THE SIGNIFICANCE OF 'BAYANIHAN' CULTURE ON TECHNOLOGY ADOPTION: A CASE OF VIRTUAL LEARNING ENVIRONMENT ADOPTION IN A REGIONAL PUBLIC UNIVERSITY IN THE PHILIPPINES

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Abstract

The paper aims to explore local contextual influences on the adoption of a virtual learning environment in a regional public university in the Philippines. Through an interpretive case study, this paper examines the perspective of teachers, who optionally adopted a VLE and used the concept of 'bayanihan' to build a small and informal network of support. The examination of the 'bayanihan' culture presents an understanding of the role of communal support focused on the new and potential adopters of the VLE. The broader implication revealed in this paper is that there are local contextual characteristics that are crucial and can play an important role in the adoption process. In the context of this research, 'bayanihan' has been found to be an important socio-cultural characteristics that facilitated the adoption of the VLE.

Keywords: Socio-cultural factors, bayanihan, adoption, e-learning, virtual learning environment

1 INTRODUCTION

Together with the internet explosion, virtual learning environments (VLE) in higher education have prevailed over the years (Chung et al. 2013) from supporting traditional teaching and learning environments to a much wider system covering massive content and audience or the massively open online course (MOOC). Whether at institutional level or through provision of a MOOC, the VLE continues as a pervasive educational technology in the higher education landscape. Following the trend, but with considerably less alacrity, educational institutions in developing countries are also tapping into the new operational capabilities provided by these technologies. Their adoption could significantly expand educational opportunities across populations in developing countries, currently deprived due to a shortage of teachers, classrooms and other educational resources (UNESCO 2006). Koponen et al. (2011) pointed out the development possibilities of these technologies through the reduction of class sizes, time and cost savings, reduction of printed materials, and the possibility of continuing education such as professional academic/training development of in-service teachers.

While educational technology is becoming a necessity in higher education institutions (HEIs), there are numerous impediments to its adoption and integration (Surry et al. 2005). In developing countries, HEIs continue to strive to improve the educational condition of their constituents by resorting to VLEs to augment, if not change, the existing teaching and learning modalities. However, because of the challenging socio-economic, political and technological conditions, the adoption of VLEs in HEIs in developing countries are fraught with immense difficulties (Sife et al. 2007). While VLEs may be a promising innovation there is a myriad of challenges that confront its adoption, such as: technological, social and economic constraints (Dutton et al. 2004; Trucano 2012). Those who have limited resources, mostly educational institutions in developing countries, and those who implement technologies designed and developed outside of their own context suffer from these difficulties. One reason for this appears to be attributed to the mismatch in the design and implementation of information technologies and the local user actuality in developing countries (Heeks 2002). Such a mismatch often causes marginal adoption or even failure of these technologies (Blake et al. 2011; Ssekakubo et al. 2011). Heeks (2002) warned that while findings of information systems (IS) literature, including those related to VLEs, in developing countries are not definitive, the majority seemingly point towards failure. Congruent to this, Ssekakubo et al. (2011) argued that VLE-based e-learning initiatives in developing countries often fail either partially or totally.

Despite the existing constrains and difficulties, many are still hopeful and enthusiastic about technology adoption and integration in teaching and learning in developing countries. However, little is consistently known about how and why this phenomenon continues to be troubled. To contribute to the understanding of this phenomenon, an interpretive case study research was conducted following the naturalistic paradigm taking into account the context within which the VLE is implemented. One of the major findings of the said research is reported in this paper.

The paper is structured as follows: in the next section a background of the context of e-learning evolution in the Philippines is provided. Then a detailed literature review about cultural influence on technology adoption and e-learning is presented. Section 4 enumerates the methodology followed in this study and Section 5 describes the finding, the 'bayanihan' culture in technology adoption. The paper concludes with the implication of the findings in theory and practice.

2 THE CONTEXT

Context covers situational circumstances that affect behaviour. Johns (2006) define context as "situational opportunities and constraints that affect the occurrence and meaning of organizational behaviour as well as functional relationship between variables" (p. 386). This definition suggests that context reveals environmental conditions that influence an observed phenomenon. Understanding the context is significant in all research undertakings because it helps a reader to interpret findings (Davison 2014). In consideration of this stated critical importance, this section will discuss the research context; detailing where the research was situated and the circumstances under which it was conducted.

The Philippine higher education system is heavily influenced by Spanish and American educational systems. These influences span from different eras of educational transformation as shown in the timeline below (Figure 1).
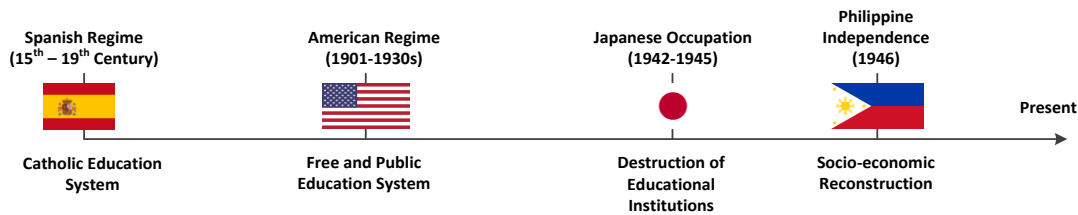

Figure 1. Historical and cultural influence of Philippine Higher Education [Adapted from Alcala (1999)]

The three and a half centuries of Spanish rule in the Philippines (15th to 19th century) saw the creation of several higher education institutions. At that time, higher education in the Philippines was fundamentally created to "Christianize the Filipinos, Hispanize the elite class and ensure the subjection of Filipinos by Spaniards" (Alcala 1999 p. 123). When the Americans came in the 1900s several educational reforms were implemented purposely driven to develop literate, civic-minded citizens and to provide a pool of Filipino professionals (e.g. teachers, lawyers, judges, physicians, scientists and engineers) who would occupy positions in the colonial bureaucracy (Alcala 1999). After the American occupation shifted to local representatives, the 'Commonwealth' as it was known then, continued the educational development. However, such development was halted by the Japanese occupation during World War II. When the Philippines gained political independence in 1946, the government focused on the rebuilding of educational institutions as part of a massive social and economic reconstruction (Alcala 1999). From that time on, there was a steady growth of HEIs in both private and public sectors. At present, there are 2,299 higher education institutions in the Philippines, 110 of which are public HEIs with 437 satellite campuses spread across the 7,107 island country ("HE in Numbers" n.d.). The University of the Philippines (UP), being the premier national university, receives the most significant portion of the higher education budget.

