

Adoption of green innovation strategies in water bottling companies: the case of Gambia

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Abstract: Environmental innovation practices and green product innovation are not only new to Gambian industries but are a critical and inevitable choice for firms to change and achieve desired environmental and sustainability goals. At present, the green knowledge and practice by Gambian firms are in infant stages, and therefore this paper is important to help focus water bottling industry managers' attention on green practices, to promote organizational creativity that will result in achieving better and improved green innovation performance. Therefore, this paper aims to explore green environmental practices that can promote green product innovation performance of Gambia water bottling firms. A quantitative design and research method is proposed as the most viable for using survey questionnaires to collect data. Further, SPSS and SEM-PLS data analysis software are useful for confirmatory analysis and correlation tests of the research hypotheses. To the best that can be discerned from literature review, this theoretical model is the first research concept to apply to green innovation practices in the context of the Gambian water bottling industry. The findings of this research may help to provide better knowledge for water bottling firms managers to promote organizational creativity climate for effective adaptation of environmental green innovation practices that will ultimately promote green product innovation performance of the firm. The research may contribute to the cultivation of a green innovation creativity climate and behaviors which will increase the environmental sensitivities of employees who benefit from cross-organizational knowledge and ideas for improved environmental innovation performance.

Keywords-Creativity climate, Environmental innovation practices (EIP), Environmental policy, Green creativity, Green innovation performance.

I. Introduction

Globalization's primary consequent action is a world economy that continues to grow at a considerably fast pace. The global economy's growth is not without notable challenges that caused major inhibitors to both economic development and the performance of firms (Song and Yu, 2018). In the West and some parts of the South East, governments are relentless in exerting regulatory pressures with policies that compel firms to seek to balance organizational efforts for improving their performance while ensuring environmental sustainability (Tang *et al.*, 2018). Firms in the developed and middle-income countries have pivoted towards the adoption of green innovation as a strategy to gain environmental sustainability. According to Chang (2016), green innovation offers a way to reduce the conflict between a fast-growing economic development and environmental protection interest and concerns. Green innovation is particularly important for improving a firm's environmental management (Li *et al.*, 2017). Furthermore, firms continue to give considerable attention to green product innovation which is important for increasing firm competitiveness (Melander, 2017). Thus, a large number of organizations have developed green products as a means to advance their differentiation advantages and improve their firm performance (Chang, 2016; Chen *et al.*, 2018).

The importance of green innovation has now taken center stage among firms because the firms' keen interest in environmental sustainability, and as a result, many researcher have investigated the organizational factors that impact green innovation (Dangelico, Pujari, and Pontrandolfo, 2017;Stucki *et al.*, 2018), such as market demand, legislation, and knowledge (Zhao, Feng and Shi, 2018), interdepartmental collaboration and creative thinking (Jabbour *et al.*, 2013) have been examined. Albeit some studies exists on green innovation, it is of recent that focus was placed on the antecedents of green product innovation performance (Song and Yu, 2018). One such research was conducted investigating the firm's market demand and its impact on green product innovation (Lin, Tan and Geng, 2013). The results have shown that market demand has a positive influence on green product innovation performance. Similarly, corporate environmental commitment has the potential to positively influence green product innovation performance (Chang, 2016). Based on abundant evidence provided by literature, many past studies were focused on market and organizational contextual factors influencing green product innovation performance, while very limited studies investigated the possible way environmental innovation practices may affect or cause green product innovation performance(Song and Yu, 2018).

II. Problem Statement

The advent and wide global proliferation of plastic water bottles and the eventual eminence of the bottling industry have caused and continue to leave an indelible mark on the environment (Cameron, no date). Bottling water is a concept that came about in the 1970s following the market movement from soft drinks. Water bottles are made from petroleum-based plastics with chemicals that leach into aquatic and terrestrial ecologies after the bottles are used by millions of consumers and not appropriately recycled. These plastics cause immeasurable damage to human health and the environment because of their wasteful nature. The water bottle industry represents the wrong decisions humans have made relative to the environment and ecological impact of these bottles. Plastic bottles are a good representative of Anthropocene due to their wastefulness, the negative consequences of human exploitation of natural water resources, and the harmful pollutants associated with plastic bottles that leave permanent and lasting effects on the Earth and its ecosystems (Cameron, no date).

