Handbook of Research in Mobile Business:
Technical, Methodological, and Social Perspectives

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Chapter XXIII
Cultural Impacts on the Spread of Mobile Commerce:
An International Comparison

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ABSTRACT

Culture predefines the framework of needs, beliefs, and norms in most decisions humans make in their lives. However, the impact of culture often tends to be neglected in the investigation into adaptation of mobile business technologies. This chapter aims to address that lacuna by highlighting cultural differences and their consequences for the diffusion of mobile technologies in business and society, as well as its acceptance in mobile direct marketing and mobile commerce. We achieve our objective in the following four steps:

- *Highlight the impact of culture on the adoption and acceptance of mobile technologies,*
- *Introduce measures for the assessment of cultures by means of quantitative indices (e.g., Schwartz values, the Hofstede dimensions),*
- *Correlat the assessment of culture with mobile activities in selected societies, and*
- *Discuss implications for the introduction of innovative mobile commerce services.*

INTRODUCTION

Culture constitutes the framework of references related to all buying decisions. In this respect, culture defines

- Buyers' needs,
- Buyers' perception of appropriateness of offers, and
- Acceptability of innovative technologies and services.

The cultural framing of vendors and customers impacts on all types of businesses, but it tends to be critical in m-commerce applications because these are frequently new to customers. Therefore, m-commerce services contradict the conception that technical innovations are culture free and might be successfully introduced to markets neglecting cultural differences (Pressey & Selassie, 2002). Both the technology acceptance model and the m-banking acceptance model (Luarn & Lin, 2005) do not take into consideration cultural differences. Particularly communication and

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the benefits to (prospective) customers of new products or services need to be aligned with the customers' cultural background.

Building on Rokeach (1973) and Hofstede (1994), we propose:

Definition 1 (culture): *Culture consists of a knowledge reservoir common to all members of a group that distinguishes them from other people in other cultures.*

This knowledge reservoir embraces explicit and implicit rules learned by the members of the culture in order to adopt their behavior to meet the expectations and standards of their society. Clearly, the benefits and advantages associated with mobile commerce activities differ in the light of cultural differences. For instance, from the perspective of Western cultures, Keen and Mackintosh (2001) argue that the key value proposition is the creation of choice or new freedoms for customers. Naturally, freedom is one of the most important values of the authors' home culture, the US, but it is of minor importance in other cultures in countries such as India. Consequently, culture turns out to be relevant for conducting mobile commerce activities for three main reasons:

1. The value propositions (e.g., prestige or self enhancement) associated with mobile services and related devices depend on aims and desires predefined by one's culture.
2. The acceptance of products and services by customers differs substantially across cultures.
3. Similarly, mobile technologies employed by vendors, as well as the usage of marketing techniques to establish and maintain customer relationships, differ in respect to national markets.

Despite similar technological conditions, remarkable differences in the usage of cellular devices are observed in various studies (Fraunholz & Unnithan 2004; Kim et al. 2004; Mobinet 2005). Mahatanankoon , Wen and Lim (2005) claim that the factors that influence consumers' attitudes and value perceptions of m-commerce are understood only fragmentarily. This chapter aims to provide some empirical evidence on the relation between culture and the usage of mobile services in different countries.

The remainder of this chapter is structured as follows: In the next section, we introduce the concepts for quantifying culture discussed in psychology, sociology und marketing. The dimensions grasped by these concepts are linked to m-commerce activities by highlighting their relevance. Subsequently, we present empirical results from an investigation of Hofstede's cultural dimensions and the mobile activities in six countries.

The chapter concludes with a discussion on the implications for further research.

BACKGROUND: CONCEPTS FOR QUANTIFYING CULTURE

Mobile device functions are embedded in networks, and consequently their usage should not be considered in isolation. Patterns of usage are collective rather than individual phenomena, and are therefore influenced strongly both by individuals' predispositions and usage circumstances and by culture. Therefore, a cross-cultural investigative approach of m-commerce acceptance is likely to provide both academic insights as well as advice for practitioners to improve their m-commerce activities. Working out cultural differences in a tangible manner is an obvious approach for this purpose. A quantification of culture according to definition 1 is essential to derive sound results which are superior to conceptual considerations and anecdotal evidence. In this section, different approaches to address this challenge, as discussed in the sociology, management and marketing related literatures, are introduced and related to mobile commerce activities.

Culture, according to definition 1, is neither observed nor measured directly. Instead, indicators, grasping particular aspects of the knowledge reservoir, are considered in these approaches. With respect to m-commerce activities, important aspects for quantifying culture are values, or beliefs. In line with Schwartz and Bilsky (1987), we propose:

Definition 2 (values): *Values are beliefs about some desirable end state that transcends specific situations and guides the selection of behavior shared by the members of a culture.*

Humans develop a set of values that guides them through the decisions they make in their lives. These values are formed by social interaction with other

individuals. Mobile devices support these interactions in:

- The relations of consumers with one another,
- Communication of organizations to their customers (consumers or other organizations) and,
- Communication of organizations to make up networks, for instance the management of joint ventures.

