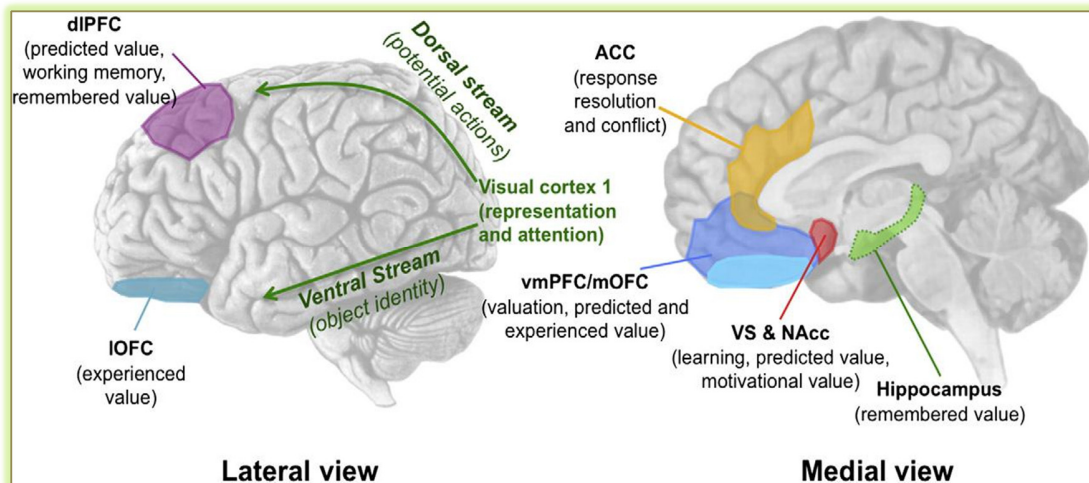


Figure 1: Anatomy of Brain (Prepared by the author)

Neuromarketing is an emerging area in marketing research that studies consumers' minds in response to marketing stimuli. The human brain is a well-developed network of one hundred billion neurons, and there is less research in the deep understanding of how the brain operates and how a brain's complex operation produces the highly specific human behavior (Donoghue, 2015). In recent times, there has been a grand quest to gain a more in-depth understanding of social cognition and behavior.

The knowledge led to the emergence of synergy between the biological and social sciences. These collaborative research efforts of the natural and social scientists have helped in fostering significant advances along various fronts of social, behavioral, physiological, and managerial sciences. Neuroeconomics and decision neurosciences have provided valuable theoretical insights about human decision making that account for both individual choices and the neural mechanism underlying those choices (Shiv & Yoon, 2012). Researchers use technologies such as fMRI, electroencephalography, and Steady-state topography to track changes in parts of the brain.

The tools enable us to understand the consumers in decision making and areas of brain responsibility. Neuromarketing research is expanding in both the academic and business sectors. FMRI uses the electromagnetic properties of blood to depict brain

function. Individual companies, particularly those with large-scale ambitions to predict consumer behavior, have invested in their laboratories, science personnel, and partnerships with academia. Consumer researchers certainly need more insights into how our senses help us in creating decisions for product choice. The best scent sprayed in the retail store is targeted at senior consumers. In the same way, consumers' brains process the taste of food getting served in an airplane flying at the height of 30,000 ft.

The brain has four regions: occipital, temporal, parietal, frontal lobes. The occipital lobe handles visual cues; the temporal lobe processes object recognition, object memory, and spatial movements like hearing, etc.; the parietal lobe has sensory strips (spatial change like actions); the frontal lobe, the prefrontal cortex, helps in working memory, preference, and decision making. The display of the product for 4 seconds led to strong activation in Nucleus Accumbens, the price for 4 seconds, the insula got activated (related to emotional responses), the medial prefrontal cortex got activated on getting the choice of yes/no. Learning takes place in Ventral Stratum in the left part of the brain. There is a relation between sense (smell) and emotions in the brain EEG is the recording of electric signals using fragrance. Figure 1 exhibits the anatomy of the human brain.

The olfactory function, the smell, can impact the consumer buying in-retail outlet. Emotions are nonconscious, and feelings are conscious. Happiness is a feeling; joy is an emotion. The lower-level responses are called Emotions. They occur in the subcortical regions and neocortex of the brain. The neocortex is ventromedial prefrontal cortices that deal with conscious thoughts, reasoning, and decision making.

The responses create biochemical and electrical reactions in the body that alter its physical state - emotions are neurological reactions to an emotional stimulus. The amygdala plays a crucial role in arousing emotions. It controls the release of neurotransmitters that are important for memory consolidation, which is why loving memory is more reliable and long-lasting. Feelings are physical and mechanical, instantly prompting bodily reactions to threat, reward, and everything in between. The bodily responses can be measured objectively by pupil dilation (eye-tracking), skin conductance (GSR), brain activity (EEG, fMRI), heart rate (ECG), and facial expressions.

The subcortical parts of the brain initiate emotions and feelings. An impression is the side product of the mind perceiving an emotion and assigning a specific meaning to it. Neuromarketing aims to better learn the impact of marketing stimuli after observing and interpreting human emotions. The rationale behind Neuromarketing is that rational decision making is not so much a conscious process and the idea of the "homo economics," basis for the majority of economic models around, is outdated. Instead, there is more and more proof that the buying intention of products and services is an emotional process as the brain is involved in decision making.

Neuromarketing studies are made for studying the relevant emotions for human decision making and use this knowledge to make marketing more effective. The culture is applied in product design, enhancing promotions and advertising, pricing, store design, and improving the consumer experience as a whole. The traditional methodology is unable to replicate or model what the brain does, how it operates, and what it perceives around itself (Pradeep, 2010). In contrast, Neurological tests reach a rigorous degree of scientific and actionable results for various reasons. First, it requires smaller samples and that despite the differences that we find between the brain of a man and a woman, and, between children compared to an adult, our minds are much more alike than different (Pradeep, 2010). The field lies at the intersection of neuroeconomics, neuroscience, consumer neuroscience, and cognitive psychology.

Companies like Google, CBS, Frito-Lay, and A & E Television, amongst others, have used Neuromarketing research services in knowing the consumer thoughts on their advertisements or products. Ale Smidts gave the term Neuromarketing in 2002 (Nyoni and Bonga, 2017). Dr. Gemma Calvert of Neurosense Ltd. and Prof. Gerald Zaltman of Harvard Business School established Neuromarketing companies in the 1990s (Levallois et. al., 2019). Unilever's Consumer Research Exploratory Fund (CREF) also published white papers on the potential applications of Neuromarketing (Salati *et al.*, 2018).

Neuromarketing aims to comprehend marketing stimuli by observing and interpreting human emotions. The rationale behind Neuromarketing is that rational decision making is not so much a conscious process, and the idea of the majority of economic models is outdated. Instead, there is more and more proof that the willingness to buy products and services is an emotional process, and the brain uses a lot of short cuts to accelerate the decision-making process. Neuromarketing studies are those where emotions are relevant in human decision making and use the knowledge to make marketing more effective. The philosophy is applied in product design, enhancing promotions and advertising, pricing, store design, and improving the consumer experience as a whole.

Electroencephalogram (EEG)

The machine is beneficial for users in providing information about brain activity. The device is portable and affordable. The method helps in analyzing the brain's electrical activity and uses a headband or helmet with small sensors placed on the scalp. The technique detects changes in the electrical currents of brain waves. The applications make the distinction in EEGs. The uses of EEGs are in scientific research for Neuromarketing investigation, EEG is beneficial. It can evaluate the value of a marketing stimulus by obtaining a series of metrics such as attention, engagement, affective valence, and memorization.

Functional Magnetic Resonance (fMRI)

Functional magnetic resonance (fMRI) is employed to explore the brain processes by the changes linked with the blood flow. The method of fMRI makes the participants lie in a bed with their heads surrounded by a scanner and track the variations of blood oxygenation in the brain, which relates to neuronal activity (Bercea, 2012; Zurawicki, 2010). A tridimensional view of the mind can distinguish each internal cortical structure and its operation. In other words, small and profound structures of the brain require investigation. The high resolution presents a shallow temporal resolution. Also, it is costly, restrictive, intrusive (the patient must lie down and be still inside a machine), and immobile. That's why fMRI in Neuromarketing is not very common.

Magnetoencephalography (MEG in Neuromarketing)

The technique analyzes and registers magnetic activity in the brain with a helmet that contains 100-300 sensors. The tool detects changes in magnetic fields and gets induced by the electrical activity of the brain (Morin, 2011; Plassmann *et al.*, 2007a). MEG offers an excellent temporal resolution to detect slight changes in brain activity (Bercea, 2012; Morin, 2011). The installation costs are much higher than EEG. It is also not portable. Therefore studies can only be carried out in laboratory settings.

Positron-emission tomography (PET in Neuromarketing)

The tool is an invasive technique meant to measure the metabolic activity of the human body. It detects and analyzes the tridimensional distribution of an ultra-short life. Radiopharmaceutical gets injected into the body. The identification of changes in chemical composition and the flow of fluid is in intense brain structure. This is an invasive method with radioactive agents and exposes subjects to radiation, its application to whole issues in non-clinical studies (such as Neuromarketing studies) is restricted. Also, it is expensive and presents a lower temporal resolution.

Steady-State Topography (SST)

The technique measures the variation in the EEG activity of the subject and as exposed to visual stimuli. The temporal resolution is made through monitoring of these changes in brain activity with high tolerance to noise during long periods. Such devised uses visual stimuli (Silberstein, 1992).