One of the unique characteristics of public HEIs in the Philippines is that they are mandated to expand access to quality higher education among lower income and disadvantaged groups (Commission on Higher Education (CHED) Philippines 2012). Public HEIs in the Philippines are non-secular entities classified as State Universities and Colleges (SUC) or Local Colleges and Universities (LCU). SUCs are funded by the national government through the Philippine Congress while LCUs are run by local government units. Both SUC and LCU may exist in a given region in the Philippines. However, the condition of regional public HEIs in the Philippines is significantly different from larger universities and colleges across the country; heavily dominated by private institutions and the national university (UP). The institution examined in this case study is a regional public HEI.

The Philippines is bent on modernizing its education system, so as to be relevant to the requirements of a knowledge-intensive economy (Camacho et al. 2005). Many of the changes in the education system involve ICT integration in the curriculum, with e-learning featuring as a prominent component. HEIs in the Philippines have prioritised teaching and learning with technology as embodied in their institutional strategic plans (Marcial 2012). Because of this, there is great potential that VLE adoption will flourish in the coming years. Also, current initiatives from government and private sectors, such as the DigiBayanihan ("Industry, Academe, Civil Society and Government Band Together for DigiBayanihan" 2014), indicate the potential growth of this area. Yet, a void still lingers when it comes to the realization of this potential.

Several years ago the International Telecommunications Union (ITU) (2002) expressed concerns about translating the good ICT intentions of the Philippine government into concrete action as many constituents have low income that inhibits access to ICT. Moreover, the ITU revealed that the Philippine government seemed to have limited control over the open and private telecommunications market. Ten years later, the situation continued to exist, with Marcial (2012) also finding that while prioritization of teaching and learning with technology was quite high, its implementation was still at a moderate level.

This suggests that ICT integration in this context has not yet reached the target level of adoption and diffusion. It also indicates that there is room for action, which also poses opportunities for determining the best conditions that leverage the adoption of VLEs in HEIs in the Philippines. Despite several initiatives at local and international level the success in e-learning space is still a bit elusive and the reasons are not clearly understood. Possibly, it is because of the absence of focus on local contextual issue from most of those initiatives, as Avgerou (2008) argued, knowledge of the local contextual and social conditions and the processes of change is significant before institutions can reap the full benefits of any information systems. Hence, an in-depth focus of the local contextual factors that influences adoption of a VLE is the primary concern of this study.

3   CURRENT LITERATURE

At present, the disparity between information systems (IS) adoption in developing countries and developed countries can no longer be seen as extraordinary. Despite this, researchers still found credence in exploring the contextual influences and subtleties that affect IS adoption in developing countries. This is so because the success or failure of adoption depends on properly understanding the context. Importantly, the context where the information system is originally designed (mostly in developed countries) may be different from the context of developing countries (Avgerou 2009). Congruent to this, Adam and Myers (2003) argued that software packages may "impose its own logic" when transferred in different cultural contexts. Adoption is likely to occur if an individual's or group's context and own value match the values embedded with the technology (Leidner & Kayworth 2006). Looking at the important role of context, this section presents the current literature in educational technology adoption, particularly the VLE, and the influence of local context towards adoption.

3.1   The local actuality problem

While literature regarding educational technology adoption seems exhaustive, much has been conducted in developed countries. While studies exist on developing countries, little has been consistently known about VLE adoption in the context of a regional public higher education institution.

E-learning has been viewed mostly from the technological perspective in the past following a one-size-fits-all approach, as it happened with many other common technology adoption and diffusion. Vast literature focused on technological breakthroughs, platforms, mode of delivery, pedagogy and not so much on socio-cultural influences towards adoption. Some research lately pointed out that HEIs in developing countries have lagged behind those in developed countries in terms of VLE adoption due to the disparity in their socio-economic and technological circumstances (Ondago et al. 2012; Sife et al. 2007; Tilak 2000). This disparity suggests that contextual issues affecting VLE adoption may not be congruent in both of these country groups. Such differences are exemplary of the fact that one cannot simply transfer the principles developed in prior studies to specific environments (Surry & Ely 1999) such as this current research. Mere transference of the principles discovered in developed countries to a developing country could likely result in a design-actuality gap, which may cause a failure of application in most information systems project in developing countries (Heeks 2002). To understand user actuality it is important to consider the socio-cultural conditions that influence the adoption in a particular context. The succeeding section describes the extent of literature that explores the influence of socio-cultural factors towards educational technology adoption.

3.2   Culture and IS adoption

Culture has been defined as behaviours (i.e. patterns of thinking, feeling and acting) that is acquired and transferred to members of the society (Hofstede 1997; Linton 1945). The transfer of behaviours between the members of the society points to the dynamic and evolutionary nature of culture. Owing to its dynamic and complex nature, Davison and Martinsons (2003) claimed that the difficulty in studying culture is that it is not an easy concept to define. Despite this, researchers and practitioners remain eager to pursue investigations in this field, evidenced by the increasing number of studies dedicated to addressing cultural issues in ICT over recent decades (Davison & Martinsons 2003). To this date, many researchers are still interested in studying culture because of the many issues related to IS failure as a

result of cultural incongruence or a failure to understand culture and how it influences IS adoption (Jackson 2011).