Since humans tend to seek contacts with others with a value system similar to their own, values tend to be stable over time. However, individuals may shift their value priorities in the course of time because of new acquaintances or other occurrences communicated by the mass media. The extent to which people share a value system is a function of individual, social and cultural forces.

In order to provide an assessment of individuals' cultural framing, we propose several concepts. Next, we provide a brief overview of the most prominent concepts for the appraisal of culture and their link to mobile commerce activities.

The Rokeach Value Survey

The Rokeach Value Survey (RVS) is a survey instrument introduced by Rokeach (1969) to operationalize the value concept (it has also been used for measuring personal and social values). The RVS is characterized by two different kinds of values:

- *Instrumental values* apply to many different countries and are socially desirable.
- *Terminal values* refer to idealized end states of existence or lifestyles.

Table 1 depicts the relation of values selected from Rokeach (1973) to mobile commerce activities.

Clearly, the value of being broadminded is the antagonism to being dogmatic in the sense of Rokeach (1973), and dogmatists may refuse to use modern mobile devices for various reasons. For example, mobile devices are judged by dogmatists in Eastern cultures as symbols of Westernization, and the notion of being reachable at any time, night or day, as conflicting with their religious beliefs, although in reality, we find

Table 1. Interpretation of the Rokeach values in the context of mobile commerce

Rokeach Values	Interpretation with respect to mobile commerce
Instrumental values	
Broadminded	Owning and using mobile devices demonstrates openness to new technologies, functions and services.
Independent	Mobile communication and data exchange enable a higher degree of independence.
Responsible	Individuals become accessible, regardless of time and location.
Self-Control	Control of own information exchange, regardless of context or location. .
Terminal values	
A comfortable life	Cellular phones make one's life easier by providing telephony and information gathering as well as processing and storing services.
An exciting life	Many innovative services, directly (e.g., games) or indirectly (e.g., dating services), are designed to add new thrill to consumers' lives.
Freedom	Mobile devices might be used to work around communication limitation by employers, governments or families.
Pleasure	By recording and playing sounds and movies, the mobile devices provide pleasure to their owners.
Social recognition	Phones and more sophisticated devices such as PDAs are recognized to symbolize one's social status within a society.

Muslim clericalists using mobile phones. Relating mobile commerce services to one of the recipients' value priorities provides ample reasons for subscribing to m-commerce services.

Nevertheless, the RVS provides researchers with a well-established framework to derive culture-related hypotheses in empirical studies concerned with attitudes toward and acceptance of mobile services (e.g., Oh & Xu, 2003; Lin & Shih, 2008).

Kahle's List of Values

The List of Values (LOV) scales were developed by Kahle (1983) to make up special and isolated values which are highly connected to direct marketing applications (Beatty, Kahle, Homer & Misra, 1985). The list is composed of nine consumer values which are related to differences in consumption behavior: (1) self-fulfillment, (2) sense of belonging, (3) security, (4) fun and enjoyment in life, (5) excitement (6) being well respected, (7) warm relationships with others, (8) sense of accomplishment (9) and self-respect. In comparison with the RVS depicted in Table 1, this list appears to be more comprehensive, but covers all aspects with relevance to mobile business.

From Table 2, it is clear that the LOV scales directly fit the needs of both academic and commercial studies of mobile business. Interestingly, the LOV has been found to provide an explanation of consumers' adoption of innovations (Daghfous, Petrof, & Pons, 1999). Moreover, Haghirian, Madlberger, & Inoue (2008) attribute differences in the perception of mobile advertising to this conceptualization of culture.

Hall's Cultural Dimensions

Hall (1977) follows an anthropological approach of cultural dimensions. Accordingly, culture is the

Table 2. LOV constructs, explanations, and relations to mobile commerce

List of Values	Explanation	Relation to mobile commerce
Self-fulfillment	Includes desirable goals for individuals and if/how they are reached.	Due to location-independence, m-commerce provides ability to fulfill needs instantaneously.
Sense of belonging	How individuals belong to their culture, family, community, country, etc.	Due to personalization, provides a sense of identity with and belonging to desired community.
Security	Degree of protection granted by a community to individual members.	Ability to call for help, advice or assistance from members of the culture.
Fun and enjoyment in life	Elements make people "feel good" and raise their quality of life.	Contact with others, music, movies, etc. are transmitted on mobile devices.
Excitement	Various kinds of stimulation that are perceived positively.	Games or dating services aim to add new thrills to consumers' lives.
Being well respected	Attributing good faith and competence to a person by the person himself as well as others.	Mobile devices serve as status symbols and utility to demonstrate immediate problem-solving competence.
	Association of individuals with each other.	
Warm relationships with others	Cultivating a close and trusting relationship in social interactions.	Using mobile services to maintain and strengthen interpersonal relationships.
Sense of accomplishment	Extent of approving individuals' ambitions.	Location- and time-independence provide immense sense of timely accomplishments (e.g., academic results being made available anywhere).
Self respect	To be proud of yourself and confident with whom you are.	No direct relation to m-commerce

human built environment of space, time and communication. This approach leads to four dimensions listed in Table 3.

