RESEARCH ARTICLE

Green Computing: Trends in Malaysia

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ARTICLE INFO	ABSTRACT
	The green computing has become very popular in the past few years. Its gained the popularity in Malaysia when Malaysia started the Green Plan in 2017 until recently. In some areas, Green Computing already being implementing to support critical computing needs in sustainable manner by reducing sprains on resources and environment. However, not all areas are ready to adapt the Green Computing. This paper will review some of the previous studies areas related with Green Computing and the current trends of areas in Malaysia have been highlighted.

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INTRODUCTION

Green Computing is also referred to as Green IT to help save and enrich an environment. The need of green computing is to minimize the use of not so eco-friendly equipment, maximizing energy efficiency, and to reutilize computing devices and IT garbage [2]. Nowadays, computers and internet become the requirement of present generation. It facilitates lots of things like data storage, enable communication in all areas such as forecasting, transportation, construction, education and etc. However, on the other side, it causes the imbalance on environment. The Green IT (GIT) is one of approach that have to be implement in organizations and companies but in adopting this, they may face some difficulties and challenges.

Green computing in Malaysia

The key landmark for the ICT industry in Malaysia started in 1997 when the Multimedia Super Corridor (MSC) Malaysia becomes the national agenda for the nation's development. In July 2009, the National Green Technology Policy (NGTP) was established with a policy statement which is "green technology shall be a driver to accelerate the national economy and promote sustainable development" (GreenTech, 2013). The NGTP outlined five strategic thrusts: i) Strengthen the Institutional Frameworks, ii) Provide a Conducive Environment for Green Technology Development, iii) Intensify Human Capital Development in Green Technology, iv) Intensify Green Technology Research and Innovations and v) Promotion and public awareness. Follows by four pillars in energy,

environment, economy and social and focus on six sectors including energy, water, waste, building, manufacturing, and transport [1]. The deployment of GIT within a corporate setting can enable the sustainable design, manufacture, usage, and disposal of IT devices with minimal or no impact on the environment. GIT initiatives are evident in the adoption of environmentally friendly practices across the entire IT lifecycle. In recent years, scholarly interests in GIT have increased rapidly, deepening our understanding of the strategic framework for GIT implementation and organizational benefits of GIT implementation. Although organizations can develop comprehensive strategic GIT blueprints and intervention frameworks, the role of individuals in translating plans into reality cannot be understated.

Trends of green computing in Malaysia

According to Green Technology Master Plan from 2017 until 2030 [1], Green Computing in Malaysia will focus as Figure 1 below:
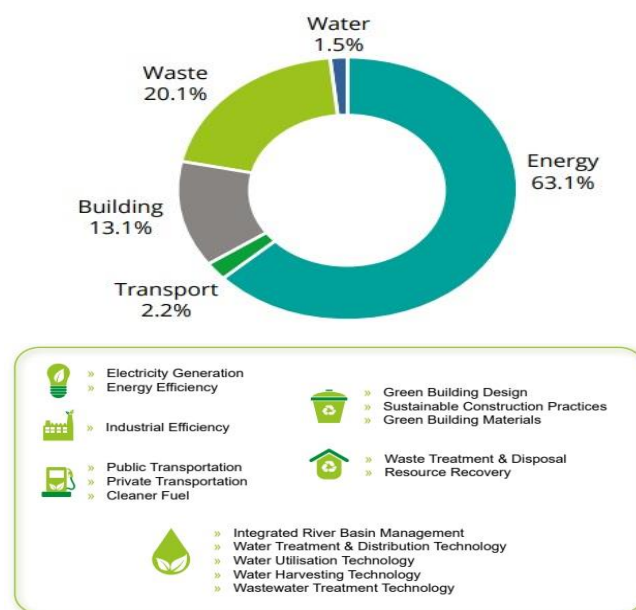
Existing studies based on the trends

E-Learning and safe energy

E-learning is learning to utilize the electronic devices and internet to access the educational curriculum outside from traditional classes. It had gained many attentions to society recently and becoming one of the major markets in Malaysia. According to Global Education Times in 2019, the development of the ICT sector, government initiatives, improvements in e-learning content, entry of foreign players, rising number of schools and corporate companies in the internet penetration rate will drive the Malaysian e-learning market to show a positive future growth at a CAGR of 16.1% in the next 5 years.