Electrocardiogram (ECG)

The technique measures the electrical activity of the heart. The sensors get placed in the skin. The ECG enables information to be collected in real-time on the emotional state of participants in response to marketing stimuli. The technique is affordable and convenient.

Galvanic Skin Response (GSR)

The technology that evaluates the galvanic response (GSR) or minor changes in skin perspiration is called a galvanometer. The skin is a better electrical conductor when there is an increase in the activity of the endocrine glands. The response is a result of exposure to a marketing stimulus (Ohme *et al.*, 2011; Venkatraman *et al.*, 2014).

The popular technologies used in Neuromarketing research include sensors like galvanometer or GSR and an ECG. Also, participants present a high acceptance of the technology. The tools enable in measuring the activation of emotions in a specific interval and rotate between a state of calmness and a state of excitement (emotional activation). The stimulus leads to an immediate increase in emotional activation (psychological impact).

Eye Tracking

The measurement of brain activity becomes complex, but eye-tracking studies the mental behavior of the Consumer. The stimuli make the changes in the subject's pupil dilation. Laubrock *et al.* (2007) studies on eye-tracking and helps in the measurement of the attention focus. Zurawicki (2010) explores the two types of eye movements, namely fixations and saccades. The eye movement is obsession is when the eye movement is fixed to one position, and saccade is switching of eyes. The scan path is the sequence of fixations and saccades, and they enable the visual perception analysis, mental intent, and interest.

O'Connel *et al.* (2011) confirm that the accuracy in eye-tracking is more than the self-report. The study of Zurawicki (2010) leads to findings that eye tracking can be employed in marketing stimuli and human-machine interactions research. The evaluation of website design and browsing structure can also be made. O'Connel *et al.* (2011) claim that eye tracking can be useful in advertisements development and

assessment, concept testing, logo and package design, online usability, and micro-site development or in-store marketing.

The value of a strong understanding of the display elements provides the retailers in the creation of more effective and efficient display signage content. The product information features more visibly than the price (Huddleston *et al.*, 2015). A complete eye tracker system includes software that easily allows producing visualizations of eye-tracking data. The most used displays are Heat Map and Gaze Plot that highlight where the person looked. This visualization is the eye candy of eye-tracking. These studies are applied in marketing studies to understand consumer visual attention behavior. A stationary eye-tracker is commonly used in controlled or laboratory settings.

Eye-tracker glasses involve the gaze pattern in real surroundings with the lenses that include an infrared camera. Eye-trackers in VR glasses are a new technique that brings real-life situations to the lab by immersing the participant in virtual surroundings. Eye-tracking via webcams uses a webcam and an inexpensive and non-intrusive device. The full forms of eye tracking are in visual fixation, search, eye movement patterns, spatial resolution, excitement, attention, pupil dilation, Testing websites, and user-interface effectiveness.

The further applications are in testing packaging design, testing advertisements and video materials, testing prints and images design, testing how the consumer filters information, determining the hierarchy of perceptions of stimulus material. The retail can make use of eye-tracking for testing shelf layout, testing in-store reactions, and testing product placement.

Facial Expression Analysis

It is a technique used to measure facial expressions that have the advantage of not requiring the sensors. Facial image analysis is a powerful method to convey emotions. They provide insights that vary with emotional valence. According to the famous psychologist and American researcher, Paul Ekman (1997), it is possible to identify through micro facial expressions, seven fundamental or universal emotions. So, accordingly, these emotions maybe 1. Surprise; 2. Sadness. 3. Anger; 4. Fear; 5. Happiness/joy; 6. Disgust; 7. Contempt.

To detect people's emotions through the movement of facial muscles, a company - supported on the study of micro-expressions - made available in the market software that excellently executes this procedure. Facial coding measures and includes the voluntary and involuntary movements of facial muscles, but does not use sensors. The technique is an indirect measurement technology, and the electrical response measurement produced by muscle contraction is not possible. A camera is responsible

for recording the micro facial expressions linked with specific emotional and cognitive states, while participants get exposed to stimuli. The most significant advantage of emotion measurement is that it is an inexpensive and portable technology, and webcam leads to analysis.

Ethics in Neuromarketing Research

As in the last ten years, the evolution of Neuromarketing lead to controversial issues in terms of ethics; the next decade will be decisive in these concerns. There is still much to examine on understanding human decisions, emotions, reasoning, and moral. The Neuromarketing studies should bring stability and standardization in research. Literature reveals that Neuromarketing has often been disregarded by some, in terms of ethics. Neuroethics involve the nature of the tools it uses and the problems it seeks to apply (Levy, 2008).

Its interest ensures that the subjects don't do anything against their will or affecting them physically and also in censoring the use of the information retrieved in unethical or illegal purposes. Ethical issues are like a barrier in the development of Neuromarketing, but they are regulatory mechanisms for the progress of the field.

There is a prime potential benefit of Neuroethics in Neuromarketing and the reason societies and organizations in neuroscience use it. Of course, ethics needs also to be delineated between its limitations and risks. The conditions for consideration are namely responsibility towards subjects participating in studies, responsibility towards consumers, responsibility concerning researchers. Also, Neuromarketing research could serve the society and the environment, promoting a healthy life for the individuals and society and helping consumers find what they want.

The field lies at the intersection of neuroeconomics, neuroscience, consumer neuroscience, and cognitive psychology.

Does advertising bring happiness to the Consumer's mind?

Do online retailers use content to improve customer engagement?

The rationale of the study

The literature review depicts the gaps in the study of the Neuromarketing application's impact on consumers. The literature states that the online retailing environment is influenced by marketing inputs, which as a result, impact the customer response. This work has laid the foundation of detailed research on the consumer response to the advertising input of online retailers. The principles of online marketing can deliver better customer value and retention (Bhattacharya, 2019).

Research Objectives

The study proposed to research the impact of advertising inputs on consumer minds in online retailing. The further aim is to examine the role of gaze points, fixation counts, heat maps, and emotions of consumers in response to the stimulus or advertising campaigns.

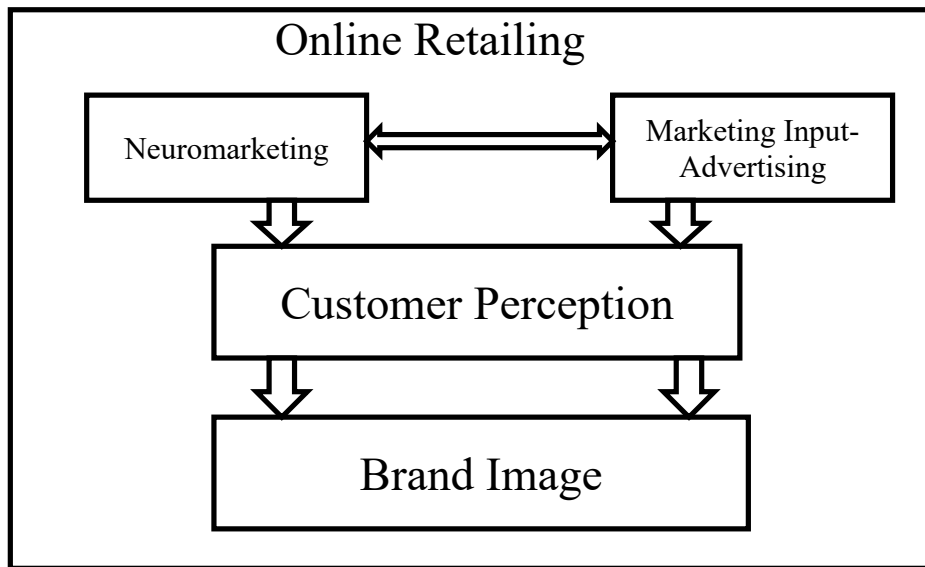


Figure 2: Conceptual Framework of Neuromarketing and advertising in online retailing

Regarding the problem, it is possible to combine discovered findings of previous research and compress the experiences and outcomes of other researchers. The limitation of further studies is not taking place in Neuromarketing as it requires tremendous time and cost exposure. The various images have been taken from the online retailing for explaining the use of Neuromarketing. Figure 2 represents the conceptual framework of this study.

Methodology

The sample size was 25. The empirical research model is based on experimental research. The 11 stimuli and 25 participants led to the development of instruments after taking their consent. Four demographic questions were part of the tool. The study followed the guidelines for ethical aspects like rightful incentives, block hidden

marketing, protection and participation of vulnerable groups, debriefing of participants, disclosure of tools/measurement scales, and accurate communication of the result (Hensel *et al.*, 2016).

They were exposed to the stimuli (5 men and 20 women), all MBA students, and aged between 18 and 60 years being online consumers. The data collection was made through the Eye Tracking device, which was meant to decide on the data. The data collection and analysis tools used for the project are Eye tracking, mouse tracking, and emotion measurement. Classification of the emotional state helps to understand how the subject feels and what he experiences in a specific situation. Rating of the emotional state is applicable for various areas of our life from Neuromarketing, through the retail industry (determining how emotions affect the selection of product and buying behavior).

Tools for Data Collection

The selection of Top online retailers was from China, India, and Taiwan. According to previous researches, small sample sizes are appropriate if the actual effects are genuinely significant enough to be reliably observed in such samples in case of the studies of Neuromarketing. There was the use of Auditory and visual stimuli. The exposure of 11 stimuli with 25 subjects obtained internal validity. The Participants were also be asked before scanning if they take medication or have brain injuries in order not to bias the data.