Culture has been found to have influenced IS adoption and diffusion. In a literature review conducted by Leidner and Kayworth (2006), culture was investigated at two distinct levels: national and organisational. The national level studies mentioned one or more of Hofstede's cultural dimensions having relationship on IS adoption. According to the said review uncertainty avoidance was the most used cultural dimension followed by power distance, individualism-collectivism, and masculinity-femininity. An important finding revealed in their review is that because information technology (IT) is fundamentally risky, adoption is less likely for those who are not comfortable with uncertainty. At the national level, Leidner and Kayworth (2006) argued that "groups are more likely to adopt a technology if their own values match or fit the values embedded within the technology or those associated with its development" (p. 366). At the organisational level, the same review pointed out that cultures that are flexible or open have a greater tendency to adopt a technology.

Hofstede's theory of cultural dimensions is the most influential and widely cited body of work in the field of culture despite several staunch critiques (Jackson 2011; Shaiq et al. 2011). The majority of the studies concerning various cultural aspects of IT have relied on Hofstede's model of national culture (Myers & Tan 2003). It is often used to analyse conflicts between values embedded into and behaviours required by ICT and the national culture of developing countries (Leidner and Kayworth 2006 cited in Avgerou 2008).

The following are Hofstede's (1980) five cultural dimensions that can be used to distinguish cultural variation:
- Power Distance - a measure related to interpersonal power or influence that represents human inequality i.e. a superior and subordinate.
- Uncertainty Avoidance - describes the extent to which individuals are intimidated by an uncertain or unknown situation. For example, students' preference for structured learning environments manifested by precise objectives, strict timetables, precise answers, and rewards for accuracy (Masoumi & Lindström 2012).
- Individualism versus Collectivism - describes the integration and interaction of individuals with the groups to which they belong.
- Masculinity versus Femininity - relates to the differences between social and emotional roles of men and women.
- Long-term versus Short-term orientation - describes an orientation of an individuals' effort towards the present or future.

Hofstede presents a concrete articulation and logic particularly in the area of culture, however, such an influential body of work faces much criticism by scholars (Jones 2007; Shaiq et al. 2011). One of the most striking criticisms regarding Hofstede's model is that national culture should not be considered homogenous because most nations are composed of different groups and ethnic units (Jones 2007; McSweeney 2002). Other criticisms include the use of survey techniques extracting numeric indices and matrices which provides limited understanding about culture.

Nevertheless, while Hofstede's seminal model on culture is widely used, even in the field of information systems, researchers are warned to move beyond the concept of "national culture" to a perspective that recognizes the emergent and dynamic nature of culture (Myers & Tan 2003). This is so because of the oversimplification that could "sweep the subtleties of cultural difference under the universal carpet" (Walsham 2001 cited in Avgerou 2008). Jackson (2011) asserted that culture is not static and that viewing culture from different perspectives, rather than in isolation, provide a more penetrating account when attempting to understand the complex nature of culture and its influence on VLE adoption. As such, this study gleaned on Hofstede's work on cultural dimensions as baseline information that may help in the analysis and interpretation of the qualitative data while at the same time taking note of the issues raised against it. In particular, this study looked into the ways in which collectivist cultural backgrounds shape the individuals' or groups' attitude to respond to adopting a VLE. This study is not structured solely to be bounded by the cultural dimensions constructed; instead, it is open to other cultural factors in the local context.

3.3   Traditional teaching and learning culture and resistance to change

The introduction of new technologies in an organisation requires change, and that change may put pressure on the organisation's culture (van Rooij 2011). The complexity of an organisation's culture may be incongruent to what a technology may inherently promote and as such, there may be a multitude of opposing forces which may come into play.

Several studies have revealed that part of the stumbling block of VLE adoption is the opposing force brought on by traditional teaching and learning culture (Kahiigi et al. 2011; Keller 2009). One of the major inhibitors of the uptake of e-learning technologies such as the VLE includes resistance to change in traditional teaching practices (Newton 2003). The introduction of the VLE in teaching adds pressure on teachers to adopt, but, such pressure is often countered with resistance, most teachers teach in the way they were taught (Zemsky & Massy 2004) or they hold on to old teaching habits if they believe that there is no need to engage with an innovation (Zhu et al. 2010). It could be said that engaging with an innovation may place them outside of their comfort zone.

Another reason for adhering to traditional teaching approaches is concern regarding the quality of teaching and learning. Keller (2009) argued that it is not so much about traditional teaching practices hindering VLE adoption, but it is what teachers and students regard as good quality teaching and learning that is of concern. If good quality teaching and learning could not be achieved by the use of the VLE then its adoption may be in peril. Such quality can possibly be achieved if the VLE is appropriately designed to fit in a given context. Accordingly, several authors argued that the pervasive influence of culture is one of the essential foundations in appropriately designing e-learning systems and that cultural sensitivity must be highly regarded to avoid a "one size fits all" approach (Chen 1998; Chen et al. 1999; Uzuner 2009).

Comparatively, teachers in higher education institutions in developing countries are challenged by the introduction of the VLE because they are relatively accustomed to traditional teaching practices (Ahmed 2013). For e-learning to be successful in these institutions creating awareness incrementally and transforming teacher attitudes and behaviour towards VLE adoption is required (Bhuasiri et al. 2012; Librero 2004; Wu et al. 2010).

A number of researchers have avoided taking the trajectory of arguing for a total change in traditional teaching culture to ensure VLE adoption. Instead, they claim that the VLE is a mode of reinforcement, not a replacement, extending traditional teaching practices with the potential to positively impact learning (Bongalos et al. 2006; Jaffer et al. 2007). Other teachers endure the challenges of adoption despite the strong influence of traditional teaching because they acknowledge the value in engaging with the VLE (Fresen 2010).

3.4   Socio-cultural influences and educational technology adoption

A number of studies have examined the role of socio-cultural influences towards educational technology adoption. In a study in Peru, Maldonado et al. (2011) revealed that e-learning motivation and social influence positively impacts behavioural intention to adopt an e-learning portal. It was observed that the regional setting moderated the relationship between social influence and behavioural intention. Similarly, Rabiee et al. (2013) found that socio-cultural obstacles are the most influential barrier in e-learning adoption. These socio-cultural obstacles were attributed to the following: (a) government's negative view of the internet, (b) lack of national preparation and determination for training, (c) lack of efficiency of online training compared to traditional teaching methods, (d) willingness to impose limitations on using the internet, (e) student's willingness to participate in classes, (f) students' perception of the lack of socialization associated with virtual university and (g) lack of public familiarity with virtual education (Rabiee et al. 2013). These findings suggest that local context plays an influential role towards adoption intention.

