

# INFLUENCING FACTORS AND THE ROLE OF ICT ON CORPORATE SUSTAINABILITY IN BAHRAIN'S SERVICE INDUSTRY: A FIELD STUDY APPROACH

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**Abstract:** Corporate Sustainability (CS) has been researched by many scholars in recent years. While literature on corporate sustainability covers various issues, it lacks comprehensive studies of factors and variables and the roles of ICT which influence the practice of corporate sustainability. This paper studies these factors and variables and investigates the roles of ICT on corporate sustainability in the context of some organizations within service industry in Bahrain. A qualitative field study approach is undertaken in this research where seven organizations in Bahrain are studied via interviews with ten key personnel. Content analysis is then performed to extract the factors and variables and a comprehensive model of the antecedents of corporate sustainability practice is developed. The results indicate that *networking* (internal and external) with a view to *creating new knowledge* are the significant antecedents of corporate sustainability. In terms of the roles of ICT, it is proposed that *collaborative technologies, knowledge management systems, specific DSSs* and *internet based sustainability reporting* are the appropriate ICTs to implement and manage corporate sustainability effectively. The paper also highlights the research and managerial implications of corporate sustainability model.

**Key words:** Corporate sustainability, Communities of Practice (CoP), Networking, Knowledge Management, Knowledge creation, Bahrain

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## 1. INTRODUCTION

The Kingdom of Bahrain – like other Gulf Cooperation Council (GCC) countries – is trying to diversify its economy instead of depending solely on the export of oil (Al-Jasser and AlHamidy 2003). Bahrain Minister of Industry and Commerce Dr. Hassan Fakhro stated that “Bahrain is service-based economy” (The Ministry of Industry and Commerce 2006). Accordingly, the number of national/international service organisations – especially in the financial sector – is increasing rapidly (Central Bank of Bahrain 2004) and ultimately fierce competition is growing. With this highly competitive market environment organisations require to employ strategies to compete and sustain their competitive advantage. Hence the need for understanding, practising, and managing corporate sustainability is vital (Elkington 1998, Frankel 1998).

Corporate Sustainability (CS) has been defined in the literature in many different ways. As the famous quote says “it means something, but not always the same thing to everybody”. Some researchers have defined CS by taking a *shareholder, stakeholder, and societal* approaches. Others have argued that CS is a process rather than a tangible outcome. However, three most agreed dimensions of Corporate Sustainability are: *Ecological (environmental), Social and Economic sustainability* (Marrewijk 2003). The bottom line however is that organizations of the 21<sup>st</sup> century must attain the dimensions of corporate sustainability effectively and become more competitive at the same time. Questions therefore remain: what must be done to practise corporate sustainability? What are the antecedents of CS? What are the roles of ICT in CS? This paper investigates the above questions in the context of some service oriented organizations in Bahrain.

Grant's (1996) knowledge-based view of the firm argues that knowledge is a critical source for sustainable competitive advantage. Roberts (2006), on the other hand, argues that Communities of Practices (CoPs) provide a suitable environment to create knowledge by facilitating the exchange of knowledge between members. It has also been suggested that development of new knowledge via CoPs depends on social capital comprising trust, norm, among others (Wasko and Faraj 2005, Wasko et al. 2004). On the other hand literature reveals that new knowledge (created through CoPs) contributes significantly towards the sustainability of organizations (Placet et al 2005) – an assertion which will be elaborated later. This paper thus proposes that CoPs will help organizations to create new innovative knowledge which in turn will influence the corporate sustainability. Thus CoPs and new knowledge created through CoPs are considered to be the most important antecedent factors of corporate sustainability. Thus primary objectives of this paper are as follows:

- (i) In what forms and shapes do CoPs exist within the service industries in Bahrain?
- (ii) What are the roles of CoPs in creating knowledge that are essential for corporate sustainability?
- (iii) How does social capital influence the creation of knowledge via CoPs?
- (iv) What are the roles of ICT on the implementation and practice of corporate sustainability?

It is noted that above objectives of this paper (specially objective iv) fit very well with the overall theme of the conference which states that “the conference will explore the contribution of ICTs to the achievement of sustainable development”.

We use qualitative filed study as the research method and use structured interview techniques to collect relevant data. In the next several sections we first briefly present relevant background literature. The research method is presented next which describes the process of data collection and data analysis. The results of the study are then presented in detail in the form of a comprehensive corporate sustainability influencing model. The role of ICT in corporate sustainability is then presented which is explicated based on this comprehensive model. Finally, conclusions and future directions are presented.