Data Analysis

The Eye Tracking devices measure and collect data on the visualization of specific stimuli. Heat or attention maps show the number of fixations participants made in a particular part of the image. Moreover, heat maps are indicators of a participant's focus, with red labeled areas suggest a high number of gaze points followed by yellow and green. On a heat map, the red color denotes the highest number of fixations or the longest time, and green means the least, with varying levels in between. An area with no shade on a heat map shows that the participants did not fixate on that particular area of the stimuli. Visualization can be used only for analyzing data from neuro lab tests. The displays which are applied include Gaze Plot, Heat Map, Opacity Image, and Areas of Interest, Bee Swarm Video, Heat Map Video.

Figure 3 demonstrates the product shelves' fixation data of online retailers. The analysis shows that the count of product shelves eye fixation is highest in Aliexpress (88%). The second highest fixation count is of Alibaba (72%). The third highest fixation count is of other online retailers, namely Amazon, PChome, Flipkart, and Books.com.tw.

The eye-tracking tool has hundreds of metrics; the most used for analysis are fixation duration, dwell time, and several obsessions.

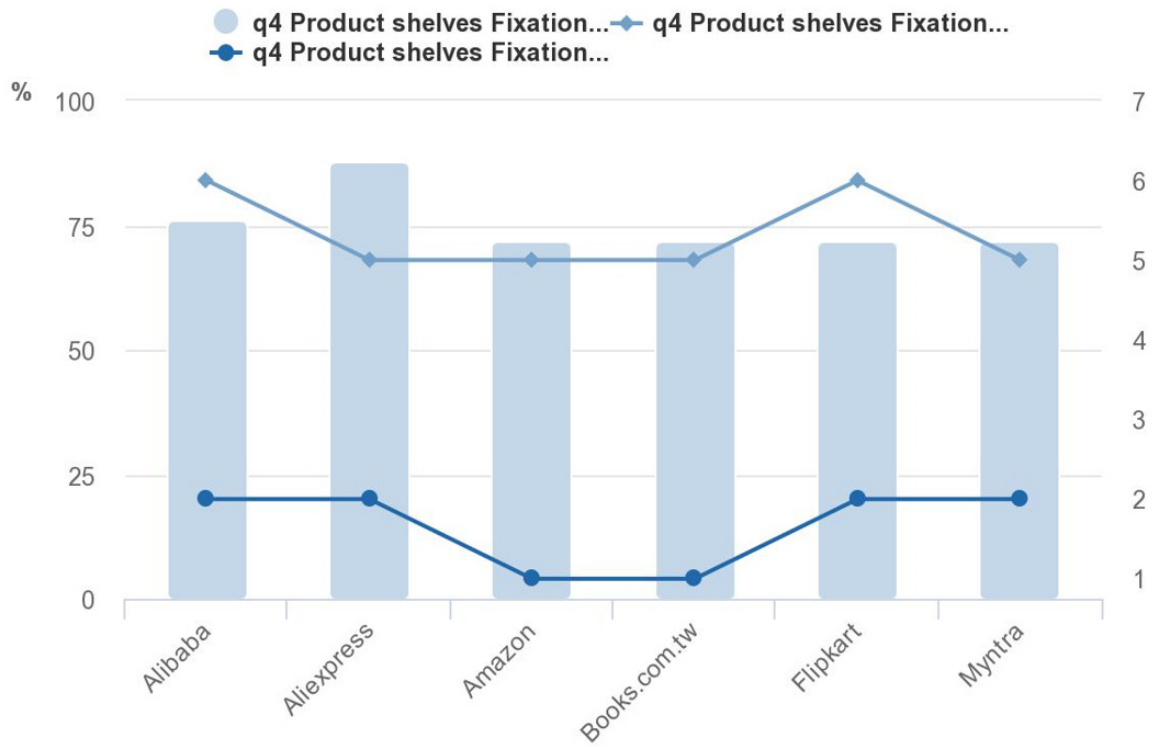


Figure 3: Product Shelves Fixation Data (Prepared by the author)

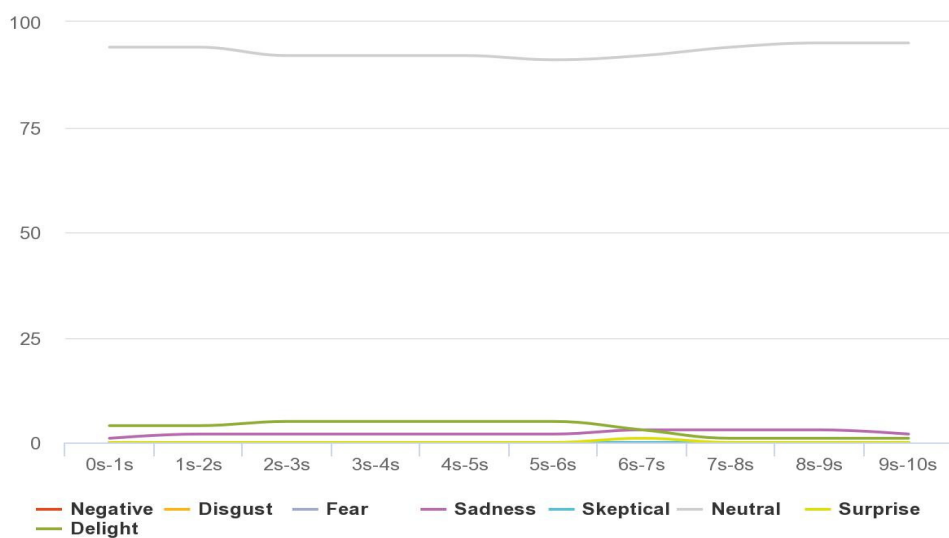


Figure 4: Product Shelves Emotions (Prepared by the author)

Figure 4 represents the emotions created in the face of customers while looking at the product shelves. The emotion attributions stimulated the prefrontal and anterior temporal areas in prior studies (Spunt, Ellsworth, & Adolphs, 2017). The earlier studies indicate the display of fewer emotions owing to the less time the participant spent looking at the shelves. Where there was a more extended time spent, there was also increasing physical interaction with the product and a more magnificent display of mostly negative emotion (Spanjaard & Freeman, 2012).

The customers show the delight in feelings, but the shelves become disengaged gradually, so the online retailers need to plan a more engaging process. The percentage of emotions while looking at product shelves is namely 27% delight and 73% neutral. The enjoyment gradually converted into sadness. A period of neutrality must also be considered in the analysis, since this state reveals, in potential, the absence of an emotional process, when facing a stimulus (Peruzzo, 2013).

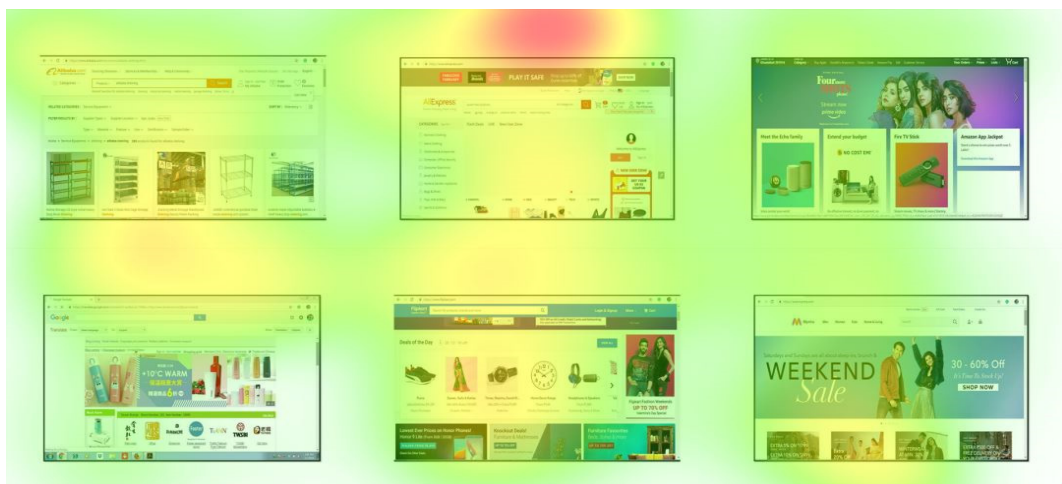


Figure 5: Heat Map of Product Shelves (Prepared by the author)

The red labeled field in Figure 5 indicates the highest gaze points, followed by yellow and green. The heat map of product shelves shows the high, medium, and weak gaze points of respondents on the product shelves of online retailers. The shelves display of online retailers needs to attract and engage customers as the conversion depends on them. The figure states the central top position more engaging, so the shelf display must include the location for essential items.

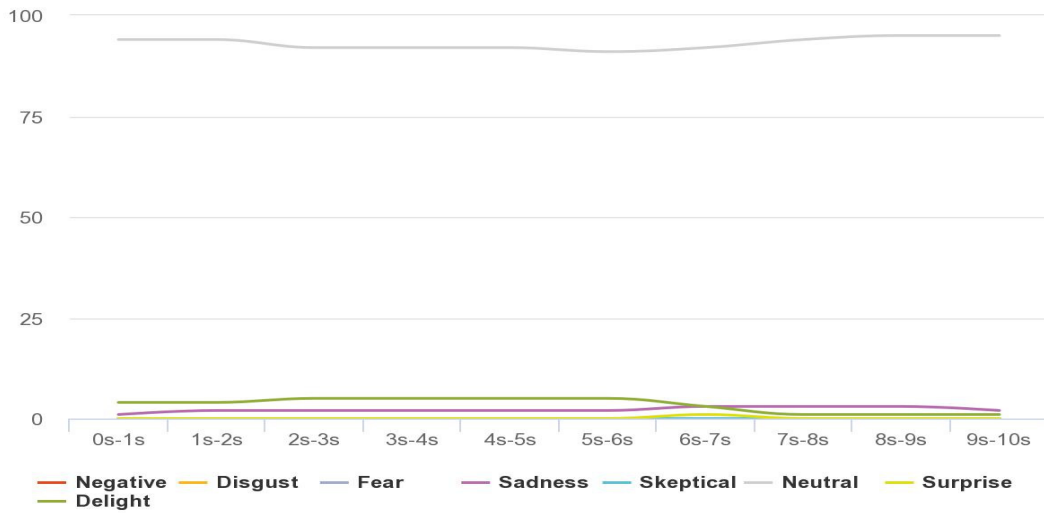


Figure 6: Product Shelves Emotions Timeline (Prepared by the author)

Figure 6 states that the emotions have shown sadness as 2%, and delight as 1%, and neutral is 95%. It means the shelves of online retailers are not engaging. Moreover, Figure 7 shows the screenshots of the intensity of customers’ gazes on the online retailer’s product shelves. The central position in a website displays the maximum attention, so the retailers must place their attractive offers at the center. The gaze plot in Figure 7 also displays that all respondents’ gaze points are at the center top position.

