

# THE DYNAMICS GREEN MANAGEMENT, TECHNOLOGY AND SOCIAL MEDIA IN BUSINESS, MANUFACTURING AND INDUSTRIES

Mohd Yazid Md Taib <sup>1+</sup>, Zulkifli Mohamed Udin <sup>1</sup> and Azizi Abu Bakar<sup>2</sup>

<sup>1</sup> School of Technology Management and Logistics, Universiti Utara Malaysia, Malaysia

<sup>2</sup> Islamic Business School, Universiti Utara Malaysia, Malaysia

**Abstract.** Nowadays, numerous business and organizations are enthusiastically adopted green management and technology strategies to compete in the global business. In achieving the goal, it is necessary to access the implementations and practical ways of green management and technology in the industry so the best practices are identified. This paper describes the development of key dynamics, which will ameliorate the adoption, implementation and practical ways of green management and technology. In addition, high motivation among team members in the entire organization is necessary to the sustainability. This paper is discussing the interrelationship between the green management, philosophy, technology and social media as a communication tool.

**Keywords:** Green Management, Green philosophy, Technology Management, Social Media

## 1. Introduction

We know “green” has become a universal importance to business and various industries in recent years and a major contributor for businesses and industries to embrace green or at a minimum, to express concern for environment [1]. Key dynamics consist of pollution by industrial toxic waste and directly flow into the river without going through water treatment plant, landslide due to excessive land clearing of trees without replacing it, water contamination due to improper handling and segregation, global warming, climate change and sustainability[2]. Subsequently, sustainability can eliminate the earlier mentioned issues. In support, any investors must produce a portfolio profile of showing their sustainable report as per requested by Dow Jones sustainability index (USA), FTSE4GOOD Index (Singapore) and KLD’s Domini 400 Social Index (Korea) for example [3] to be awarded with the sustainable status. The challenge is, how to arrive to such a” sustainability business” status without compromising the economic growth, in particular, to developing countries like Malaysia?

This paper is structured into three parts. In the first part, the definition of terminologies used is reviewed. Second part is to identify the implementation efforts of green technology management implementation and lastly in part three the linking of green management, technology management and the important role of social media.

## 2. Green Philosophy

The debate about the contribution of mankind to the environment is as old as civilization. Getting quality clean water and preserving continuous flow of supply is a mankind priority as old and fundamental as getting food and shelter. Looking back into ancient times whereby mankind is dealing with effect of weather on the irrigation system, inadequate and the engineering effect on the cycling of water and ecosystem[4] besides mankind have waste to dispose from themselves, animal waste and food waste to the by-products of industries like food production waste, mining and tanning.

Gradually, as civilization and technology became more sophisticated, standards for cleanliness and responsibility became more complicated: when technology is able to expose the bacteria and other chemical substance in the consume water causing major alarm to the world population and raising concern on the impact of biodiversity, non-renewable resources, erosion, carcinogenicity and endlessly pollution. Unfortunately, mankind through a company running a factory pollutes the earth and water

resources ignorantly even though it matters to their workers. Among the green ethics and philosophy in practice are Adaptive Management, Conservation, Ecological restoration, Eco politics, Environmental Justice and policy, Genetic engineering, Globalization, Sustainability and Spiritual Values, United Nations Environment Programme and Urbanization[5]. (See Table 1).