Most prominent of Hall's work is the "classic pattern", which refers to the distinction of "low-context" cultures from "high-context" cultures. In the realm of mobile advertising, in high-context cultures, the information content of advertisements should be lower than in low-context cultures (Al-Olayan & Karande, 2000; Cyr, Head, & Ivanov, 2005). For future m-commerce applications, the distinction in polychrome and monochrome time orientation is likely to become an important criterion for practitioners aiming to identify target segments. Bell, Compeau and Olivera (2005) argue that individuals with polychrome time orientation are more likely to adopt new mobile services allowing for interaction in a multi-tasking manner.

The Trompenaars Databank

The approach of Trompenaars and Hampden-Turner (1998) is based on a dataset consisting of surveys conducted with more than 11,000 employees from 46 countries worldwide. The basic assumption is that the culture of any country becomes salient in dealing with the following three main problems: employees' attitude toward their fellow men, time and the environment. The *interpersonal problem* is again divided into another five contradiction pairs which characterize cultural behavior:

1. *Universalism* versus *particularism*
2. *Individualism* versus *collectivism*
3. *Neutral* versus *emotional*
4. *Specific* versus *diffuse*
5. *Achievement* versus *ascription*

The acquaintance with *orientation in time* is distinguished by consecutive and sequential, respectively, synchrony or polychrome dichotomy. Additionally, the culture's orientation toward the past, the present and the future and the relationship of the three to one another is proposed to assess the cultural framing of individuals. Considering the *attitude toward the environment*, a rather fatalistic attitude can be distinguished from an autonomous, more self-directed approach.

Although the control of the environment distinguishes the Trompenaars dimensions substantially from other concepts, the use of this concept is scarce with respect to the domain of m-commerce.

The Schwartz Value Survey

The Schwartz Value Survey (SVS) is based on a survey of over 60,000 individuals in 63 countries worldwide. In this approach, the responses are characterized by ten motivational values and seven cultural-level dimensions. Each of these dimensions is a composite index of a set of values which varies according to the culture. Therefore, this approach allows the inclusion of values which turn out to be meaningful in only a

Table 3. Hall's cultural dimensions, explanations, and relations to mobile commerce

Dimension	Explanation	Relation to mobile commerce
Context orientation	Within an interaction, a certain amount of information is transferred in the context of interaction rather than the explicit.	Mobile devices enable personalization and the virtual imagination in the context of interactions.
Space-/Room orientation	The quality of actions and interactions differs with respect to location, e.g., private versus public.	Depending on whether a person is in a cinema hall, sports venue, or in a hospital, mobile devices can add location as well as context related information.
Time orientation	In cultures with monochrome time understanding, time is seen as linear. In cultures with polychrome time perception, time is seen as circular.	Connection to others whenever you want – as it is possible to communicate irrespective of time, and the recipient can decide when to receive the information. In monochrome time societies, consumers are likely to cue their tasks rather than processing them in parallel.
Information speed	This means the speed at which information is coded and can be decoded in a communication situation.	Information exchange is in real time while speaking or very fast by sending e-mails, SMS, MMS, etc.

few cultures, but sustains the comparableness of nations by a unified set of dimensions. Specifically, it distinguishes between cultures and types of media consumption behavior better than the traditional dichotomy of individualism and collectivism (Schwartz, 1994). The ten individual-level dimensions and their link to m-commerce are outlined in Table 5.

These values are not generally uncorrelated. The extent of correlation has been found to vary with respect to culture. In addition to the motivational values depicted in Table 5, seven dimensions for describing national cultures have been proposed: affective autonomy, conservatism, egalitarianism, harmony, hierarchy, intellectual autonomy, and mastery. The typology motivational values depicted in Table 5 are frequently used in international comparisons of consumer behavior. Interestingly, Guzmán-Obando Gonzalez, de la Rosa, Ruiz, & Castan (2006) utilize this conceptualization of culture to make up a recommender system that considers the cultural differences explicitly and concisely.