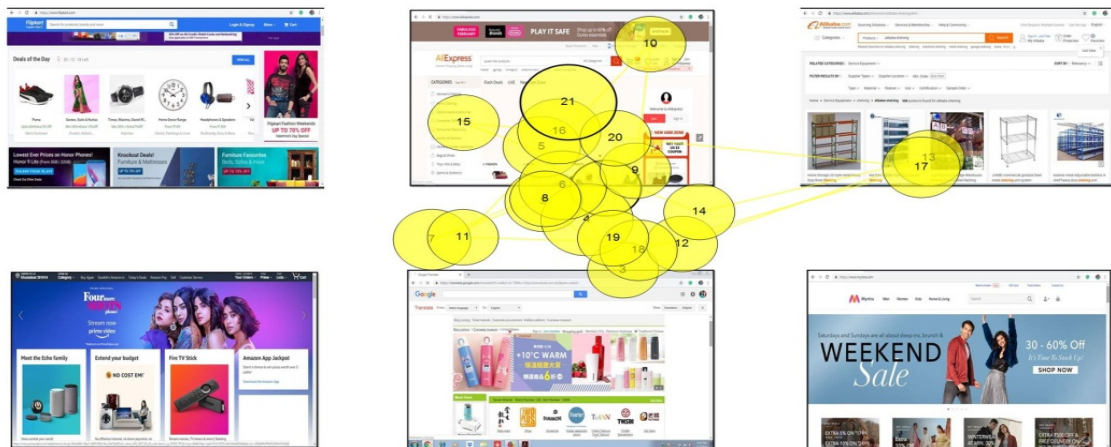


Figure 7: Product Shelves Gaze Plot (prepared by the author)

Discussion

The study indicates that the insights for the advertisement improvement are necessary for influencing the consumer. The engagement of customers in online retailing is essential. The gaze points dictate the importance of using the specific portion of the product shelves for improving the participation of the customers. The study examines the impact of Neuromarketing applications on consumers. The quality of the advertisement is measured by the number of fixations and gaze points by the customers. The paper found variations in the gaze points, fixation counts, heat maps, and emotions of consumers in explaining the impact of Neuromarketing tools on consumer response in online retailing.

Conclusion

The qualitative research technique Neuromarketing provides multiple benefits as compared to traditional marketing approaches, as cited by previous researchers. The Neuromarketing is a discipline that implies the value addition in the research of Marketing and leads the companies to use the result-oriented marketing inputs. The development of Neuromarketing as a scientific principle contributes to higher quality and a better understanding of consumers. The study provides insight into Neuromarketing applications in the advertising on consumers in online retailing. The study may enable the researchers to extend the study on the impact of Neuromarketing on consumer attitude. The study reveals that improved customer perception and brand image growth are the necessary prerequisites for a successful marketer.

Limitations

The tools used in the study have the minimum value, and the budgetary constraint could not make the study on other marketing inputs possible like EEG. The tools like EEG and fMRI is an expensive tool and can help in understanding the other marketing inputs viz product, pricing, and distribution.

Managerial Implications

The study on the impact of Neuromarketing may enable consumers and marketers to notice the underlying differences in profit. The study allows for online retailers to utilize Neuromarketing insights for effective advertising. The online retailers require

introspection in their advertising to increase the overall revenue. Advertising is the technique to persuade the customers in an impactful manner, and such insights can make the marketers take a proactive understanding of the content and visual elements to be employed in the advertising.

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Macroeconomic Determinants of FDI Decisions in the Automotive Industry: Theoretical Foundations and Empirical Evidence

Helmut Birnleitner

Abstract

Purpose – Foreign direct investment (FDI) has seen a tremendous increase over the years. Decision-making concerning FDI puts great pressure on managers due to their complexity and long-term effects on the companies. Macroeconomic factors increase in their importance when companies go international. The external environment is complex and directly influences the activities of business entities and often decides about the future progress of them. The study aims to bring more clarity into the specific macroeconomic factors and their impacts on the manager's decision-making process. Also, intervening factors will be analyzed if they may attract or distract FDI behavior.

Method – Set-up of a new model by separating macroeconomic factors within certain characteristics as well as including potential intervening factors such as incentive schemes and risk/uncertainty as negative and/or positive stimulating factors for FDI decisions.

Findings – The conditioned data show that some macroeconomic factors have strong influences on FDI decisions and often are not considered by the decision-makers as much as they should have been. Incentive schemes for FDI seem to have a strong positive impact on investment decision-makers. Risk/Uncertainty factors have negative impacts.

Limitations – The research was conducted on the German and Austrian automotive industries with industry-specific characteristics. The period of FDI ventures was limited to 10 years.

Implications – The study underlies the perception of FDI decision-makers in the specific business and environmental conditions of the automotive industry and its supplier organizations. Their views are important to consider and represent the results of this work. A vice-versa contemplation on the receiving party of FDIs may result in different findings.

Originality – The study separates different macroeconomic levels concerning FDI motives to set-up a new SEM-model approach. It includes intervening factors to get a holistic view of the macroeconomic environment with potential impact on decision-making.

Keywords: decision-making process, foreign direct investment, macroeconomic factors, internationalization.

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Introduction

The growth of enterprises and expansions to new markets has dramatically accelerated over the last decades (Westerfield, 2004). Companies are more and more forced with different and new upcoming influence factors when expansion to other countries is targeted strategic goal. These factors can occur from the company's structure, strategic goals, and visions (internal factors), these are the so-called microeconomic factors (Varian, 1992). And also the outer environment of a company plays a very important role (Wagner & Disparte, 2016) by entering new markets, new countries, or unknown territories. These factors are defined as the external factors and known as macroeconomic factors (McCarthy, 1975; Porter, 2008). Internationalization and FDI are closely connected. Going international prerequisites a strategic concept (Hax, 1996) when it diversifies its business operations across national borders (Barney, 2002). Companies can organize their international business operations in a wide range with an uncountable number of possibilities and ways. It starts with a simple export of goods until managing a wholly-owned foreign subsidiary. And these options represent different levels of integration (Cheng *et al.*, 2009) into international activities available to companies. When firms become more integrated into international operations, their level of direct investment in foreign markets increases. And this investment is called (Barney, 2002) foreign direct investment (FDI).

This business model became more important and internationalization and globalization are terms that are used commonly in many economic contexts (Garcia-Canal *et al.*, 2018; Adler, 2008). Motivations therefore can be to seek natural resources, to seek markets, to seek efficiency, or to seek strategic assets (UNCTAD, 2007). Barney (2002) states, that competition becomes much more international, even the scope of the company is mainly regional. It tends to increase rivalry, the threat of new entrants, and the threat of substitutes. But also opportunities will occur. Larger markets bring more business opportunities for companies. Enlarging smaller existing markets often is a good

opportunity, proactive motive (Albaum & Duerr, 2008; Hollensen, 2011), or even is the only chance to survive on the market, to gain a higher value to the company. If a company is going to establish a subsidiary abroad, a dominant motive, therefore, is the exploitation of a new market with further potentials for existing products. Other reasons are when existing customers go abroad and want to take their suppliers with them or when the company is driven by the competitors (Gutmann & Kabst, 2000). This is a kind of a fast follower strategy. If the domestic market is saturated by their own company or by competitors, it is often the only opportunity to start transnational activities (Sternad *et al.*, 2013). Further reasons can be that certain important resources are located outside the domestic market. Barney (2002) defined the five most potential sources of economies of scope for firms pursuing international strategies. These are: 1.) to gain access to new customers for current products and/or services. 2.) to gain access to low-cost factors of production. 3.) to develop new core competencies. 4.) to leverage current core competencies in new ways, and 5.) to manage corporate risk.

The limitation of this research work is related to specific requirements and characteristics of the automotive industry and includes effects that are not representative of other branches or markets. This work takes the view from the investor's perspective and relates to macroeconomic influence factors. Geographically it is limited to companies with head offices in Germany and Austria and their employees or entrepreneurs. A time-wise limitation has also been set. Only FDI decisions from the last 10 years before the date of sending out of the electronic survey have been considered in this work.

In the following, research questions have specifically been formulated to get focused answers for this research work.

The main research question is below.

RQ₀: How important are different macroeconomic factors for FDI motives in the automotive industry?

The main research question, RQ₀, should deliver answers about the degree of importance of macroeconomic factors on FDI intentions and motives in the automotive industry. Three different sub-groups of macroeconomic factors allow a more detailed view of the potential power of them to impact FDI decisions.

