

## **Green IT/IS Adoption within Organizations: A Systematic Literature Review and Research Agenda**

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### **Abstract**

Advances in technology have affected all sectors of the economy and environments of countries around the globe. Research studies of the relationship between environmental sustainability, information technology (IT), and information systems (IS) under the terms of Green IT and Green IS have grown exponentially in the IS research community in the past seven years. This paper provides a systematic academic literature review of the organization-level adoption of Green IT/IS to understand and summarize the existing studies related to the field with the aim of understating better the research field, categorizing the studies and identifying some research opportunities and gaps for future research. To provide a robust study, we have applied the upper echelon theory (UET) to formulate potential research questions for future researchers.

Keywords: Systematic literature review, Green IT/IS, Upper echelon theory, Environment, Sustainability, Adoption

### **1. Introduction**

As advances in technology for the environment have occurred, there have been increasing concerns regarding environmental sustainability issues (Thomas et al., 2015, Nuss, 2015). Moreover, organizations and businesses are under overwhelming pressure from their shareholders and legislatives to improve their environmental sustainability activities (Melville, 2010, Butler, 2011a, Murugesan, 2008, Zheng, 2014, Frehe, 2015). Gärling et al. (2003) listed the environmental issues that organizations face as: (1) air pollution (outdoor and indoor), (2) solid waste disposal, (3) topsoil erosion, (4) ozone layer depletion, (5) population growth, (6) marine and fresh water pollution, (7) toxic waste accumulation and disposal, (8) reduction in biodiversity, (9) wetlands destruction, (10) deforestation, and (11) climate modification. This concern regarding the environment and climate by corporations is creating an impetus and ever increasing momentum, which sometimes is referred to as corporate ecological responsiveness (CER). Based on Bansal and Roth (2000), CER is defined as “a set of corporate initiatives aimed at mitigating a firm’s impact on the natural environment”, in which these initiatives can include changes to the firm’s products, processes, and

policies such as reducing energy consumption and waste generation, using ecological sustainable resources, and implementing an environmental management system.

Information technologies (IT) and information systems (IS) could be considered to be two CER initiatives of a firm’s response towards environmental sustainability. Based on a report in 2007, information and communication technologies (ICT) are responsible for 2% of global greenhouse gas (GHG) emission, which is equal to global aviation industry (Webb, 2008). Researchers have framed the impacts of IT on the environment as first, second, and third-order effects (Hilty et al., 2006, Köhler and Erdmann, 2004): (1) first-order effects are direct impacts from IT hardware during the product lifecycle, including production, use and disposal of computer equipment. This perspective considers IT as part of the problem (Molla and Abareshi, 2012, Dedrck, 2010). These effects are similar to the scope of Green IT. Therefore, making IT products, use, and disposal more environmental friendly and greener is referred to as Green IT (Dedrck, 2010, Molla and Abareshi, 2012, Ryoo and Koo, 2013, Gholami et al., 2013); (2) second-order effects are the effects of ICTs on other processes such as transportation or industrial production, influencing their environmental impacts. This