## **2. BACKGROUND**

Located in the Arabian Gulf on the eastern shore of Saudi Arabia Bahrain has a 5000 years of civilization. It has a relatively small land area and a population of only 680,000 people. But Bahrain has achieved a very high level of social and economic development in the last three decades. In terms of Information and Communication Technology (ICT) Bahrain boasts one of the most advanced infrastructure. It has achieved a PC penetration of 16 per 100 people, Internet penetration of 22% of the population and E-banking adoption of 17% of Internet users (Al-Amer 2005). The Government of Bahrain has also undertaken major steps towards e-Government implementing a series of related projects across all public authorities costing between US\$150 million to US\$ 200 million. In terms of e-Government readiness Bahrain scores 2.04 compared to the global mean of 1.62 (Al-Amer 2005). The score for USA is 3.11. Almost all local and foreign banks in Bahrain now offer e-banking services. There also has been some innovative applications and uses of ICT in Bahrain, for example e-voting (Al-Amer 2005), Smart Card (Al-Alawi and Al-Amer 2006), among others. But use and application of ICT in facilitating Communities of Practices (CoPs) leading to managing knowledge and corporate sustainability have not been found in any ICT literature on Bahrain. Thus present exploratory study in this domain will contribute significantly to the literature.

### **2.1 Communities of Practice (CoPs)**

Community of practice (CoP) approach was developed in the beginning of the 1990s (Roberts 2006). Despite cautious criticism of this approach by several scholars (e.g. Contu and Willmott 2003; among many others), currently various organisations utilize this approach as a vehicle for analysing and transferring knowledge (Roberts 2006). Under the CoP theory individual's and group's tacit knowledge are shared and transferred among the members (Teigland 2003). CoPs exist within an organisation as well as between different organisations (Braun 2002). To take full advantage both internal and external CoPs must be considered. Wenger, McDermott and Snyder (2002) believed that customers and suppliers CoPs are beneficial tools for organisations and individuals.

As mentioned earlier this study attempts to examine the impact of knowledge received from participants in internal and external CoPs on creating new knowledge for corporate sustainability. It is noticed from the literature that that there is a lack of comprehensive study on CoP relationship with corporate sustainability. Therefore, this study will contribute significantly to the literature.

### **2.2 Knowledge Creation**

In the literature two major types of knowledge are dealt with as tacit and explicit (Polanyi 1997). As stated by Nonaka (1994), the formulation and communication of tacit knowledge is harder than explicit knowledge. When tacit and explicit knowledge are shared between

individuals and groups inside and outside of the organisation, new knowledge is created (Nonaka and Toyama 2005).

One of the important areas of debate in CoPs is related to knowledge creation. Brown and Duguid (1991) argued that responding to new problems will incrementally improve work practices, thus there is a positive correlation between CoP and knowledge creation. It is noted that in studying the antecedent factors of corporate sustainability, one of the objectives of this study is to discover if the knowledge received from members in CoPs will facilitate knowledge creation.

### 2.3 Corporate Sustainability

Corporate sustainability has attracted the attention of large and small organisations (Hawken 1993; Elkington 1998; Frankel 1998). According to Porter and Kramer (2006) organisation's economic, social, and environmental performances are the ultimate principles of sustainability. Organisation's ability to integrate tacit knowledge embedded in individuals' minds will provide a source of sustainable competitive advantage. An organisation can reach a sustainable competitive advantage through supporting the creation of new ideas and innovation by increasing the flexibility of knowledge integration.

While literature on corporate sustainability is plentiful, it lacks a comprehensive study on the antecedent factors of corporate sustainability. This paper attempts to fill this gap. As mentioned in the introductory section and further supported by the literature review section above we propose a generic framework as follows to conduct our research:

CoPs → Knowledge Creation → Corporate Sustainability

We shall use the above framework to investigate the antecedent factors and variables of corporate sustainability which will then help us to understand the role of ICT in the implementation and practice of corporate sustainability.