RQ₁: Which macroeconomic factors have the strongest influence on FDI motives in the German and Austrian automotive industry?

The RQ₁ raises the question of the macroeconomic factors having the strongest influence on FDI decisions. This is going to be analyzed as a direct impact on FDI motives. Many countries establish and offer incentive schemes to foreign investors to attract specific industries which may influence the macroeconomic impact on FDI decisions.

Another impacting variable is the risk and uncertainty factor. This implies, that if target countries (e.g. emerging markets) hold unforeseeable risks for the investors, they may hinder them to enter these markets. This leads to the following research questions, RQ₂ and RQ₃.

RQ₂: *How do FDI incentive schemes impact the macroeconomic factors?*

RQ₃: *How do the macroeconomic factors impact uncertainty/risk and what influence does this have on FDI motives?*

To answer the research questions, the variables need to operationalize and integrate into a new postulated causal model. An SEM-PLS analysis should gain a picture to see if significant effects occur between the variables.

Theoretical Foundations, Hypothesis, and Model

At the beginning of every internationalization venture, there is a general decision upfront to get involved with entering foreign markets (Grünig & Morschett, 2012) and countries. The initiation for such projects can occur from the company itself or directly from the market (Barney, 2002). The decision for going international can have far-reaching consequences, positive as well as negative, for the development of the company. Therefore such a decision-making process should be done carefully and deliberately (Buckley & Ghauri, 2015; Barney, 2002). According to Sternad *et al.* (2013), entrepreneurs and managers who consciously consider exporting goods or developing business activities abroad should think about the reason why the company should do business abroad. They should also consider the additional risks related to internationalization and whether the company can meet the requirements to be active on an international scale in terms of fitness and resources.

To have a clear perception of the motives for going international is so important because of the differences between those motives. Blitzenis *et al.* (2012) define nine different motives of going international of companies: market hunters, strategic market hunters, factor hunters, efficiency hunters, location hunters, exploiting ownership hunters, financial hunters, political reasons, and overcoming imperfections. Dunning and Lundan (2008) see as the main motives of internationalization in resource-orientation, efficiency orientation, and strategic aims to gain competitive advantages. The main motive is seen in the exploitation of new markets (Albaum & Duerr, 2008; Hollensen, 2011). The diversity of the motives easily shows the complexity of such ventures.

Going international always is connected with handling some risks. According to Jahrmann (2010), risks can be divided into the following sub-groups: economic risks, political-legal risks, and market risks. A company has to be aware of them and consider

them for making a decision. All three categories can be split into sub-factors (Jahrmann, 2010):

- Economic risks: exchange rate, inflation rate, credit risk, transport risk, and storage risk.
- Political-legal risks: installation of trade barriers, lack of legal security, capital transfer risks, security risks, corruption, tax risks, risk of misappropriation
- Market risks: qualitative and quantitative market risks, local market risks, temporary market risks, competition risks

The third point about the fitness of being prepared for the international market can be proofed, when the first two questions have been answered positively. This part focuses on the strengths of the company’s product or services as well as its organizational structure. To make use of an existing USP would be an opportunity for going abroad. Delivering Added Values and competitive advantages for the customers (Delgado-Gomez *et al.*, 2004; Peng, 2001) or having access to special resources would be potential success factors. Entering cooperation with partners could be arguments for internationalization strategies. The management of the company has to commit to the internationalization. And the process, time schedule, goals, aims (Sousa *et al.*, 2008) have to be very clear for all members which are affected by this venture. According to Griffin and Pustay (2007) three major factors affecting the FDI decision-making process. And these can be classified into Demand Factors, Supply Factors, and Government Factors as shown in Table 1.

Table 1: Factors influencing FDI decision-making process.

Factors Affecting FDI Decisions		
Supply Factors	Demand Factors	Government Factors
- Production Cost	- Customer Access	- Economic Priorities
- Logistics	- Follow Clients	- Avoidance of Trade Barriers
- Resource Availability	- Follow Rivals	- Economic Development Incentives
- Access to Technology	- Exploitation of Competitive Advantage	

Source: Author’s construction based on Griffin and Pustay (2007).

The most important impact factors for the FDI decision-making process according to Griffin and Pustay (2007), will be extended with factors from Dunning (1977, 1983) and from Ernst and Young (2016), which regularly published new empirical data about the

drivers for FDI decisions. Specifically, these are used for the respective automotive branch.

Demand Factors and Indicators

The market expansion is a strong motive for FDI decisions. Customer Access, Following Clients, Following Rivals, Exploitation of Competitive Advantage and Customer Mobility (Griffin & Pustay, 2007) are the main drivers. Gaining access to customers often requires physical presence in their markets to be able to serve them properly. German and Austrian engineering is a good example of a high-quality characteristic. The perception of buyers can enable firms to produce the goods in the country with the highest quality reputation and therefore be able to get higher prices. Companies with a high reputation and a valuable trademark or brand name or even technology may choose to operate in foreign countries (with subsidiaries) rather than export to them to gain a competitive advantage. Also, clients of companies often attract FDI. Following clients, who build facilities in foreign countries to enter new markets, enable the possibility to also expand business with existing customers by locating a new factory of its own nearby. It enables the companies to continue to meet customer demand promptly and attentively. Following clients also is a competitive advantage to bring win-win situations for both parties. A further possibility of gaining a competitive advantage by spending FDI is to follow rivals. A competitor analysis enables companies to find out their geographic strengths and weaknesses of individual competitors and the followers can select markets for FDI for their ventures. Most of the multi-national companies (MNCs) regularly monitor market sizes and growth rates from a global perspective (Griffin & Pustay, 2007).

Supply Factors and Indicators

Supply Factors according to Griffin and Pustay (2007) include production costs, resource availability, access to technology, and logistics. Production costs influence the competitive situation in negatively or positively. MNCs often try to locate their production facilities in low wage countries to gain a competitive advantage. Not only labor costs are of importance for FDI (Boghean & State, 2015), but also real estate prices and lower taxes. Hunady and Orviska (2014) say that taxes are still often emphasized as a crucial determinant of FDI. In terms of logistics, MNCs seek to invest in subsidiaries in foreign markets if the cost of transport raw materials is high. Also, infrastructure is a driver for FDI. Natural resources are often of essential importance for companies and their products. MNCs tend to utilize FDI to access natural resources. Natural resources attract many MNCs. Examples of important resources are iron ore and wood. A key technology is also an important supply factor that affects the FDI decision-making process. Technology (Aswathappa, 2008) influences every aspect of the global market place, it drives innovation, affects partnership and locations, and changes stakeholder relationships.

Government Factors and Indicators

Political factors according to Griffin and Pustay (2007) are often influential factors to attract or distract FDI. Economic priorities (Aswathappa, 2008) of emerging markets and developing countries regularly have misalignments with profit-oriented strategies and goals of MNCs. Development countries impose restrictions on the flow of FDI into their economies. This is not in general, there are examples, see on the example of China or India (UNCTAD, 2020), which allowed and welcomed FDI to enable big economic growth. A driver to affect FDI flows is the avoidance of trade barriers (Aswathappa, 2008). Such barriers reduce the flexibility and the willingness of FDI from MNCs which follow the profit-oriented strategies. Development incentives are interesting for MNCs and related FDI decisions. Governments offer attractive development incentives to MNCs to invest in their economies. In particular developing countries. The primary motive of developing countries to attract FDI (Griffin & Pustay, 2007) is to fill the resource gaps from the industrialized countries.

Potential Intervening Factors - Incentive Schemes

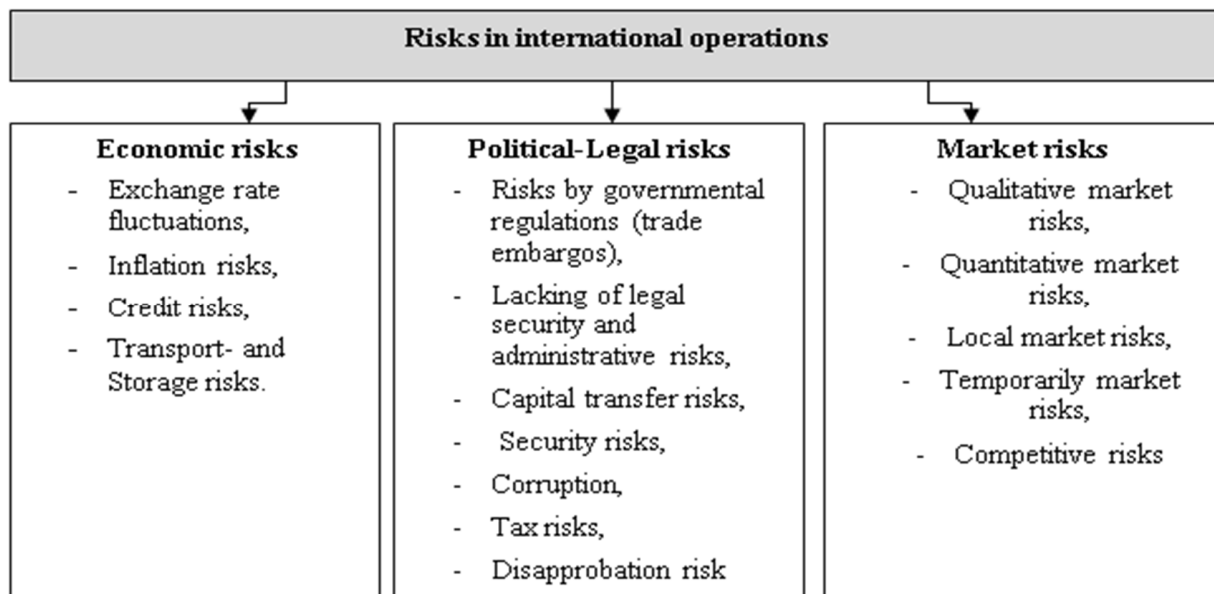
Countries often create policies to attract FDI. Host government policies are location-specific factors that may influence profitability and MNC's decision for doing FDI in different ways. Such governmental policies include both, incentives and performance requirements (Gilroy *et al.*, 2006). Related to incentive schemes are performance requirements for FDIs. A host government can place performance requirements on investors to push to ensure that the benefits of FDI will stay in the country. Examples for such requirements could be hiring and training of local personnel, local content, technology transfer, and exporting of output. Such performance requirements may distract FDI flows. To decrease negative effects, governments often link meeting the requirements to FDI incentives (Gilroy *et al.*, 2006). This paper focuses only on the intervening power of incentive schemes to FDI decisions. Examples of typical incentives include tax reductions, investment allowances, tax deductions, and exemptions from import or export duties (Navaretti & Venables, 2004).