The main objective of this conceptual paper is to adapt a theoretical model from (Song and Yu, 2018) that further provide a better understanding of how Environmental Innovation Practices (EIP) impacts green product innovation performance. The three themes of the research are borrowed from (Song and Yu, 2018): the first theme reveals the relations to EIP and green product innovation performance. The second theme determines EIP's impact on firm's creativity climate and green creativity and explain the relationship between these elements. Thirdly, is the expansion of the exploration of mediation effects of EIP's impacts on green product innovation performance. Figure 1, depicts the proposed research model adapted from (Song and Yu, 2018).

III. Literature Review

1.1 Global Water bottling industry

The use of bottled water has gradually risen in the world for the last several decades. The bottled water industry is considered among the most fast-growing sectors of all food beverages. Use of bottled water has risen over the years at an average rate of 12% increase (Rosemann, 2005). The rise of the plastic water bottle industry started in the 1970s following the market decline of the soft drink industry (Rosemann, 2005). Following years of success as an industry, the exploitation of the natural water resources was discovered as a primary environmental negative impact on the earth. Besides depleting and permanently destroying and emptying aquifers beneath the ground, the plastic bottles used to carry this water, exert a significant toll on the environment (Vogel, 2009). The bottles are said to have adverse health and environmental ramifications because of the injurious nature of the plastic chemicals and the manufacturing of plastics (Safina and Perelman, 2016). The literature is replete with studies on the effects of the plastic chemicals and several studies have provided evidence that Bisphenol-A, or BPA, a synthetic chemical used to produce plastics, is an endocrine disruptor with adverse effects on human health (Vogel, 2009). Even the slightest exposure to BPA through chemical leaching from plastic bottles into the water is known to be capable of causing certain kinds of cancer, and neurological problems and reproductive difficulties in humans (Safina and Perelman, 2016).

Leaching of Bisphenol-A from plastic bottles and ingested through baby bottles and water bottles have been subjected to lawsuits in some parts of the world (District Court, 2009). The endocrine disruptor can be harmful to the environment when it gets into the aquatic ecosystem in even trace amounts, resulting in harming fish and other faunal water species (Safina and Perelman, 2016). Moreover, the manufacturing of Polyethylene terephthalate (PET), a polymer of clear plastics used for bottled water, is associated with emission of exhaust gas which is suspect

of consisting of harsh polymers and chemicals (District Court, 2009). These chemicals end up causing air pollution which ultimately damages the ecosystem and subject locals to the risk of inhaling these carcinogens (Safina and Perelman, 2016). Thus, the pollution caused by the production and use of plastic bottles may be regarded as one of the worst decisions that consumers consciously made relative to damage to the environment (Cameron, no date).

1.2 Gambia Water bottling industry

Packaged drinking water supply is a thriving multimillion-dollar business in developing countries like Nigeria and the rest of the sub-Saharan Africa (Dada, 2011). Packaged water is manufactured and distributed and sold in sachets, cans, laminated boxes, glass, plastic bottles, or sachets pouches. In recent times, within the last two decades, the developing nations like the Gambia have seen the rise in the registration of companies small, medium, and large that are involved in the manufacturing of packaged water (Dada, 2011). Today, water packaging companies have joined what may be called the unofficial economy in many developing countries.

IV. Research Design and Method

In referencing Song and Yu, (2018), the research for the present conceptual paper adapted conceptual framework with constructs on the organizational level. Therefore, the hypotheses are proposed to be examined using a questionnaire survey with data derived from water bottling companies in the Gambia. Further correlation test may be conducted using SPSS and SEM-PLS.