## 3. RESEARCH METHOD

### 3.1 Paradigm, Sample and Procedure

As the study is exploratory in nature, a field study was conducted in the service industry of the kingdom of Bahrain. Thus the paradigm of this research is qualitative. The purpose of the field study was to get a clearer picture of what is happening in Bahrain service industry (e.g. existence of CoPs and issues on corporate sustainability) using the generic high level framework presented above. The data was collected using semi-structure interviews. The interview plan followed the guidelines of Patton (1990). The areas of information that the semi-structure interview questions focused on are: (1) the existence of CoPs and their categories, (2) the characteristics of CoPs, (3) the level of importance of internal and external CoPs, (4) type of knowledge (tacit/explicit) received from CoPs members, (5) how knowledge is created, (6) the creation of new knowledge, (7) social capital level within these CoPs, (8) role of social capital and finally (9) practice of corporate sustainability (organisation's social, environmental, and economic performance). The interview questions were first tested by one prospective participant.

Ten managers from middle and top management level were chosen to be interviewed. The selection of the interview participants was based on two main conditions; first the position of the participant and second the industry of their organisation. Seven organisations in the government, private, and quasi-governmental sectors within Bahrain service industry took

part in this study. Table 1 shows the demographic information of the interview participants and the organizations they work for. It is noted that three organizations (3, 5 and 6) allowed us to interview two executives each from their organizations.

**Table 1: Demographic information of the interviewees**

	Position	Nationality	Education	Organisation	Nature of Business	Public/Private
<b>Interviewee 1</b>	Senior Vice President	Bahraini	MBA	Organisation 1	Financial services (Banking)	Private
<b>Interviewee 2</b>	Executive Director	Non-Bahraini	MBA	Organisation 2	Financial services (Banking)	Private
<b>Interviewee 3</b>	Manager	Bahraini	Master	Organisation 3	Public services	Public+Private
<b>Interviewee 4</b>	Director	Bahraini	Master	Organisation 4	Public services (Defence Force)	Public
<b>Interviewee 5</b>	Director	Bahraini	Bachelor	Organisation 5	Public service (Municipality)	Public
<b>Interviewee 6</b>	Head of Department	Bahraini	MBA	Organisation 6	Public services (Transportation)	Public
<b>Interviewee 7</b>	Director	Non-Bahraini	MBA	Organisation 6	Public services (Transportation)	Public
<b>Interviewee 8</b>	Director General	Bahraini	MBA	Organisation 7	Public services (Transportation)	Private
<b>Interviewee 9</b>	Chief Executive	Bahraini	PhD	Organisation 3	Public services	Public+Private
<b>Interviewee 10</b>	Head of Department	Bahraini	PhD	Organisation 5	Public services (Municipality)	Public

### 3.2 Data analysis

For the ten interviews conducted in this research, over forty pages of interview scripts were produced for analysis. Content analysis technique was used to analyse the interview data (Thomas 2003). The specific approach used to analyse the interview scripts followed Thomas' (2003) six steps approach of content analysis. A list of variables was prepared on each major area of the study. It is important to highlight that most of the variables were checked for consistency with similar variables from the literature review. After that a comprehensive table was developed showing all the variables found from the field study.

## 4. RESULTS AND IMPLICATIONS

### 4.1 Demographic Information

All the interviewees were male except one female manager. It is noticed that seven of them hold top level management positions while others hold middle level management positions. The majority of the participants had Masters degree, while one of them had a Bachelor degree and two are PhD holders. Three of the interviewees work in the private sectors and the others work in governmental or quasi-governmental organisations. In addition, all the participants work in large organisations within the service industry in Bahrain (i.e. financial services, transportation, defence force, municipality, and public services). All the interviewees appreciated the aims and objectives of the study.

We now discuss the major variables which were explicated from the field study scripts via content analysis. We grouped them under major heading of the factors identified in the literature. Altogether 87 variables were identified which were grouped under 18 factors (see Figure 1).

## 4.2 Existence of Community of Practice

The first objective of this study is to discover the existence of CoP concept within the service industry in Bahrain. It was noticed that the interviewees never heard of the formal terminology called CoP before. Only one of the ten interviewees guessed the right definition of CoP. Interestingly, one of the interviewees admitted that they are applying this concept at his work, but it is the first time he heard about this expression. The researcher did not explain the CoP concept to the participants unless they asked about it. Therefore, the participants would not be given an indication of what answers were expected from them. This was to eliminate the bias of the data collected. For those who asked about the meaning of the CoP concept, the researcher gave them a brief definition of CoP and its origin.

