RISK FACTORS IN GREEN IT DECISION: A VALUE MODEL APPROACH

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ABSTRACT

This paper discusses the concern of risk that may affect green IT practice and environmental sustainability. A model has been utilized to analyze risk effect. The green IT value model is the model that can be used to depict the process mechanism between green IT and environmental sustainability. The risk analysis will be conducted throughout the green IT value model.

Keywords: Green IT, environmental sustainability, risk, uncertainty

INTRODUCTION

Sustainability is a concept that pursues the goal of maintaining long term wellbeing for human (Wikipedia, http://en.wikipedia.org/wiki/Sustainability). Generally speaking, there are three essential components to construct the sustainability, including economic growth, social equity, and environmental protection. Within them, environmental sustainability is the most emergent issue that attracts the world.

Organizations, especially in manufacturing industry, are responsible to environmental protection and sustainability. Organizations must comply with environmental regulations that apply to energy consumption, water usage, greenhouse gas emissions, and waste disposal. A better way to handle this task is to build up environmental management systems to monitor operations in organizations. Individuals must understand the importance of environmental quality and also obey the law set for environmental policies. This way can fully fulfill the needs of environmental sustainability.

The IT industry is a focal area that needs to adapt to environmental protection movement since it utilizes resources such as water, energy, hazardous materials for manufacturing processes. The IT manufacturing processes also generate computer related wastes that may damage the environment. For this reason, this industry needs to adapt to environmental policies that set by governments. Therefore, green IT is a thought that the IT industry should design, manufacture, and use computers, servers, and peripherals effectively and efficiently to minimize the environmental damages (Chou and Chou, 2010).

This paper introduced the concern of risk that may affect green IT practice and environmental sustainability. A model has been utilized to analyze risk effect. The green IT value model is the model that can be used to depict the process mechanism between green IT and environmental sustainability. The risk analysis will be conducted throughout the green IT value model.

GREEN IT AND ITS VALUE MODEL

Green IT is a new research field in information systems discipline. Several studies (Murugesan, 2008; Melville, 2010; Chou and Chou, 2010) focused on the necessity of implementing green IT for achieving environmental sustainability. Murugesan (2008) presented an inclusive view of achieving green IT, which contained the following four paths: green use, green disposal, green design, and green manufacturing. These four paths indicated that all IT stakeholders, such as users, designers and manufacturers of software and hardware, should recognize and follow the suite of implementing environmental sustainability.

Chou and Chou (2010) indicated that the driver of instigating green IT stems from the appreciation of environmental sustainability. The green IT value model can be used to describe the path of achieving environmental sustainability, which through the following four separate but continuous components: *awareness*, *translation*, *comprehension*, and *green IT value*.

The *awareness* is the first component in this model. Awareness is a starting point of planning a mission such as green IT. The importance and potential benefits of green IT must be recognized by individuals, organizations and societies before these entities can take account of it (Chou and Chou, 2010). The second component of this model is *translation*. Translation is a process of transforming awareness into the action of green IT. As indicated by Chou and Chou (2010, p. 3735), "The most important task in the translation stage is to convert ideas and opportunities into operational courses. During this stage, organizations must seek to provide sufficient resources for green IT conversion." The *comprehension* is the third component in the green IT value model. Organizations at this stage must actively pursue the task of green IT. Organizations must create green IT strategy and implementation plan for their employees to follow.

The resulting component of the green IT value model is the *green IT value*. The combination of the efforts in green IT awareness, translation, and comprehension results in a distinguishable green IT value. Green IT value is "the measurement of satisfaction of exploiting green IT and its environmental impact. It can be identified through two levels: the enterprises' satisfaction and the social and environmental satisfaction." (Chou and Chou, 2010, p. 3736).

Finally, accumulated green IT value can lead to the final goal of environmental sustainability. While organizations adopting green IT strategy and energy efficiency programs, they actually contribute to the environment by mitigating potential environmental damages and risks on the planet. Organizations are also benefited by saving operational cost and improving revenue. The whole nation may achieve such economic advancement. The blending of environmental protection and economic growth crafts the value of social equity. After all, the whole society can enjoy Green IT value and environmental sustainability (Chou and Chou, 2010).

RISKS IN GREEN IT VALUE MODEL

This paper intends to discover risk factors embedded in all three components that may affect the green IT value. Furthermore, these risks may finally affect the achievement of environmental sustainability. Risk occurring in any task of business process or project management represents

an undesirable event or a negative outcome to the expected result. Risk is defined as "the combination of the probability of an event and its consequences." (ISO/IEC Guide 73).

The awareness stage in the green IT value model describes the degree of recognizing green IT made by individuals, organizations, governments, and societies. Possible risk factors in the awareness components are related to the knowledge reconciliation in areas of energy shortage, environmental pollution, green IT, and environmental sustainability. Governments need to promote and educate their citizens about the effort of green technology and environmental sustainability. In order to achieve green IT success, organizations must bear the duty of social responsibility and business ethics. For the sake of environmental sustainability, organizations must overlook their business profit and individuals must change their behaviors toward green IT practice.

The major work in the translation stage is to convert ideas and opportunities into operational courses of green IT (Chou and Chou, 2010). Organizations during this step need to acquire adequate resources for pursuing green IT. Possible risk factors are related to the degree of organizational support and resources allocation to green IT implementation. In order to craft green IT strategy, a strong support from top management is crucial. The degree of managerial support is based on the fund invested into green IT initiative. Therefore, a concern on investment risk may affect executive's strength of mind. A related risk or concern stems from the degree of stakeholders' support, which may affect the success of green IT strategy.

After translation stage, corporations should have done a proper preparation for green IT practice. During the comprehension stage, organization must construct suitable metrics for monitoring the performance of implementing green IT. Striving for knowledge of crafting desirable measurements for assessing green IT processes is a major focus in this practice. Any insufficient knowledge in creating monitoring metrics may generate risk.

The combination of awareness, translation and comprehension generates values in green IT model. Organizations must carefully estimate related probabilities of risk factors occurring during green IT practice and their associated values of loss to calculate related risk. A better way to identify risk should base on the data reported in corporate environmental management system. The risk result should report to executives and corporate employees for their understanding about the progress of green IT practice in the organization. In order to mitigate the risk occurrence, organizations must seek professional help such as field consultants to reduce the risk.

CONCLUSION

A successful green IT practice can reach to environmental sustainability. However, risks and uncertainty may always affect the results of green IT practice. This paper utilized the green IT value model to illustrate various risks that may involve in every stage of green IT valuation process. The identification and understanding of these risk factors may allow companies preparing these threats ahead of time, so they have better chance to achieve the goal of environmental sustainability.

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