A subset of the values depicted in Table 5, hedonic needs, or the need for stimulation and social innovativeness, are clearly reflected in the measurement of innovativeness by Roehrich (2004). With regard to the value of self-direction, the autonomy in innovative decisions has also been considered as a relevant dimension. These dimensions have been found to have a significant positive impact on the degree of perceived usefulness of the mobile Internet (Lee, Kim & Chung, 2002) and individuals' attitude toward the usage of wireless application protocol (WAP) services (Hung, Ku, & Chang, 2003).

The Hofstede Dimensions

These dimensions originate from the study on how cultural values influence business behavior, organizations and CEOs in the time span 1967 to 1973. The initial study was restricted to employees of IBM in 70 countries. In subsequent studies, the results have been validated with other respondents, including airline pilots, students, civil service managers, consumers and "elites". Hofstede (1980, 1994) first developed a model that identified four main value dimensions to assess cultural differences. Later, a fifth dimension, the long-term orientation, was added after recognizing that Asian cultures with a strong link to Confucian philosophy acted differently from Western cultures. Table 6 depicts the five Hofstede cultural dimensions and their relation to mobile commerce.

Kim et al. (2004) attribute the tendency of Japanese respondents to regard the mobile Internet with some misgivings in terms of contribution to e-commerce to the high UAI level in Japan. Interestingly, although their comparison of Korean, Hong Kong and Japanese respondents is based on Hofstede's dimensions, they highlight another result: Japanese users prefer to communicate via e-mail rather than phone calls. The authors explain this by "meiwaku", which means a strong sense of inhibition about being a nuisance in public. This perfectly fits the dimension of conformity in the framework of the SWS, but is not captured by the Hofstede dimensions. Nevertheless, Hofstede's operationalization of culture is most frequently referred to in investigations of the impact of culture on the adoption and acceptance of mobile services. For instance, Kim et al. (2004) found consumers from Hong Kong and Korea strongly opposed to paying additional fees for m-commerce services because of their higher scores in the collectivism dimension. Other m-commerce related studies relying on the Hofstede cultural dimensions are Lee, Y., Kim, J., Lee, I., and Kim, H. (2002), Urbaczewski, Wells, Sarker and Koivisto (2002), Ford, Connelly and Meister (2003) and Van Biljon (2006).

Hofstede (2008) provides us with a list of the five values for 74 examined countries (the fifth value is only available for 23 countries) and also depicts each of them in a figure, exemplified in Figure 1 for the US.

From the figure it is clear that the PDI is below the world average in North America, which indicates greater equality across societal levels. The IDV of 91 in the US is by far above the world average of 43. It is evident, therefore, that US citizens are more individualistic and have relatively loose bounds with others. MAS is only slightly above the world average, but the second highest dimension of the US. The value symbolizes a higher degree of gender differentiation of roles. The low score for UAI indicates that this culture has fewer rules and also a greater tolerance for a diversity of ideas. The additional dimension of *long-term orientation* is the lowest of all scores for the US and also lowers than the average world value of 45. It is interpreted as societies' belief in meeting its obligations and tends to reflect an appreciation of cultural traditions. The Hofstede dimensions are not uncorrelated and are subject to an inner-organizational culture bias due to the sampling of IBM employees. McSweeney (2002) provides a recent compilation of further critics. However, the study by Denison (1996) reveals a "striking set of similarities" to other

Table 4. The relation of the Trompenaars interpersonal problem dimensions and m-commerce services

The Trompenaars Dimensions	Relation to mobile commerce
Interpersonal problem	Mobile devices might assist the settlement of conflicts and help to overcome misunderstandings by enabling access to relevant data regardless of the time and location of individuals. Additionally, mobile devices allow for interaction as a substitute for face-to-face communications. Moreover, mobile services might support individuals to make up or maintain their relations to other individuals.
Universalism versus particularism	Mobile services particularly can help consumers in universalistic cultures to overcome the limits of their society without violating any rules.
Individualism versus collectivisme	Mobility enables to maintain the connection to the community in communitaristic cultures and provides individuals with opportunities to re-assure their decisions.
Neutral versus emotional	At first glance, interactions via mobile devices have been neural due to their digital nature. Modern devices and services aim to add the emotional elements (prominent examples are individualized ring tones or wallpapers).
Specific versus diffuse	Particularly in Western cultures, business relations are frequently described in terms of a goal-orientated interaction that is limited to the activities needed to reach the goal. In Asian cultures, diffuse relationships are not only preferred, but necessary before business relationships are set up. Mobile services may assist to strengthen these diffuse relationships.
Achievement versus ascription	In achievement-focusing cultures, mobile service providers should emphasize the functional values offered by their services. In contrast, in ascription-oriented societies, the prestige and brand essence should be communicated. Additionally, referring to other users assigned to the mobile services network is likely to increase its valuation of the services offered.
Orientation in time	In addition to the opportunities outlined in Table 3, mobile services allow the retrieval of information on the past, present and most interestingly – highly profitable – on the future (e.g., horoscopes, local weather forecasts, etc.).
Attitudes toward the environment	Mobile services give control to the user of the mobile device, e.g., parents may localize their children, spouses each other, etc., but in another sense, they can be used to control other technical equipment, e.g., domestic central heating, other mobile devices.

quantifications of culture: the underlying dimensional constructs are very similar. Since Hofstede's four dimensions of culture served as consistent starting points in prior cross-cultural studies, e.g., Urbaczewski et al. (2002) and Kim et al. (2004), we use these dimensions in the subsequent section to analyze and compare countries by different data from their mobile communication market like phone penetration or SMS sending in a specific time period.