It was however found that there are connections and networks between the interviewees and the people working with them in the same organisation and outside of their organisation. All interviewees agreed that they seek help and advice from the members of these networks whenever they faced a problem at their work. It was also noticed that communication was always two ways. As a result, they benefitted from each other's knowledge and experiences. This supports one of the CoP indicators specified by Wenger (1998) that is called "sustained mutual relationships". For example one of the participants stated that: *"it is a two way communication and cooperation as those people also contact me if they need my help and advice."* It was also discovered that all the interviewees participate in formal/informal networks having similar work experience or field of interests to learn from each other.

Thus it can be claimed that in some form CoPs exist within the service industry in Bahrain although none of the interviewees knew the formal terminology.

## 4.3 Knowledge Creation

We now turn into our second objective of the study which seeks to discover the role of CoPs on knowledge creation.

It is noticed that six of the respondents received both tacit knowledge (skills, abilities, and verbal knowledge) and explicit knowledge (documents, reports, and procedures) from other network members. On the other hand, two of the interviewees received only tacit knowledge and two others received only written knowledge. Therefore, there is evidence that both tacit and explicit knowledge are received from CoPs members. It was also found that the knowledge creation process of Fuller et al. (2007) matches with the way the interviewees use these knowledge to generate even new knowledge.

## 4.4 Social Capital and its Role

We now investigate our third objective. As indicated in the literature several scholars believed that social capital moderates or influences the impact of knowledge exchange (Wasko and Faraj 2005). As a result this study assumed that social capital had a moderating role on the amount of knowledge received from network members. A number of variables from the literature are used to measure the level of social capital from the interviews.

- **Trust:** The majority declared that they have high level of trust with other members in their network. However, some commented that they have low level of trust with others. For example, one interviewee declared that: *"I do not trust all of them."*

- **Norms:** It was found that the level of norms in these networks was relatively high. Only two of the interviewees showed that they are not open to conflicting points of view. One of them said: *"I argue with people who have different point of view. If I am not convinced I will do what I think is right."*
- **Identification:** A moderate level of identification was found between networks members. For instance, one participant said: *"regarding the feel of belonging and proud it is something very hard to produce ..."*

All the interviewees agreed that trust, norms, and identification have an affect on their decision to accept or reject the received knowledge. However, it was noticed that almost all of them emphasized on the role of trust more than norms and identification.

#### 4.5 Corporate Sustainability:

We now investigate in what ways the knowledge created within the CoPs impact corporate sustainability, ie. the influence of new knowledge – or the knowledge creation outcome – on organisation's social, environmental and economic performance.

**Social performance:** Majority of the interviewees agreed that there were new ideas generated through knowledge received from their network members which had some influence on their organization's social performances. Examples of social responsibility projects included: increase the quality of education, contribute to the growth of the country, and sponsor university students.

**Environmental performance:** Most of the respondents also believed that the solutions they came up with were beneficial to the environment. Some of the creative solutions were used either to protect the environment or to help clean it. For instance, one of the interviewees stated that: *"... helped in reductions of use of paper, which in turn reduced the demand on cutting trees."*

**Economic performance:** All participants agreed that there was major effect of the new solutions on the economic performance of their organisations. Examples of these effects were: increase profit, decrease cost, and enhance organisation's productivity and performance. For example, a participant stated that: *"Again, good solutions have helped a lot in the increase of organisation's profits and decrease in its expenses."*

