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WHY IS THERE VARIATION IN THE NATURE OF ORGANIZATIONAL MOBILE IT ADOPTION? AN EMPIRICAL STUDY OF THE INFLUENCE OF ORGANIZATIONAL CULTURE ON ORGANIZATIONAL MOBILE IT ADOPTION

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Abstract

This study investigates how organizational culture (OC) influences the adoption of mobile IT in organizations. So far, research has only considered control or flexibility-oriented OC as an influencing factor in mobile IT adoption. We use the competing values model of Denison and Spreitzer to extend the existing theory and assess whether an external or internally-orientated OC influences mobile IT adoption in organizations. Based on a quantitative questionnaire, we collected data from CEOs, CIOs, and managers from 101 organizations. Employing PLS, the relationships of two culture types - group culture (GC) and developmental culture (DC) - and their influence on mobile IT adoption in customer relations, supplier relations, and production and operations is tested. The results show that GC and DC influences mobile IT adoption differently. GC has a positive influence on mobile IT adoption in production and operations and DC on mobile IT adoption in customer relations. Hence, the study indicates that mobile IT adoption is subject to cultural bias. The findings can support executives by creating an awareness of culturally-biased adoption. We contribute new insights into the understanding of mobile IT adoption and extend the existing theory concerning the influence of OC on organizational mobile IT adoption.

Keywords: IT Adoption, Mobile IT, Mobile Computing, Organizational Culture, CVM, PLS.

1   Introduction

Over the last few decades, information technology (IT) has emerged as a critical resource enabling organizations to create value and has led to the transformation of products, processes, companies, industries, and even competition itself. The painful structural shifts experienced by the music, film and publishing industries are testament to the transformative force of IT innovation (The Economist, 2012). Following this tradition, mobile IT has emerged as another transformative force with the capabilities to reshape business and society (Time Magazine, 2012). The potential business value of mobile IT is almost beyond question and scholars and practitioners confirm that it has the potential to leverage business value gains across the entire value chain of organizations (Barnes, 2004; Kadyte, 2004; Basole, 2005; Sheng et al., 2005; Walker and Barnes, 2005; Scornavacca and Barnes, 2008; Sørensen, 2011). However, the business value of mobile IT is multi-faceted, as demonstrated by Scornavacca and Barnes (2008), who summarize eight core and non-mutually exclusive benefits of mobile IT, including business transformation, efficiency, effectiveness, flexibility, etc. However, despite the claimed benefits of mobile IT, in practice, we recognize different patterns and states of adoption. Concerning the adoption of mobile IT in organizations, many have recently started to develop their first customized software applications for smartphones or tablet computers, while at the same time, other organizations have been using comparable solutions for several years. For example, many organizations are now adopting applications to support their sales staff with media tablets whereas other organizations have been using tablet computers for comparable applications since the early 2000s (Walker and Barnes, 2005). Similar observations can be made about the adoption of PDAs (personal digital assistant) or smartphones. Therefore, questions arise about factors that explain differences in the adoption of mobile IT among organizations. To better understand these factors, it is necessary to study the organizational context in which the adoption of mobile IT takes place. We, therefore, focus on organizational behavior and adoption, rather than on individual behavior or adoption.

On an organizational scale, research has so far focused mostly on the strategic implications and competitive advantages of mobile IT to explain adoption behavior (Ladd et al., 2010). However, some authors (Che and Nath, 2005; Chen and Corritore, 2008; Chen and Nath, 2008; Hoang et al., 2008) consider that besides national culture (Sgriccia et al., 2007), an appropriate *organizational culture (OC)* is also a pivotal factor that influences organizational IT adoption. For example, Chen and Nath (2008) conclude that the extent to which organizations supported mobile workers depends largely upon the culture of the organization and its employees. They state that organizations need to consider whether they are comfortable with employees not being physically in a space eight hours a day, 40 hours a week. They conclude that organizations, in which employees are viewed as *capable*, *motivated*, and *trustworthy,* are more open to mobile IT. At the other extreme, in more "control-focused" organizations, mobile work initiatives are not supported by management and employees tend to resist new technologies and change in the workplace. Chen and Nath (2008) conclude that nearly all CIOs in their sample noted that the right OC and work environment are the keys to success in mobile work. Based on these results, Chen and Corritore (2008) developed a theoretical model of a *nomadic culture*, which proposes that control-focused organizations will disfavor mobile IT and flexibility-oriented organizations will favor mobile IT. In addition to mobile work, Hoang et al. (2008) also make a comparable conclusion on telecommuting. They observed that telecommuting has been highly touted for a number of years, but its adoption indicates varying levels of success. They propose reinvestigating the impact of OC on telecommuting adoption.

