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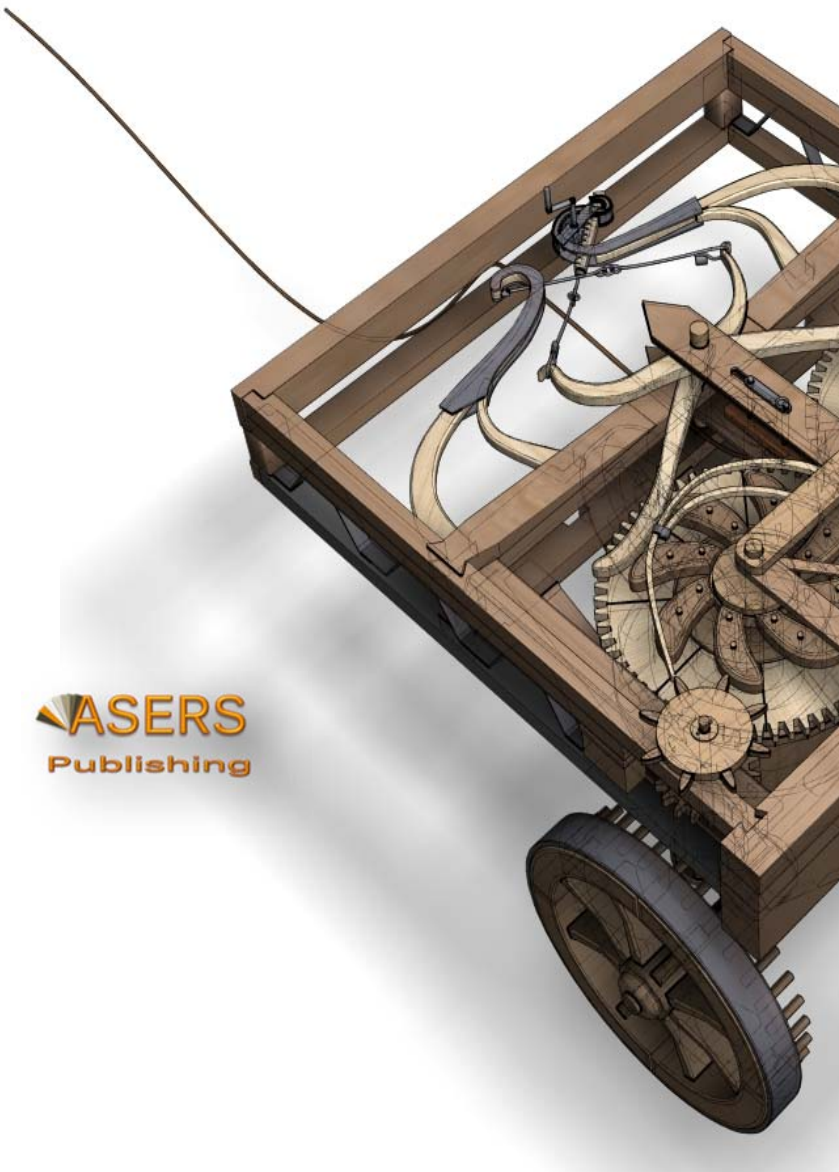

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Framing the Direction of Environmental Performance Using Theory of Dynamic Capabilities

Jeya Santhini APPANNAN
University Tunku Abdul Rahman, Malaysia
jeyasanthini@utar.edu.my

Ridzwana Mohd SAID
University Putra Malaysia, Malaysia
ridzwana@upm.edu.my

Tze San ONG
University Putra Malaysia, Malaysia
tzesan@upm.edu.my

Rosmila SENIK
University Putra Malaysia, Malaysia
rosmilasenik@upm.edu.my

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Abstract:

Considerable interest of environmental studies has appeared in the literature over the past decade. Environmental performance indicates a way to minimize environmental damages caused by business activity. It is evident that good environmental performance signals wise protection of the natural environment. However, it is still not entirely understood the factors that affect the environmental performance. As such, the purpose of this paper is to examine factors that contribute to the environmental performance utilizing the theory of Dynamic Capabilities and investigate the body of literature constituting the field. The outcome of this study is expected to provide useful direction for the policy makers and companies to combat environmental issues.