Measures for incentive schemes have already been mentioned in a UNCTAD report in 1996. The most common financial incentive schemes to finance new foreign investments or operations have been defined as follows: government grants (direct subsidies) to cover capital, production, or marketing costs; government credits at subsidized rates; government equity participation and government insurance at preferential rates; subsidized infrastructure or services; special market preferences or preferential treatment on the foreign exchange (UNCTAD, 1996). Nowadays further measures have been discovered, but the main drives stayed the same. The effectiveness and influence of incentive schemes to foreign direct investments seems to be a controversial topic and different studies have produced different conclusions (Navaretti & Venables, 2004). The study from UNCTAD (1996) concluded that incentive schemes seem to play a minor role relatively seen to other factors such as market size, economic

stability, political stability, regulatory framework production costs, or skill levels. But they also state that incentives are not negligible. Hanson (2001) did several case studies to analyze the effect of incentive schemes to FDI and found them influenced the final investment locations. For other industries and markets, they got quite different results.

Potential Intervening Factors - Risks/Uncertainties

Every company that needs to decide whether it would go international or not has to be conscious about the chances and risks which are linked to this decision (Jahrman, 2010). Multinational companies are facing certain macroeconomic risks that are completely outside of their control. These include cataclysmic events such as wars and natural calamities, and also equilibrium-seeking or random movements in exchange rates, commodity prices, interest rates, or even wage rates (Aliber & Click, 1999). In addition to that, MNCs facing what is usually referred to in the literature as political risks (Jahrman, 2010; Aliber & Click, 1999) but maybe more appropriately called policy risks to emphasize that they arise from policymakers and their decisions and actions of national governments and not from either long-term equilibrium-seeking forces of global markets, or short-term random fluctuations in economic variables arising out of stickiness or unpredictability of market mechanisms (Aliber & Click, 1999). There are diverse risks that can be generally divided into the following three areas as illustrated in figure 1.



Source: Author's construction based on Sternad *et al.* (2013) and Jahrman (2010).

Figure 1: Risks in international operations.

Risks are often not directly influenced by companies (Aliber & Click, 1999). They depend on macroeconomic varieties and framework conditions. Political frameworks and subsidies can change very fast when politicians change, parties change or other

circumstances make it necessary to change. Then, companies are forced with changes in their environment. This can bring changes but also may bring risks and uncertainties into the mid- and long-term success of a company (Hungenberg & Meffert, 2005). Kelly and Philippatos (1996) include foreign risks into the international investment decisions of multinational firms.

Derived from the research questions RQ₀, RQ₁ - RQ₃, the following assumptions can be made:

Base hypothesis:

H₀: *There is no significant impact of macroeconomic factors and intervening factors FDI incentive schemes and risk/uncertainty on FDI motives of German and Austrian Automotive companies.*

The base hypothesis H₀ should provide a holistic novel view on macroeconomic perspectives and their impact on FDI motives. It assumes that besides the well-studied micro-economic impact factors (Porter, 2008; Ansoff, 1965), the macroeconomic level, the FDI incentive schemes, and risk/uncertainty factors have no significant impact on FDI decisions. The macroeconomic level has been divided into three main groups of determinants according to Griffin and Pustay's (2007) model: demand factor, supply factor, and public and governmental factor. To answer the base hypothesis H₀, seven sub-hypotheses (SH₁ - SH₇) have been derived to provide a new and holistic view of macroeconomic influence factors to FDI intentions (Wagner & Disparte, 2016) including potential intervening variables: FDI incentive schemes and risk/uncertainty factors.

Derived sub-hypothesis:

SH₁: *The macroeconomic factor (Demand - Expected Market Volume) positively impacts both the macroeconomic factors (Supply-Production Factors) and Public and Governmental Conditions.*

SH₂: *The Demand factor positively impacts the Risk/Uncertainty factor.*

SH₃: *The Demand factor impacts the FDI Motive more strongly than Supply and Public factors do.*

SH₄: *The Supply factor has more influence on FDI Motive than on Risk/Uncertainty.*

SH₅: *FDI incentive schemes have a positive impact on macroeconomic factors.*

SH₆: *The Public factor is negatively related to Risk/Uncertainty.*

SH₇: *The Risk/Uncertainty factor negatively impacts FDI Motives.*

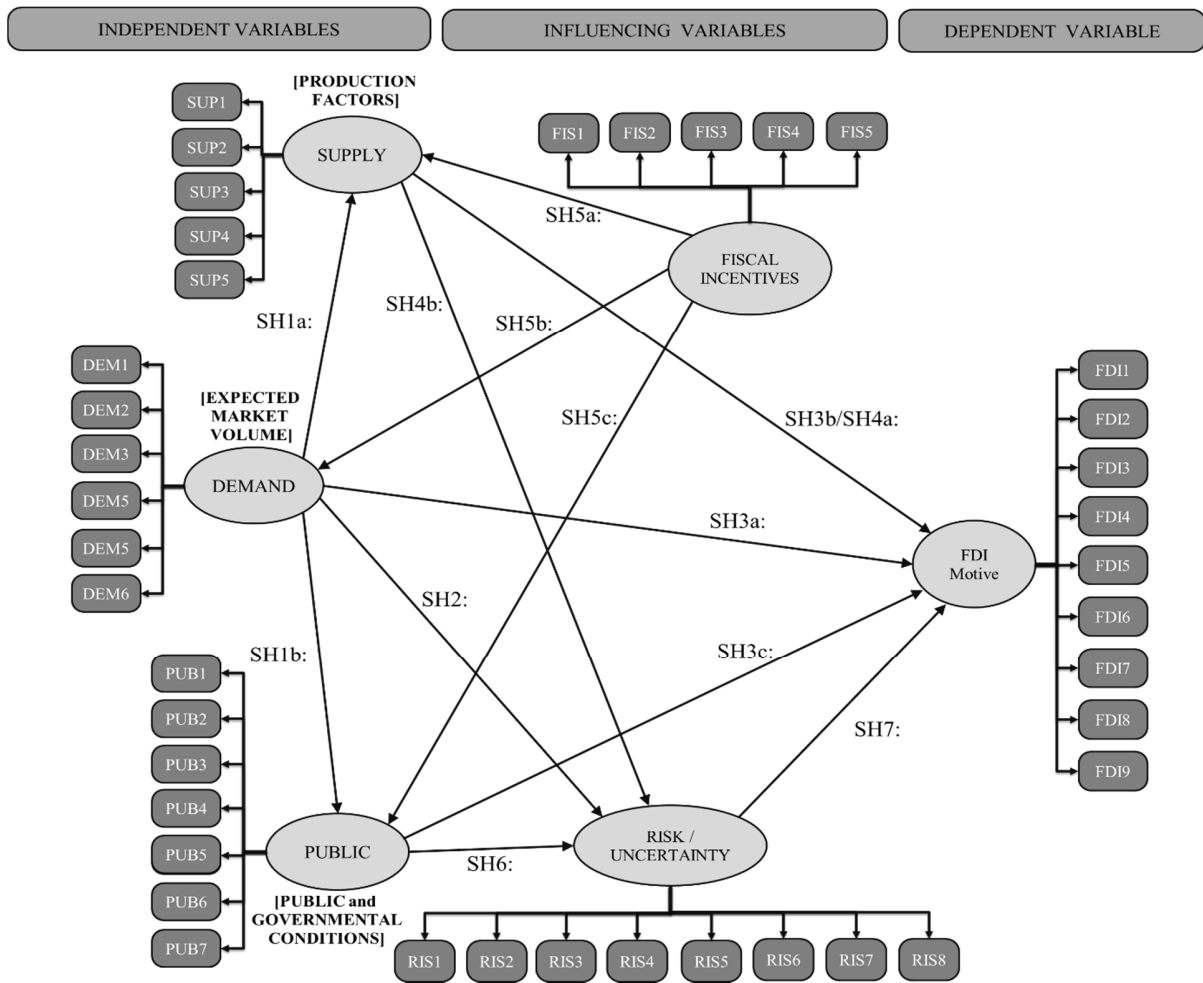
The null hypothesis H₀ and the derived sub-hypothesis SH₁ - SH₇ shall generate a holistic picture of macroeconomic influence on FDI decisions, extended with intervening variables of FDI incentive schemes and risk/uncertainty factors. The aim is to find out the biggest influencing factors and potential relationships between them to derive interpretations and conclusions. These results are only valid and limited to the selected

industry, which is the German and Austrian located automotive industry. The aim is to find out the strongest influence factors and potential relationships. After testing the relationships, the results will be analyzed and interpretations will be worked out as well as conclusions derived.