On the one hand, these results support the assumption that OC is related to the adoption of mobile IT, but on the other hand, it is also a very limited conclusion, as only one dimension of OC (*control* vs. *flexibility-focused)* is taken into consideration. In addition, mobile work and telecommuting are only two aspect of mobile IT adoption and neither article further explores the impact of OC in particular. In conclusion, research indicates that OC is an important factor influencing organizational mobile IT adoption, but specific empirical work on this aspect still needs to be conducted. However, the

observation that mobile IT adoption is characterized by varying levels of adoption can be further confirmed by preliminary research on the sub-aspect of telecommuting and mobile work. Additionally, we conclude that research which considers OC as an influencing factor for, in particular, mobile IT adoption, contributes to the existing body of knowledge and enriches our understanding of mobile IT adoption in organizations. We therefore state the following research question:

How does organizational culture influence the organizational adoption of mobile IT?

In this article, we present an empirical study and extend the existing knowledge by examining the influence of OC on the adoption of mobile IT in organizations through exploring in particular, the cultural dimension of *internal* vs. *externally-focused* OCs. The study thus contributes to a more detailed understanding of the nature of this evolving technology in the context of organizational usage and tests for cultural bias in the adoption process.

The remainder of the paper is organized as follows. Section 2 contains an introduction on related work and the theory, and defines the hypotheses. Section 3 discusses the methodological approach and sample. Section 4 reports on the results and section 5 discusses the results and their implications for theory and practice, as well as the limitations of the study and opportunities for further research.

2 Theoretical Framework and Hypotheses

From a theoretical point of view, we examine the relationship between two constructs: OC and mobile IT adoption. However, to use OC as a theoretical construct, different cultural types have to be identified and operationalized. The same applies to mobile IT adoption. In the following section, we define both constructs and develop hypotheses that specify their relationship.

2.1 Organizational Culture

Culture theory in general has been used to explain a wide range of social behaviors and outcomes in organizational settings. The preliminary findings provide reasonably compelling evidence that value orientations (from a cultural perspective) may predispose certain social groups / organizations to either favor or disfavor the adoption of certain IT artifacts (Leidner and Kayworth, 2006). It is also proposed that OC influences managers' choices of desired outcomes and decisions on the means to achieving these outcomes (Yarbrough et al., 2011). Thus, the OC theory suggests that OC impacts on perceptions of whether mobile IT is a good or bad thing. Concerning culture at an organizational level, the concept of organizational climate must also be mentioned as a comparable approach. Both concepts share comparable assumptions and definitions and have been traditionally distinguished by the research approach – culture was qualitatively, climate quantitatively measured – but with the emergence of quantitative measures for culture, many authors argue that the two concepts have become indistinguishable (Jung et al., 2009; Thumin and Thumin, 2011). We follow the recommendation of Thumin and Thumin (2011) and use the term culture, as it is more encompassing then climate.

One of the most common instruments, which has been widely reported and proven valid, is the *competing values model* (*CVM*). It is a value-based and dimensional approach introduced by Denison and Spreitzer (1991) that is capable of distinguishing and measuring different cultural types. In information systems research, it is widely used to empirically assess culture on an organizational scale (Leidner and Kayworth, 2006). In general, the CVM is a meta-theory that was originally developed to explain differences in the values underlying several organizational effectiveness models (Quinn and Rohrbaugh, 1981; Denison and Spreitzer, 1991). Culture is measured in terms of values separated by two distinctions and dimensions, namely: *control vs. flexibility* and *internal vs. external focus* (Denison and Spreitzer, 1991; Iivari and Huisman, 2007). Figure 1 illustrates the two main dimensions on which the CVM is based: the *control-flexibility axis* (vertical) and the *internal-external axis* (horizontal). The control-flexibility axis reflects the extent to which an organization emphasizes *control and stability,* as opposed to *flexibility and spontaneity*. The internal-external axis reflects

