
The Adoption of Green IT/IS: Proactive and Reactive Approaches to Meeting Environmental Challenges

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Abstract

Most discussions on environmental challenges relating to the use of Information Technology (IT) focus on IT as a drain on energy resources and a contributing factor towards environmental degradation. As a result, substantial research and focus of the organizations is towards reducing the negative impact of IT's energy consumption. Organizations primarily go green in a reactive mode in response to the forces in its institutional environment. In doing so they adopt Green IS/IT practices because they are required to do so, or believe that they need to be better corporate citizens or they simply copy their competitors. This approach while beneficial to the environment in the short term may not be sustainable as it views Green initiatives as a cost of doing business. In this research using the lenses of institutional theory and strategic choice theory, I propose that organizations will benefit greatly if they view green initiatives proactively and as a strategic choice investment rather than as cost centers. The strategic and proactive approach towards adoption of Green IT initiatives is both sustainable and profitable for the organizations as it becomes a part of the organization's strategy and has a long term beneficial effect. Testable hypotheses have been presented.

Keywords: Green IS/IT, Sustainability, Adoption, Rationale, Institutional Theory, Strategic Choice

1. INTRODUCTION

As the future of our planet depends on our ability to limit or reverse the negative effects of global climate change, organizations look for new and better ways to manage their energy resources and create a sustainable society. Information technology and systems that support the goal of sustainability are referred to as green IT/IS (Watson, Boudreau, & Chen 2008). The decision to adopt green IT/IS practices can be made for many reasons not the least of which is to reduce the negative effect on the environment (Porter & Kramer, 2006). However, in doing so many other decisions need to be taken that may involve changing existing processes, investing in new technologies that

have a green footprint, training employees for Green IT practices and buy in from middle and top management. All of these changes may come with additional costs and become a drain on company's financial resources. Some companies go green because they want to be better corporate citizens (i.e. the right thing to do), others may do so because their competitors are also going green and some others may do it to comply with regulations or under pressure from their consumers or partners. All of the above reasons for adoption can be considered as organization's response to institutional pressures (normative, mimetic and coercive) within the organization's environment (DiMaggio & Powell, 1983). The decision to "go green" as a response to institutional pressures, in the absence of any

internal consideration, is viewed as the cost of doing business by the organization. The above mentioned approach overlooks the potential of Green IS/IT as a strategic driver for companies to be able to transform their value chain (Porter & Kramer, 2006). This paper suggests that the underlying rationale for adoption of Green IT/IS practices may have a significant bearing on how successfully the practices diffuse within the organization and how sustainable they are in the long run. The paper further suggests that organizations are more likely to benefit from adopting green IS if they approach it proactively as opposed to reacting to the needs of their business environment.

2. ADOPTION DECISION AND UNDERLYING RATIONALE

An important consideration in the adoption of new practice or technology is the motivation or rationale behind its adoption. Although it would seem that an organization's adoption decision is driven by well thought out internal and external assessments with a clear objective to improve performance there may be other factors which could be characterized as "less rational" such as conforming to pressures from the organizational environment which may drive adoption. This is even truer when the practice in question has far reaching societal, economic and environmental implications. Besides the need to adopt these new practices it is equally important to explore the underlying motivations or rationales behind adoption. The underlying rationales may shed light on how the practices subsequently evolve and are integrated with the daily activities performed in the organization's value chain. For example, we may find that in situations where rationale for adoption is conforming to institutional environment pressures there might be a very superficial adoption of Green IT practices to satisfy legitimacy needs or viewing it a cost of doing business. This approach would be reflected in low to minimal levels of early integration of the practice or technology in the value chain activities of the organization. Similarly if the decision to adopt is motivated by strategic and efficiency gains and potential long term benefits to improve organizational performance we may find a significant effort to integrate the practices and technology with existing systems within the organization.

The rationales to adopt can be broadly classified into two categories: a "rationalistic" strategic choice (Whittington, 1998) perspective oriented

towards improving efficiency and organizational performance; and an institutional perspective (DiMaggio & Powell, 1983) oriented towards efforts to maintain legitimacy by organizations in response to the forces in their institutional environment (Kling, 1980; Markus, 1983).

Understanding rationale invoked in adoption decisions may prove useful in explaining many superficial implementations which fail to deliver adoption benefits. The purpose for which IT investments are made can have a significant bearing on whether those investments will have an effect on firm performance Weill (1992).

The institutional perspective however should not be interpreted as the opposite of rational economic behavior. As Powell & DiMaggio (1991) themselves suggest, institutional rationales are not mutually exclusive from the economic efficiency rationales and there is a joint optimization which may seem sub-optimal for the individual production functions when considered only from the economic efficiency perspective. Scott (1987) and Dacin (1997) also suggest institutional arguments as complementary rather than replacing rational and efficiency arguments.

This paper suggests both rationales to be prevalent in the adoption of Green IT practices. The paper further examines the link between the strength of the different underlying rationale to the different adoption decision modes i.e. pro-active vs. reactive and post adoption strategies. The paper proposes testable hypotheses based on prior research on IT adoption such as EDI.

