National Culture for a Participatory Time-driven Activity Based Costing: A Conceptual Framework and Research Agenda

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Received: January 20, 2018 Accepted: February 3, 2018 Online Published: February 11, 2018
doi:10.5430/ijba.v9n2p56 URL: https://doi.org/10.5430/ijba.v9n2p56

Abstract
National culture has a well-recognized role in management practices especially in shaping participatory decision-making processes (PDM). The article aims to provide a conceptual framework where national culture is considered as a potential moderator in a PDM when designing a Time-Driven Activity Based Costing (TDABC). The purpose is to identify a set of dimensions when designing time equations, on which the costing system is based on, to be then linked to national culture. Moreover, a research agenda is also presented in order to validate the proposed framework, outlining directions for futures research as well as managerial implications.

Keywords: national culture, participatory decision-making, time-driven activity based costing

1. Introduction
Advanced management accounting systems, used by a growing number of companies, can result successful by involving employees in their design (Ahmed, Walid, & Kilani, 2016), while facing international challenges (Mitter & Hiebl, 2017). Thus, it becomes relevant to explore differences in management accounting techniques among different cultures (Hoffjan, Trapp, Endenich, & Boucoira, 2012) aware of how participation drives planning and controlling measures for costing decisions (Himme, 2012).

In the outlined context, the paper aims to offer a framework for the design of an advanced costing system such as Time-Driven Activity Based Costing (TDABC) by highlighting significant cross-culturally measures (Aycan, Kanungo & Sinha, 1999) to be considered in a context of a participatory decision-making (PDM). Aware of the importance that national culture has on management (Van der Stede, 2003; Andreassi & Lawter, 2014) we present a theoretical framework to overcome the lack emerging in TDABC literature in studying behavioral and organizational factors linked to the participation of employees in designing the costing system (Raucci & Lepore, 2015).

The aim of the research is to arrive at propositions to be summarized in a conceptual framework that can provide a basis for hypothesis generation guiding future quantitative studies. Our paper is the first to suggest an interactive model for designing a TDABC model in a participatory approach by exploring the influence of national culture. Therefore, the conceptual paper includes itself among those studies that view national culture as a behavioral factor (Tsui, Nifadkar, & Yi Ou, 2007) able to influence management and decision-making processes (Drucker, 2001) and in particular management accounting practices (Van der Stede, 2003).

Moreover, by suggesting an interactive model for studying participation as the one of Shields and Shields (1998) the paper presents a contingency prospective (Govindarajan, 1986; Cadez & Guilding, 2008) in which national culture conceived as the moderator is the contingent variable (Harrison, 1992; Chenhall, 2006) affecting the successful implementation of the costing system. Firstly, a review of the role of national culture for management practices is provided before considering the role of participation for TDABC. Then the interactive model is presented with its dimensions, followed by the research agenda. Finally, limitations and conclusions are drawn.

2. Literature and Theoretical Foundations
In the context of globalization and of economic interdependence between countries, national culture is becoming crucial for modern businesses due to the impact that culture has on management and decision-making processes (Drucker, 2001). Moreover, culture contributes towards interpersonal relationship of individuals and institutions,
organizational policies in accordance to the values held by decision makers (Licht, 2001). Even in a globalized context, the implementation of formal corporate governance standards is still influenced by a country’s culture consistently with the general belief that there should not be a “one size fits all” type of governance (Haxhi & Van Ees, 2010). According to Tse, Lee, Vertinsky, and Wehrun (1988), an understanding of the impact of national culture on strategic decision making processes in the international marketplace may be a source for developing competitive advantage abroad. Further, national culture is considered also in relation to the performance of strategic partnerships (Meirovich, 2010). Overall, such an understanding can enable enterprises operating in different national contexts to define effective strategic in foreign markets. Moreover, recognizing the impact of national culture can help managers also understand their international partners and competitors and ultimately helps to improve their managerial skills (Cullen & Praveen, 2005).