Table1: Ethics and Philosophy

Author	Definitions and brief description
[6]	Adaptive Management emerges due to system complexity, uncertainty and ambiguity in the scientific study which overshadows the success in the environment and ecological restoration analysis.
[7]	Conservation has been part of the socio cultural in the western world by its practice and ethics in balancing the capitalist ideology in relation to growth, development and industrialization, which causing massive damage to the planet earth.
[8]	Ecological restoration is an activity to remedy, re-create, the damaged environment to as close to the original environment. Example: Since 1970, Pilansberg, Game Reserve in South Africa is the world largest restoration area of 55,000 hectares, which formerly farmed and mined.
[9]	Eco politics commonly known as environmental or green politics, which related to social and political movements. It consists of human consumption of food, shelter, job, fertility, transport and so on. A. Leopold mentioned that “green” inclusive of global thinkers and “think globally act locally” has become a famous catch phrase.
[10, 11]	The existence of environmental policy derived as a reaction to the prevention and reduction of the negative effects to our ecosystem caused by human’s activities. Peoples were aware of the severe consequences due to excessive pesticide used in agriculture, chemicals in industry and gas omissions. As a result, sustainable development is the primary concept in environmental policy making with various actions taken such as guiding concept in policy making, policy instruments, regulations and financial incentives.
[12]	Genetic engineering primarily used to produce higher yield. In China, massive wheat yields per hectare increase to 681 percent, European Union and Asia were more than 300 percent, rice yield as well increased by nearly to 200 percent as reported by United Nations Food and Agriculture Organization (FAO), between 1961 and 2000. Broiler chickens nowadays reach the maturity stage in 6-7 weeks. Even human from elite and royal family practice the selective breeding by marrying the offspring to the offspring of other members of their group for beautiful, intelligence and energetic.
[13]	Globalization is commonly understood as borderless or cross border or transnational of capital, labor, goods and services. It is also involved with the migration or movement of ideas, taste and value. Subsequently, globalization influenced local political scenario, social community relationship and cultures. According to Friedman, the globalization is sharing of economy opportunity, which normally dominated by United States based mainly on manufacturing, electronic technology transfer, which changed the qualitative world economy. He added that the ability to move from one country to another in search for low cost of operations causing the employment opportunities no longer stable. Those migrant or foreign workers are exposing to abuse and violent such as paid less than legal wages or late payment. The worst is the human trafficking and sex tourism.
[14]	In 1987, with the publication of the Brundtland Commission’s report, the concept of sustainability achieved an acknowledgment. Sustainability and spirituality are having a

	common ground by equally sharing the meaning of conducting living activities by preserving the interest of future generations.
[15]	UNEP was set up in 1972 at the UN conference on Human Environment and finance by the state members. The establishment was to promote policies, programs and acted as a voice for the environment in the UN system.
[16]	A massive population inhabits small towns, cities and urban areas, mainly due to natural growth and migration. While urbanization has been rapidly developed, the need for food and drink, shelter, jobs, infrastructure, systematic waste disposal should be upgraded progressively. In response, the “sustainable urbanization/green urbanization” emerged with the purpose of balancing the lifestyle, economy and environment.

### 3. Green Management

Green management and go for ‘green’ is still in an ambiguity status and need further empirical evidence as being reported by media [2]. Haden, et al. [3] were working on the comprehensive definition of green by using an exploratory approach. Consumers and organizations are demanding for it. The foundations of future organization are built on green and its social responsibility. Academicians are working in understanding of truly what green means, the appropriate methodology of implementing and the applicable of the green management. There are massive researches in green namely a few: Green supply chain management in Japanese large companies [4], Design for environment: The greening of product and supply chain [5], Hazen, et al. [6] was discussing about green supply chain management and the impact on the competitive advantage but the finding shown that implementing green supply chain was not necessarily assisted in adding the value of competitive advantage, Carvalho, et al. [7] have empirically conducted a research in Lean (focussing on waste elimination on motion movement, materials and set-up time), Agile (a rapid response to market and environmental uncertainty), Supply Chain (more towards the flexibility and investment in infrastructure and resources before actually in need, purchasing capability, system technology and transportation efficiency), Green (actively moving towards the sustainability in maximizing profit and increase market share simultaneously preserving the environment, gaining competitive advantage and minimizing ecology impact of organization. An adoption to Green IT in management [8], while Gimenez and Sierra [9] studied the rules and regulations from the aspect of government agencies in greening the supplier by supplier’s collaboration and assessment.

### 4. Technology Management

Technology has been a mechanism through which mankind used collectively to improve their quality of life. Early forms of “technology” which famously defined including of axe, spears, bows, which help people, find their food. Later, the technology developed into the invention of wheels to move at higher speed and longer distance, steam engine to move a ship after discovery the charcoal, electricity, and combustion engines. The development of technology continued to advance with the discovery of penicillin in medical, advance machinery to fasten the production of foods and equipment, nuclear plant, the Internet, biotechnology and so on which contributed to more quality in life [17]. More than two decades ago, many strategic scholars acknowledge to have coined that “technology” is an important dynamic key in defining the business and competitive advantage [18].