Empirical Design and Research Model

Research Design and Methodology

A new model has been constructed by the author. The model has been used to determine and operationalize the dependent variable *FDI motive*. The indicators, therefore, were carefully extracted from existing research works. Furthermore, the determination of the independent variables: *demand, supply, public and governmental conditions* (Griffin and Pustay, 2007), and the intervening variables *risk/uncertainty* and *FDI incentive schemes* were operationalized. A semi-structured questionnaire was created and distributed to experienced persons among the focus groups of employees in German- and Austrian-based companies from the automotive industry sector, in which all respondents were asked a standard list of questions in a standardized order. Only fixed-alternative questions have been applied. Figure 2 shows the postulated causal model including indicators and paths.



Source: Author's construction.

Figure 2: A complete postulated causal model with indicators and paths.

Research Results and Findings

The semi-structured questionnaire has been sent to 481 employees in Austria and Germany which are working for in the automotive industry. 138 persons returned and fulfilled the survey requirements which results in a reply rate of 28.7%. For distributing the questionnaire, representatives were contacted mainly personally and via company directories. The questionnaires were addressed electronically with a special survey tool. The analysis of the 138 respondents shows the following distribution with respect to the locational aspect:

Table 2: Data description from location evaluation.

	Frequency	Percent
Austria	60	43.5
Germany	78	56.5
Total	138	100.0

Source: Author's construction.

Out of the 138 respondents, more than half is out of German-located companies (78 employees). The others are from Austrian-located companies throughout the supply chain of the automotive industry sector. The data of the survey showed, that most of the respondents were from the middle and top management followed by lower management levels. Internal and external consultants only represent a minority within the sample size. See Table 3 with percentage distribution.

Table 3: Data description of the respondents' current professional positions.

		Frequency	Percent	Cumulative Percent
Valid	Top Management	45	32.6	32.6
	Middle Management	49	35.5	68.1
	Low Management	26	18.8	87.0
	Internal Consultant	11	8.0	94.9
	External Consultant	1	0.7	95.7
	Others	6	4.3	100.0
	Total	138	100.0	

Source: Author's construction.

The next question evaluated the experience of the respondents with FDI in years. This was an important point to see if the respondent is experienced in FDI ventures and was involved in such decision processes. The responded data represent an equal distribution of short term experiences (<3 years to 4-6 years). The main respondents have long-term experience of more than 7 years (see Table 4).

Table 4: Data description for respondent's experience with FDI [in yrs.]

Interval	Frequency	Percent	Cumulative Percent
<3 years	27	19.6	19.6
4-6 years	27	19.6	39.1
7-10 years	44	31.9	71.0
11 years and more	40	29.0	100.0
Total	138	100.0	

Source: Author's construction.

Tables 2, 3, and 4 just show an excerpt of the descriptive analysis of this study. Further results can be looked after in the related promotional work. Now, the following analysis focuses on the assessment of the SEM-Model and the results out of it.

To assess the structural equation model, a 5-step approach after Hair *et al.* (2014) was going to be performed. As this model has been developed by the author, it hasn't been proofed before. The five steps brought positive results with concludes that the model fit has a good quality and the variables and its indicators have good descriptive quality. The interpretation of the research results in combination with the expert post-survey discussion finalizes the model and ends with specific suggestions as an outcome from this promotional work.

Causal Model's Fit and Quality

Validity and reliability of collected data follow the criteria as shown in Table 5 for proofing or rejecting a hypothesis.

Table 5: Acceptance criteria for hypothesis testing.

Characteristic	Value description/ definition
Coefficient of Determination [R^2] (Chin, 1998)	> 0.67 (substantial); 0.33 (average); 0.19 (weak)
Path Coefficient [β] (Sapp, 2006, p. 31)	Null hypothesis: < 0.5 All Sub-hypotheses: > 0.1
Level of Significance [p -Value] (Hair, 2014, p. 171)	< 0.05

Source: Author's construction.

The coefficient of determination (R^2) measures the predictive quality of the observed values (Chin, 1998). The significance level of one sample size to another one is measured with the p -value is rated as <0.05 as significant (Hair, 2014). The quality of the causal model, the internal consistency reliability has been measured. An established and broadly accepted criterion is the Cronbach's Alpha measurement characteristic. This value explains the quality of the model and it is recommended that the value for the variables should be 0.70 or above (Cronbach, 1951; Hair *et al.*, 2014). Indicators with very low loadings (<0.40) are recommended to exclude from the model (Hair *et al.*, 2014) to increase the internal consistency of the model. Table 6 shows the model fit criteria for this construct. Three characteristics will be probed: Cronbach's Alpha, AVE, and Composite Reliability.

Table 6: Assessment of the measured values for the model fit.

Model Fit Characteristic:	Cronbach's Alpha	AVE	Composite Reliability
<i>Threshold Value:</i>	≥ 0.70	≥ 0.50	≥ 0.70
Literature source:	Hair <i>et al.</i> , 2014, p. 107	Hair <i>et al.</i> , 2014, p. 107	Hair <i>et al.</i> , 2014, p. 102, 115; Nunally & Bernstein, 1994
Used variables in the SEM-model:	Measured values:		
FDI Motive/Decision-Making	0.790	0.545	0.856
Demand [Expected Market Volume]	0.753	0.591	0.808
Supply [Production Factors]	0.707	0.486	0.710
Public and Governmental Conditions	0.742	0.592	0.780
Risk/Uncertainty	0.760	0.541	0.781
FDI Incentive Schemes	0.731	0.503	0.750

Source: Author's construction.

Cronbach's Alpha is recommended to be ≥ 0.70 as the acceptable threshold value of the model fit (Hair *et al.*, 2014; Nunally & Bernstein, 1994). The postulated causal model shows values from 0.707 (*supply*) up to 0.790 (*FDI motive*). So, all variables can be taken into consideration.

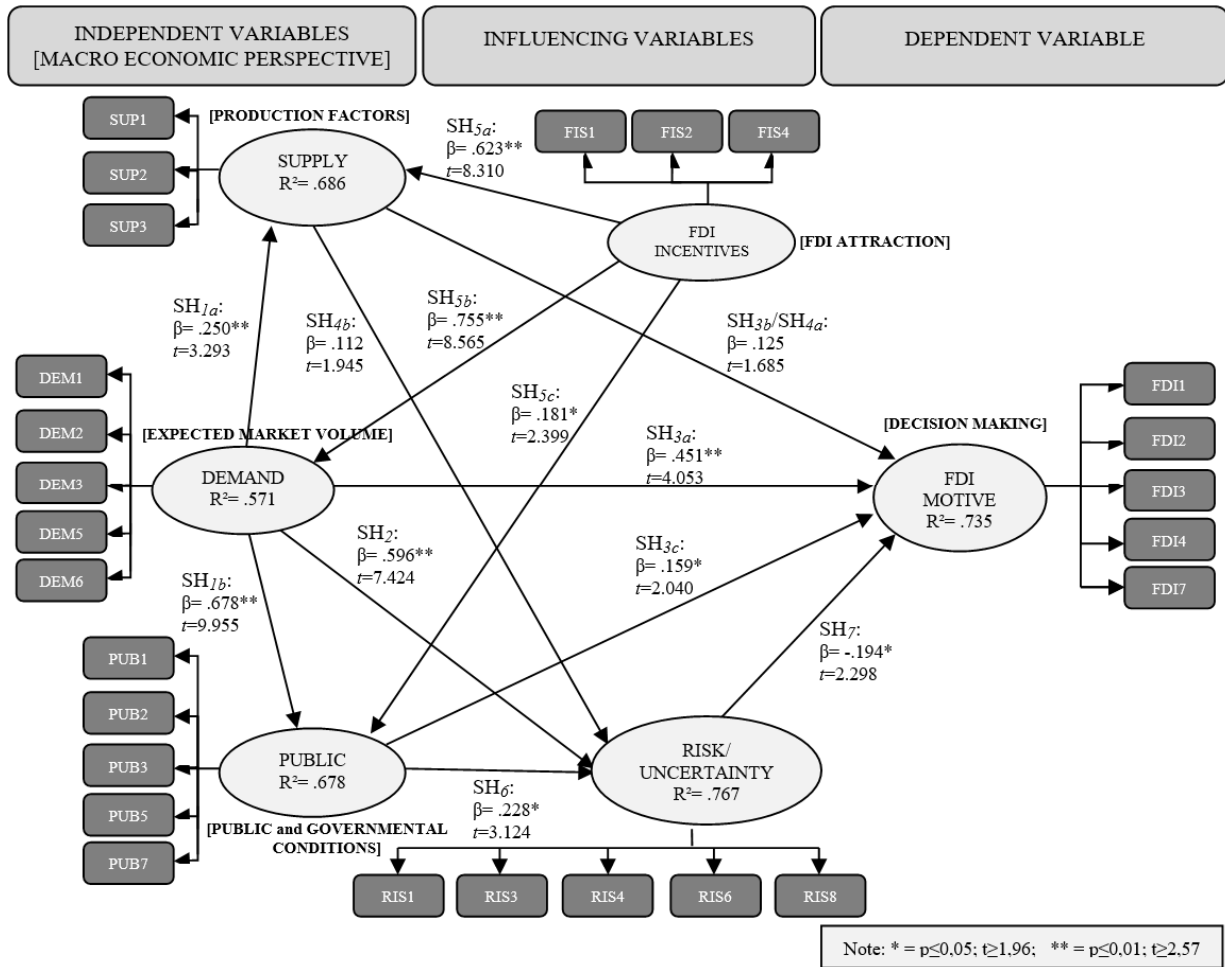
To proof the convergent validity the AVE value has been taken into consideration. This value is more than the correlation squared of the other constructs (Fornell & Larcker, 1981). The convergent validity is measured by the AVE value and shall exceed 0.50 (Hair *et al.*, 2014). The highest measured AVE value is 0.592 (*public*) and the lowest value is 0.486 (*supply*). The variable *supply* is slightly below (0.486) the required 0.50. But due to a good value at Cronbach's Alpha and Composite Reliability and the almost reached target of the AVE value, it has been taken as valid for the construct. Furthermore, Hair *et al.* (2014) describe these targets as rules of thumb for reflective measurement models and not as hard minimum targets. Therefore the author has decided to keep this variable with the adjusted indicators in the model.