Indeed, national culture as the collective programming of mind that distinguish members of one human group from another (Hofstede, 1980) is considered the man’s medium responsible (Hall, 1977) of shaping everything (Hickson & Pugh, 1995). The outlined prospective has driven to include management practices into cross-cultural studies (Kuman & Bjorn-Anderson, 1990; Aycan, Kanungo, Kaicheng, Jurgen, Gunter, & Answar, 2000; Schaffer & Riordan, 2003), linking national culture to organizational culture (Joiner, 2001; O’Connor, 1995) and treating national culture as a behavioral factor (Tsui et al. 2007).

Further, different studies, mainly by selecting dimensions of Hofstede’s value based framework (Harrison & McKinnon, 1999) have considered national culture as a relevant mean in different areas such as marketing studies (Soares, Farhangmehr, & Shohamb, 2007; O’Connor, 1995; Libby, 1999; Wong-On Wing, Guo, & Lui, 2010), evaluation processes (Cawley, 1998), and in the design of management accounting systems (Hunton & Beeler 1997; Cho, 1998; Mulyani, 2015). In general, in cross-cultural studies when considering participatory decision-making, power distance (PD) and individualism–collectivism (I/C) are the most used Hofstede dimensions (Sagie & Aycan, 2003) which are also considered in the suggested framework. Precisely, power distance influences the extent to which participation is practiced, whereas I/C helps identifying the participant in the decision-making process concluding that employees in high power distance cultures prefer their superiors making decisions for them (Khatri, 2009), thus delegation is avoided (Sagie & Koslowsky, 2002). In opposition, in low power distance cultures superiors and subordinates are perceived as partners, and the best management style is the democratic one (Bialas, 2009).

Overall, participation intended as joint decision making (Wagner & Gooding, 1987) or influence-sharing between superiors and subordinates (Mitchell, 1973) has gained attention in budgeting (Brownell & McInees, 1986; Libby, 1999; Wong-On Wing, Guo, & Lui, 2010), evaluation processes (Cawley, 1998), and in the design of management accounting systems (Hunton & Beeler 1997; Cho, 1998; Mulyani, 2015). In general, in cross-cultural studies when considering participatory decision-making, power distance (PD) and individualism–collectivism (I/C) are the most used Hofstede dimensions (Sagie & Aycan, 2003) which are also considered in the suggested framework. Precisely, power distance influences the extent to which participation is practiced, whereas I/C helps identifying the participant in the decision-making process concluding that employees in high power distance cultures prefer their superiors making decisions for them (Khatri, 2009), thus delegation is avoided (Sagie & Koslowsky, 2002). In opposition, in low power distance cultures superiors and subordinates are perceived as partners, and the best management style is the democratic one (Bialas, 2009).

Overall, most studies have treated participation as an independent variable effecting further accounting dimensions, such as performance (Isham Narayan, & Pritchett, 1995), satisfaction (Driscoll, 1978; Wagner, 1994), stress (Slater & Vogel, 1997) and information for decision-making (Chong & Chong, 2000). Some studies, when considering the effects of participation, used interactive models examining the moderating effect of locus of control (Krenl, 1992), self-efficiency (Lam, Chen & Schaubroek, 2002), information asymmetry (Dunk, 1993), task complexity (Wagner & Gooding 1987), job characteristics (Bradley & Soonhee 2004), and climate of creativity and change (Zubair, Bashir, Abrar, Baig, & Hassan 2015). Fewer models included antecedents connected to the concepts of uncertainty in environment and objectives, interdependency between the objectives and information asymmetry between managers and employees (Shields & Shields 1998).

In the framework here presented, the participatory variable is considered in relation to Time-Driven Activity Based Costing (TDABC), a costing system introduced to overcome technical limits of Activity Based Costing (ABC) (Kaplan & Anderson, 2007).

The costing system by extracting “time” as the primary cost driver for cost objects (Siguenza-Guzman, Van den Abbeele, Vandewalle, Verhaaren, & Cattrysse, 2014) is based on time equation (TE), which are mathematical expressions of the time needed to perform activities as a function of several activity time drivers (Bruggeman Everaert, Anderson, & Levant, 2005; Everaert & Bruggeman 2007). By using TE, TDABC allows to easily incorporate complexities of actual production or services and variations in employing resources by simply formulating different TE (Everaert, Bruggeman, & Decreas, 2008; Madhok. Keyhani, & Bossink, 2015).