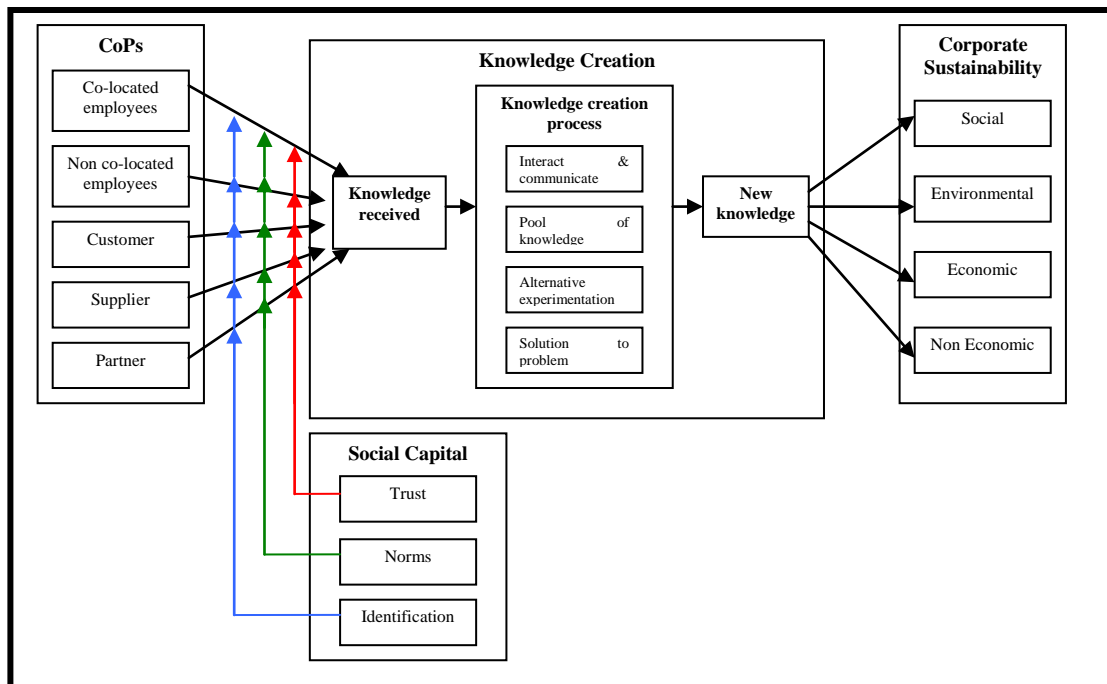
From the interviews we also discovered other performance measures of corporate sustainability which we call non-economic performance:

**Non-economic performance:** All interviewees also agreed that the new found solutions had positive impact on organisation's performance, employees' productivity, and the growth of the organisation. Moreover, as stated by one of the respondents, employee loyalty towards the organisation also increased. For instance, an interviewee said that: *"Solutions always helped in minimising costs, time and efforts and helped the organisation manage its works in a smooth manner."*

In summary, based on this field study in Bahrain, it can be argued that there is a hint of possible link between the knowledge received from the members of the CoP networks on the knowledge creation process and the outcome of the knowledge creation process (i.e. new knowledge) may have possible relationship with organisation's social, environmental, economic, and non-economic performance (corporate sustainability).

For each of the ten interviews corporate sustainability influencing model was developed. Finally a combined model was developed which is shown in Figure 1. It is noted that this is the elaborate version of our high level framework, ie. CoPs → Knowledge Creation → Corporate Sustainability, which we started with at the beginning of this study. Via field studies we had

been able to verify and expand this framework into a research model in the context of Bahrain's service industry. This model has both research and managerial implications as will be discussed later.



**Figure 1: Combined Corporate Sustainability Influencing Model**

#### 4.6 Role of ICT on corporate sustainability

We now investigate our fourth objective which is the role of ICT in implementing and practising corporate sustainability. In a way this was our primary objective. But in order to study this objective we needed to explore the antecedents of corporate sustainability which is shown in Figure 1 above. Sipping through the interview scripts and studying various literature the roles of ICT in corporate sustainability have been identified as follows.

We propose that the roles of ICT in corporate sustainability should be investigated using the framework of input, process and output. That is, we need to investigate the roles of ICT in managing (i) the antecedents of corporate sustainability, (ii) the corporate sustainability itself and (iii) the output of corporate sustainability.

On the antecedents of corporate sustainability, Figure 1 reveals two broad categories of activities: management of CoPs and management of knowledge. We propose that CoPs should be managed by using some form of collaborative technologies (Easley et al. 2003). Examples of collaborative technologies include group support systems, groupware; among many others (Easley et al. 2003, Bajwa et al. 2005). Collaborative technologies can be set up as both synchronous and asynchronous mode. Synchronous collaborative technology is ideal for managing CoPs within the same organization, while asynchronous collaborative technology is ideal for managing CoPs within and outside of the organization (non co-located employees, customers, suppliers, partners etc.). On managing knowledge (outcome of CoPs) we propose to use knowledge management systems (KMS) (Quaddus and Xu 2005). KMS is a specialized form of information systems which facilitates the generation, preservation and sharing of knowledge. Literature on the use KMS in various fields are plentiful. Literature provides

descriptions of some KMS applications in leading organizations such as BP, Xerox, KMPG etc. (Sarvary 1999). KMS is therefore ideally suited to manage the new knowledge from CoPs and use them effectively in corporate sustainability.