Basically, Malaysia Online Education Technology can be segmented by the basis of technology into EIGHT (8) categories that are Rapid Online Learning, Learning Management System (LMS), Mobile E-Learning, Podcasts, Virtual Classroom, Application Simulation Tool, Knowledge Management System and Learning Content Management System [2]. This initiative is to promote education through online platform in order to increase the adoption of technology among the younger generation hence helps them to afford the quality education in a convenient education system. Nevertheless, the increment of online education usage represents high energy consumption and its represent a substantial environmental impact and increase the production of carbon footprint. Green IT is purposely use to create an awareness towards the practicing of using computing resources in an eco-friendly manner in order to tone down the environmental impacts of computing. Nowadays Green IT incorporated

into different institutions, universities, corporate/business sectors or may be in various IT companies in Malaysia.

Awareness among professional

There are several studies shown the relationship of professional employees' engagement in green computing practices in organization [4][5]. There are some studies shown the important to have an awareness practices of GIT among professionals in organization.

Green building

In the context of Malaysia, it is important for the government to exploit their foresight regarding this transition to maximize its potential benefit through policies supporting the development of the private demand for and supply of activities which meet this agenda [6]. There were few existing studies that identified the management criteria that can be applied in improving green building performance [7][8].

CONCLUSION

A review of previous studies related with Green Computing areas have been highlighted. Apparently, not much research has been done on the areas highlighted.

Acknowledgement

REFERENCES

K.HEMA, P.SUBHASHINI, S.VENKATA LAKSHMI. (2017). Emerging Issues of Green Computing in IT. International Journal of Scientific & Engineering Research Volume 8, Issue 5, May-2017.

Kumar Gourav Arora1, Garima Kohli2, Pranav Ratta.(2018). Green Computing – Trends and Challenges. International Journal of Scientific Research in Computer Science, Engineering and Information Technology. Vol. 4, Issue 1, 326-329. ISSN : 2456-3307.

Arif Ullah , Nazri Mohd Nawi , Asim Shahzad , Sundas Naqeeb Khan , Muhammad Aamir.(2017). An E-Learning System in Malaysia based on Green Computing and Energy Level. Vo. 1, no 4-2. http://dx.doi.org/10.30630/joiv.1.4-2.63.

Vanthana. N. (2018). Green Computing. International Journal of Engineering Research & Technology (IJERT). Vo. 6, issue 7. ISSN: 2278-0181.

Dr. Mukesh Shrimali et al. (2017). Intangible need of Green Computing in Education. International Journal of Advance Research in Computer Science and Management Studies. Volume 5, Issue 1, January 2017. ISSN: 2321-7782.

HaslindaMusaa*, NurNabilahMamatb, Ahmad RozelanYunusc, Mohd Amin Mohamadd, NursyairaliaSafrie. (2014). MALAYSIAN AWARENESS & PRACTICES OF GREEN TECHNOLOGY: A CASE OF FLEXTRONICS SDN BHD. 76:1 (2015) 1–6 | www.jurnalteknologi.utm.my | eISSN 2180–3722 |

Aghili, Nasim, Hosseini, Seyed Ehsan, Mohamed, Miswan abdul hakim and Abidin, Nazirah. (2018). Management Criteria for Green Building inMalaysia; Relative Important Index, 10.1080/15567036.2019.1568634, Energy Sources, Part A: Recovery, Utilization and Environmental Effects.

Kate Frazer. (2019). Malaysia e-learning to reach US$2b by 2023: report. Global Education Times. https://www.globaleducationtimes.org/news/asia/malaysia-e-learning-to-reach-us2b-by-2023-report/612/.

Ozcan, Burcu. 2019. The impact of internet use on air pollution: Evidence from emerging countries. Environmental Science and Pollution Research 25(12) DOI:10.1007/s11356-017-0825-1