Contrarily from ABC, TDABC allows a good estimation of resource consumption and capacity utilization, providing insights into the causes of excessive time or costs occupied by the resources (Everaert, Bruggeman, & Decreas,
This means that managers can review the time and cost of the unused or overused capacity and contemplate actions towards operational improvements (Tse & Gong, 2009; Ruiz de Arbulo Fortuny, García, Díaz de Basurto, & Zarrabeitia, 2012).

Although, TDABC has some inherent weaknesses mainly related to difficulties in measuring the necessary time to perform activities (Gervais, Levant, & Ducrocq, 2010). Indeed, differences in personal judgment can provide misleading factors for estimating practical capacity and required time for each activity (Mortaji, Bagherpour, & Mazdeh 2003), leading to estimation errors that impact on the accuracy of the model. (Labro & Vankoucke, 2008) In general, TE can be built through interviews or observation. In this latter perspective, there is a great risk of connoting the design of time equation merely as another type of Taylorism, impacting employees’ ability to make decisions and not allowing the identification of operational improvements (Hoozée & Bruggeman, 2010).

Therefore, a participatory approach may result as a suitable solution to avoid the outlined drawbacks and to exploit the benefits of a TDABC model. Even if to be effective a participatory approach must be built according to a contingency prospective (Govindarajan, 1986), which is viewed as dominant in management accounting research (Cadez & Guilding, 2008).

Nevertheless, TDABC literature lacks on considering the participation of employees finding a complete analysis only in the case study of Hoozée and Bruggeman (2010), which leaves insights about the involvement of employee to further explorations. Moreover, there is a lack of interest in behavioral and organizational factors, focusing mainly on its technical aspects when considering accounting systems, such as TDABC (Raucci & Lepore 2015). As a matter of fact, the current paper tries to overcome the highlighted gaps in literature suggesting a framework for the behavioral analysis of participation, when designing a TDABC model in a cross-cultural model by presenting significant cultural dimensions to consider and evaluate by linking them with Hofstede dimensions.

3. The Framework

In accordance to the study of Shields and Shields (1998), the variable of participation is set in the framework here presented for the design of time equations as an independent variable to be investigated in an interactive model.

The interactive model, as presented in Figure 1, considers operational improvements deriving from the implementation of the costing system as the dependent variable, to which the success of the model is set as the consequent one. In line with the case study of Hoozée and Bruggeman (2010), identified as the only one considering the participatory variable in TDABC (Raucci & Lepore 2015), the present framework sets as antecedents, explaining the reasons for a participatory approach the presence of information asymmetry between managers and employees as source of uncertainty. Whereas, in reference to the definition of the key dimensions summarized around the ultimate moderator of nation culture, the case study of Hoozée and Bruggeman (2010) has revealed once again determinant in defining the most relevant dimensions to be explored in the suggested cross-cultural analysis when designing time equations.

The first relevant cultural dimension explaining the relationship occurring between manager and employees as outlined by Hoozée and Bruggeman for TDABC design is leadership style whose linkage with national culture is also confirmed by the wide range of cross-cultural analysis (House Hanges, & Ruiz-Quintanilla, 1997; Dickson, Deanne, Jacqueline K. Mitchelson, 2003).

A further determinant we suggest considering is the control dimension since it is strictly related to the concept of time measurement. Indeed, working time regulations, monitoring and lack of autonomy are all conceivable as indicators of control at the workplace, which in terms are negatively related to trust towards the manager (Alesina & La Ferrara, 2002). Indeed, the dimension of trust may be included in the overall analysis as confirmed in its role as a key variable in cross-cultural studies (Huff & Kelley, 2003). Its inclusion is also supported by its relationship with the previous dimension of leadership style since the degree to which the leader promotes two-way communication represents the basis for mutual trust (Burke, Dana, Lazzara, & Šalas, 2007). Therefore, the relationships between the two dimensions should be further investigated considering their negative correlation in the cross-cultural analysis.