On the corporate sustainability itself, we propose to use dedicated decision support systems (DSS). Three dimensions of corporate sustainability are social, environmental and economic. For social dimension of corporate sustainability dedicated DSS can be used to analyse the social impact of any corporate decision making. For example, Dey (2004) developed a dedicated DSS to analyse the social issues of a project in Indian oil pipelines industry. The author used a well known DSS tool called analytical hierarchical process (AHP) to develop the specific DSS (Saaty 1994). There are plenty of applications of specific environmental DSS to analyse the environmental impact of corporate decision making. For example Sen et al. (2000) developed a corporate DSS to manage the US Department of Energy's hazardous waste cleanup efforts. For economic dimension of corporate sustainability dedicated DSS is used to analyse the economic benefit of an organization. For example, the World Bank developed a dedicated DSS to analyse the economic benefit of electrical power districting problem for the republic of Ghana (Bergey et. al. 2003).

On the output of corporate sustainability we concentrate on the reporting of corporate sustainability using ICT. Early reporting of corporate sustainability had been via print media which used a structured approach and format. However, as mentioned by Isenmann (2004) a combination of ICT and internet can be used now for corporate sustainability reporting. Main advantage of using internet based reporting is the flexibility whereby the reports can be fine tuned easily to meet users' needs.

In summary, we propose that collaborative technologies, knowledge management systems, various dedicated DSSs and Internet based reporting are the ICTs which can be used effectively within the domain of corporate sustainability. In the context of Bahrain these technologies are not used at present to deal with corporate sustainability. However, given the excellent ICT infrastructure of Bahrain, ICTs, as proposed above, can be easily developed and used for effective management of corporate sustainability.

#### **4.7 Research Implications**

Further research can emanate from our study in two ways. First, the comprehensive model of Figure 1 can be used as a research model to undertake empirical test on the model. To do that formal hypotheses need to be developed via further literature review. A causal modelling approach (structural equation modelling) can be undertaken to perform the empirical test. The model in its entirety may be too big for some applications. In that case part of the model can be investigated for empirical verification, for example the later part of the model – from new knowledge to corporate sustainability (see Figure 1).

Secondly, our proposed role of ICT in corporate sustainability can be investigated further taking a case study approach. For example, use of collaborative technologies for CoPs management can be investigated further using a case study approach to explore the factors of successful implementation of CoPs using collaborative technologies. The roles of knowledge management systems, specific DSSs and internet based reporting of corporate sustainability can be investigated in a similar fashion.

## 4.8 Managerial Implications

Figure 1 also serves as a practical model to implement and practice corporate sustainability. All factors and variables of this model have been obtained from the real world. It is noted that all variables of the model ultimately lead into corporate sustainability. Therefore, organizations planning to embark on corporate sustainability can consider the variables of Figure 1 as basic 'criteria' to successfully implement corporate sustainability. Organizations can do a feasibility study based on the criteria of Figure 1. An appropriate decision can then be taken by the organizations to ascertain to what extent they can implement and practice corporate sustainability.

## 5. CONCLUSIONS AND FUTURE STUDY

This paper presents a comprehensive study to determine the factors and variables to implement and practise corporate sustainability. The paper then explores the role of ICTs in implementing and managing corporate sustainability. The research is undertaken using a qualitative field study approach in Bahrain. Seven organizations from Bahrain's service industry took part in this study, which resulted in ten interviews. The interviews were transcribed by the researchers and content analysis was used to explore various factors and variables as antecedents of corporate sustainability. The analysis resulted in 18 factors and 87 variables. A combined corporate sustainability influencing model was then developed. In terms of dimensions of corporate sustainability all interviewees agreed with *economic performance*, nine of the ten interviewees agreed with *social performance*, while seven interviewees agreed with the *environmental performance*. On the role of ICTs in corporate sustainability it was proposed (based on the antecedent factors/variables) that *collaborative technologies, knowledge management systems, specific DSSs and internet based sustainability reporting* are the appropriate ICTs for implementing and managing corporate sustainability.

This study contributes to the corporate sustainability literature in two significant ways. First, it uses a qualitative approach to explore a comprehensive list of factors and variables as antecedents of corporate sustainability. To the best of our knowledge it is quite a unique study from this perspective. This study also develops a comprehensive influencing model of corporate sustainability which has significant research and managerial implications. Second, the study also proposes a combination of ICTs which can be used successfully to implement and practise corporate sustainability.

Our immediate future plans is to test the comprehensive model via quantitative empirical study using structural equation modelling.

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