Keywords: environmental collaboration; environmentally management accounting; environmental performance; Environment Management System (EMS).

JEL Classification: L25; Q56.

Introduction

Countries all over the world are drastically taking efforts to acknowledge themselves as the world's most eco-friendly countries. This is evident by the World Bank's committed loans worth US$31.8 billion, to accommodate funding in the environment and natural resource management over the past decade (2004-13) (http://www.worldbank.org). For instance, in China, around US$500 million project is allocated to reduce carbon emissions, in Piaui, Brazil, actions supported by the Bank directed to develop quality of environmental health, similarly in Peru, a project is established to support air and water quality monitoring systems, whereas in Lebanon, a project is designed to clean up the pollution in Lake Qaraoun. Other countries like Santiago (Chile),

Mexico City (Mexico), Dhaka (Bangladesh), and Bangkok, (Thailand), policies targeted at limiting environmental degradation have formed.

Malaysia as an emerging and developing country in Asia has also established its responsibilities in environmental agreements locally and internationally to protect the environment. Despite with various introductions and participations in environmental protection programmes, it is worth to mention that Malaysia has left a mark on the environment. Once Malaysia has retained as one of the least polluted country in Asia, however, with the immense industrial growth of recent years, and an upsurge in urbanisation, the impact of business activities on environment is not a novel issue anymore and has drawn the attention of many non-government organisation and political parties, which have been showing growing interest on this matter for the last twenty years.

Furthermore, Malaysia's Environmental Performance Index (EPI) has been ranked at worrisome position for past few years. The objective underlying the EPI is to move the environmental debate to more data and evidence based action that facilitates performance tracking and accountability of decision makers. Now in its sixth iteration, the EPI was among the first tools of its kind and is now a standard bearer for comparing and tracking country performance on international policies including sustainable development goals and the new economic model (Hsu and Zomer 2016). In year 2014, Malaysia EPI was ranked at position of 51 out of 180 countries, in year 2016 it was positioned at 63 and in year 2018, Malaysia has fallen far backward to the position of 75 out of 180 countries (www.epi.envirocenter.yale.edu). The EPI ranks countries' performance on environmental issues in two broad areas: protection of human health and protection of ecosystems. EPI low ranking signals a need for national sustainability efforts to protect the mother nature such as minimising GHG emissions, cleaning up air quality, conserving biodiversity, etc. Thus, studying environmental performance is crucial to put the country back on track whilst limiting the environmental degradation.

Environmental performance is the extent to which organisations activities to exploit natural resources, lessen wastage and environmental risks (Roberts and Gehrke 1996). In fact, there is a known general consensus that continued environmental degradation lead to impairment of human life. Thus, to ease the responsibility of sustaining entire ecosystem, every industry has to embrace environmental protection strategies and practices. Realising the urgency of this issue, many companies in the world opt to run their operations through an environmental management system (EMS) in order to achieve sound environmental performance. EMS encompasses a framework that permit firms to increase its operating efficiency at the same time reduces its environmental impacts (ISO 14001).

In spite of this, a number of studies have previously been done on environmental activities and the performance outcomes. For example, Graham and Potter (2015) focused on internal environmental practices and supplier collaboration to stimulate environmental performance; Darnall *et al*. (2008) focused on the links between environmental management systems and performance; Bauer, Hofer, Althaus, Duce and Simons (2015) consider an electric passenger vehicle to mitigate climate change. Bae (2017) concentrate on environmental capabilities to have an effect on environmental performance; Green *et al.* (2012) studied on supply chain practices; Latan, Jabbour & Jabbour, Wamba and Shahbaz (2018) focus on the link between environmental management accounting and environmental performance; Cuesta, Castro, Tascon and Castano (2019) concentrated link between financial and environmental performance. Investigation of relationship between environmental performance and costs of capital structure financing by Magaji *et al.* (2017) and Sambasivan *et al.* (2013) focused on environmental proactivity and performance outcomes. However, overall discussions of this field is mainly flourishing in countries like Europe, UK, Australia, and China and the results of prior studies remained to be inconclusive. In order to decrease the environmental footprint, measures should be taken from firm's own initiatives, hence investigation of environmental performance is indeed worthwhile.

