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Green IT: an Empirical Study regarding Organizational Actions and Impacts on Environmental Performance

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Abstract
Environmental sustainability has become increasingly important to business as a response to rapid depletion of natural resources. IT specifically represents a meaningful part of environmental issues which society has faced lately. In this sense, Green IT/S emerges as a way of combining available resources and sustainable and economic policies, thus generating benefits for the environment and for business. So, this research aims at investigating the organizational actions that stimulate the implementation of Green IT and its subsequent impacts on environmental performance. We empirically tested our hypotheses based on survey data gathered from 327 IT users and managers of 83 Brazilian companies. The results indicate that Green IT sourcing, Green IT policy and Green IT monitoring have a significant and positive effect on Green IT implementation practices, standing out Green IT sourcing as the main predictor. Still, the relationship between Green IT adoption and Environmental performance is also positive and significant, meaning that improvements in Green IT implementation are associated to improvements in environmental performance – considering the environmental impact provided by IT, the efficiency of the IT operations and the environmental awareness of the employees.

Keywords
Green IT, Sustainability, Antecedents, Environmental Performance, PLS.

1. Introduction
Environmental sustainability has become increasingly important to business scholars and practitioners in the last decades, as a result of natural resource exploration, climate change, toxic

wastes, and loss of biodiversity. Such issues have recently spread to the Information Technology (IT) domain in which the impact of IT on the natural environment can be classified into two categories: the first-order effects, i.e., technology represents a significant and increasingly larger part of environmental problems faced by the society (which refer to the negative impact of IT) and the second-order effects, i.e., technology provides important solutions to mitigate these problems (which refer to the positive impact of IT on business and economic processes) (Molla & Abareshi 2012). In this context, it highlights the concept of Green IT/S, a socio-technical movement which implements policies, practices, strategies and IT products (software and hardware) that can help improve and foster environmental sustainability (Murugesan 2008). Some scholars have attempted to separate Green IT from Green IS (Brooks et al. 2010; Dedrick 2010) with some considering Green IT as a part of Green IS (Brooks et al. 2010; Melville 2010), while others find these terms to be interchangeable (Jenkin et al. 2011). Here, we use Green IT and Green IS as synonyms.

Given the increasing demand for a responsible environmental management by regulatory agencies, consumers and general public, several organizations have devoted time and resources toward protecting the environment, implementing different strategies to mitigate the impact of their IT operations so that energy consumption and waste generation can be decreased (Ko et al. 2011). Firms can pursue and contribute to environmental sustainability by implementing environmental management processes to save costs and improve reputation, while also reducing their impact on the natural environment (Wang et al. 2015). Since computer equipment has become more popular and financially accessible to the population, the IT industry (which supplies the goods) and the organizations (which are the main users of technological products) have been facing strong pressure to become more sustainable regarding environmental issues. This challenge has affected design, production and use of computers, besides servers, software and accessories in the search for efficient and effective ways to mitigate environmental damage. In this sense, adopting Green IT practices may create a multidimensional value for organizations and society, besides enabling these organizations to operate in a more sustainable way not only by saving energy, paper and waste, but also by improving their image, respecting the environment and providing better social conditions to their employees and community.

In spite of the relevance of Green IT in the last few years, the study of the role of IT in environmental management and sustainability is in its initial stages, requiring a better theoretical understanding and stronger empirical evidence on the potential contributions of IT as a solution for environmental problems (Jenkin et al. 2011; Bose & Luo 2012; Wang et al. 2015). As mentioned by Molla (2009), few studies have shown the development and validation of reliable tools to measure the Green IT construct. So, investigating Green IT and its relationships may lead to the identification of what organizations need to do in order to become greener and advance towards Green IT maturity. This paper offers a contribution to fill part of this gap, by investigating the organizational actions that stimulate the adoption of Green IT and its subsequent impacts on environmental performance. The uptake of Green IT induces organizations to focus on less energy consumption, recycled/non-polluting material, less printing and recycled paper that helps them achieve same output with less resources and higher competence; thus, resulting in better energy consumption, waste, pollution prevention, product stewardship and sustainable development (Chen et al. 2011). On the other hand, the consequences of organizations in not addressing environmental issues are significant and

include, for example, a loss of revenue and potential damage to a product brand image and corporate reputation. Thus, Green IT plays a critical role in the firm's efforts not only to improve environmental performance but also overall performance.