Composite Reliability: This value represents the internal consistency reliability of the model. In exploratory research, it should be 0.60 to 0.70 to be considered as acceptable. The highest value in the model is 0.856 for the dependent variable. The lowest value is 0.710 for the independent variable *supply*. So, all AVE values are above the recommended limits to have a good base of the model fit for further investigations.

The hypotheses are shown in the model accordingly and are numbered according to the hypothesis numbers. The direction of the arrows shows the path of how the hypotheses are designed and defined in the way of explorative analysis. The β -value at each of the arrows shows the loading to the illustrated variable. The value of each indicator has been assessed specifically. Indicators with a β -loading of <0.400 have been deleted from the final model for improving the quality of each variable and according to the recommendations of Hair *et al.* (2014). This model is the result of the extensive research work and developed by the author of this thesis.

The aim was to determine the power of the impact of potential macroeconomic factors on *FDI motives* and decision-making process. It should diminish the lack of results in terms of the potential macroeconomic impact on such ventures. The model is extended by potential intervening factors that may attract or distract managers for FDI decisions from a macroeconomic perspective. The model is constructed for the B2B business activities only and the participants are entrepreneurs or employees exclusively from the German and Austrian automotive industry. Applying this model to other industries, countries, specific companies, etc. may need to adapt it to their specific environments and needs.

Figure 3 shows the final construct of the postulated causal model. This model represents the essence of this promotional work. The main three macroeconomic factors have been brought into relation to *FDI motives/decisions*. To complement this construct with potential intervening variables, the *risk and uncertainty* factor has been included to prove the impact of this dimension in such ventures. In addition to this, *FDI incentive* schemes have also been included in the model, as they have the potential to attract FDI inflows. The findings in the fourth chapter are, that the assessment of the newly developed model showed the constructs strong and resilient, even though there are intervening variables included which influence investment decisions (Moran *et al.*, 2018; Dutta & Roy, 2009). Andreff and Andreff (2017) said that the main motive for investors after market-seeking is strategic-asset-seeking, efficiency-seeking, or resource-seeking. This is similar to the results of the causal model's results. The focus on macroeconomic levels related to *FDI incentive* schemes and *risk/uncertainties* in terms of FDI motives/decisions brought more evidence in this case. The impact of this level on planned investments is significant and often is not considered in this certain context. It allows us to gain results for impact factors from the macroeconomic perspective on *FDI motives* (Liebscher *et al.* 2007). The in-depth analysis of existing literature and already existing research results has been executed for a holistic picture of this specific task.



Source: Author's construction.

Figure 3: Final postulated causal model including statistical values

Analysis of the hypotheses

The base-hypothesis [H_0] needed to be rejected because of the highly significant impact of the three macroeconomic determinants: *demand*, *supply*, and *public and governmental conditions* (Griffin & Pustay, 2007). Seven sub-hypotheses [SH_1 - SH_7] have been derived from the null-hypothesis to get a more detailed view of each variable and its impact within the postulated causal model. The sub-hypotheses The three sub-hypothesis SH_1 , SH_2 , and SH_3 measured the impact factor from *demand* on *supply* and *public and governmental factors* [SH_1], *demand* on *risk/uncertainty* [SH_2] and proofed if *demand* has a stronger impact on *FDI motives* than on *supply* and *public and governmental factor* [SH_3]. All three sub-hypotheses could be accepted. The fourth sub-hypothesis [SH_4] verified the impact of *supply* on *FDI motives* and *risk/uncertainty*. Supply has more influence on *FDI motives* than on *risk/uncertainty*. This sub-hypothesis needed to be

rejected because *risk/uncertainties* are more impacted by supply than *FDI motives*. Sub-hypotheses SH₅ predicted a significant positive impact of *FDI incentive* schemes on macroeconomic determinants. The high factor loadings and significance values showed a significant and positive relationship. The sub-hypothesis SH₅ could be accepted. SH₆ predicted a reversely positive relationship of public and governmental conditions with *risk/uncertainty*. The last sub-hypothesis SH₇ predicted a significant negative impact of *risk/uncertainty* on *FDI motives*. This prediction also could be accepted due to the values gained by the survey. It can be concluded, that the null-hypothesis needed to be rejected due to a significant impact of macroeconomic factors on *FDI motives*. Only one [SH₄] out of seven sub-hypotheses needed to be rejected.

Interpretation of Research Results

The postulated causal model shows strong relationships between the macroeconomic factors and the *FDI motive*. The minimum level for the path loading β is set to ≥ 0.100 . All three factors surpass this limit (Demand: $\beta = .596$; Supply: $\beta = .125$; Public: $\beta = .159$). Both *demand* and *public* have significant values on *FDI motive*. Only the *supply* factor didn't reach the minimum significant limit of $p \leq 0.05$.

Demand is positively related to *supply* and *public* factors as well. It can be interpreted, that if *demand* exists, also other macroeconomic factors are positively affected. The *FDI motive* is well explained ($R^2 = .735$) which proves the model's quality and stability. The model shows that macroeconomic factors have a significant and positive influence on *FDI motives*.

The model shows a significant difference between the factors. The *demand* factor hereby is the strongest one in terms of impact on the *FDI motives* ($\beta = .451$; $p = 0.000$; $t = 4.053$). This factor is followed by *public* factors but much weaker ($\beta = .159$; $p = 0.042$; $t = 2.040$). And the weakest factor on *FDI motives* is *supply* ($\beta = .596$; $p = 0.093$; $t = 1.685$). This factor has a weak significant level and a weak path loading. It can be concluded that if a host country wants to attract FDI, the macroeconomic performance of such a country is of high importance for investors.

FDI incentive schemes seem to have the potential to positively impact macroeconomic factors in relation to FDI behavior. A closer look on the path coefficients and significant levels shows the following results: *FDI incentive* \rightarrow *demand*: $\beta = .755$; $p = 0.000$; $t = 8.565$; *FDI incentive* \rightarrow *supply*: $\beta = .623$; $p = 0.000$; $t = 8.310$; *FDI incentive* \rightarrow *public*: $\beta = .181$; $p = 0.017$; $t = 2.399$. The analysis shows that the effort a country, government, or public department puts into foreign-friendly environments is accepted and granted by investors to reduce risks and uncertainties as well as being better able to start the business.

Conclusions and Implications

Scientists in the field of management sciences to this time have done some strong and broad investigations in the field of decision making and influence factors. But in fact, there are still gaps for specific applications such as diversified macroeconomic perspectives and special branch requirements. FDI motives can be of various forms and are often based on mid- and long-term corporate strategies. The willingness to expand in this context is mainly the core objective, but impact factors from the macroeconomic perspective are often not considered in the early stages of the decision process. The results of the model constructs demonstrate that the positive impact power of FDI incentive schemes on FDI motives/decisions from a macroeconomic perspective has a significant potential to influence FDI decision-makers. Therefore, it can be concluded that the countries intended to attract FDI inflows have a strong instrument to steer them.

The dependent variable FDI motive/decision-making is highly explained by the macroeconomic independent variables including the intervening variable of risk/uncertainty with a value of 73.5%. That means that only 26.5% is explained by other variables that have not been included in the model. So, macroeconomic factors have a strong influence on the FDI motive and if they vary, the FDI decision also will be influenced in both ways, negatively and positively. The main importance is that the demand factor has a strong positive impact on FDI ($\beta = .451$). Conclusively summarized, if the expected market volume is stable and in good condition, the FDI willingness of the investors shall grow.

Decision-makers for FDI should be aware of the positive impact of FDI incentives from the target countries. FDI incentive schemes and public funding are targeted on certain regions, technologies, or industries and are limited for a certain period. FDI incentives can increase the potential of success and help to start-up a business. It is suggested to also have an in-depth understanding of potential uncertainties and risks of the target country. Corruption and political instabilities or other economic country conditions may have a significant and negative impact on business activities.

Managers should be clear of their motives or intention for investment. Indicators in this research work show the importance of internal growth strategy, too small home market, existing competition, shifting production to better conditions, etc. All these company internal drivers are affected by macroeconomic factors. It is suggested, that also macroeconomic development of potential target countries should be observed and analyzed in an appropriate period to get a better overview of the development of a country itself and of the specific industry which is targeted. This should be done regularly before taking such long-term decisions.

External and local consultants should be used as a first-hand information source. They cannot replace internal company know-how, but they should gain an external and independent view on the environmental influences of the target country.

Extension of this research work

To bring more depth and insight into this complex environment of macroeconomic factors and their potential impact on FDI decision, researchers are asked to do research projects in the opposite direction of the FDI – the so-called receiving party (target country) of the FDI perspective. Representatives from public and governmental institutions should be taken as target groups. This additional view on the complex procedure of decision making in the context of FDIs could provide a much better insight into potential positive as well as negative influence factors on FDI decisions.

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