3. ADOPTION DECISION MODES AND POST ADOPTION STRATEGIES

As discussed in the previous section, there can be different motivations (strategic and/or institutional) for adoption of Green IT practices. The strength of these underlying motivations can influence the adoption decision modes (proactive vs. reactive) and post adoption strategies (superficial vs. extensive integration). Figure 1 in the Appendix analyzes the four scenarios resulting from different combination of strategic and institutional motivations using a 2x2 matrix.

Scenario 1- Low Strategic and Low Institutional Rationale: Organizations that neither feel an internal need nor feel compelled by environmental pressures to adopt Green IT fall

under this scenario. The scenario will result in non adoption of Green IT practices.

Scenario 2- High Strategic and Low Institutional Rationale: Presence of strategic rationale is associated with the goal of increasing organizational efficiency and performance (Whittington, 1998). In the presence of high strategic rationale organizations are likely to view Green IT as a means to differentiate them from the competition and develop capabilities (Porter & Kramer, 2006). They will adopt proactively and extensively integrate Green IT with value chain activities to leverage transformational benefits for both the organization and society.

Scenario 3- Low Strategic and High Institutional Rationale: Organizations that adopt Green IT in response to pressures from their institutional environment but don't perceive any long term strategic benefits from adoption will adopt in a reactive mode. External pressure, for example, has been identified as a significant driver of intent to adopt in EDI studies (Chwelos, Benbasat & Dexter, 2001).

These organizations will focus on reducing the negative effects of IT/IS (Porter & Kramer, 2006) and will view "going green" as the cost of doing business. While this approach may work for the short term, it will result in superficial implementation of green IT/IS and will be difficult to sustain in the long term.

Scenario 4- High Strategic and High Institutional Rationale: In the presence of high strategic rationale and high institutional rationale, organizations will view institutional pressures as an opportunity and proactively adopt Green IT. While experiencing pressures from the environment organizations will also have an eye on the goals of efficiency and firm performance. Under this scenario organizations will actively integrate Green IT practices into their value chain activities for transformational benefits (Porter & Kramer, 2006) for themselves and society as a whole.

4. HYPOTHESES

Based on the analysis in the previous section following testable hypotheses are proposed:

Hypothesis 1: Organizations with low strategic and low institutional rationale will not adopt Green IT practices

Hypothesis 2A: Organizations with high strategic rationale and low institutional rationale will proactively adopt Green IT.

Hypothesis 2B: Organizations with high strategic rationale and low institutional rationale will extensively integrate Green IT into their value chain activities.

Hypothesis 3A: Organizations with high institutional rationale and low strategic rationale will reactively adopt Green IT.

Hypothesis 3B: Organizations with high institutional rationale and low strategic rationale will superficially adopt with minimal or no integration of Green IT into their value chain activities.

Hypothesis 4A: Organizations with high institutional rationale and high strategic rationale will proactively adopt Green IT.

Hypothesis 4B: Organizations with high institutional rationale and high strategic rationale will extensively integrate Green IT into their value chain activities.

5. FUTURE WORK

As the nature of this study is exploratory, as is consistent with exploratory frame work, I intend to support my hypotheses through semi-structured interview data. I propose to interview executives in the industry that are directly responsible for the Green IT initiatives within their organizations. While survey data may be appropriate to test the proposed hypotheses, I believe qualitative data will provide more useful and deeper insights about adoption of Green IT under the presence of seemingly contradictory rationale for its adoption.

6. CONCLUSIONS

The decision to adopt and support green IS/IT is a critical decision for organizations. Besides initial commitment of resources, it requires significant changes to be made within the organization's internal and external processes, buying new technology, updating existing infrastructure and training employees and personnel. These changes are usually a drain on the organization's financial resources which explains why most organizations consider it as a

luxury with no quantifiable benefits. This approach towards green IT/IS is reactive and may only lead to superficial measures which are neither be beneficial nor sustainable in the long run.

In this paper it is suggested that organizations should proactively view green IS/IT as an investment which can bring benefits for the company in the long run and have significant positive impact on the company's bottom line. The idea of sustainability is of balancing commercial and societal goals. Sustainability if done right should be able to benefit people, planet and profit all three in a positive way simultaneously rather than being seen as tradeoffs where one goal overrides the other two. This research is a step towards understanding how different underlying rationale can influence an organization's approach and make the goal of sustainability possible.

7. REFERENCES

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APPENDIX

Figure 1. Adoption Decision Modes and Post Adoption Strategies

		Strategic Choice Rationale in Green IT Decision	
		LOW	HIGH
Institutional Rationale in Green IT Decision	LOW	<p>1</p> <p>Organizations neither feel the need nor feel compelled to adopt green IT.</p> <p>Non-Adoption of Green IT practices.</p>	<p>2</p> <p>Organizations view Green IT as a means to differentiate themselves from competitors and develop capabilities.</p> <p>Proactive adoption with extensive integration of green IT with processes and value chain activities leading to transformational benefits for the society and the organization.</p>
	HIGH	<p>3</p> <p>Organizations view Green IT as the cost of doing business in response to the environmental pressures.</p> <p>Reactive adoption with focus on reducing negative effects from value chain activities.</p>	<p>4</p> <p>Organizations view environmental pressures to adopt green IT as an opportunity.</p> <p>Proactive adoption with extensive integration of Green IT with processes and value chain activities leading to transformational benefits for the society and the organization.</p>