We explore the relationship between actions and impacts in a firm level, by addressing two research questions: 1) which organizational actions do influence most the Green IT implementation? and (2) what are the impacts of implementing Green IT on firm's environmental performance? We intend to answer these questions by empirically proposing and examining a model that explains and predicts the antecedents of Green IT adoption and the consequences on environmental performance. We argue that organizations can provide important and different conditions to stimulate or inhibit the implementation of Green IT practices which in turn will impact the environmental performance of the firms making them more sustainable.

2. Literature review

The effect of IT on environmental sustainability and the magnitude of the theme sustainability itself have triggered the interest of academics in researching Green IT (Watson et al. 2010; Melville 2010; Jenkin et al. 2011). According to Murugesan (2008), Green IT is the study and the practice related to designing, manufacturing, using and disposing of computers, servers and associated subsystems (monitors, printers, storage devices, and network and communication systems) efficiently and effectively, with minimal or no impact on the environment. In addition, it is concerned with waste, energetic efficiency and the total cost of ownership, which includes the cost of discharge and recycling. Schmidt et al. (2010) have added that Green IT also comprises tools to control, guide and communicate adopted IT sustainable practices which identify Green IT as a holistic and systematic approach to face challenges related to IT.

Adopting Green IT is different from adopting any IT, mainly because of the importance that is given to issues related to ethics and sustainability in the decision making processes. Adopting any IT is usually motivated by potential economic benefits when this technology is used whereas Green IT practices are also triggered by the concern towards the planet, even if the economic benefits may not be reachable in the short term or perceived directly in the organization. Notwithstanding, the adoption of Green IT has involved a new perspective of operations whose positive results improve the economic and environmental development of the organization and disrupt the idea of conflict between Economics and Ecology.

So, we developed a conceptual model (Figure 1) where organizational actions have an important influence on Green IT implementation which in turn impacts the organization's results – more specifically the environmental performance of firms which is defined by Jenkin et al. (2011) as those issues that positively or negatively affect the natural environmental, including organization's business processes, activities and operations. Besides, different organizational actions can stimulate or inhibit the implementation of Green IT practices in the firms. When companies are committed to Green IT and take actions to demonstrate that commitment, this can lead to a change in the work method so that initiatives in environmental sustainability can be favored, forming and developing positive beliefs and attitudes towards Green IT (Bose & Luo 2012) that can mitigate the negative impact of IT in the organization. Lunardi et al. (2013) suggest four main domains among initiatives and orientations to evaluate the effectiveness of Green IT which are: Green IT policy (GITP); Green IT sourcing (GITS); Green IT monitoring

(GITM); and Green IT actions (GITA). By examining these domains, we realize that the first three of them are conditions for the last one – Green IT actions – which, in turn, mediates the association with environmental performance.