whether an organization emphasizes its *internal organization* or the *environment*. Organizations with an *internal*-focus strive to maintain and improve the existing organization, while *externally*-oriented organizations focus on competing with, adapting to, and interacting with the external environment (Zu et al., 2010). By combing the two axes, four types of ideal cultural orientations emerge from this distinction: group culture (GC), developmental culture (DC), rational culture (RC), and hierarchical culture (HC). These four cultural orientations are defined differently and can be distinguished from one another and measured independently. Figure 1 illustrates the CVM, including the two axes and four cultural types.
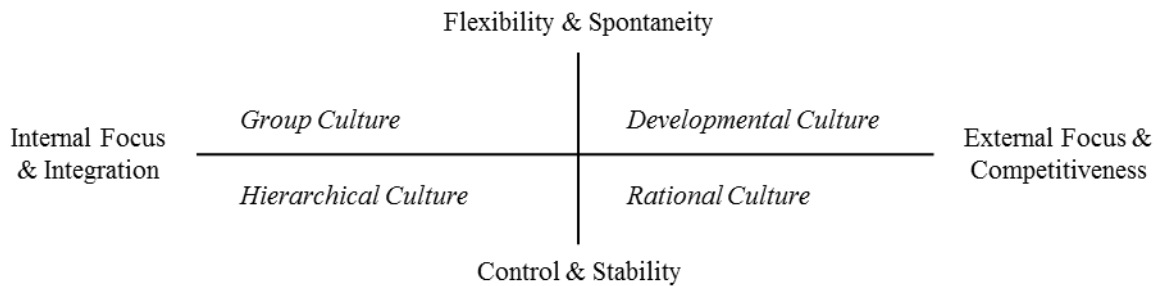
Flexibility & Spontaneity

Internal Focus & Integration	*Group Culture*	*Developmental Culture*	External Focus & Competitiveness
	Hierarchical Culture	*Rational Culture*	

Control & Stability

Figure 1.   *The Competing Values Model* (Denison and Spreitzer, 1991; Zu et al., 2010).

By applying the CVM, it is possible to extend the existing theory on nomadic culture, which focuses mainly on the control-flexibility axis, with a novel aspect introduced by the internal-external axis. As the theory of nomadic culture proposes that a control-oriented culture deemphasizes mobile IT adoption, we focus on cultural types that emphasize mobile IT adoption. This decision is based on two reasons. First, based on the preliminary results, we assume that these two cultural types display higher adoption rates and are therefore more likely to reveal differences in mobile IT adoption across the value chain. Second, by limiting our view on two types, the research design is more focused and includes an manageable number of hypotheses. Based on these reasons, we research the flexibility and spontaneity-oriented cultural types (the upper two types in Figure 1): GC and DC. The difference in mobile IT adoption of these two cultural types reveals, whether the internal-external axis influences mobile IT adoption. Following this approach, we can examine the relationships between two culture types and mobile IT adoption in organizations (Zu et al., 2010). To formulate hypotheses according to the CVM, we follow the definitions of GC and DC given in the introductory paper of the CVM by Denison and Spreitzer (1991).

2.2   Organizational Mobile IT Adoption

By dividing OC into GC and DC, we can test relationships between the mobile IT adoption and OC of an organization. However, the disparate and varying nature of an organization's mobile IT adoption complicates the measurement of overall mobile IT adoption. To understand how OC influences mobile IT adoption, a more detailed view is necessary. One way of simplifying this task is to adopt a classification scheme that groups mobile IT usage in an organization into generic but distinguishable areas that share common goals (Tallon et al., 2000). Therefore, we adopt an approach that breaks mobile IT adoption down into distinct areas. This break-down of mobile IT adoption can be achieved by applying a process-level-oriented measure of mobile IT adoption across the value chain of an organization. While there are many recognized ways of depicting an organization in terms of process areas, the value chain is probably the most common and widely known approach. Basically, the value chain divides an organization into primary and supportive activities. The primary activities represent the process areas where the value creation occurs and represent a stream through the organization, ranging from inbound logistics, operations, outbound logistics, marketing and sales, to service (Porter and Millar, 1985). Therefore, the value chain's primary activities are synonymous with the conversion of input into output and are more applicable to manufacturing organizations. However, concerning the impact of IT on the value chain, generic models have been developed, which are based on the value

chain, but are capable of representing the primary activities for organizations in any industry. With respect to these generic models, Tallon et al. (2000) conducted a literature review and defined six selective dimensions of IT business value, based on the value chain: customer relations (CR), production and operations (PO), supplier relations (SR), process planning and support (PPS), product and service enhancement (PSE), and sales and marketing support (SMS). Three of these represent primary activities (CR, PO, SR) and the other three (PPS, PSE, SMS) represent supportive activities. We focus on the primary activities for two reasons. Firstly, we assume that mobile IT adoption can best be recognized in primary activities, as these are more readily observable and represent the value creation in an organization. Secondly, we argue that primary activities can be clustered into more internal- and externally-focused activities. We follow the definitions of Tallon et al. (2000) and define the process areas as follows:

CR includes market and customer-focused activities and goals, such as aftersales service and support, the distribution of goods of services, attraction and retention of customers, and support during the sales process. It focuses on interaction with the customers and, therefore, entails activities that focus mainly on interaction with external stakeholders, prospective and present customers.