Technology is also becoming a key factor in determining a competitive advantage to business organization in the global world. The element of workforce is advancing due to high commitment and achievement in skills, and leaders are better at managing, understanding and practiced than before subsequently with the major player in the same industry. Next, what action left for company to strive for competitive advantage? The answer is through the better management of technology management

[17]. Technology strategy is the task of building, maintaining and exploiting a company's technological assets. In the short term, the main function of technology strategy is to recognize the technological resources of a company, both internal and external, and identify those which are basic and distinctive. In the long term, technology strategy concerns the technological capacity building through the acquisition of appropriate technologies, which sustains the company's continuous success [19]. A key success and failure of technology in expanding business or coming out from the brink of financial disaster depending on the management conditions, system in place and decisions surround it. A merger of technology expertise between Renault of France and Nissan of Japan produced a massive turnover in increasing sales both in Europe and Asia [20].

## 5. Social Media

Weirup [21] defined social media as technology engineering facilitated dialogue among individuals and / or groups; examples inclusive of blogs, forums, Wikipedia, content sharing, social networking, bookmarking, and gaming media plays an important role in spreading of information within the organization and to the society. The awareness and understanding of issues, purpose, objectives, implementations and up to date results throughout the organization and the related players such as suppliers, customers and policy makers are crucial. Electronic social media is the intermediary tools famously used due to its efficiency and speed [22]. The e-mail, tweeter and Facebook are widely used and contribute to the company innovativeness. Business and industries commonly used Internet based communication internally and externally, which expedite business transaction effectively and efficiently. The rule of thumb is communication never stop; it is repeatable and members of the organization need a flow of information continuously. The role of social media as presented in table 2 below.

Table 2: The expanded role of social media by [21]

Education –	Sharing information to educate customers and employees about the products.
Motivation -	Needed in changing individual behavioral: e.g. Cash redemption for recycling aluminum cans.
Regulation(industry)	Competition among the building design and construction regarding LEED certification, laws from implementation of seat belts.
Legislation	To disseminate to the public as a 'bill' before it passed in the parliament and becoming a law.

## 6. Linkage between green philosophy, management, technology, and social media

Philosophically, the green management is recognized differently in times. The need for green management towards environmental awareness, transpired long time ago due to human wrongdoings as a result of greediness and selfishness [23]. Back to two decades ago, the conscious on the manufacturing to operating and sustaining the environment were: by meeting the customer requirements for green products, recycling scheme, reducing the materials' usage which produced a minimal impact to the environment in the packaging [24-26]. The green management did not materialize without the involvement of technology and innovations. With the extensive of R & D and engineering involvements, high tech machineries are capable of producing high volume of products with less quality issue in the high tech machineries ages. The state of the art of measuring, inspecting fewer quality issues the accuracy the products manufactured reducing the recalling back finished goods from the customer [24, 25]. Such cases of Japan and China which shifting towards international business, both countries depends heavily on the emergence of high technology machines for competitive advantage [29]. This applies to Asian industrial country as Malaysia too. Weirup [21] discussed, that the usage of internet based communication internally and externally will transfer the information throughout the organization

faster. Workforces will understand the vision, mission, and objectives clearly. Any future expansion and new technology transfer will be broadcast to the entire organizations [26]. Top management will publish in the company website for e.g. building expansions, the number of new workforce needed, the new fleet of new machines to fill the new space expansion and the Gantt chart. This will definitely increase the visibility and transparency of the projects, increase the morale and motivation of employees. Additionally, the social media functioning as a dual communication within the departments, expediting the procurement activities, marketing expansion and customer feedback [27, 28]. The 21<sup>st</sup> century green management is stressing of the CSR towards contributing sustainability to the society and balancing with environment. The online social media is very effective to create a bridge between organization's corporate social responsibilities activity and stakeholder's anticipation, therefore increase corporate existence[20].

## 7. Conclusions

This paper seeks to explore the linkage between green philosophy management, technology, and social media. Green management consists of the way the business and industries adopted the best managing and practical work pattern in preserving the environment, minimizing wastages, cost and maximizing profit as well as boasting their competitive advantage towards sustainability. Technology management functioning simultaneously to assist the green philosophy and implementation in terms of equipment and tools for human resources to perform effectively and efficiently. Social media plays a role of integrating the green management philosophy and technology in sharing information from top management to the down floor, channelling the vision and mission of the company in achieving her objectives.