Relation between Cultural Dimensions and Characteristics of Mobile Technology in Six Countries

The impact of culture on the exposure to mobile technologies will be demonstrated with the Hofstede value dimensions and collected data for mobile technologies. The data obtained from the OECD (2006) dataset cover the total number of outgoing minutes for 2004 and 2005. The dataset comprises data on SMS sending, mobile phone penetration and phone subscriber penetration in China, France, Germany, Japan, the United Kingdom and the United States.

The total number of minutes individuals phoned in different countries in 2004 are correlated to the four cultural dimensions. The correlation coefficients are shown in Figure 2.

It is evident from the figure that the UAI is negatively correlated to the number of minutes people call in a year. The results are in line with those reported by Kim et al. (2004) for Japanese consumers. However, the results are unexpected, because individuals in cultures with high scores for UAI could reduce their perceived uncertainty by confirming information, reporting information to related individuals, and acknowledging their whereabouts and activities. One explanation for this is the lack of durability in comparison to other media (e.g., letters or fax), the related credibility and

Table 5. Schwartz motivational values and their impact on m-commerce

Schwartz Values	Relation to mobile commerce
Power	The ownership of mobile devices and the subscription to particular services symbolizes social status and prestige as well as the control of other individuals or resources.
Achievement	The familiarity with and usage of mobile services demonstrate a desirable competence with respect to social standards.
Hedonism	Mobile devices facilitate a variety of self-gratification applications, e.g., games.
Stimulation	Modern mobile devices consolidate communication technologies with entertainment, e.g., music.
Self-direction	The user gains independence by means of reachability and access to different resources stored on the device or accessible via the mobile device.
Universalism	Mobile services may support individuals in their ambition to understand others, interact fairly und increase the welfare of societies.
Benevolence	Mobile devices enable a closer contact with people in frequent interaction, particularly family and friends.
Tradition	Yet, mobile devices are an element of any society's history. However, mobile devices enable the members of societies to develop their traditions in modern formats, e.g., access to religious texts or prayers, regardless of the individual's place and local time.
Conformity	In business life, most individuals are expected to be reachable during business hours and beyond. In contrast, the usage of any mobile services might violate social norms, e.g., the usage of mobile devices during religious ceremonies or in places of cultural interest.
Security	The perception of safety and harmony as well as the stability of relationships can be increased by mobile services.

the lower level of trust in the information received. Another explanation is the uncertainty of the costs incurred by the use of mobile devices – the tariffs for the usage of mobile services are made up of at least two components: a basic fee and a charge for the call. The extent of the latter frequently depends on the service provider of the other user, the local time or day, and so on. Experiments by Estelami (1999) indicate that even 25% of a group of marketing students, who were provided with all the necessary data and trained in calculating the costs, failed to work out the costs with perfect accuracy. The majority of users of mobile devices are not trained in calculating these costs, are rarely provided with the necessary data, and, most important, lack the motivation to work it out. Therefore, it is a reasonable strategy to reduce uncertainty by avoiding calls using the mobile phone.

A second remarkable result depicted in Figure 2 is the high positive correlation between the IDV and the called minutes per year. This result shows that people in individualistic societies phone a lot more than those in collectivistic societies. Societies with loose ties among individuals, who primarily look after themselves and their immediate family, and disregard communities, are more egoistic and career oriented. They use the phone more often to stay in contact with other like-minded individuals and to power their career. This result is in line with previous results by Kim et al. (2004).

For a further investigation, the Hofstede dimensions are correlated with the penetration of mobile contract subscriber numbers (OECD, 2006), mobile phone penetration and the average number of SMS messages sent per inhabitant each month. The results are shown in Figure 3.