PO includes activities where the service or the product is created. This is quite specific across different organizations, but the area can be specified in terms of common goals that organizations want to achieve. These include the improvement of production or service volumes and quality, the enhancement of operating flexibility and utilization of equipment, and improving productivity. In general, this area is focused on efficiency and creation. This represents the very internal activities of an organization.

SR, in turn, focuses on the interaction with other organizations, in particular, the suppliers of the particular organization. It is also very specific, but can be defined by common goals, such as gaining leverage over the suppliers, reducing supplier lead time and establishing electronic transactions, monitoring the supplied quality, and creating close relationships with the supplier. These activities focus on the interaction with external stakeholders, the suppliers.

To define the scope of the research and to focus our perspective on mobile IT adoption in these three areas, we define mobile IT as follows: Mobile IT encompasses highly portable mobile computing devices, including smartphones, handhelds, and tablet computers. Therefore, we focus on computer devices, which can be used "on the move" (Sørensen, 2011). Other mobile computing devices such as laptop computers are not included in this definition due to their restricted portability. Concerning these three types of devices (smartphones, handhelds, and tablet computers), any software application that supports the business and is in particular developed for these devices accounts as mobile IT application. Mobile IT therefore includes mobile email as well as mobile CRM software, etc.

2.3 Hypothesis development

By applying an approach which measures the adoption of mobile IT in specific process areas of an organization, it is possible to examine whether certain cultural types will emphasize or deemphasize adopting mobile IT in certain areas. By mapping these relationships between cultural types and mobile IT adoption in different areas of organizations, the influence of OC on mobile IT adoption is revealed. Based on the CVM and specific areas of the value chain, we formulate the following hypotheses with respect to the research question. The primary goal is to test whether GCs and DCs display different emphases when adopting mobile IT in different process areas of the organization. These two cultural types are mainly different in terms of their external or internal focus. GC is internally-focused and DC is externally-focused. This distinction corresponds to the internal-external axis of the CVM. Researching the impact of these two constructs will reveal whether internally- or externally-focused organizations have a different focus in the adoption of mobile IT.

However, the CVM additionally reveals more generic characteristics of these cultural types. These characteristics can be used to formulate additional hypotheses concerning their emphasis in mobile IT adoption. Although we focus on the internal-external axis, we will formulate such hypotheses in

addition, to obtain a more complete picture of the research issues. The additional hypotheses will also ensure that unexpected relationships are also explored.

2.3.1 Internal vs. External Focus

The internal vs. external focus represents the two environments in which an organization is embedded. The internal environment is represented by stakeholders that "belong" to the organization, such as employees. The external environment is represented by stakeholders with which the organization interacts, such as customers, suppliers, the government, etc. (Enns Dean B.Sweeney, Paul D., 2011). Based on the definition of the process areas, we are able to identify areas which are concerned primarily with interacting with the external environment and those, which are more concerned with interacting with the internal environment. The process areas on which CR and SR focus include the interaction with external stakeholders, customers and suppliers. Therefore, these two process areas are mainly concerned with the external environment. DC is defined as cultures that have "a primary focus on the external environment" (Denison and Spreitzer, 1991). Therefore, we assume that a DC orientation focuses on innovation in process areas that are externally-focused, such as CR and SR. The main objectives of CR and SR also fit well with the strategy of DCs, which is generally described as focused on innovation, resource acquisition, the development of new markets and new products to gain new customers. These strategic goals can be achieved by innovation in CR (developing new markets, gaining new customers) and in SR (resource acquisition). If a DC favors such strategic goals, it can be argued that they will also focus on employing novel technologies that support those goals in the corresponding areas. Mobile IT is capable of supporting all activities of an organization, including CR and SR. We therefore posit that DCs will employ these technologies in CR and SR to achieve their strategic goals. We propose the following two hypotheses for DCs:

H1a: A developmental culture orientation has a positive impact on mobile IT adoption in customer relations.

H1b: A developmental culture orientation has a positive impact on mobile IT adoption in supplier relations.