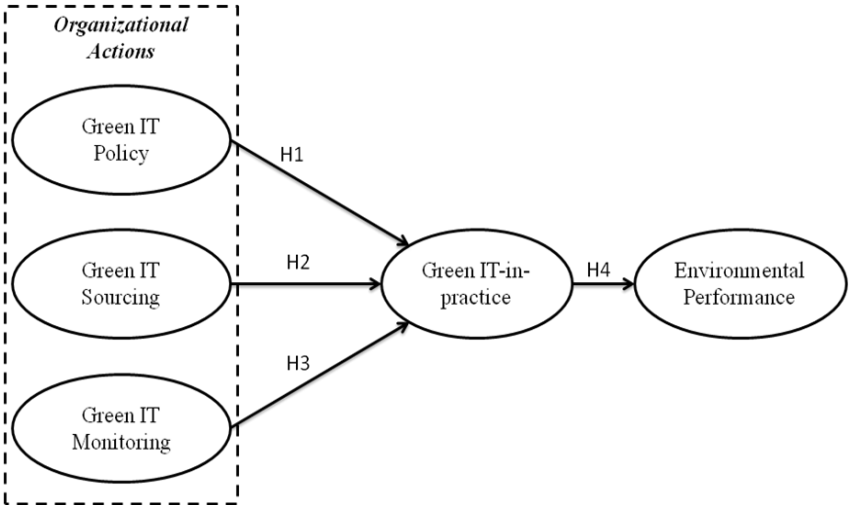

Figure 1: Conceptual model

In this paper, we termed Green IT actions as Green IT-in-practice, making an analogy to Orlikowski (2000)'s technology-in-practice. In this sense, it is thus not technologies per se, nor how they may be used in general that matter, but the specific technologies in practice (enacted technology structures) that are recurrently produced in everyday action that are consequential for the shaping of **organizational outcomes** (Feldman & Orlikowski 2011). According to Orlikowski (2000, p. 407), "these enacted structures of technology use", which she terms technologies-in-practice, "are the sets of **rules and resources** that are (re)constituted in people's recurrent engagement **with the technology at hand**" (emphasis added). It is worth noting that for the purpose of this paper, interested in analyzing Green IT-in-practice in a firm level, we cannot narrow the focus to what people do with the technology at hand, but rather to what people do in terms of rules and resources throughout the different stages of the Green IT life cycle – selection, purchase, use and disposal – in an organization that makes use of information technology to achieve their organizational goals having in mind the environmental sustainability. Following, we develop and present our research hypotheses.

2.1. Antecedents and consequents of Green IT-in-practice

This research considers that a myriad of organizational initiatives can explain and predict the Green IT implementation on firms. Some organizational factors such as top management support, strategy, and culture can either facilitate or inhibit Green IT adoption. Accordingly, actions undertaken by senior management can introduce complementary structures to facilitate learning and innovation, encouraging or discouraging employees to engage in pro-environmentalism actions as well as to develop a sense of civic responsibility (O'Flynn 2009). The firm has a certain level of environmental guidance and social commitment which makes these technologies and organizational routines focused on the environment (Jenkin et al. 2011). Additional research suggests that when employees perceive some signals from the organization regarding environmental policy, they are more likely to be engaged in the environmental

initiatives (Ramus & Steger 2000). Hereof, organizations should be aware of the need to address environmental issues in a pro-active way by developing a Green IT policy, defining outline objectives, targets, action plans and deadlines to implement green technologies and strategies effectively (Ko et al. 2011; Dick & Burns 2011). So, we propose the following hypothesis:

H1: The level of Green IT policy will be positively associated with the level of Green IT-in-practice.

As stated before, Green IT-in-practice is applied at different stages of the Green IT life cycle, requiring a technological knowledge by the IT staff in the organization to obtain effectiveness in the search of efficient and effective ways to mitigate environmental damage. Thus, the organization should be willing to try, update and look for new approaches, information and knowledge about the use of equipment and services in order to support environmental sustainability policies in the IT area (Molla et al. 2008; Elliot & Binney 2008; Kim & Ko 2010). These initiatives aim at keeping the organization committed to the organizational strategies by maintaining or decreasing operational costs, mitigating waste and optimizing the consumption of energy in the processes of the organization's value chain (Elliot & Binney 2008). Kim and Ko (2010) have highlighted that organizations that do care about collecting and updating knowledge about the sustainability of their activities are prone to increase their results minimizing risks and waste, avoiding regulatory-related taxes and getting new business opportunities. Based on this view, we propose the following hypothesis:

H2: The level of Green IT sourcing will be positively associated with the level of Green IT-in-practice.

Still, Schmidt et al. (2010) have added that Green IT also comprises tools to control and monitor its results. In this sense, it is essential the development of performance indicators, using measurement and control consumer tools, thus demonstrating to users and managers the positive effects provided by these Green IT initiatives on environmental issues. Green IT monitoring assesses how well the organization manages the activities and measures aimed at reducing resource consumption, business operational costs, and damages caused to the environment as well as improving the effectiveness of energy consumption (Molla 2009; Melville 2010; Schmidt et al. 2010). Therefore, we suggest the following hypothesis.

H3: The level of Green IT monitoring will be positively associated with the level of Green IT-in-practice.

While organizations may be motivated to implement Green IT strategies and technologies for different reasons, the success of these and associated changes to environmental orientations is finally assessed by the impact of these activities on the environment (Jenkin et al. 2011). In this way, Green IT may introduce not only environmentally favorable strategies into organizations but also environmentally correct products which will affect the organization's environmental performance when they are put-into-practice. So, to obtain a better environmental performance, different practices must be carried out by the organizations so that IT activities can become more sustainable, using computer resources efficiently and contributing to the environment (Molla et al. 2008; Brooks et al. 2010) in terms of purchase, use, and disposal of IT. Although each stage

of the IT life cycle, from manufacturing to usage and disposal, provokes environmental problems, these effects can be minimized by adopting sustainable practices applied to IT. In this sense, economic and ecological value can be created in the internal domain by enhancing the efficiency of processes and material utilization, both resulting in cost savings and emission reductions. Based on these, we propose the following hypothesis:

H4: There is a positive relationship between the level of Green IT-in-practice and the environmental performance.