Therefore, this paper aimed to identify factors affecting environmental performance to help organisations to subscribe the truth of their actual environmental performance. Present paper therefore intended to investigate on how environmental collaboration influencing environmental performances with the presence of mediating effect of environmental management accounting. Due to scarcity of theoretical literature on this field, the authors have made an attempt to come up with a construct having dimensions that direct or indirect influences environmental performance by conceptualising the theory of Dynamic Capabilities (DC).

1. Literature Review

1.1. Environmental Performance

The importance of environmental performance has been studied since ten years back in extant literature. For example, firms found with good environmental performance evident to reduce operating costs, improve access to

resources, and reduce employee turnover (Berrone and Gomez-Mejia 2009). Furthermore, firms with good environmental performance can take advantage of market opportunities created by an increased demand for environmentally friendly goods and services (Berrone and Gomez-Mejia 2009). Moreover, case studies conducted by the World Business Council for Sustainable Development (2002) showed that strong environmental performance can lead to reduced fuel, energy, and water costs (de Villiers *et al.* 2011). As to date, researchers found organisations are performing well in terms of environmental issues and have proven their ability to build up their competitive advantage (Albertini 2014).

Environmental performance can be defined based on three categories. The first category comprises environmental impacts of emissions and the usage of energy. Achievement of regulatory compliance is included as a second category; activities include installing a treatment and/or recycling plant. The third category of environmental performance can be seen from the perspective of organisational processes and capital expenditures (Delmas and Blass 2010). The present study is looking into environmental performance as a mixed of all three categories above to meet firm's aim on environmental improvement. Given the condition the field has expanded considerably over the years, Graham *et al.* (2016) call for future researcher to attend to how firms can developed and at the same time improved environmental performance whilst creating competitive advantage. Hence, present study would like to embed Theory of Dynamic Capabilities with the conceptual framework.

1.2. Theory of Dynamic Capabilities (DC)

The DC theory is "the firm´s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano and Shuen 1997, 516). As to expand upon that in Teece *et al.* (1997), newer framework has been distinguished with three fundamental capabilities namely sensing and shaping opportunities, seizing opportunities and reconfiguring (Teece 2007) (refer Fig 1).

The aim of this theory is to understand the explanation of how firms can yield competitive advantage by responding to and creating environmental change (Teece 2007). Notwithstanding, this theory has evolve over 20 years and became one of the most active theory, several critics have aroused along the way that firms to sustain a competitive advantage has been decreasing over time, which dynamic capabilities is claimed no longer adequate to sustained in a longer period.

Despite the arguments of whether theory of DC can regard as a path to achieve improved performance outcomes, scholars are still active in investigating further in depth the antecedent and enabler of this theory. For instance, Li and Liu (2014) and Wilden *et al*. (2013) evident DC positively responded in the context of environmental dynamism and competitive advantage while Makkonen *et al.* (2014) found DC accommodating firm performance.

Figure 1. Overview of the Dynamic Capabilities Theory

Source: (Teece 2007)

According to Teece (2007), sensing focuses opportunity identification, seizing involves investment in these opportunities lead to new positions and paths, which then affects firm performance in terms of growth, profits and competitive advantage. Recombination and reconfiguration underpinned alteration of accumulated asset base leading to an additional effect on firm performance and competitive advantage, and to new positions and paths.