In contrast, PO is an area that is primarily embedded in the internal environment of an organization. The tasks are performed mainly by employees and there is considerably less interaction with the external environment compared, to CR or SR. This area is, therefore, more related to the internal environment of the organization. Hence, this area is of particular interest for organizations, which focus on improvements in the internal environment. This fits the strategic goals of GCs, as they are described as having "a primary focus on the internal organization" (Denison and Spreitzer, 1991). GCs value participation, teamwork, people, and commitment, with facilitator-type leadership. Hence, they emphasize the internal environment and strive to enhance the internal parts of the organization and internal value creation. If a GC favors such strategic goals, it can be argued that they will also focus on novel technologies that support these goals in the corresponding internal areas. It is well known that internal operations, such as PO, can also profit from mobile IT and that improvements in this part of the value chain can be achieved by its adoption. Based on the internal orientation of GCs, we posit that such a culture would focus on adopting mobile IT in PO and we therefore formulate the following hypothesis:

H1c: A group culture orientation has a positive impact on mobile IT adoption in production and operations.

2.3.2 Characteristics of the Cultural Types

In addition to the different implications derived from the distinction between an internal and external-focus, the CVM characterizes each cultural type with additional descriptions. As we use the CVM as our theoretical basis, we do not neglect this fact and thus formulate additional hypotheses.

Concerning the DC, the CVM states that such a culture is in general very open and fast in adapting to changes in the external environment, such as new technologies. This is supported by Stock and

McDermott (2001), who found evidence that DCs generally emphasize the adoption of new technologies. This leads to the assumption that DCs strive to adopt mobile IT in all parts of their organizations, despite their external focus. Therefore, a DC would emphasize mobile IT adoption in all process areas. To obtain a complete picture of the influence of DC on the adoption of mobile IT, we propose, in addition to H1a und H1b, the following hypothesis:

H2a: A developmental culture orientation has a positive impact on mobile IT adoption in production and operations.

Concerning the GC, the CVM states that such a culture "has a primary concern with human relations. The purpose of organizations with an emphasis on group culture tends to be group maintenance. Belonging, trust, and participation are core values, and primary motivational factors include attachment, cohesiveness, and membership. Leaders […] facilitate interaction through teamwork" (Denison and Spreitzer, 1991). The strategy of GCs is to support interaction and teamwork in general and across all areas of the organization. A core part of interaction is communication. Thus, improving teamwork, especially technology that supports communication, is an important aspect. Hence, if a technology can be employed to support communication, GCs would emphasize its employment. As IT in general and mobile IT in particular is known to promote effective communication, this would assume that GCs would favor the adoption of mobile IT in all areas of the organization, despite their internal focus. Hence, we propose that a GC orientation would lead to the adoption of mobile IT in all areas of the organization. To obtain a complete picture of the influence of GC on the adoption of mobile IT, we propose, in addition to H1c, the following two hypotheses:

H2b: A group culture orientation has a positive impact on mobile IT adoption in customer relations.

H2c: A group culture orientation has a positive impact on mobile IT adoption in supplier relations.

3   Methodology

3.1   Survey Instrument

For the measurement of mobile IT adoption in CR, PO and SR, we use an instrument developed by Tallon et al. (2000) to measure the impact of IT on certain parts of the value chain. Tallon et al. (2000) formulated the items in such a way that they apply to manufacturing and service organizations. We therefore adapted them to measure – in particular – mobile IT across the value chain. To ensure that the participants give answers on the right subjects, we provided an explanation of what accounts for mobile IT with text and examples (illustrations of smartphones, handhelds and tablet computers) in the introduction section of the questionnaire. Items were measured on a five-point Likert-scale. We used five items for each construct (CR, PO, and SR).

To measure GC and DC, we use the instrument of Iivari and Huisman (2007), which is based on Yeung et al. (1991). Iivari and Huisman (2007) report excellent validity and reliability estimates for the instrument. The original instrument was developed to measure the degree to which an organization emphasizes each of the four culture types described by the CVM. The instrument uses three five-point Likert-scale items for each construct. We adopted those concerning GC and DC.

To refine the questionnaire, it was independently reviewed and pre-tested by two members of our faculty and two practitioners. The questionnaire was evaluated in terms of issues such as understandability and wording, logical validity, format, and the ability of the items to capture the measured constructs. Based on the feedback, the questionnaire was refined further. All items used in the questionnaire are reported in Table 1, including the corresponding means and standard deviations for each item.