Further variable which is determinant when considering a participatory approach is knowledge sharing, whose importance is confirmed also by a set of cross-cultural studies (Michailova & Husted, 2003; Moeller & Svahn 2004). Moreover, knowledge sharing becomes determinant when designing time equations for TDABC successful implementation in terms of operational improvements that can be provided in the perspective of exploiting the model. Indeed, this linkage with the design of time equations providing operational improvements is explainable since a context with high knowledge sharing provides opportunities for mutual learning (Huber, 1991), which in turn may result in improved organizational performance (Hansen, 2002). Moreover, it is noteworthy that this latter dimension
is also further linked to the already suggested dimension of trust (Kramer, 1990). As a matter of fact, trust is regarded as a facilitator of effective knowledge sharing. In the sociological literature, indeed it is emphasized that trust comprises not only individuals’ beliefs about others, but also their behavior and their willingness to use knowledge to influence future action (Luhmann, 1979; Lewis & Weigert, 1985). Further, when considering knowledge sharing a further distinguish must be made between knowledge sharing with regards to management and peers (Cook & Wall, 1980). The distinction is also supporting by the role of cognitive and motivational factors that need to be further investigated and thus are included in the overall framework considering the dimension of self-efficiency. Indeed, considering cognitive and motivational mechanisms by involving employees in group discussions leads to a greater level of fairness to the decision-making process, enhancing their level of control. Moreover, by expressing voice the level of self-efficacy may raise, and in turn give rise to operation improvement in the company (Barki & Hartwick, 1994). Further, the perceptions about management’s support for knowledge sharing are potentially necessary for the creation and maintenance of a positive knowledge sharing (Connelly, 2003) confirming the need to consider knowledge sharing with respect to management and separately with regards to peers. Moreover, insights about the relevance of knowledge sharing can be captured by considering the rewards system of the company. Indeed, rewards encouraging individuals to share their knowledge are relevant from a cognitive evaluation (Deci & Ryan, 1985; Bartol & Srivastava, 2002).

The pointed-out dimensions of leadership style, control, trust, knowledge sharing and cognitive and motivational factors in the variable of self-efficiency were then reconsidered in light of national culture through Hofstede model as presented in Table 1. Precisely, knowledge sharing with peers has been connected to the cultural dimension of individualism/collectivism, which is above all the dimension that has received most attention in cross-cultural research, especially when considering operation improvements in management practices, which result from a context of high knowledge sharing (Chow Kato, & Merchant, 1996; Goncalo & Staw, 2006). Whereas, knowledge sharing with respect to management has been linked to power distance at the same length or leadership style (Jogulu, 2010) and for the control dimension both power distance and uncertainty avoidance should be considered in line with previous studies investigating on participatory decision making and cultural dimensions (Chow, Kato, & Merchant, 1996). Whereas, motivational and cognitive factors are considered in individualism and collectivism considering the national implications of self-efficacy playing an important part in the ability to achieve a predicted goal as it helps evaluate the competence needed to attain that goal (Bandura, 1997).

![Interactive model](image)

**Figure 1. Interactive model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cultural dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership style</td>
<td>Power Distance</td>
</tr>
<tr>
<td>Trust</td>
<td>Power Distance and Uncertainty Avoidance</td>
</tr>
<tr>
<td>Peer Knowledge Sharing</td>
<td>Individualism/Collectivism</td>
</tr>
<tr>
<td>Management Knowledge Sharing</td>
<td>Power Distance</td>
</tr>
<tr>
<td>Control</td>
<td>Power Distance</td>
</tr>
<tr>
<td>Self-Efficiency</td>
<td>Individualism/Collectivism</td>
</tr>
</tbody>
</table>

*Table 1. Variables linked to National Culture through Hofstede model*
4. Research Agenda

The conceptual framework represents a first step in understanding which dimensions can be more relevant when considering national culture in a participatory approach for TDABC. After, further refining the framework, a survey, which is the main method in cross-cultural analysis, (Harrison & McKinnon 1999) can be undertaken. In particular, as a first step exploratory studies (Lu, Rose, & Blodgett, 1999; Pheng & Yuquan 2002; Choo, Bergeron, Detlor, & Heaton., 2008) with the intention to finalize the research proposal (Manerikar & Manerikar 2014) and discuss the cross-culturally measures can take place (Aycan, et al. 1999).