3. Research method

3.1. Sample and data collection

The study was carried out in 83 Brazilian companies located in the south of Brazil. Respondents were IT users and managers in their companies. The participating organizations represented a variety of service (33.7%), commercial (33.7%), public services (25.3%) and industry (7.2%) firms, including retail (14.5%), logistics (13.2%), financial (7.2%), automobile (7.2%) and education (6.0%) as the most representative sectors. Companies were chosen by convenience through personal contacts. Regarding size, 25 (30.1%) companies are classified as large, 13 (15.7%) as medium, 24 (28.9%) as small and 20 (24.1%) as micro according to the number of employees by Economic sector.

In each company, four questionnaires were left; one should be answered by the responsible for the IT department and the other three by IT users and managers in the company. We provided respondents information about the purpose of the study, assured the confidentiality of their answers and offered a future report of the summarized results to all companies as an incentive to participate in the research. Data were collected between November 2011 and March 2012. At the end of the study, 327 questionnaires were considered valid: 83 (25.4%) were answered by IT managers and 244 (74.6%) by IT users from different administrative areas. After that, we combined for each company the questionnaires collected from its respondents (IT manager and users) using the average to create one response for each of the 83 firms.

3.2. Questionnaire development and measurement indicators

To examine the research questions proposed in this study, we designed a questionnaire following the sequence of steps suggested by Koufteros (1999). Measuring items emerged from prior literature in Green IT found in papers published in journals and congress annals. We initially grouped the variables according their theoretical association with the proposed constructs. After the questions were formulated and theoretically supported, the questionnaire was finished and pre-tested with four scholars.

We split the questionnaire in three blocks: one containing demographics (with questions regarding to the organization and respondents), the second containing 24 indicators associated with Green IT, and the third block assessing three items concerning to Environmental Performance. These actions should separate the measurement of the predictor and criterion variables. All survey items were measured on a Likert-type scale anchored by ‘strongly disagree’

(1) and 'strongly agree' (5). The items were formulated in a reflective mode and were asked at the firm level. Appendix A shows the measurement items used in the study.

3.3 Measurement validation

The data were first analyzed using both descriptive measures and exploratory factor analysis (EFA) to identify and validate the items contributing to each construct associated with Green IT in the model. As a preliminary check of unidimensionality, items from each construct and their Cronbach's alpha reliabilities were examined. After these procedures, four items were excluded; the remaining items of each construct loaded into a single dimension and their reliabilities were greater than .80. We then examined the factor structure of the Green IT constructs by using EFA with varimax rotation including the 20 items concerning to the four Green IT constructs (GITP, GITM, GITS and GITA). After some iterations, we excluded other five items for presenting poor conceptual coherence or low correlations with items into the same factor. The 16-remaining items were well-loaded onto each of the four constructs and all item loadings were above .50.

As a result, the items concerning to the Green IT domains and the three items measuring the Sustainability Performance construct were analyzed using partial least squares (PLS) structural equation modeling. The validity and reliability of the items and constructs were assessed by examining the loadings of items on their respective latent variables. As represented in Table 1, all items loaded heavily and significantly (at $p < 0.05$) on their respective construct (indicating individual item reliability). We assessed the reliability of scales using composite reliability (CR) as indicated in Table 2. The CR scores for all scales exceed the minimum threshold level of .70 indicating the reliability of the scales.