Code	Item	Mean	STDEV
The following section relates to mobile IT applications used in your organization. Restrict your appraisal to applications already realized and in use rather than applications expected in the future. How does mobile IT boost company performance in the following areas of your organization? (1 = strongly disagree, 5 = strongly agree)		
Code	Item	Mean	STDEV
CR1	Enhances the ability to provide aftersales service and support.	2.89	1.378
CR2*	*Enhances the flexibility and responsiveness to customer needs.*	*3.35*	*1.212*
CR3	Improves the distribution of goods and services.	3.14	1.249
CR4	Enhances the ability to attract and retain customers.	3.40	1.234
CR5	Enables us to support customers during the sales process.	3.22	1.278
PO1	Improves production throughput or service volumes.	2.90	1.145
PO2	Enhances operating flexibility.	3.75	1.033
PO3	Improves the productivity of labor.	3.83	1.001
PO4	Enhances utilization of equipment.	3.19	1.164
PO5*	*Reduces cost of tailoring products or services.*	*2.48*	*1.110*
SR1	Helps your corporation gain leverage over its suppliers.	2.49	1.154
SR2	Helps reduce variance in supplier lead times.	2.09	1.087
SR3	Helps develop close relationships with suppliers.	2.21	1.080
SR4	Improves monitoring of the quality of products/services from suppliers.	2.36	1.045
SR5	Enables electronic transactions with suppliers.	2.74	1.254
Organizational Culture: (1 = strongly disagree, 5 = strongly agree)		
Code	Item	Mean	STDEV
GC1	The organization I work in is a very personal place. It is like an extended family and people seem to share a lot of themselves.	3.34	1.003
GC2	The glue that holds the organization I work in together is loyalty and tradition. Commitment to the organization I work in runs high.	3.79	0.852
GC3	The organization I work in emphasizes human resources. High morale is important.	3.90	0.878
DC1	The organization I work in is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	2.87	1.016
DC2	The glue that holds the organization I work in together is commitment to innovation and development. There is an emphasis on being first with products and services.	3.28	1.069
DC3	The organization I work in emphasizes growth through acquiring new resources. Acquiring new products/services to meet new challenges is important.	3.20	1.068
Items marked with * were removed during the exploratory factor analysis.		

Table 1.   List of Items with the Corresponding Mean and Standard Deviation.

3.2 Sample and Data Collection

The survey instrument was implemented as a web-based online questionnaire. For the sample building, we contacted CIOs (70%) and CEOs or directors (13%), and managers (17%) of large (more than 250 employees; 79% of the sample) and medium-sized (50-250 employees; 21% of the sample) organizations with headquarters in Germany, Austria or Switzerland. For the final sample, we used only answers from executives for two reasons. Firstly, they are most likely to have a holistic picture of mobile IT adoption in their organization and secondly, they can be regarded as dominant actors in their organizations and are, therefore, appropriate representatives to measure the OC of the corporation. Although this may limit the study to a single-respondent approach, this is a common approach (McDermott and Stock, 1999; Zu et al., 2010) and proven valid. We used professional social networking sites (www.linkedin.com, www.xing.com) to search for matching participants and contacted them using the messaging function of the website. This ensures that the message is read by the corresponding person, as such messages are usually redirected to the addressee's private email address. By doing so, we contacted 640 persons and received 115 completed questionnaires between June and August 2012. We reviewed the answers and excluded small organizations (<50 employees) and answers from participants who are not executives. The final sample comprises 101 answers and

represents a diversity of industries, which increases the generalizability of the findings. It includes companies from industries in manufacturing (35%), business services (15%), administrative services / government (8%), health care (6%), media / publishing (5%), technology / software (4%), education (4%), and others (29 %).

4   Results

In order to confirm the validity and reliability of the constructs, we applied exploratory and confirmatory factor analysis using SPSS and SmartPLS. During the exploratory factor analysis, we experienced problems with one item associated with PO and another associated with CR. The item CR2 indicated high loadings on two constructs – CR and PO. Item PO5 also indicated high loadings on two constructs – PO and SR. All other items clearly loaded with more than .4 only on the associated construct. Hence, we decided to remove PO5 and CR2 from the analysis. Thus, we measured PO and CR with four items and SR with five. This is still sufficient and the confirmatory factor analysis supports the decision. To test and estimate potential causal relationships, structural equation modeling (SEM) was built upon the defined constructs and the proposed hypotheses. To avoid non-convergence and improper solutions due to a small sample-size (N=101) and distribution assumptions, we used a partial least squares (PLS) approach, which is a variance-based method. For the data analysis and path modeling, we used the software SmartPLS 2.0 M3. The analysis followed the procedure recommend by Hair et al. (2011) and Gefen et al. (2011) and used the recommended values as evaluation criteria.

