

## Conference Paper

# Sustainability Ethics of Safety in the Building Maintenance Industry: Technical Manager's Perspectives

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### Abstract

Building maintenance (BM) projects usually involve various technical individuals such as building managers, architects, and building contractors. These individuals are usually concerned with certain issues pertaining to their views and experiences on a range of ethical topics surrounding BM industry activities. The issue of professional ethics plays an important role in quality-related problems in a BM project. Ethics is a vital component in producing a profitable long-term profit in the BM industry. This paper highlights the process practice of professional ethics and sustainability in the BM industry and how ethics influences the activities of BM projects. This qualitative case study recruited four (4) technical managers within the BM organisations. Data for this research were collected through semi-structured interviews with technical managers of the BM organisations. Results indicated that different types of unethical conducts impact BM tasks significantly. This study found that it is important to include professional ethics as a pre-requisite to attaining sustained and acceptable quality in BM. The study also suggests several approaches and methods enhance professionalism among BM professionals, which could help improve the quality in BM projects. The findings provide safety sustainability ethics process to BM organisation on how to address the ethical root issues when confronting the Malaysian BM industry.

**Keywords:** ethics, sustainability, building maintenance, expert panel, technical managers.

## 1. Introduction

The Building Maintenance (BM) industry is a challenging trade sector. Therefore, ethical practice in BM is extremely important, as with other disciplines. In reaching professional quality, it is vital that BM practitioners not only focus on technological developments but also including ethics in their achievements. Problems with poor work delivery are one of these ethical issues. Shah (2017) stated that the building industry faces ethical issues such as poor work delivery. The need to consider the BM process on time at

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early phase thus avoid delaying in tasks delivery and fit for sustainability. The unethical conduct evidenced by the BM manager's perspectives is lack of safety ethics during the BM operation on the BM site.

In Rosli Ahmad (2008)'s research, he highlighted the benefits of safety programs and how it could help reduce operations site injuries. There is also a need to look into new ways to help improve BM industry image by reducing the hazards at building sites (Ahmadon Bakri et al., 2006). Nawi et al. (2016) stated that BM workers was the impact of exposed matters in a project and are faced with possible risks and disclosure throughout the BM process.

## 2. Building Maintenance Safety

A BM project needs to integrate ethic safety to ensure safety awareness on the activities. The BM project safety achievement mainly depend on the practice of the workers taking part in the project from the beginning to end (Al-sweity, 2013). Vee and Skitmore (2003) stated in their research that any managers must conduct their work in an ethical manner. Vee and Skitmore (2003)'s research also mentioned that ethics refers to the behaviour projected of an employee in an organisation within the industry is practiced. Unethical practices can take place at BM phase of a project such throughout the pre-maintenance. Hamimah Adnan et al. (2012) stated that unethical practices could take place and affecting the whole life of building project cycle.

The roles of BM managers technically require competent and ethically responsible in order to carry the ethics successful. In the design phase, consideration should be a priority of the quality and workmanship of the work. While on BM operation, the need for awareness of worker's safety on site. Safety and health in the workplace is an important component of the working environment where employees need a safe and healthy environment for their activities (Kamal, 2012). According to George and John (2015) pointed out that the roles of a BM site practitioners must demonstrate to implement sustainable and taking into account social, environmental, economic, and technical dimensions. The concern of ethics responsibility should be the priority of the utmost concern for BM managers (Vee & Skitmore, 2003)

## 3. Safety in BM Ethics

Future BM practitioners should be educated to have better fundamental understanding concerning sustainable development and ethics as this is quite an important part of

BM as it could prevent endangering a person's life. BM practitioner should also update their skills as it is important to manage any uncertainties that could arise. This is so that they are able to make call judgments on the environment design and construct. Devon et al. (2004) stated that the project must aware of ethical concerns such as safety and environmental friendliness that concern the whole BM workplace. In this case, the need to have good application of safety at BM workplace. Dutta and Sengupta (2014) stated that professionals must take into view the eco-friendly considerations for future workers.

According to Fang et al. (2004) pointed out that safety meeting, safety inspection, safety training, and education and safety communication must be in consideration at workplaces. Failure to implement safety briefing as sources of increases in incident frequency in the building industry (Suraji, 2001). Moreover, BM practitioners must carry on their shoulders the responsibility of authorizing the principles of safety culture growth. Affendy et al. (2017) stated that in-house training must be embedded for BM organization thus increase the intention of worker's knowledge ethics.