Item	***ENVPERF***	***GITA***	***GITM***	***GITP***	***GITS***
ENVPERF1	**0.89**	0.61	0.61	0.57	0.61
ENVPERF2	**0.92**	0.57	0.65	0.59	0.76
ENVPERF3	**0.95**	0.71	0.68	0.67	0.84
GITA1	0.53	**0.80**	0.45	0.47	0.59
GITA2	0.53	**0.74**	0.61	0.56	0.46
GITA3	0.58	**0.79**	0.48	0.50	0.61
GITA4	0.57	**0.86**	0.48	0.63	0.74
GITM1	0.67	0.56	**0.91**	0.54	0.53
GITM2	0.38	0.39	**0.74**	0.28	0.42
GITM3	0.72	0.67	**0.88**	0.48	0.64
GITM4	0.39	0.27	**0.69**	0.24	0.30
GITP1	0.61	0.58	0.39	**0.86**	0.67
GITP2	0.52	0.52	0.53	**0.83**	0.53
GITP3	0.55	0.58	0.32	**0.82**	0.61
GITP4	0.56	0.59	0.47	**0.85**	0.47
GITS1	0.66	0.67	0.50	0.58	**0.83**
GITS2	0.64	0.66	0.45	0.53	**0.83**
GITS3	0.64	0.50	0.56	0.51	**0.81**
GITS4	0.74	0.66	0.55	0.61	**0.87**

Table 1: Factor loadings

We also assessed the convergent validity of the constructs using the average variance expected (AVE) criterion. The AVE for each construct exceeded the minimum threshold level of .50. Factor loadings and construct AVE values provide the basis for our confidence that the

constructs in our research model demonstrate convergent validity. The discriminant validity was assessed via cross loadings criterion (each indicator is expected to be greater than all of its cross loadings) and AVE (the square-root of the AVE is greater than the correlations between constructs in the model), which indicates the constructs demonstrate discriminant validity.

Construct	*CR.*	*AVE*	*Mean*	*S.D.*	*ENVPERF*	*GITA*	*GITM*	*GITP*	*GITS*
ENVPERF	.94	.84	3.21	.79	**.92**				
GITA	.88	.64	3.48	.75	.69	**.80**			
GITM	.88	.66	3.34	.71	.71	.63	**.81**		
GITP	.91	.71	3.03	.84	.67	.68	.51	**.84**	
GITS	.90	.69	3.11	.68	.80	.76	.62	.68	**.83**

Table 2: Correlation Matrix and average variance extracted of principal constructs

We took some steps to assess method bias commonly associated with self-reported measures captured via a common instrument following Podsakoff et al. (2003) procedural and statistical remedies. We tried to protect respondent anonymity and reduce evaluation apprehension of respondents. Following, we obtained data from different respondents for each firm and we separated the measurement of the predictor and criterion variables in different blocks. Using these procedural remedies can minimize, if not totally eliminate, the potential effects of common method variance bias. However, it is useful to use some statistical remedies too. For this, we conducted three different tests.

First, we examined the correlations between all the constructs of the model. Evidence of CMB exists if any of the constructs are highly correlated with each other ($r > .90$) (Pavlou et al. 2007). In our study, the greatest correlation between two constructs was .80, which indicates that CMB is not an issue. Second, we performed Lindell and Whitney's (2001) partial correlation technique. This technique consists of using a theoretically unrelated construct (i.e. a marker variable) to adjust the correlations among the principal constructs. High correlations among any of the study's principal constructs and the marker variable can be an evidence of CMB. In our study, we used the education level of the respondents as the marker variable which presented as the highest correlation with the other focal constructs value .12 not representing an issue. Finally, we introduced a method factor and determined if the variance in the items are result of focal constructs or the method construct. In doing so, it is possible to compare the variance of indicators due to substantive constructs to the variance due to the method construct. In our study, the average variance explained by substantive constructs is 72.5% versus 2.6% for the method construct. Taking all these tests into account, we could conclude that CMB is not a concern.

4. Results and discussion

In order to understand the linkage between organizational actions and environmental performance, this study presents a conceptual model denoting Green IT-in-practice as a mediated variable. We employed the variance-based SEM (Partial Least Squares) technique to evaluate both the measurement and structural models using SmartPLS 2.0 M3 (Ringles et al. 2005). We used the bootstrap resampling technique with 500 samples to estimate the significance of the path coefficients. Results indicate the three organizational actions (Green IT sourcing, Green IT policy and Green IT monitoring, respectively) have a significant and positive effect on Green IT

implementation success. Together, the three constructs explain 65% of the variance of Green IT-in-practice suggesting these organizational factors indicate substantial explanatory power and predictive relevance of the structural model – impacting positively the Green IT adoption on firms. On the other hand, the relationship between Green IT-in-practice and Environmental performance is also positive and significant, meaning that improvements in Green IT implementation explain 47.8% of the variance in improvements in environmental performance. Both analyses provide a relatively good support for the proposed model. The PLS path coefficients for our research model are shown in Figure 2.

