Chapter 3
Integrating Sustainability in Cloud Computing for Managing Sustainable Knowledge in Higher Education

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ABSTRACT
This chapter aims to present a conceptual model in order to facilitate sustainability in cloud computing resulting in sustainability in organizational knowledge in education. From one perspective, while cloud computing has been considered as a recent area of research due to arguments round its value to organizational performance, sustainability has turned to be a typical common norm due to the discovery of uncertainty in various human aspects. From a different perspective, the role of Knowledge Management in enhancing organisational success has been detected in different researches. The main consensus after these researches is that the more effective management of knowledge is, the more effective the organisational performance will be. Therefore, this chapter presents a theoretical framework of potential links among cloud computing, knowledge management and sustainability.

INTRODUCTION
Sustainability in higher education is a recent phenomenon. Following several environmental, social and financial crises in the recent years, significant social and environmental effects of businesses and other organisations’ practices can be detected. An increasing number of academics and practitioners have begun considering that sustainability are imperative to the survival and development of business and the society (Hart, 1997; Accenture, 2010; PRME, 2008; Lee and Schaltegger, 2014).

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Since the level of sustainability impacts on business and society can be enormous in short- and long-term, it is critically important to raise ‘the sustainability bar’ to current and future managers and leaders. Here, higher educational institutions have essential roles to embrace sustainability to educate future managers and leaders for sustainable knowledge society.

As this shift has occurred, one can easily witness global organisations both preserve and create value by integrating sustainability into their business strategies and operational practice, ultimately contributing to sustainable society. As a global message, the UN Global Compact (2007) highlighted “any meaningful and lasting change in the conduct of corporations towards societal responsibility and sustainability must involve the institutions that most directly act as drivers of business behavior, especially academia (p.3). More recently, Accenture (2010) reported that global companies adopting sustainable business strategies and practices drive value by growing revenue and reducing costs through efficiency gains, managing operational and regulatory risks more effectively, and building strong brand, reputation and collaborative networks.

The IT industry is not far from such concepts. The ongoing movements of designing more sustainable practices in manufacturing and using computers and servers attracted many authors. Cloud computing is a newly formed area that has caught major attention in the IT industry. Cloud computing uses dynamic resources in order to provide data management services over the Internet. In cloud computing, the provider can provide answers (i.e., software, infrastructure or platform) over the Internet and these services are made available to the users on demand (Cervone, 2010). Despite it has been argued that the knowledge of such a technology is normally not needed by the user, the term “cloud computing” is used as a symbol to represent an underlying complicated structure (Erdogmus, 2009).

The major advantage of cloud computing practice is the offering of computing access as a utility form, which making computing capability through “service” oriented model. In general, cloud computing can be offered in the forms of Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), in which software, hardware, and storage capabilities can be achieved through “pay per use” paradigm.

This chapter aims to theoretically develop sustainability in cloud computing in order to enhance sustainability and responsible knowledge management in education. It supports international arrangements to support education processes worldwide.

Knowledge Management, a Way Ahead

Knowledge has been considered as of central importance for the functioning and competitiveness of organisations in modern life (Soliman, 2000). In consequence, knowledge management has emerged over the last decade of the twentieth century and the first decade of the twenty-first century as one of the major improvements in managerial theory (Fugate, Stank & Mantzer 2009; Pappa et al. 2009).

In general, several authors argue that knowledge management has been at the forefront of management theory and organisations since the mid 1990s (Gold, Malhotra & Segars 2001; Guenasekaran & Ngai 2007). Several publications indicate the increasing consequences of knowledge in enhancing organisational performance (Afiouni 2007; Eftekharzadeh 2008). In essence, Maqsood, Walter and Finegan (2007) argue that knowledge is the ‘race for the future’. Wiig (1999) states that the emergence of knowledge management can be explained by external and internal driving forces. External forces like globalisation of business and international competition, sophisticated customers, sophisticated competitors and sophisticated...