#### **4. The Integrated of Sustainable and Ethics Safety in the BM**

The application of BM ethics and strategies was based on a sustainable approach. According to Parkin (2000) stated that sustainable practice comprises of social, environmental, and economic. According to Mohd-Isa et al. (2011) stated that a sustainable practice in BM must integrate the ethics maintenance policy and strategies on any maintenance agenda. The important in practice of safety and health on the project must include topics such as prevention of danger in the workplace and safety and health problems (Akasah, Abdul, and Zuraidi, 2011).

Azuin et al. (2013) stated it needs to integrate the built of environmental hazards for the initial screening to help evaluate building safety and healthy activities. Nasser and Aulin (2016) stressed that a precondition for successful safety in a building project to ensure that activities according to deliver the project's scope and activities, thus creating project sustainability. Affendy et al. (2015) highlighted that sustainability knowledge must integrate within a workplace situation, thus provide a holistic process. On the other hand, Bakri et al. (2015) highlight that the mandatory formation of safety training for workers on site. Bottani et al. (2009) pointed out that the execution of safety ethics must comprise safety and security goals. The communication to attain these goals to employees training programmes is also another important factor.

#### 4.1. Ethics in BM project

Ethics in BM industry comprises of the use of language and the safety awareness processes that impact the decisions people and affecting to the others (Wasserman, 2000). This could affect the conflict of interest. The impact of accidents occurred at the workplace not only deferral project completion but also affects the reputation of industries involved (Asanka & Ranasinghe, 2015). Riddel (2016) highlights the need to provide effective communication between project parties.

Due to the high fatality rates in Malaysia building industry, workplace safety should be the main concern of BM managers and practicers. This statement was also supported by Sawacha et al. (1999), where they mentioned that stated that the high fatalities are due to lack of knowledge from the workers, which prevents them from performing and applying safety in the workplace. A study by Perecman (2018) stated the need to conducting safety meetings on workplace or project site. Zeng et al. (2008) highlighted that lack of safety awareness in BM and training caused on-site accidents. Furthermore, the need to have an adequate safety practice at BM workplace thus awareness of safety integrity in BM workplaces.

### 5. Procedure of Building Maintenance Ethics Procedure



**Figure 1:** Integrated procedure of BM Ethics Sustainability (Researchers, 2019).

Figure 1 illustrates the BM ethics on-site safety on BM workplace. The process comprises of BM tasks received ethics on safety and strategies on safety. The process for ethics and strategies in BM workplaces is vital in BM activities.

## 6. Methodology

In this study, the approach of four (4) technical managers was conducted in BM organizations. The semi-structured interviews were conducted as the main data collection method by targeting BM technical managers based on questions as part A- Strategies to implement ethics and safety practices in BM workplace; part B- Ethics for Safety Practice at the workplace and part C- Health and safety hazards and its consequences on BM workplaces

## 7. Results

### 7.1. Part A

TABLE 1: Strategies to Implement Ethics and Safety Practices in BM Workplace.

	<b>Strategies and Ethics Safety Practices</b>	<b>Descriptions</b>
1	Provide effective communication briefing to workers	All workers attend
2	Conducting in-house safety and health training to workers	Depends on the time availability
3	Full commitment from top management	Top management instructions mandatory
4	Providing and explaining safety policies to each of the workers in pocket sizes	Each workers provided
5	Panel display surrounding the BM sites	Clear display
6	Impose penalty to the workers have offended the safety rules and regulation	Mandatory to all workers
7	Provide safety booklets in various languages	Provide during training

Table 1 shows the strategies performed for in safety practices encountered at BM sites are: provide effective briefing to workers; 2 conducting in-house safety and health training to workers;3 full commitment from top management; 4 providing and explaining safety policies to each of the workers in pocket sizes; 5.panel display surrounding the BM sites 6; impose penalty to the workers have offended the safety rules and regulation;7. Provide safety booklets in various languages.

### 7.2. Part B

TABLE 2: Ethics for Safety Practice at Workplace.

	<b>BM safety policy</b>	<b>Ethics</b>	<b>Evaluation</b>	<b>Findings</b>
1	The preparation of BM safety induction at workplace	Safety Briefing	Agree	All of the respondents agreed that the safety induction are vital
2	SOP for BM safety at the work place	Standard of Procedure at	Agree	All of the respondents agreed that the organization carry out and provide SOP for BM site safety
3	Attend training on the BM safety workplace	Safety training	Strongly agree	All of the respondents agreed that several personnel been trained on the safety on site
4	Inspection, operation, and maintenance of BM safety equipment conduct by organization	Inspection and Quality	Agree	Organization maintain a BM safety plan within the emergency response plan (ERP)

### 7.3. Part C

The interviews were held with four experienced BM site managers on the nature and source of health and safety hazards at Malaysia BM workplaces. The results are indicated in Table 3.