Barton (2013) found that the adoption of e-learning technologies in higher education is "strongly shaped by social and cultural factors but not in ways that might have been expected" (p.115). She argued that it is not so much that there are socio-cultural factors specific to e-learning technologies; rather, it is how socio-cultural factors encourage, guide and assist teachers to adopt the new technology. The influence

of socio-cultural factors can only be realised when appropriate social networks exist that build trust and encouragement among teachers to overcome anxiety brought by the new technology (Barton 2013). This is referred to as building the social capital. One evidence related to the importance of social capital is exhibited through academic guanxi or a mentor-peer-network which provides support and collaboration to increase uptake and continued use of e-learning technology (Barton 2008).

Educational technologies developed and adopted in one culture often reflect a fundamental shift in educational paradigm in those cultures (McLoughlin & Oliver 2000; Olaniran 2009). However, a previous paper by the authors of the current paper argued that adopting developed-country based educational technologies should not represent a call for the unification of the educational values of developing countries and developed countries; instead, it requires a gradual change of educational practices that takes into account the local context (Quimno et al. 2013). Specifically, the processes involved in the paradigm shift, the practices of people and the institution need to be understood. In this paper, a local culture called 'bayanihan' is revealed to have a significant influence on adoption.

3.5 Collectivism and the 'Bayanihan' culture

The root of the 'bayanihan' culture may be found in collectivism and collective society defined by Hofstede (2005). According to him, the way members behave in an individualist and a collectivist society are quite distinct. The members of the individualist society are accustomed to look after him/herself and his/her immediate family only while members of the collectivist society typically operate in a communal sense, through networks and associations (Barton 2008). Some examples of this collectivist culture is guanxi in Chinese and 'bayanihan' in Filipinos. 'Bayanihan' is figuratively similar to guanxi but is operationally different in that it focuses on the development of a communal spirit to support the needy, particularly those who are new to the community. In contrast, guanxi is focused on the social interactions, networking and building of social capital (Barton 2008). While the 'bayanihan' culture espoused in this paper is often used as a metaphor to describe the communal spirit of Filipinos working together to achieve one goal, it is exemplary of a collectivist culture that positively influences members of an organisation.

The basic concept of 'bayanihan' draws on communal support afforded to migrants in a new community. Traditionally and literally, 'bayanihan' is symbolized by the moving of a house to a new location borne on the shoulders of a working group of neighbours (Guillermo 1964; Sarmenta & Hirano 1999). 'Bayanihan' can be defined as "a spirit of communal unity and cooperation which makes seemingly impossible tasks possible through the concerted effort of many people with a common goal and a sense of unity" (Sarmenta & Hirano 1999 p. 675). 'Bayanihan' culture is usually depicted through a gathering of neighbours literally helping a household to relocate as shown in Figure 2.

Figure 2. An illustration of the Bayanihan Culture (Ganadores 2013)

A number of studies have rediscovered and applied this concept in various fields. For example, Sarmenta and Hirano (1999) utilised the concept of 'bayanihan' to build and study web-based volunteer computing systems. The same concept of 'bayanihan' was observed in agriculture studies by Birol et

al. (2008) who recognized that 'bayanihan' is a traditional form of mutual assistance, through self-help groups, that is part of Filipino farming culture. Similarly, Barameda and Barameda (2011) found the important role of 'bayanihan' as a communal approach and coping mechanism towards rebuilding lives and communities damaged by extreme calamities. Salvador et al. (1997) utilized the concept of 'bayanihan' as an effective psychocultural counselling strategies for children with Filipino ancestry. From the studies mentioned, one thing that is quite clear is that 'bayanihan' has been observed and recognized to provide a group dynamics that could facilitate communal support to achieve a common goal. Surprisingly, the 'bayanihan' culture has not been examined in information technology adoption.

4   METHOD

This study follows an interpretive approach as it seeks to understand the phenomenon in context carried out through a qualitative case study. Qualitative research methodology is commonly applied in evaluative studies, including research into information systems. Its primary purpose is to understand a phenomenon through the examination of people's behaviour and perspectives and the context in which the phenomenon occur (Kaplan & Maxwell 2005). Conducting this study following the qualitative research method seems reasonable because it is also appropriate in investigating the behaviour and perspective of people and the context within which the phenomenon occur.

As context is considered a crucial element in this approach, qualitative studies are routinely conducted in a natural setting such as field studies in the organisation that may comprise of interviews, observations, and archival records and are systematically analysed using a variety of techniques such as content analysis (Anderson 2007; Creswell 2007; Gibbs 2002; Patton 1987). The qualitative data gathered in this study consists of interviews from 28 teachers of a regional public university in the Philippines. Participants were selected from different colleges, namely, arts and science, governance and business, computing, education and engineering, with ages ranging from 25 to 60 years old. The interviews were conducted within the period of three months (June to August 2013) and within that time frame on-site observation was also conducted. Proper ethics approval was sought prior to the conduct of each interview. Moreover, organisational documents were retrieved and field notes taken. Based on their adoption decisions the 28 participants were classified into four embedded cases, namely, coerced adopters, optional adopters, contingent adopters and non-adopters. Of the 28 participants, 13 belong to the coerced adoption case (case 1) as they were obliged to adopt the VLE after being selected to teach in a distance education program. There were 8 participants who belong to the optional adoption case (case 2) or those teachers who decided to adopt the VLE on their own. The 'bayanihan' culture is only evident in case 2. Only 3 participants were considered contingent adopters (case 3) as they have decided to adopt the VLE after their involvement with the distance education program. Lastly, 4 out of 28 participants were non-adopters (case 4) who did not adopt the VLE at all.