Akin to the calling minutes, the proportion of mobile contract subscribers, mobile phone penetration and SMS-usage are positively related to the dimension of individualism. Therefore, we argue that the cultures with high individualism scores provide good

Table 6. Overview of Hofstede dimensions explained and in the context of mobile commerce

Hofstede Dimensions	Relation to mobile commerce
Power distance (PDI):	This dimension reflects the need to have mobile devices in order to maintain control over other individuals as well as other resources. Since this dimension captures the accepted degree of inequality, it also reflects the acceptance and appropriateness of very high-priced devices and services.
Individualism (IDV):	Mobile devices enable vendors to contact their customers individually, in contrast to mass media advertising. However, in individualistic cultures, the benefits of maintaining the connection to a group by using mobile services are likely to be less esteemed.
Masculinity (MAS):	The metaphor of masculinity refers to assertiveness, performance, success and competition. Mobile services and the related devices are frequently associated (and promoted) with these attributes.
Uncertainty avoidance (UAI):	Mobile devices and services aim to support users in structuring their situations and provide access to information to reduce the perceived uncertainty.
Long-term orientation:	Users of mobile devices get their services instantly. Therefore they need not plan or wait.

Figure 1. Example of the Hofstede cultural dimensions for the US

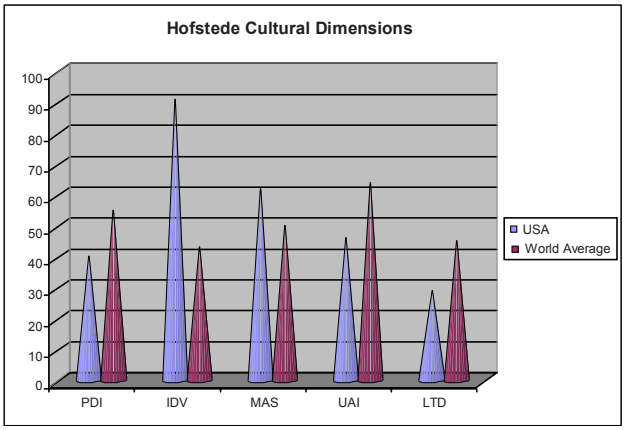
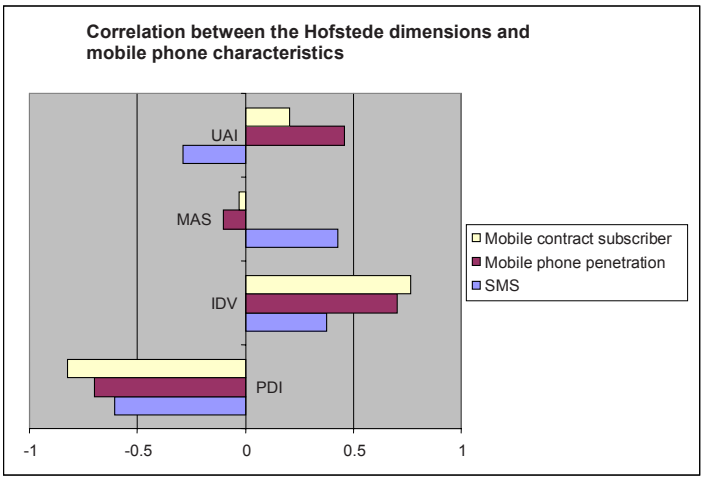


Figure 3. Correlation between the Hofstede dimensions and mobile phone characteristics (contract subscriber, phone penetration and SMS) (BNA, 2006; BD, 2006)



preconditions for mobile phone activities.

Contrarily, the PDI again has a clear negative impact. A rationale for the negative correlation with the extent of text messaging is given by Sarker and Wells (2003). In high PDI cultures, the sending of SMS messages is more likely to be considered unsuitable for formal communication. In the interaction of individuals of different status – an employee with his work supervisor, for example – it might even be perceived as a serious offense. The same argumentation might hold for the negative correlation of UAI and text messaging. Clearly, the UAI is positively related to the mobile phone penetration, although it is shown to be negatively related to the calling minutes in Figure 2.

Harris Rettie, & Kwan (2005) argue that high PDI in a culture is associated with acceptance of one's lot in life and being more relaxed and fun-loving. Because of the hedonic value associated with mobile devices, a positive correlation between the proportion of mobile phone subscribers and mobile phone penetration is expected, but nor supported by the data. This point clearly calls for further research.

The positive correlation of MAS and text messaging contradicts prior conjecture: Straub Keil, & Brenner (1997) argued that individuals in cultures with a high score of masculinity rely on rich media to improve their assertiveness in social interactions. The richness of media is qualified by (1) the capacity for immediate feedback, (2) the capacity to transmit multiple cues such as voice inflections or gestures, (3) the variety of language, and (4) the capacity of the medium to have a personal focus (Daft, Lengel, & Trevino, 1987). Since SMS do not meet the second and the third criteria, the richness is low, which limits assertiveness in social interactions.