TABLE 3: Health and Safety Hazards and its Consequences on BM Workplaces.

	<b>Type of health and safety hazards in BM</b>	<b>BM hazard Consequence</b>	<b>Possible effect of health and safety hazard consequence</b>
1	Poor housekeeping	Fall by object	Confined sites Overcrowded workplace Culture and ignorance which BM workers very low education level
2	Falling object	Hit by falling object	unprotected body (not wearing safety shoes)
3	Equipment tools	Hit or cut by object such working tools	Improper use of tools and wrong procedure of operating
4	Working at a height place	Workers falling from height	Improper fixed scaffolding Not using personnel protective equipment Collapse of the workbench Unaware of work risk

## 8. Conclusion and Implications

The study has revealed to improve ethics in the industry, and it should start from the way we educate BM workers on-site by putting ethics in action. In BM, the way forward

is to improve ethics in the industry, and it should start from the way of educating BM workers by putting ethics in action. The BM industry as a contribution to the development of the building industry. Thus, they provide positive scenario in the industry, good ethical practices are vigorous application. Through these findings, the study found that a positive evaluate by safety ethical practices, the need to have good working environment require to achieve. The results have shown that to highlight the ethics practice in BM safety that required technical managers in carrying out their work. The BM industry must have a safety culture in order to reduce the number of fatalities, accidents, and injuries that involves BM workers. The practicing of ethics safety in BM works is important to prevent failure of the BM process, which can lead to hazards consequences, such as human accidents and BM workplaces.

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## References

- [1] Abdul Aziz Abdullah, Zakaria Harun, Hamzah Abdul Rahman (2011) Planning Process of Development Project in the Malaysian Context: A Crucial Brief Overview, *International Journal of Applied Science and Technology*, Vol. 1 No. 2, 74
- [2] Ahmadon Bakri, Rosli Mohd Zin, Mohd Saidin Misnan & Abdul Hakim Mohammed. (2006). Occupational Safety and Health Management System: Towards Development of Safety and Health Culture, in Proceeding of 6th Asia-Pacific Structural Engineering and Construction Conference (APSEC 2006), Kuala Lumpur, Malaysia. 19-28
- [3] Akasah, Z. A, Abdul, R. M. A and Zuraidi, S. N. F. (2011). Maintenance Management Success Factors for Heritage Building: A Framework. *Structural Studies, Repairs and Maintenance of Heritage Architecture XII*. WIT Transaction on The Built Environment, Vol. 118 @ 2011. ISBN: 978-1-84564-526-7; ISSN: 1743-3509 (On-line)

- [4] Alsweity A. Y. (2013) "Unethical conduct among professionals in the construction industry", Master's Thesis, the Islamic University of Gaza.
- [5] Azuin Ramli, Zainal Abidin Akasah and Mohd Idrus Mohd Masirin (2013) Assessing Safety and Health Factors Influencing Performance of Malaysian Low-Cost Housing, Civil and Environmental Research, www.iiste.org ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online) Vol.3, No.3.
- [6] Azuin Ramli, Zainal Abidin Akasah and Mohd Idrus Mohd Masirin (2014) Factors Contributing to Safety and Health Performance of Malaysian Low-cost Housing: Partial Least Squares Approach, *Research Journal of Applied Sciences, Engineering and Technology* 7(21): 4612-4620.
- [7] Bakri, A., Misnan, M. Yusof, Z. and Mahmood, W. (2015) Safety Training for Contractor's Workers: Malaysian Experience. Universiti Teknologi Malaysia. [Online]. Available at: <http://epublication.fab.utm.my/179/1/ICCI2006S1PP25.pdf>.
- [8] Bottani, E., Monica, L. and Vignali, G. (2009). Safety management systems: Performance differences between adopters and non-adopters. *Safety Science*, 47, 155-162.
- [9] D. P.Fang, F.Xie, X. Y.Huang, & H.Li (2004) Factor analysis-based studies on construction workplace safety management in China. *International Journal of Project Management*, 22 (1): 43-49.
- [10] Darwish, M., and Agnello, M.F. (2009) Sustainability Green: Challenges and Changes for Education, Construction in the Twenty-First Century, Istanbul, Turkey.
- [11] Devon, Richard & Van, Ibo & Poel, Ibo. (2004). Design ethics: The social ethics paradigm. *International Journal of Engineering Education*.
- [12] Er. Amit Bijon Dutta, Dr. Ipshita Sengupta (2014) Engineering and Sustainable Environment *International Journal of Engineering Research and General Science* Volume 2, Issue 6, ISSN 2091-2730, www.ijergs.org
- [13] Ernawati Mustafa Kamal (2012) "The Critical Review on the Malaysian Construction Industry". *Journal of Economics and Sustainable Development*, 3 (1):81-87.
- [14] Fryer, B.G. (1997) *The Practice of Construction Management*, Blackwell Science: Oxford.
- [15] Hammad Al Nasser and Radhlinah Aulin (2016) Enablers and Barriers to Project Planning and Scheduling Based on Construction Projects in Oman, *Journal of Construction in Developing Countries*, 21(2), 1–20, Penerbit Universiti Sains Malaysia.
- [16] Hamimah Adnan, Norfashiha Hashim, Norazian Mohd Yusuwan & Norizan Ahmad (2012) AicE-Bs 2011 Famagusta Asia Pacific International Conference on