1.3. Environmental Management Accounting (EMA)

The unconsidered negative environmental and social impacts have inspired researchers to criticize conventional accounting and made environmental management accounting rise to prominence in recent years (Schaltegger *et al.* 2013). Based on the guidelines of the International Federation of Accountants (IFAC 2005) as cited by Sulaiman and Mokhtar (2010), environmental management accounting identifies, collects, analyses and uses physical information united with monetary information to make a decision. Physical information is the information concerning to the usage and flow of water, energy and material including wastage, whilst monetary information from the environmental management perspective relates to costs, earnings and savings.

EMA represents an innovative concept embracing a large range of tools that assist managers with information to guide green decision making in companies (Burritt *et al.* 2019) in which dismiss the view that conventional accounting method would suffice. In traditional accounting systems, environmental costs are

generally hidden in manufacturing overhead costs (Burritt *et al.* 2002), which complicates managers to detect the actual environmental costs associated to their particular activities. As such, it is utmost important for the use of EMA in accounting function in meeting corporate sustainability. Not surprisingly, in the generic management accounting literature, several researchers have begun to express an interest in how contextual factors influence environmental accounting activity, and studies have been published on this topic with positive results (Qian *et al.* 2011). Solovida and Latan (2017) drawn samples from ISO 14001 Certified Companies listed on the Indonesia Stock Exchange have found the role of EMA mediates both environmental strategy and environmental performance relationship.

Moreover, the mediating effect of EMA in relation between environmental collaboration and environmental performance is yet to be examined in previous research. The mediating effect is an important issue to be researched as these analyses environmental data, and subsequently assist organizations in decision making process and to realize the gains of being environmentally proactive, such as identification of new opportunities (Ferreira *et al.* 2010), lessen operational costs (Cassells, Lewis and Findlater 2011), and development of organizational performance (Ann *et al.* 2006). As for present study, this mediating relationship particularly acts as environmental management control system within environmental collaboration to progress in advance to meet organisations' environmental performance. Although, EMA research is developing with a high speed, involving an increasing range of authors and regions, but it still appears to be a 'rare orchid' particularly in the Southeast Asia (Herzig *et al.* 2012) and therefore more empirical studies needed as a guide to any scholarly contribution.

1.4. Environmental Collaboration

Environmental collaboration is known as an essential ingredient of firm's strategy in improving their environmental footprint because it focuses on joint environmental goal setting, shared environmental planning, and requires business partners to work together to reduce environmental impacts (Vachon and Klassen 2008). The integration between partners at supply chain chain level involves manufacturers, suppliers, and customers to work closely to develop holistic approaches and efficiently use their capabilities to meet environmental solutions. Present study would unpack environmental collaboration into customer and supplier collaboration.

1.4.1 Customer Collaboration

As customers demanded eco-friendly products and services, it is important that manufacturers to design products or services which are more respectful for the environment to meet customers' demands. Considering this, if a manufactured product left unsold in inventory, it's simply because such product is deliberately environmentally unfriendly. Products, therefore, must have both quality of utility and be eco-friendly (Green *et al.* 2012).

As demand for green products and services is growing exponentially, customers are in the cards to learn technical information about manufacturers' operations for example environment-related policies and strategies when comparing similar priced products. Green *et al.* (2012) further explained, buyers will likely choose the comparatively more eco-friendly product and will use and dispose it in a sustainable manner which in turn lessen the environmental footprints.

In the current business environment, organizations strive towards exceeding the customer's expectations. Hence, collaboration with customers can help manufactures to change the basic practices or materials used, and providing tools and services that allow companies to transit to environmentally friendly products. Further, such collaboration is likely to be inspired from, and guided by, customers' knowledge related to the environmental philosophy of the organization (Vachon and Klassen 2008).

1.4.2 Supplier Collaboration

On the other hand, supplier collaboration is referred as working jointly with suppliers to set and achieve environmental goals that result in the reduction of the environmental impact of coordinated activities (Vachon and Klassen 2006a). Another study by Paulraj (2011), indicated that by accommodating the suppliers with design specification which contained environmental requirements for purchased items, it will advances suppliers to new sources of proactive strategies, moving into cleaner production whilst support organizational environmental goals. The importance of addressing the environmental dimension in product development, such as the possibility of recycling, the use of environmentally friendly materials, energy consumption during product usage and the environmental impact of the end-of-life product is to be considered by suppliers.