V. Underpinning theory

In referencing organizational creativity theory, a climate of creativity of a firm is described as “the psychological environment of creativity, the perceptions of work environment that affect the creativity work executed in the organization” (Song and Yu, 2018. p. 2). A firm that adopts EIP can experience an enhanced organizational creativity climate and thus, becomes better prepared to mitigate environmental challenges and can create beneficial unique ideas that support green innovation (Li, 2014). Therefore, this suggests that the creativity climate plays an important role in the relationship between environmental innovation practices (EIP) and green product innovation performance. Organizational creativity is, therefore, critical in creating valuable, unique, and useful ideas for firms which in turn supports the development of green innovation (Awan, Sroufe and Kraslawski, 2019). The creativity theory, therefore, states that green creativity implies “the development of new ideas for green products, practices, services, or processes that are regarded as useful, unique and original (Song and Yu, 2018). A firm with a resilient creativity environment can produce added worthwhile ideas, that will increasingly stimulate firm capacity for green creativity supports a successful application of the green product innovation performance. Therefore, borrowing from Song and Yu, (2018), the proposed conceptual paper proposes to investigate the effect of Environmental innovation performance on green product innovation performance from the perspective of organizational climate of Gambia bottling companies.

VI. Hypothesis and Conceptual Framework

7.1 Environmental Innovation Practices

Environmental concern has received well-deserved attention from the Gambia government when it demonstrated this commitment with the National Environment Agency (NEA) act was first established in 1977. The NEA Act is primarily promulgated for the promotion, coordination, and proposing an environmental policy to the National Environmental Management Council (NEMC) (AllAfrica, 2020). The Gambia government continues to demonstrate concern for environmental sustainability through several policies and regulations. For example, the Gambia joined the world with a regulatory policy to ban plastic bags to curb the negative impact of these bags on the environment. Therefore, as in the rest of the world, firms in the Gambia can similarly contribute to driving Gambia's sustainability development quest through environmental sustainability. When pressured by environmental policies and regulations, Gambian firms may adopt strategies that will help meet the requirements of environmental goals and for the reduction of pollution through green innovation initiatives (Song and Yu, 2018). For example, EIP is regarded as a critical strategy to greatly improve environmental protection and advance green development while allowing firms to achieve competitive advantages (Li, 2004; Porter and Van der Linde, 1995). Thus several studies have examined organizational factors' impact on EIP and investigated the connection between EIP and environmental performance (Chen *et al.*, 2018; Li, 2004; Lin, Tan and Geng, 2013).

EIP is described as a methods to avoid or minimize environmental damage by improving products, processes, technologies, and systems (Chu, Wang and Lai, 2019). This definition is a reflection of the firms' actions to reduce any environmental impact and that those actions expectantly and significantly reduce destructive contaminants

discharged into the environment (Li, 2014). Past studies examined how firms' EIP affects firm performance (Eiadat *et al.*, 2008). Similarly, Li (2014) investigated the drivers of EIP, such as government pressure, market pressure, and competitive pressure, and how these external factors affect a firm's environmental performance. However, there is a dearth of research in the examination of the relationship between EIP and green creativity.

Therefore, EIP is proposed to have a positive link with green creativity. EIP is a means to avoid waste which can result in preventing damage to ecological management (Li, 2014). Environmental innovation allows firms to make good use of their resources, which provides the chance to raise a firm's awareness of green innovation and ultimately improve the firm's green creativity. Thus based on creativity theory, a firm's management practices can improve its organizational creativity (Jeong and Shin, 2019). EIP is critical for the promotion of green consciousness. Hence implementing EIP can advance organizational green perception which leads to the formation of green ideas about green products which increase the chance to improve green creativity. Based on the above discussion, hypothesis (H1) was formulated:

H1: Environmental innovation practices is positively linked to green creativity.