This case study employed the thematic analysis suggested by Braun and Clarke (2006) as the primary data analysis technique. Thematic analysis is a descriptive presentation of qualitative data that includes a system of themes and sub-themes that is based on iterative reading and coding of certain speech units (words, sentences and paragraphs), points of interest and concepts (Anderson 2007; Bourdon & Kimble 2008). In this study, thematic analysis is executed through the grouping of words, phrases and sentences according to a concept derived within the data which eventually form the themes in the case study. Table 1 presents the data analysis process executed in this study.

	Thematic content analysis process	Analysis process in this research
Phase 1	Familiarise the content	Familiarisation with the content from transcripts and other data sources was executed through reading, rereading, and comparison of different data sources. The familiarisation was executed in NVivo through word frequency tabulation and word cloud generation to determine the common words used by the participants.
Phase 2	Generate initial codes (open coding)	Initial generic codes were generated after reading and rereading. Data extracts were coded to as many

		codes as possible, as no definite meaning was ascribed at this initial stage. This is also referred to as open coding.
Phase 3	Search for themes	Searching for themes was initially supported through cluster analysis in NVivo to check for similarities of codes and concepts. Further categorisation was executed after the resulting analysis yielded irrelevant categorisations.
Phase 4	Review themes	Themes were reviewed through grouping and further categorisation. NVivo aided in this process through concept maps generated from emerging themes.
Phase 5	Define and name themes	Definitions of each theme were developed, explaining aspects and providing meaning to each theme.
Phase 6	Produce report	Reports were generated through a narrative, capturing the salient elements (codes and themes) that described each case. Evidence was included in the report through data extracts, codes and themes.

Table 1. Thematic content analysis [adapted from Braun & Clarke (2006)]

5 THE INFLUENCE OF BAYANIHAN ON TECHNOLOGY ADOPTION

While the case study mostly confirms the existing literature on factors affecting educational technology adoption and diffusion as shown in Figure 3, one striking difference was noticed especially from developed country context, where most of those theories were developed and tested, is the strong influence of socio-cultural factors. In this particular instance it is the 'bayanihan' culture. The 'bayanihan' culture is synonymous to Hoftede's collectivism dimension discussed in Section 3.3. Although this study does not cover culture in a national scale, findings of this interpretive case study supports Hofstede's previous finding that classified the Philippines as having a strong collectivist culture.

As described earlier, 'bayanihan' provides communal support to new members of a community that makes a seemingly difficult and impossible task become possible (i.e. lifting a house to a new location). The adoption of the VLE is reflective of a seemingly difficult task that teachers hurdle amidst challenging situation such as limited infrastructure and organisational support. It can be remembered from section 4, that of the four cases, 'bayanihan' culture is only evident in case 2 where teachers decided on their own to adopt the VLE but receiving very minimal support from the university administration since the VLE was originally intended for distance education courses. Hence, they developed their own way of providing support through 'bayanihan'.

'Bayanihan' enables the smooth transition of an adopter to the new community by virtue of communal support. Through 'bayanihan' information exchange between an existing adopter and a potential adopter is facilitated. The data shows that the exchange of information between and among peers influenced the VLE's proliferation within a certain group of teachers in the university. Information about the VLE was shared by teachers within an informal support group composed of a few teachers who were able to adopt the VLE without relying on formal support from the institution. This communal support exemplifies the 'bayanihan' culture which confirms Goffee and Jones (1996) organisational culture framework indicating that groups with high solidarity and high sociability exhibit a communal culture. Similarly, Hoffman and Klepper (2000) indicate that in a communal culture "people are driven by common goals, and at the same time are united by strong social bonds" (p. 38). In 'bayanihan' culture, members of the community exhibit solidarity or oneness while sociability is exhibited through the helping hands extended even to the new members of the community.
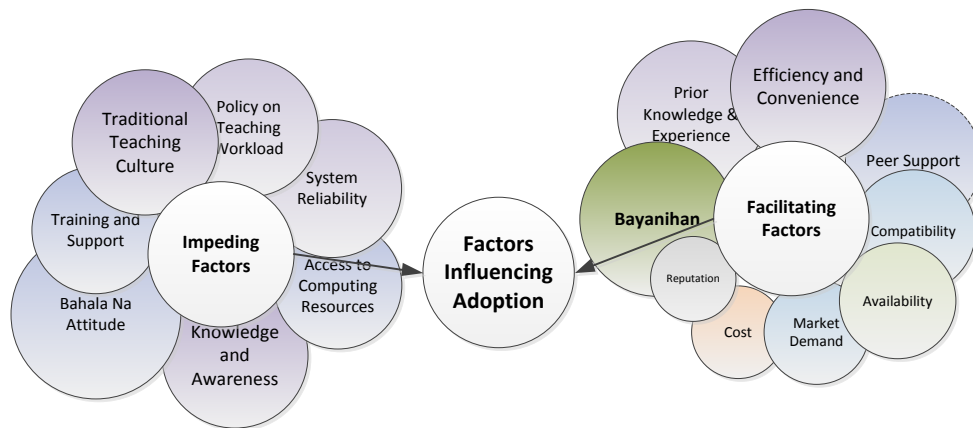
Figure 3. Factors Influencing Adoption

Two examples of the 'bayanihan' culture through an informal support group were observed during field work. First, a small group of teachers from the Institute of Computing and the Electronics Department of the College of Engineering were seen to exhibit reliance on each other by sharing experiences and resources while engaged with the VLE. Second, some teachers from the College of Education exchanged information about the VLE with their peers in the Institute of Computing. Though from different departments with varying teaching practices, teachers from these different academic units collaborated and assisted each other to overcome the challenges of using the VLE. The excerpt below highlights the nature of this relationship as a way to help colleagues and acquire information about the VLE.