Culture not only impacts on individuals, by means of determining need and desires, but it also affects a society's progress in building a digital interaction infrastructure (Ho, Kauffman, & Liang, 2007). This progress is quantified by the country's national e-readiness:

Definition 3 (e-readiness): *E-readiness refers to a country's ability to benefit from the electronic advantages as an engine of economic growth and human development.*

E-readiness has several components, including telecommunications infrastructure, human resources, and a legal and policy framework. This assessment is not restricted to m-commerce, but serves as a suitable proxy for the quality of technical, economic and legal condition for successful m-commerce activities (Ferguson & Yen, 2006).

The data on e-readiness are taken from the EIU (2006). E-readiness is quantified by scores from 1 to 10 comprising the following categories: connectivity, business environment, consumer and business adoption, legal and policy environment, social and cultural environment and supporting e-services. In addition to the e-readiness in 2005, the cell phone penetration in Italy, Germany, the UK, France, Spain, Japan, South Korea, the US and China is depicted in Figure 4.

It is clear from the figure that the European countries under consideration have a similar phone penetration, between 70% and 80%, and their e-readiness scores are also quite similar, oscillating between 70% and 85% (standardized in the range from 0 to 100 for comparability). However, in Asia, and especially in the US, the results strongly disband. Clearly, in the US, the use of the mobile phone falls short behind e-readiness.

Considering the correlations between the Hofstede dimensions and e-readiness in Figure 5, their similarity is striking. This seems reasonable because in a national culture with a high e-readiness score, the people are prepared for different kinds of modern technologies, and are therefore likely to invest individually in mobile phones.

A high UAI is associated with increased e-readiness and mobile phone penetration. Notably, Gong, Li and Stump (2007) hypothesized a negative impact of UAI on Internet use and access, but failed to support this hypothesis with their data. Consequently, we suppose that people aim to maintain an opportunity for staying in contact with one another via mobile phone and use more modern technology like the mobile Internet.

IDV is positively related to the ubiquitous spread of mobile phones and e-readiness. This result fits the findings of Lee, Choi, Kim, and Hong (2007), which highlight the fact that people in individualistic countries benefit from a higher perceived enjoyment and usefulness of mobile applications. This result and the negative impact of PDI are in line with the results by Gong et al. (2007). The impact of masculinity is relatively small, a finding that fits the observation of Hofstede (1994), who deems that the MAS dimension deploys a lower impact than the other three dimensions.

Figure 4. Comparison of the penetration of cellular phones and e-readiness scores (OECD, 2006; EIU, 2007)

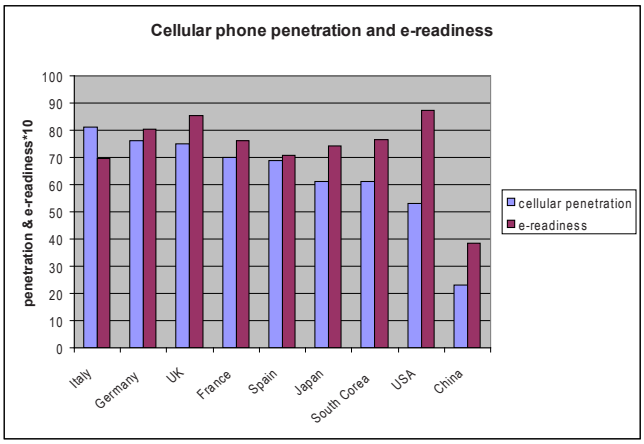
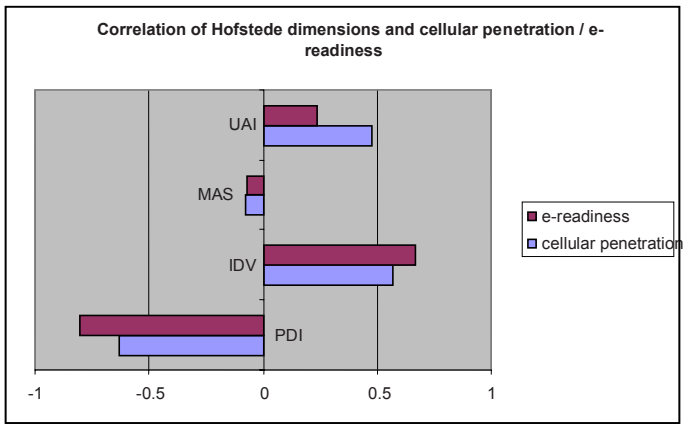


Figure 5. Correlations of the Hofstede dimensions and mobile phone penetration and e-readings (OECD, 2006; EIU, 2007)



Implications for Further Research

The contribution of this chapter aims to shift attention from technical aspects and isolated consideration of technology diffusion to the cultural frames of the use of mobile devices.