- Environment-Behaviour Studies, Salamis Bay Conti Resort Hotel, Famagusta, North Cyprus, 7-9 December 2011 *Ethical Issues in the Construction Industry: Contractor's Perspective Procedia - Social and Behavioral Sciences* 35,719 – 727.
- [17] KA Shamsuddin, MNC Ani, AK Ismail, MR Ibrahim (2015) Investigation the Safety, Health and Environment (SHE) Protection in Construction Area, *International Research Journal of Engineering and Technology (IRJET)*, Volume: 02 Issue: 06, 624-636.
- [18] Mohammad Affendy Omardin, Nazirah Zainul Abidin, Wan Dagang Wan Ali.(2015) Concept of environmental sustainability awareness strategies in pre-construction stage *Journal of Tropical Resources and Sustainable Science*, Volume 3, No. 1, 103-116.
- [19] Mohammad Affendy, Omardin and Yao, Liu and Diyana, Kamarudin (2017) In-house green knowledge practice for hospital building maintenance. *Journal of Information System and Technology Management*, 2 (6), 62-72.
- [20] Muge Mukaddes Darwish, Mary Frances Agnello, Richard Burgess (2010) Eighth LACCEI Latin American and Caribbean Conference for Engineering and Technology (LACCEI'2010) "Innovation and Development for the Americas", June 1-4, Arequipa, Peru. *Incorporating Sustainable Development And Environmental Ethics Into Construction Engineering Education*.
- [21] Mohd Nasrun Mohd Nawawi, Siti Halipah Ibrahim, Rohaida Affandi, Nor Azalina Rosli, Fazlin Mohamad Basri (2016) Factor Affecting Safety Performance Construction Industry, *International Review of Management and Marketing*, 6(S8) 280-285.
- [22] Misnan, M S and Mohammed, A H (2007) Development of safety culture in the construction industry: a conceptual framework. In: Boyd, D (Ed) Procs 23rd Annual ARCOM Conference, 3-5 September 2007, Belfast, UK, *Association of Researchers in Construction Management*, 13-22.
- [23] N. Mohamad, H. Abdul Rahman, I. M. Usman & N. M. Tawil (2015) Ethics Education and Training for Construction Professionals in Malaysia *Asian Social Science*; Vol. 11, No. 4;
- [24] Perecmen, S. (2018) How to Prevent an Accident at Construction Site. [Online]. Available at: <https://www.perecman.com/blog/2014/may/how-to-prevent-an-accident-at-constructionsite/>.
- [25] Osman, R., Awang, N., Syed Hassan, S. A. H. & Mohammad Yusof, N. (2015). Level of awareness on behaviour-based safety (BBS) in manufacturing industry towards reducing workplace incidents. *Int. Journal Education & Research*, 3(1), 77-88.

- [26] Riddel, T.(2016).”Best Practices to Improve Construction Site Safety”, Esub.com. [Online]. Available: <https://esub.com/improve-construction-site-safety/>.
- [27] Sawacha, E., Naoum, S., and Fong, D. (1999). Factors Affecting Safety Performance on Construction Sites. *International Journal of Project Management*, 17(5), 309-315
- [28] Suraji, A., Duff et al. (2001). Development of casual model of construction accident causation. *Journal of Construction Engineering and Management*, 127(4), 337-344.
- [29] Wang, George & Buckeridge, John. (2015). Ethics for Construction Engineers and Managers in a Globalized Market. 10.1007/978-3-319-18260-5\_10.
- [30] Wasserman, B. (2000). Ethics and Practice of Architecture. New York, McGraw-Hill.
- [31] Vee, C. and Skitmore, R.M. (2003) Professional ethics in the construction industry. *Engineering Construction and Architectural Management* 10(2):pp. 117-127.
- [32] Zeng, S., Tam, V. W., & Tam, C. M. (2008). Towards occupational health and safety systems in the construction industry of China. *Safety Science*, 46(8), 1155-1168.