> *"I just heard about it here in IC [Institute of Computing], because we are always here [in their office].... sometimes we work together in different projects and activities, we share resources and exchange ideas about how to do things like the ExamView. I also attended a seminar about that [VLE] before but I did not use it at that time. Later when I learned about its capabilities, that I can do a lot of things about it such as the Quiz, I learned how to use it and they helped me because I'm still new in the VLE and my experience is with ExamView only. After that exposure, I realized that it can be done, that I can use my existing ExamView databank because I spend a lot of time and effort for how many years in building my questions databank. Now, it is possible to give fully online quizzes and exams even outside of the campus. I tried it in one of my courses, I just ask for help from my colleagues here and indeed I made the transition and adopted the VLE. For sure it will not be much of a problem because they [peers from IC] are here to guide and help me; they are like my instant helpdesk because I am still a newbie" [INT0020]*

Further analysis of data in conjunction with onsite observations revealed that social relations through 'bayanihan' influenced the adoption of the VLE in the College of Engineering, particularly in the electrical engineering department. It was observed that through 'bayanihan' the interpersonal communication and mutual peer support was enhanced, especially for new users to develop their confidence with the VLE. Teachers employing the 'bayanihan' concept exchanged ideas about how they created activities and resources in other applications and the VLE. Consequently, the proliferation of the VLE reached departments that are not previously involved in any distance education programs or other e-learning projects in the university. The field notes below capture this scenario.

> *"I observed an interesting event that relates to 'bayanihan'. Somehow, 'bayanihan' provided between and among peers in IC and ECE departments encourage teachers to consider the VLE. These teachers are new to the VLE, they don't have adequate experience and they are not well trained. But they are confident with their ICT skills. They tried to explore the VLE and experimented on exporting and importing ExamView quizzes since they were already using it long time ago. They have a good number of questions data bank. They were eager to know more about the VLEs capabilities to accept ExamView quizzes. One said, "aw, ok kaayo! pwede na ko mag online quiz ani any time" [This is very good. Now I can create online quizzes anytime]. The scaffolding went on as the days go by. And true enough that teacher is now using the VLE*

confidently for his engineering classes. Ocassionally, he visits his peers to consult and share their experiences with the VLE. Finally, I have observed that knowledge and awareness about the VLE easily propagated within their social circle." [Field Notes, 13 July 2013]

The 'bayanihan' tradition illustrated above exhibits a collectivist culture that is evident in the context. Hofstede's (1986) study on cultural differences in teaching and learning revealed that the Philippines is classified to belong to a group of countries with low individualism. Congruently, Vasquez et al. (2001) argued that Filipinos can be classified as members of a collectivist society, where community considerations are essential. Clearly, for teachers in this case study, learning to adopt the VLE is facilitated through 'bayanihan'. Therefore, it can be argued that to facilitate teachers' adoption of the VLE 'bayanihan' must be nurtured.

The majority of the teachers who optionally adopt the VLE are not handling any distance education course offered by the university. They are not formally trained to use the VLE in the university and organisational support seems non-existent because they are not involved in the distance education program. These teachers appear to rely on their peers for support, and have formed small informal support groups for information and resources sharing. This 'bayanihan' effort, paved the way for the proliferation of the VLE even in colleges/departments that do not have distance education programs. Similar results from a previous study revealed that social networks and mentor relations encouraged junior teachers to advance in the field of VLE adoption and integration in their teaching practices (Barton 2010). The 'bayanihan' culture illustrates social network and mentor relations as teachers who are adept with the VLE act as champions to encourage their peers to adopt the VLE.

Lastly, the findings of this study presents a valuable empirical evidence that confirms previous findings related to culture and IS adoption. Particularly, the 'bayanihan' culture confirms the concept of collectivism as theorized by Hofstede (1980), the theory on communal organisational culture by Goffee and Jones (1996), and Barton's (2010, 2013) building of social capital through social networks and mentor relations.

6 CONCLUSION

This paper has revealed the importance of socio-cultural factors essential for the adoption of the VLE. Specifically, the 'bayanihan' culture is vital for creating social relations among adopters. 'Bayanihan', which is deeply ingrained in certain culture, must be taken seriously as it has been shown in this case study that the communal support developed through 'bayanihan', even in an informal or small group, could provide the necessary support that positively influences adoption. While 'bayanihan' can generally be construed as peer support or guanxi, it is distinct because it focuses on assisting new members of the community (i.e. new and potential adopters). The 'bayanihan' culture has been explicated in a number of studies from different fields but has never been found to have significant influence on IS and educational technology adoption, particularly involving the VLE. The exposition of the influence of 'bayanihan' towards technology adoption is a major contribution of this study. Future e-learning initiatives can exploit this phenomenon by integrating the communal type of support between and among peers. Similar phenomena in other context can also be carried out to see how the some local cultural characteristics can positively or negatively influence technology adoption. Appropriate mix of culture and technology has the potentiality to come up with newer innovations in e-learning space which will make actual difference in its outcome. Finally, we envisage that the 'bayanihan' culture be further scrutinized in the context of IS adoption particularly on how it is created, developed and nurtured within the organisation.

References

Adam, M. S., and Myers, M. D. (2003). Have You Got Anything to Declare? Neo-Colonialism, Information Systems, and the Imposition of Customs and Duties in a Third World Country. In M. Korpela, R. Montealegre, and A. Poulymenakou (Eds.), *Proceedings of the International Federation of Information Processing* (Vol. 254, pp. 101–116). Dordrecht, The Netherlands: Kluwer.

Ahmed, T. T. (2013). Toward Successful E-Learning Implementation in Developing Countries: A Proposed Model for Predicting and Enhancing Higher Education Instructors' Participation. *International Journal of Academic Research in Business and Social Sciences*, *3*(1), 422–435.

Alcala, A. C. (1999). Higher Education in the Philippines. *Philippine Studies*, *47*(1), 114–128.

Anderson, R. (2007). Thematic content analysis (TCA). *Descriptive presentation of qualitative data*.

Avgerou, C. (2008). Information systems in developing countries: a critical research review. *Journal of Information Technology (Palgrave Macmillan)*, *23*(3), 133–146.

Avgerou, C. (2009). Discourses on innovation and development in information systems in developing countries' research. *Assessing the Contribution of ICT to Development Goals, Dubai School of Government and International Federation for Information Processing*.