Yet, most researchers take identical needs and desires of the users for granted when investigating m-commerce service adoption or designing innovative business models using mobile services. The results outlined in this chapter are reason enough to change this misleading point of view. In the marketing related literature, there is an ongoing debate on the necessity and the limits of standardization. The empirical results of this chapter call for an adaptation of m-commerce services with respect to the cultural predisposition of the users. A detailed investigation is just emerging in the realm of m-commerce.

Most of the results presented in the current chapter are in line with prior conjecture, some of which is conflicting. Particularly the relation of UAI and e-readiness and the relation between MAS and text messaging should be explored in more detail, not only for the cultures under consideration, but also for other cultures.

In this study, we have demonstrated the quantification of culture by means of Hostede's dimensions, just one approach among a few similar ones, which has been shown to provide a valid assessment of quantifying culture. Clearly, an investigation using other quantification methods would be an avenue for further research. All the approaches discussed in this chapter, however, are taken from related social sciences, but not developed to foster research on mobile or more broadly defined digital research. Consequently, design and validation of scales for a quantitative assessment of culture appear to be the more challenging endeavor.

Implications for Practice

The lack of cultural fit is likely to become a common argument for explaining the failure of m-commerce business models as it is rarely taken into account in the planning of an m-commerce business strategy. Practitioners from all domains of m-commerce should be urged to take advantage of adapting their offers to the cultural expectations of their target users. The data analysis in this chapter results in two rules of thumb:

1. Users in cultures with low PDI and UAI are more likely to adopt m-commerce services. Vendors should target these markets first, when introducing or re-launching their services. Moreover, e-readiness is higher in these cultures. Consequently, the technical infrastructure will support the diffusion of innovative services.
2. Cultures with high IDV scores are suited to the introduction of voice-related services, and entertainment opportunities in general.

If practitioners investigate the manner in which the population of a country uses mobile technology, they will run their business more successfully both from a short- and a long-term perspective. Mobile technology applications like SMS, MMS, WAP, mobile e-mail and even more accruing new services like "Mapion Pointing" or "Point & Find", which use GPRS to locate the user and UMTS for a very fast data transfer, encourage acceptance, which has turned out to depend on the cultural predisposition of the user. From the technical perspective, users of mobile devices can be reached any time and anywhere. Moreover, this might be achieved on many levels, with text content, music, pictures or even movies, but attention paid to these services and their acceptance differs significantly with respect to their cultural embedding. On the contextual level and formal configuration of any communication, mobile users need to feel culturally engaged with the vendors. The metaphor, "clash of cultures", gains importance for all m-commerce services, which are elements of particular societies' "modern way of life", if these societies and their values are disapproved of by other relevant target groups.

CONCLUSION

This chapter highlights the importance of culture for the acceptance of m-commerce offers by correlating the adoption of different services to Hofstede's cultural dimensions. The reasons for varying adoption rates have turned out to be critical to the success of m-commerce business models, and call for a reliable quantification of the relevant dimensions of culture. Clearly, m-commerce vendors are well advised not to standardize their offers or their communication to and with their customers. The challenge of adapting to the cultural needs appears to be more daunting than the somewhat milder challenge of adapting to the stationary Internet. In the latter case, the alignment of languages and symbols provides a sufficient level of customization. In m-commerce, the different usages of mobile devices open or lock communication channels. Moreover, the culture determines the appropriateness of the interaction gestalts with respect to the users' situational contexts.

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KEY TERMS

High-Context Cultures: Societies where relationships of individuals are long lasting and qualified by means of individuals' status. Individuals in high-context cultures are used to understanding implicit communication.

Individualism: The extent to which people are expected to stand up for themselves and consider their own well-being in any decisions. Dimension for quantifying culture with Hofstede's framework.

Instrumental Values: Beliefs about some desirable end state that transcends specific situations, which apply to many different countries and are socially desirable.

Long-Term Orientation: The extent to which the individual considers future impacts of their decisions. Dimension for quantifying culture with Hofstede's framework.

Low-Context Cultures: Societies where the relations between individuals are formed by rules and where communication has to be explicit.

Masculinity: The extent to which competitiveness, assertiveness, ambition, and the accumulation of wealth and material possessions are considered to be desirable within a society. Dimension for quantifying culture with Hofstede's framework.

Media Richness: Theoretical framework for qualifying communications with respect to social cues (e.g., gestures or moods) that are conveyed in the course of interactions by using particular media. (This is also known as Information Richness)

Meiwaku: The Japanese term describing the strong sense of inhibition about being a nuisance in public in this culture.

Power Distance: The extent to which an unequal assignment of control people and resources is accepted by the individuals of a society. Dimension for quantifying culture with Hofstede's framework.

Uncertainty Avoidance: Extent to which individuals attempt to cope with anxiety by minimizing uncertainty. Dimension for quantifying culture with Hofstede's framework.

Terminal Values: Beliefs about some desirable end state that transcends specific situations which refer to idealized end states of existence or lifestyles.