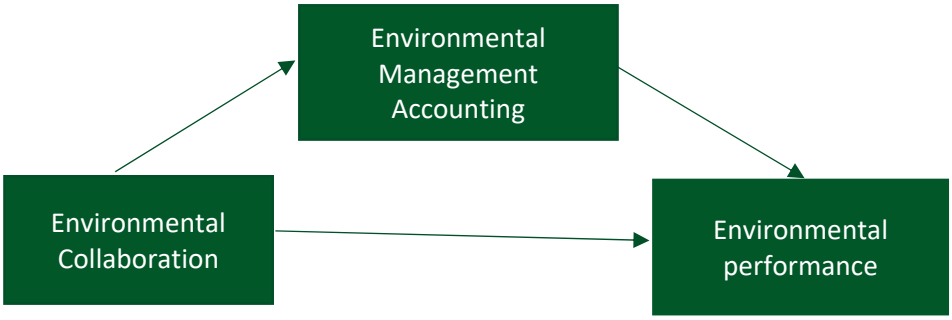
Blome *et al.* (2014) findings showed that it is necessary to consider supply-side and demand-side collaboration in sustainability matters as this will result in significant performance and guaranteed sustainability along the whole supply chain. A number research has been conducted in the past which recognizes

environmental collaboration is necessary for environmental performance is to be realized. For example, Golgeci *et al.* (2019), suggested firms to be open to collaborative arrangements for the environment and to pay attention to how firms execute environmental collaboration with their partners. This is because well adequate knowledge in achieving environmental collaboration may resulted in ease adoption of environmental sustainability strategies. Among the other studies that had found mixed findings between environmental collaboration and performance are Graham and Potter (2015), and Iwata and Okada (2011). Hence, more attention is needed to revisit and establish the link between environmental collaboration and environmental performance especially in developing countries like Malaysia.

2. Towards Conceptual Framework with Theory of Dynamic Capabilities (DC)

Consistent with Teece's model, environmental collaboration's sensing capability is identifying new market opportunities by collecting data along the supply chain. This study extends the view of environmental collaboration as an enabler of decision making by integrating partners in supply chain as well as utilising resources. Thus, environmental collaboration would result in an impetus for organisational change and trigger organisational environmental performance. Therefore, apart from relying on past studies that established the direct relationship between environmental collaboration and environmental performance, this paper aims to hypothesized a mediating role of EMA. In sum, EMA anticipated to influence the direct relationship of environmental collaboration and performance. The mediator model of EMA is postulated in Figure 2.

Figure 2. Mediating model of EMA



In addition to environmental collaboration, mediating construct, EMA, fits as an antecedent in DC theory. Scholars have proven that EMA instruments can embrace more environmentally friendly behaviours within an organisation and at the same time improve environmental and firm performance (Spencer *et al*. 2013, Nuwan 2015, Burritt *et al.* 2011). Building on Teece's model, this study proposes, EMA as environmental management control system that eventually lead to cost saving, and optimal use of resources, promotes a growth in shareholders' value that would help the employees to acquire new knowledge and its seizing capability is to engage the employees in innovation-related activities which in turn transform its business system to avoid wastage and ease the process of achieving good environmental performance.

Conclusion

Despite being environmentally proactive, some organizations are unable to realize the full benefits gained from environmental management (Sulaiman and Mokhtar 2010). Perhaps, this is due to the fact that most organizations overlook the significance of supply chain collaboration with suppliers and customers and unable to captures the growth of environmental costs. Hence, this study illustrated the potential of environmental collaboration along a supply chain to develop products or services with less environmental impact. In addition, attention to other factors is equally essential to enable performance improvements in achieving sustainable growth and development. Henri and Journeault (2010), argued that without EMA, companies would lead to misconception of theoretical relevance, disregard fundamental of economic conditions, and even misinformed the managerial decision making. Therefore, EMA is employed as an important construct to be studied in the context of environmental performance. Proposed framework from present study may devote insight to have a more relevant system to achieve companies' environmental goal and at the same time creates potential gains. Thus, it gives an insight to policy makers and standard setters to improvise their existing policies, rules and regulation to meet environmental objectives.