Barameda, T. V., and Barameda, A. S. (2011). Rebuilding communities and lives: The role of Damayan and Bayanihan in disaster resiliency. *Philippine Journal of Social Development*, *3*, 132–151.

Barton, S. M. (2008). Cultural factors behind the growth of e-learning in Malaysia - Academic Guanxi. *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2008*, *2008*(1), 3385–3394.

Barton, S. M. (2010). *Social and cultural factors that influence the uptake of e-learning: case studies in Malaysia, Indonesia, Turkey, Singapore and Australia*.

Barton, S. M. (2013). Social capital framework in the adoption of e-learning. *International journal on e-learning*, *12*(2), 115–137.

Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., and Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education*, *58*(2), 843–855.

Birol, E., Smale, M., and Yorobe, J. M. (2008). Bi-modal preferences for Bt maize in the Philippines: a latent class model.

Blake, A., Donald, C., Datt, A., and Xiaoyan, B. (2011). Cross-Cultural Learning Design: Past the Head and the Hands to the HEART of the Matter. In *2011 11th IEEE International Conference on Advanced Learning Technologies (ICALT)* (pp. 600 –601).

Bongalos, Y. Q., Bulaon, D. D. R., Celedonio, L. P., De Guzman, A. B., and Ogarte, C. J. F. (2006). University teachers' experiences in courseware development. *British Journal of Educational Technology*, *37*(5), 695–704.

Bourdon, I., and Kimble, C. (2008). An analysis of key factors for the success of the communal management of knowledge. *arXiv preprint arXiv:0804.2844*.

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Camacho, J. V., Camacho, R. R., and Camacho, B. V. (2005). Some imperatives of ICT Integration in the Philippine Educational System: Towards modernization and relevance in a highly globalized economy. *Retrieved November*, *1*, 2009.

Chen, A. Y. (1998). *Asian perspectives on a culture of simulation: the challenge of virtual instruction*. (T. W. Chan, A. Collins, and J. X. Lin, Eds.).

Chen, A. Y., Mashhadi, A., Ang, D., and Harkrider, N. (1999). Cultural Issues in the Design of Technology-Enhanced Learning Systems. *British Journal of Educational Technology*, *30*(3), 217–230.

Chung, C.-H., Pasquini, L. A., and Koh, C. E. (2013). Web-based Learning Management System Considerations for Higher Education. *Learning and Performance Quarterly*, *1*(4), 24–37.

Commission on Higher Education (CHED) Philippines. (2012, May). Roadmap Public Higher Education Reform.

Creswell, J. W. (2007). *Qualitative inquiry & research design : choosing among five approaches* (2nd ed..). Thousand Oaks: Thousand Oaks : Sage Publications.

Davison, R. (2014). Editorial. *Information Systems Journal*, *24*(3), 203–205.

Davison, R., and Martinsons, M. (2003). Guest editorial cultural issues and it management: past and present. *IEEE Transactions on Engineering Management*, *50*(1), 3–7.

Dutton, W. H., Cheong, P. H., and Park, N. (2004). The social shaping of a virtual learning environment: The case of a university-wide course management system. *Electronic Journal of e-learning*, *2*(1), 69–80.

Fresen, J. W. (2010). Factors influencing the lecturer uptake of e-learning. In *European Distance and E-Learning Network (EDEN) Research Workshop, Budapest*.

Ganadores, E. (2013). *Bayanihan*.

Gibbs, G. (2002). *Qualitative data analysis: Explorations with NVivo (Understanding social research)*. Buckingham: Open University Press.

Goffee, R., and Jones, G. (1996). What holds the modern company together? *Harvard Business Review*, *74*(6), 133.

Guillermo, L. E. (1964). The Bayanihan! *Music Journal*, *22*(2).

HE in Numbers. (n.d.). *The Commision on Higher Education Official Website*.

Heeks, R. (2002). Information systems and developing countries: Failure, success, and local improvisations. *The Information Society*, *18*(2), 101–112.

Hoffman, N., and Klepper, R. (2000). Assimilating New Technologies: The Role of Organizational Culture. *Information Systems Management*, *17*(3), 36–42.

Hofstede, G. (1980). Motivation, leadership, and organization: Do American theories apply abroad. *Organizational dynamics*, *9*(1), 42–63.

Hofstede, G. (1986). Cultural differences in teaching and learning. *International Journal of Intercultural Relations*, *10*(3), 301–320.

Hofstede, G. (1997). *Cultures and organizations : software of the mind*. New York: New York : McGraw-Hill.

Hofstede, G. H., and Hofstede, G. J. (2005). *Cultures and organizations: software of the mind*. New York: McGraw-Hill.

Industry, Academe, Civil Society and Government Band Together for DigiBayanihan. (2014).

Jackson, S. (2011). Organizational culture and information systems adoption: A three-perspective approach. *Information and Organization*, *21*(2), 57–83.

Jaffer, S., Ng'ambi, D., and Czerniewicz, L. (2007). The role of ICTs in higher education in South Africa: one strategy for addressing teaching and learning challenges. *International Journal of Education and Development using Information and Communication Technology*, *3*(4), 131–142.

Johns, G. (2006). The Essential Impact of Context on Organizational Behavior. *The Academy of Management Review*, *31*(2), 386–408.

Jones, M. L. (2007). Hofstede - Culturally questionable? Presented at the Oxford Business & Economics Conference, Oxford, UK.

Kahiigi, E., Hansson, H., Danielson, M., Tusubira, F. F., and Vesisenaho, M. (2011). Collaborative e-learning in a developing country: A university case study in Uganda. In *10th European Conference on e-Learning ECEL* (Vol. 10).

Kaplan, B., and Maxwell, J. (2005). Qualitative Research Methods for Evaluating Computer Information Systems. In J. G. Anderson and C. E. Aydin (Eds.), *Evaluating the Organizational Impact of Healthcare Information Systems* (pp. 30–55). Springer New York.

Keller, C. (2009). User Acceptance of Virtual Learning Environments: A Case Study from Three Northern European Universities. *Communications of the Association for Information Systems*, *25*.

