

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

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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). Fourth, 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

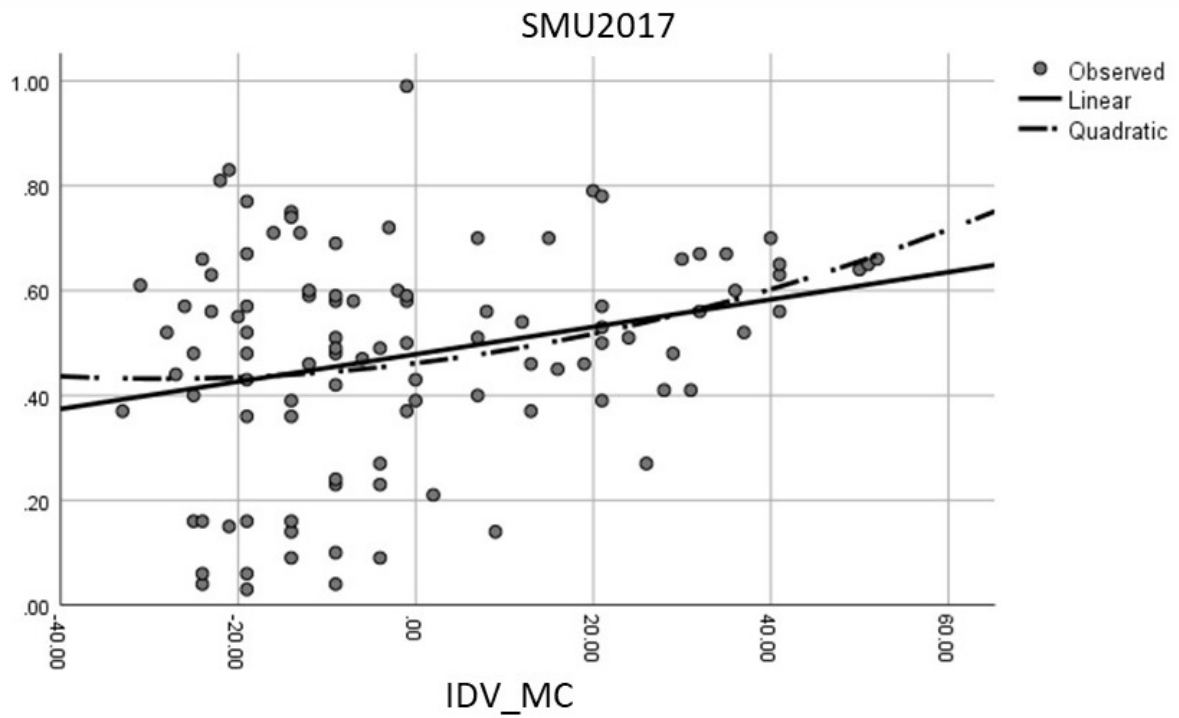
Sample Statistics and Descriptive Statistics before Mean Centering											
	Dependent Variable	Control Variables				Substantive Variables					
COUNTRY	SMU	URBAN	LITERACY	GDPppp	IPTR	IDV	MAS	PDI	UAI	LTO	IND
Albania	0.52	0.59	98.00	36.01	0.63	20	80	90	70	61	15
Angola	0.15	0.45	66.00	193.60	0.23	18	20	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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