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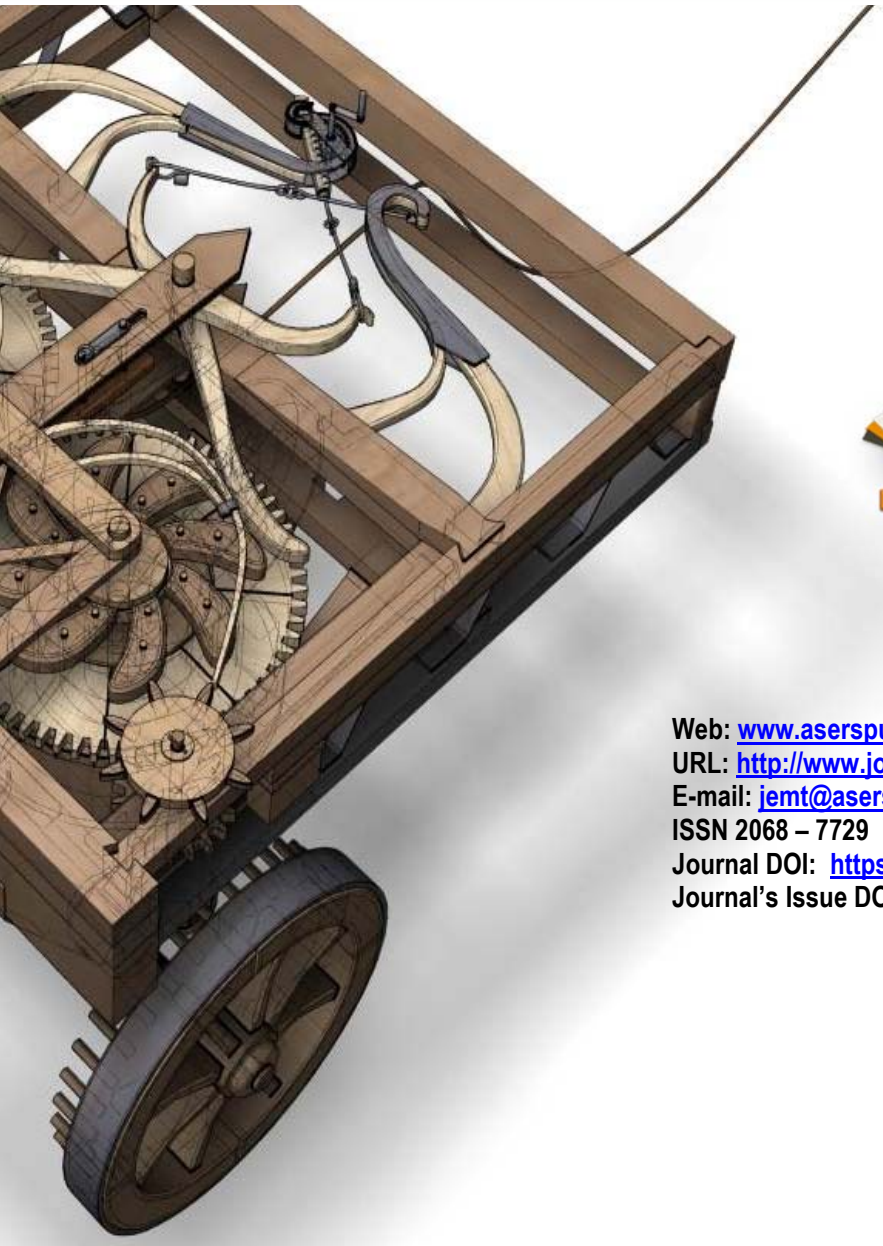

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