Koponen, T., Tedre, M., and Vesisenaho, M. (2011). An analysis of the state and prospects of e-learning in developing countries. In *IST-Africa Conference Proceedings, 2011* (pp. 1 –9).

Leidner, D. E., and Kayworth, T. (2006). Review: A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*, *30*(2), 357–399.

Librero, F. (2004). Digital learning environment in the Philippines: Perspective from the UP Open University. In *Symposium on digital Learning, Keio University, Tokyo, Japan* (pp. 11–13).

Linton, R. (1945). *The Cultural Background of Personality*. New York.

Maldonado, U. P. T., Khan, G. F., Moon, J., and Rho, J. J. (2011). E-learning motivation and educational portal acceptance in developing countries. *Online Information Review*, *35*(1), 66–85.

Marcial, D. E. (2012). Teaching and Learning with Technology in Higher Education Institutions in the Philippines. *PeLS Online Journal*, *3*(1), 50–66.

Masoumi, D., and Lindström, B. (2012). Quality in e-learning: a framework for promoting and assuring quality in virtual institutions. *Journal of Computer Assisted Learning*, *28*(1), 27–41.

McLoughlin, C., and Oliver, R. (2000). AJET 16(1) McLoughlin and Oliver (2000) - cultural inclusivity - indigenous online learning at tertiary level. *Designing learning environments for cultural inclusivity: A case study of indigenous online learning at tertiary level*.

McSweeney, B. (2002). Hofstede's Model of National Cultural Differences and their Consequences: A Triumph of Faith - a Failure of Analysis. *Human Relations*, *55*(1), 89–118.

Minges, M., Magpantay, E., Firth, L., and Kelly, T. (2002). *Pinoy Internet: Philippines Case Study* (p. 58). International Telecommunications Union (ITU).

Myers, M. D., and Tan, F. B. (2003). Beyond models of national culture in information systems research. *Advanced topics in global information management*, *2*.

Newton, R. (2003). Staff attitudes to the development and delivery of e-learning. *New Library World*, *104*(10), 412–425.

Olaniran, B. A. (2009). Discerning culture in e-learning and in the global workplaces. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, *1*(3), 180–195.

Ondago, C. O., Ondimu, K. O., and Muketha, G. M. (2012). A Framework for E-Learning Implementation in Developing Countries: A Students' Perspective. *Int. J. Emerg. Sci*, *2*(4), 579–597.

Patton, M. Q. (1987). *How to use qualitative methods in evaluation*. Sage.

Quimno, V., Imran, A., and Turner, T. (2013). Introducing a Sociomaterial Perspective to Investigate E-learning for Higher Educational Institutions in Developing Countries. In H. Deng and C. Standing (Eds.), *ACIS 2013: Information systems: transforming the future: Proceedings of the 24th Australasian Conference on Information Systems*. Melbourne, Australia.

Rabiee, A., Nazarian, Z., and Gharibshaeyan, R. (2013). An Explanation for Internet Use Obstacles Concerning E-Learning in Iran. *International Review of Research in Open and Distance Learning*, *14*(3), 361–376.

Salvador, D. S., Omizo, M. M., and Kim, B. S. K. (1997). Bayanihan: Providing Effective Counseling Strategies with Children of Filipino Ancestry. *Journal of Multicultural Counseling and Development*, *25*(3), 201–209.

Sarmenta, L., and Hirano, S. (1999). Bayanihan: building and studying web-based volunteer computing systems using Java. *Future Generation Computer Systems*, *15*(5–6), 675–686.

Shaiq, H. M. A., Khalid, afiz M. S., Akram, A., and Ali, B. (2011). Why not everybody loves Hofstede? What are the alternative approaches to study of culture? *European Journal of Business Management*, *3*(6), 101–111.

Sife, A. S., Lwoga, E. T., and Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development using ICT*, *3*(2).

Ssekakubo, G., Suleman, H., and Marsden, G. (2011). Issues of adoption: have e-learning management systems fulfilled their potential in developing countries? In *Proceedings of the South African Institute of Computer Scientists and Information Technologists Conference on Knowledge, Innovation and Leadership in a Diverse, Multidisciplinary Environment* (pp. 231–238).

Surry, D. W., and Ely, D. (1999). Adoption, Diffusion, Implementation, and Institutionalization of Educational Technology, *29*.

Surry, D. W., Ensminger, D. C., and Haab, M. (2005). A model for integrating instructional technology into higher education. *British Journal of Educational Technology*, *36*(2), 327–329.

Tilak, J. B. G. (2000). Higher Education in Developing Countries. *Minerva*, *38*(2), 233–240.

Trucano, M. (2012). E-Learning: Opportunities & Challenges | e-Institute.

UNESCO. (2006). *Teachers and educational quality: monitoring global needs for 2015* (Vol. 253). UNESCO Inst for Statistics.

Uzuner, S. (2009). Questions of Culture in Distance Learning: A Research Review. *The International Review of Research in Open and Distance Learning*, *10*(3).

Van Rooij, S. W. (2011). Higher education sub-cultures and open source adoption. *Computers & Education*, *57*(1), 1171–1183.

Vasquez, K., Keltner, D., Ebenbach, D. H., and Banaszynski, T. L. (2001). Cultural Variation and Similarity in Moral Rhetorics Voices from the Philippines and the United States. *Journal of Cross-Cultural Psychology*, *32*(1), 93–120.

Wu, J. H., Tennyson, R. D., and Hsia, T. L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education*, *55*(1), 155–164.

Zemsky, R., and Massy, W. F. (2004). Thwarted innovation. *What happened to e-learning and why, A final report for the Weather station Project of the Learning Alliance at the University of Pennsylvania in cooperation with the Thomson Corporation, Pennsylvania*.

Zhu, C., Valcke, M., and Schellens, T. (2010). A cross‑cultural study of teacher perspectives on teacher roles and adoption of online collaborative learning in higher education. *European Journal of Teacher Education*, *33*(2), 147–165.