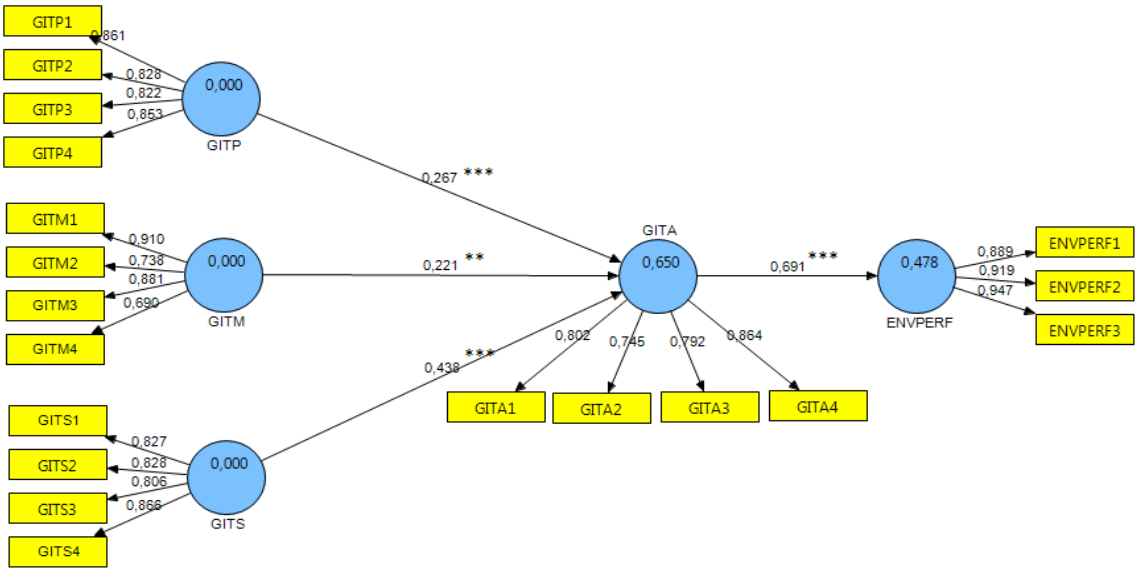

Figure 2: Research model results

First, we found that defining good Green IT policies (GITP) has a significant and positive effect on Green IT-in-practice ($\beta = .27$; $p < .000$), thereby supporting Hypothesis 1. This suggests that the more intense the presence of environmental policies concerning IT issues, the more effective will be the Green IT implementation. To develop Green IT results, the organization must be aware of the need to address environmental issues defining environmental policies and strategies, having norms and rules about the use of natural resources and looking for business partners who have environmental concerns. Besides, it is important to outline targets, objectives, action plans and deadlines in the development of Green IT policies to implement environmental strategies effectively (Molla et al. 2008; Ko et al. 2011; Dick & Burns 2011).

Second, we found that Green IT sourcing (GITS) has a significant and positive effect on Green IT-in-practice too ($\beta = .44$; $p < .000$), thereby supporting Hypothesis 2. This suggests that the more information and knowledge about new and modern approaches and technologies to support environmental sustainability in the IT area, the more effective the implementation of Green IT actions. Companies should search and know how computer technologies may work more efficiently or which cleaner and more efficient ones can be found in the market (Elliot & Binney 2008; Kim & Ko 2010). Organizations can seek new ways to reduce the energy consumption of computer products, identifying cases of other companies that have saved energy and money through the use of cleaner computer devices, and using different sources to identify cleaner and more economic computational trends (such as seminars, books and consulting).

Forth, we found a significant and positive effect between Green IT monitoring (GITM) and Green IT-in-practice as well ($\beta = .16$; $p < .01$), thereby supporting Hypothesis 3. To develop Green IT results, all IT activities and measures should be monitored and controlled. Managing maintenance costs with computers, printing documents and energy consumption can help organizations to perceive problems and enable them to change their environmental strategies and technologies – justified by high costs of repairs or maintenance, or new and more efficient products available in the market – in such a way they can decrease resource consumption, mitigate environmental damages,improve effectiveness in energy consumption and diminish the operational costs of the business (Molla 2009; Melville 2010; Schmidt et al. 2010).