In this stage of the research, the framework is, thus, considered before actually designing time equations to capture the selected cross-cultural dimensions. However, when interpreting the outcomes of the survey, the relationships between the selected cultural dimensions should be further interpreted considering how much these are correlated with one other. The results of the survey, then, should be integrated with also instruments as observation and interview of both employees and managers in their context. Indeed, the exclusive use of questionnaire to collect information may lower the richness of the data, thus, it would be explanatory for a holistic understanding to combine the results with intensive interviews (Eisenhardt, 1989). In fact, by planning an intense exposure to the phenomenon under study within its context, building relationship with participants can allow to collect and understand better multiple perspectives (Krefting, 1991). Moreover, when setting the questionnaire concerns must be raised in relation to the language. Considering English to ensure equivalence and facilitate the discussion of the outputs (Van de Vijver & Leung 1997) and the involvement of bilinguals (Erik Alarcon, Garcia Coll, Tropp, & Vazquez Garcia, 1999).

Moreover, direct communication (Ilesanmi, 2009) must be guaranteed with the respondents who always have to able to provide feedback and ask for additional information. In selecting then national culture, we suggest considering as potential countries to investigate China, United States, Portugal and Italy. The selection of the countries is based on Hofstede dimensions and on TDABC relevance.

With respect to Hofstede dimension, the countries included should be the ones that are diverging mostly on the cultural dimensions of interest, so that the effectiveness of the sampling would be maximized (Lonner & Berry, 1986; Schaffer & Riordan, 2003). At this matter we suggest considering for the analysis China, Italy, Portugal and United States. Not only for the high level of Foreign Direct Investments (Unctad, 2017), United States, where TDABC originated (Kaplan & Anderson 2007) and China can be interesting to explore, but also since both countries are considerable as key countries in the cross-cultural analysis when referring to management accounting practices (Lana & Fei, 2007). Meantime, less research has focused on the European cross-cultural differences when considering management practices (Harrison & McKinnon, 1999; Brewster, 2007).

Accordingly, for their cultural divergences Italy and Portugal, where TDABC implementation are occurring (e.g. Campanale Cinquini L., & Tenucci, 2014; Barros & Dias, 2017) may be considered as part of the research. Then, a sector such as the manufacturing one can represent the starting point of the analysis since the manufacturing sector is the one where TDABC was initially addressed to (Dejnega, 2011) and where capacity can commonly be expressed in time measure (Öker & Hümeyra Adigüzel, 2006).

The following research should think of integrating the survey methodology suggested with a subsequent case study where the design of Time equations takes place, so to interpret the quantitative finding and give validity to the overall framework presented in accordance to the framework presented by Gable (1994). Moreover, as a future perspective of research, the framework suggested may be applied in the modern context of internationalization for multinational companies operating in a business environment where recognizing the importance of cultural differences helps managers understand their international partners and competitors and ultimately improve their managerial skills (Cullen & Praveen 2005).

5. Conclusions

Although an advanced costing system such as TDABC can result beneficial, the design of such a system must be reviewed exploiting a participatory approach aware of the impacts that national culture may have in its definition. To overcome this lack our attention, the paper sets a model of conceptual framework to which refer to when implementing TDABC in a participatory system. National culture is presented in the framework as a potential moderator to exploit Time-Driven Activity Based Costing (TDABC) when adopting a participatory approach by suggesting some relevant cultural dimensions.

Therefore, aware of the need to provide a full understanding of the participatory variable, in line with a contingent prospective, the participatory framework of Shields and Shields (1998) was adopted and adjusted in an interactive model in which a set of relevant dimensions were then linked to national culture. This research has limitations. First,
it links only one cultural dimension for each variable, except for the trust dimension, while it would be advisable to consider also more than one variable or support the exclusion of the others (Chow, Shields, & Chan, 1991). Second, this research considers only the Hofstede model when presenting the cultural effect of each of the dimension, while further model can be considered and further integrated as the GLOBE model (House, Hanges, Javidan, Dorfman, & Gupta, 2004). The conceptual framework described in this paper is offered as a foundation template to be further set under discussion and tested empirically in future research.

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