AVE	Comp. Rel.	Cron-bachs α	Comm-unality	Redun-dancy	Outer Loading (T-Stat)	Items	Principal Component Analysis (Varimax with Kaiser-Standardisation; 7 Iterations) Components				
							1	2	3	4	5
					12.004	DC1	**.695**	.169	.268	.081	-.040
					10.725	DC2	**.747**	.201	.216	-.076	.007
0.597	0.817	0.667	0.597	0	8.723	DC3	**.738**	-.045	.055	.100	.255
					7.697	GC1	.179	**.750**	-.022	.133	.130
					5.06	GC2	-.075	**.780**	.187	-.092	.124
0.579	0.804	0.638	0.579	0	5.103	GC3	.310	**.630**	-.006	.257	-.085
					12.122	CR1	.228	-.127	**.632**	.141	.345
					-	*CR2*	*-.023*	*.135*	*.579*	*.466*	*.248*
					24.444	CR3	.091	.050	**.858**	.207	.065
					25.86	CR4	.146	.117	**.842**	.218	.099
0.724	0.913	0.872	0.724	0.133	36.369	CR5	.278	.064	**.797**	.096	.158
					5.132	PO1	.032	-.058	.134	**.763**	.126
					9.068	PO2	.037	.308	.124	**.747**	.144
					7.297	PO3	-.006	.082	.244	**.776**	.040
					6.422	PO4	.120	.066	.114	**.679**	.223
0.615	0.864	0.8	0.615	0.019	-	*PO5*	*-.025*	*-.285*	*.228*	*.538*	*.470*
					8.25	SR1	.079	-.003	.260	.099	**.749**
					8.097	SR2	.055	.059	.105	.169	**.841**
					9.929	SR3	.093	.022	.114	.101	**.925**
					8.484	SR4	.075	.062	.011	.111	**.827**
0.708	0.924	0.895	0.708	0.033	6.141	SR5	-.028	.155	.144	.177	**.707**

Table 2.   Summary of Scales, Quality Criteria, Outer Loadings and the Exploratory Factor Analysis. Items marked with * have been removed.

In order to validate the proposed measurement model, we conducted validity assessments, based on internal consistency reliability, indicator reliability, convergent validity, and discriminant validity. The composite reliability values of the constructs range between 0.804 and 0.924 and are thus above the acceptable levels. Indicator reliability should ideally be higher than 0.7, which is the case here. The

indicator reliability was further ensured by the exploratory factor analysis we performed beforehand. The average variance extracted (AVE) is between 0.579 and 0.724, which is above the recommended value of 0.5. Finally, discriminant validity was assessed by comparing the indicator loadings to all of their cross loadings. A common rule of thumb is that an indicator loading should be higher than all of its cross loadings, which applies to the present dataset. In addition to the validity assessments, we also tested the measurement model for multicollinearity among the independent variables. We applied the Fornell-Larcker criterion, which proved to be valid. Therefore, multicollinearity was not a problem in the proposed model. Table 2 includes a summary of the scales, quality criteria, outer loadings and the exploratory factor analysis.

The model passed all criteria of the model evaluation. For the calculation of the t-statistics – the statistical significance level of the path coefficient – we applied a bootstrapping procedure with 5.000 bootstrap samples and 101 cases, which equals the number of observations from the original sample. Two out of six hypotheses proved to be statistically significant at a significance level of 5 percent (critical t-values for a two-tailed test above 1.96) or more. Thus, the empirical results reveal that different cultural types influence the adoption of mobile IT in organizations. The implications are discussed in detail in the next section. Figure 2 illustrates the results by displaying the path coefficients and their significance level (the * marks paths which meet a significance level of at least 5 percent) for each hypothesis, with the R^2 values of the dependent variables.

Additionally, we performed a finite mixture PLS (FIMIX-PLS) method to assess unobserved heterogeneity's existence. The results of this analysis did not support the existence of multigroup or moderator effects (such as effects concerning industries, etc.).
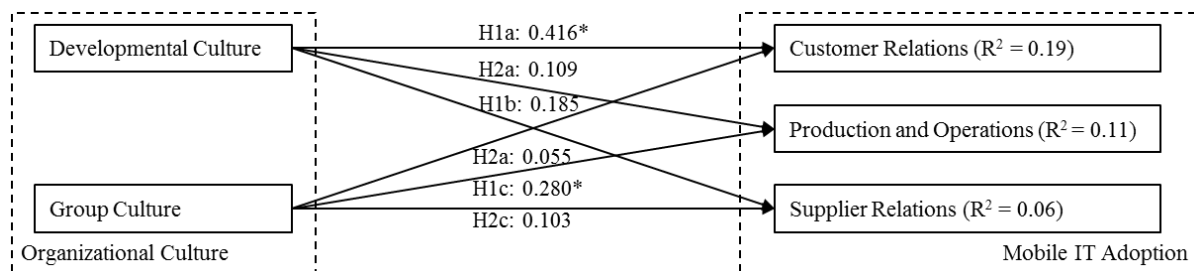