Finally, concerning to the relationship between Green IT-in-practice and Environmental Performance (ENVPERF), we also found a significant and positive association between them ($\beta = .69$; $p < .000$), thereby supporting Hypothesis 5. So, as firms implement Green IT actions, perceptions regarding environmental performance increases. Implementing Green IT helps firms to reduce their impact on the natural environment and save costs, making operations involving computer equipments more efficient (Murugesan 2008; Molla et al. 2008; Brooks et al. 2010). In this context, the study showed Green IT-in-practice as reflecting the environmental awareness of the employees concerned about the environmental impact of IT, increasing the efficiency of operations involving IT, and reducing the environmental impact provided by IT. The model suggests that organizational actions influence environmental performance by integrating IT in the firm's environmental management processes.

5. Final remarks

In this study, we aimed to identify and examine some of the antecedents and consequent variables of Green IT on firms. We drew upon literature related to different organizational actions such as Green IT policy (GITP), Green IT sourcing (GITS), and Green IT monitoring (GITM) to propose, operationalize, and empirically examine a nomological model that predicts and explains the Green IT implementation on firms and its ensuing impact on environmental performance. We found strong support ($R^2 = 65\%$) for the influence of the three above mentioned variables on the effective implementation of Green IT actions standing out Green IT sourcing as the main predictor of Green IT implementation – indicating that the higher the firm efforts to be updated and look for new approaches about green technologies and services, the higher the Green IT implementation. Regarding the level of Green IT-in-practice and the environmental performance, our research offers a moderate explanatory power ($R^2 = 47.8\%$) showing that do exist a significant and positive relationship between them, suggesting that Green IT adoption contributes positively to environmental performance. In this sense, firms implementing Green IT practices increase their performance and minimize the impact of their business activities on the natural environment and, consequently, become more sustainable.

This research brings some key contributions. Firstly, we termed the construct Green IT-in-practice as a way of measuring Green IT implementation effectiveness. Secondly, we argue that Green IT-in-practice is the only variable that can indeed transform the natural environment since organizational actions such as Green IT policy, Green IT searching and Green IT monitoring are important conditions but have no direct impact on the physical world. Lastly, we provide an

instrument that can help managers assess how sustainable their firms' IT activities are, identifying what organizations need to do in order to become greener and advance towards Green IT maturity. Two main limitations of the study merit consideration. First, our attempt to operationalize and measure Green IT in this study is exploratory at best. Future studies should attempt to further refine and validate the items and constructs used here. The other limitation concerns the nature and size of the sample, since data was collected from only Brazilian firms, we should be cautious about generalizing the findings especially concerning to the small number of firms. However, conclusions reached due to this research can be expected to motivate researchers and practitioners to study and implement Green IT initiatives, so that organizations can become more efficient, effective, and committed to the environmental sustainability.

Appendix A. Measurement items

Green IT Actions
GITA1. The company has more efficient equipment in terms of energy GITA2. The company implements strategies to improve the use of computer products (hibernate function, cooling, physical area, virtualization) GITA3. The company retires energy inefficient computer equipments GITA4. The company has made its latest technological purchases taking into account energy efficiency.
Green IT Sourcing
GITS1. The company has knowledge of cleaner and more efficient computer technologies on the market. GITS2. The company has aware of how different technologies can operate more efficiently GITS3. The company seeks to identify cases of other companies that have saved energy and money through the use of cleaner computer technologies GITS4. The company uses different sources to identify cleaner and more economic computational trends (seminars, books, articles, consulting)
Green IT Policy
GITP1. The company has well-defined environmental policies and strategies GITP2. The company has strategies and policies for the use of natural resources (water, electricity, paper) GITP3. The company seeks business partners who have environmental concerns GITP4. The company may be considered environmentally sustainable
Green IT Monitoring
GITM1. The company manages the power consumption of different computer technologies GITM2. The company controls the costs with maintenance of computer equipment GITM3.The company manages the performance of computing equipment GITM4. The company controls printer usage by employees
Environmental Performance
ENVPERF1. Staff is concerned about the environmental impact provided by IT ENVPERF2. The company has reduced waste and increased the efficiency of operations involving IT ENVPERF3. The company is reducing the environmental impact provided by IT

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