## 8. Acknowledgements

Glory is to Allah the highest, Patience and Merciful, may His peace and pleasant blessings be upon our sacred prophet, Muhammad (S.A.W). The authors would like to express the highest gratitude and compliments to the respective reviewers in reviewing, advising and accepting this paper. My gratitude goes to Associate Professor Dr Zulkifli B Mohamed Udin and Associate Professor Dr Azizi B Abu Bakar, who have guided and inspired me. A million thanks to MyBrain15 in association with Malaysia's Ministry of Education for financing my post graduate study and Universiti Utara Malaysia as a prominent knowledge provider.

## 9. References

- [1] W. W. Kassaye, "Green dilemma," *Marketing intelligence & Planning*, vol. 19, pp. 444-455, 2001.
- [2] S. W. a. J. Noh, "Going Green with Management-Management Technology Comparison within Green Companies: China, USA, and Korea," *International Journal of e-Education, e-Business, e-Management and e-Learning*, vol. 4, 2014.
- [3] J.-h. Park and Y.-g. Ahn, "Strategic environmental management of Korean construction industry in the context of typology models," *Journal of Cleaner Production*, vol. 23, pp. 158-166, 2012.
- [4] P. R. Julie Newman, "Introduction," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. ix - xi.
- [5] P. R. Julie Newman, "Reader's Guide," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, p. xiii.
- [6] J. J. Minor, "Adaptive Management," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 1-5.
- [7] T. Collins, "Conservation," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 76-81.
- [8] A. S. Gunn, "Ecological Restoration," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 146-149.
- [9] J. Barry, "Ecopolitics," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 161-166.

- [10] V. L. Jo Arney, Amanda Harmon Cooley, Nancy Erhard, "Environmental Justice," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 185-202.
- [11] E. V. Bueren, "Environmental Policy," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 202-209.
- [12] A. S. Gunn, "Genetic Engineering," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oak, California: Sage Publication, 2011.
- [13] M. S. Islam, "Globalization," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011.
- [14] L. D. Souza, "Sustainability And Spiritual Values," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 391-395.
- [15] A. S. Gunn, "United Nations Environment Programme," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 413-415.
- [16] A. Dedekorkut, "Urbanization," in *Green Ethics and Philosophy*, J. Newman, Ed., ed Thousand Oaks, California: Sage Publication, 2011, pp. 420-422.
- [17] N. Harrison and D. Samson, *Technology Management*. New York, NY 10020, USA: MCGraw-Hill, 2006.
- [18] C. C. Robert Burgelman, Steven Wheelwright, *Strategic Management of Technology and Innovation*: McGraw-Hill, New York, NY., 2009.
- [19] L. L. Richard Li-Hua, "Technology strategy and sustainability of business: Empirical experiences from Chinese cases," *Journal of Technology Management in China*, vol. 8, pp. 62-82, 2013.
- [20] K. Hughes, J. Louis-Barsoux, and J.-F. Manzoni, "Redesigning Nissan (A): Carlos Ghosn Takes Charge," INSEAD, The Business School for the world, Fontainebleau, France 2003.
- [21] A. R. A. Weirup, "Sustainability initiatives, social media activity, and organizational culture: An exploratory study," *Journal of Sustainability and Green Business*, vol. 1, pp. 1-15, 2012.
- [22] F. Shirazi, "Social media and the social movements in the Middle East and North Africa: A critical discourse analysis," *Information Technology & People*, vol. 26, pp. 28-49, 2013.
- [23] S. S. P. Haden, J. D. Oyler, and J. H. Humphreys, "Historical, practical, and theoretical perspectives on green management: An exploratory analysis," *Management Decision*, vol. 47, pp. 1041-1055, 2009.
- [24] D. Bennett, "Tracking the trends in manufacturing technology management," *Journal of Manufacturing Technology Management*, vol. 24, pp. 5-8, 2013.
- [25] K. Chaharbaghi and R. Willis, "The Technology, Mythology And Economy Of Technology," *Management Decision*, vol. 38, 2000.
- [26] C. S. Chad Milewicz, "Leaders' social media usage intentions for in-bound customer communications," *Management Research Review*, vol. 36, pp. 849-867, 2013.
- [27] J. B. Chung and G. W. Yun, "Media and social amplification of risk: BSE and H1N1 cases in South Korea," *Disaster Prevention and Management*, vol. 22, pp. 148-159, 2013.
- [28] A. Y. K. Chua and S. Banerjee, "Customer knowledge management via social media: the case of Starbucks," *Journal of Knowledge Management*, vol. 17, pp. 237-249, 2013.