Figure 2.   Results of the Analysis including the R^2 Values of the Dependent Variables and the Path Coefficients for each Hypothesis with the Corresponding Statistical Significance (indicates p<0.05).*

5   Discussion

The results of the PLS approach support H1a and H1c. A DC is positively related to higher levels of mobile IT adoption in CR, and a GC is positively related to higher levels of mobile IT adoption in PO. All other relationships are not statistically significant and are, therefore, rejected. Hence, the results suggest a positive influence of both GC and DC on mobile IT adoption. Based on the results, we argue that GC and DC should generally be taken into consideration as influencing factors in the organizational adoption of mobile IT. However, despite the fact that both GC and DC are positively related to mobile IT adoption, it is also evident that they influence mobile IT adoption differently and possibly lead to an unequal distribution of mobile IT adoption across the value chain. Organizations with a DC tend to adopt mobile IT primarily in CR, and organizations with a GC, in contrast, primarily adopt mobile IT in PO. This has several theoretical and practical implications.

Concerning the theoretical underlying, two (H1a and H1c) out of three hypotheses, based on the distinction between internal and external-focused OCs (H1a, H1b, and H1c), are supported. This supports our assumption that the internal-external axis influences mobile IT adoption across the value chain. The results show that organizations which display a culture which is externally-oriented,

emphasize adopting mobile IT in more externally-oriented parts of their value chain, whereas organizations with an internally-oriented OC have a tendency to adopt mobile IT in internal parts of their value chain. This further implies that the general conclusion of Chen and Nath (2008), who suggest that more flexibility-oriented organizations would emphasize mobile IT adoption – in general – is not accurate. Related to their work, these results give more precise insights and imply that organizations with an emphasis on flexibility have an emphasis on adopting mobile IT, but not distributed equally cross their value chain. Thus, the results also have implications for the theoretical model of nomadic culture proposed by Chen and Corritore (2008), which is based on the conclusion drawn by Chen and Nath (2008). Therefore, we propose that the model of nomadic culture, which is only based on the assumptions made by the control-flexibility axis, should be extended and revised in terms of the internal-external axis.

The managerial implications are also compelling. As argued in the introduction, mobile IT is capable of creating competitive advantages and value gains across the value chain. Based on the results, it can be argued that mobile IT adoption is influenced by a cultural bias. Organizations with an external-focus emphasize mobile IT adoption for external parts of their value chain, and organizations with an internal-focus emphasize mobile IT adoption for internal parts. These orientations prevent them from adopting mobile IT in all parts of their organizations, which in turn prevents them from exploiting the full potential of mobile IT. Hence, we recommend that managers evaluate, on a regular basis, whether mobile IT adoption is unequally distributed across their value chain. Such an evaluation will, on the one hand, reveal unused potential for mobile IT adoption and on the other hand, prevent mobile IT adoption being influenced by a cultural bias. Furthermore, such an approach creates an awareness of potential cultural bias in technology investment decisions concerning mobile IT.

There are several limitations to the current research design that should be noted. Firstly, the sample size, while adequate, could be larger to allow testing more relationships within one dataset. Secondly, the research findings are derived only from quantitative data. Additional qualitative data could reveal further insights into why GCs focus on mobile IT adoption in PO, but DCs on mobile IT adoption in CR. Thirdly, we did not test all four cultural types included in the CVM. Testing for all four types could further enhance our understanding and contribute to a more complete picture of the influence of OC. Another limitation is that we focused on primary process areas. Future studies should also include supportive process areas. Concerning the practical implications, we would further like to motivate future studies to include performance and satisfaction measures. This study is limited on this aspect, as we did not research whether a certain configuration leads to higher satisfaction levels with mobile IT adoption. However, other studies (Yarbrough et al., 2011), which are based on configuration theory, conclude that setups in which the values of the OC fit the values associated with a certain IT artifact, are more likely to achieve higher performance outputs than setups with a misfit. Additionally, we propose that future research should test the relationship between strategy, culture, and mobile IT adoption. Such relations would further extend existing knowledge and support more detailed recommendations for adopting mobile IT in organizations.

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