7.2 Green Innovation Performance

Green product innovation performance is described as "the performance of a green product that is associated with ecological environment innovation, which involves pollution-prevention, energy-saving, no toxicity, waste recycling" (Song and Yu, 2018, P. 226). Green product innovation is a means for improving environmental performance and sustainability that satisfy the firms' quest to engage in environmental sustainability. Past studies have investigated the factors of environmental scanning, green innovation strategy, corporate environmental commitment as a way to improve green product innovation performance (Chang, 2018). However, few have examined the relationship between EIP and green product innovation performance (Song and Yu, 2018). Therefore in referencing Song and Yu (2018), EIP is greatly capable to influence green product innovation performance. Firstly, because environmental innovation is a crucial means to reduce environmental damage, which is also useful to firms because it helps firms gain their environmental objective (Li, 2014). Therefore EIP can create a win-win situation ostensibly gained from green product development, which in turn advances the firm's green product innovation performance. Furthermore, when firms are pressured by external forces of competition, firms can implement environmental innovation as an important means to improve their products (Chen, 2008). Market demand is known as one of the most effective drivers of firms' environmental management practices, particularly when the customer demand is high for green products, which encourages firms to implement environmental practices that enable adaptation to external environmental change (Zhu and Geng, 2013). Based on the above discussion, the hypothesis (H2) was formulated:

H2: Environmental innovation practices is positively linked to green innovation performance.

7.3 Creativity Climate

Organization creativity theory postulates that creativity climate is the working climate that involves organizational social environmental factors, like the honesty of communication, employee care, supervisors providing emotional and functional assistance to employees (Ghosh, 2015). Therefore, creativity climate involves the combination of the organizational environment and its working environment, which impacts the operations of the organization (Song and Yu, 2018). Past studies have investigated drivers and outcomes of creativity climate, such as human resource management and leadership, which are found to influence individual creativity, and organizational innovation and performance with the organizational climate (Ghosh, 2015). Nevertheless, there is a dearth of empirical studies that have investigated the relationship between EIP and creativity climate in environmental management. Therefore, in referencing Song and Yu (2018), EIP is proposed to have a positive influence on the creativity climate. Proactive adaptation of environmental practices supported by management initiatives can enhance the results of the firm's environmental pressures (Lin, Tan, and Geng, 2013; Tseng, Tan and Siriban-Manalang, 2013). Creativity climate is a vehicle firms can use to achieve environmental goals because through cross-functional cooperation, knowledge shared with across the organization helps to create a strong creativity climate (Song and Yu, 2018). Thus the organizational creativity climate is enhanced for the achievement of green innovation and sustainability capabilities of the firm. Furthermore, when firms implement positive EIP, they enable a common vision of environmental management and increases green consciousness and knowledge (Lin, Tan, and Geng, 2013). In such an environment, firm managers can incorporate organizational resources and manage employees' behaviors to establish a green organizational identity, which can in turn help creativity climate for green innovation (Song and Yu, 2018). EIP, therefore, requires leadership support and vision for positive environmental concerns and novel ideas related to green innovation which can result in an atmosphere of creativity that is helpful for environmental development. Based on the above discussion, hypothesis (H3) was formulated.

H3: Environmental innovation practices is positively linked to creativity climate.

7.4 Green Creativity

A creative disposition of firms results in beneficial and valuable new product, procedure, service, process, or idea originating from employees' teamwork in a firms' environment (Song and Yu, 2018). Firms' innovation has been known as a process of effectively employing creative ideas (Ghosh, 2015). Thus, creativity of a firm is frequently seen as ideas that originate from organizational innovation (Anderson, Potočnik and Zhou, 2014). Referencing the creativity theory, green creativity primarily focuses on developing new and beneficial ideas which result in green products, processes, services, and practices (Song and Yu, 2018). Hence, the suggestion that green creativity has a significant and positive influence on green product innovation performance. Moreover, the implementation of new and useful green ideas helps firms to strengthen green innovation (Song and Yu, 2018). Firms can achieve their environmental goals and meeting their social expectations when firms' leadership; managers focus on advancing the development of new and novel green ideas which improves green product innovation performance. Secondly, when external pressure from customers to provide green products and to demonstrate green behavior and consciousness is high, firms will show their commitment to green innovation strategy that can generate green ideas for products, that ultimately contribute to green product innovation performance. Based on the above discussion, hypothesis (H4) was formulated:

H4: Green creativity has a positive relationship with green innovation performance.

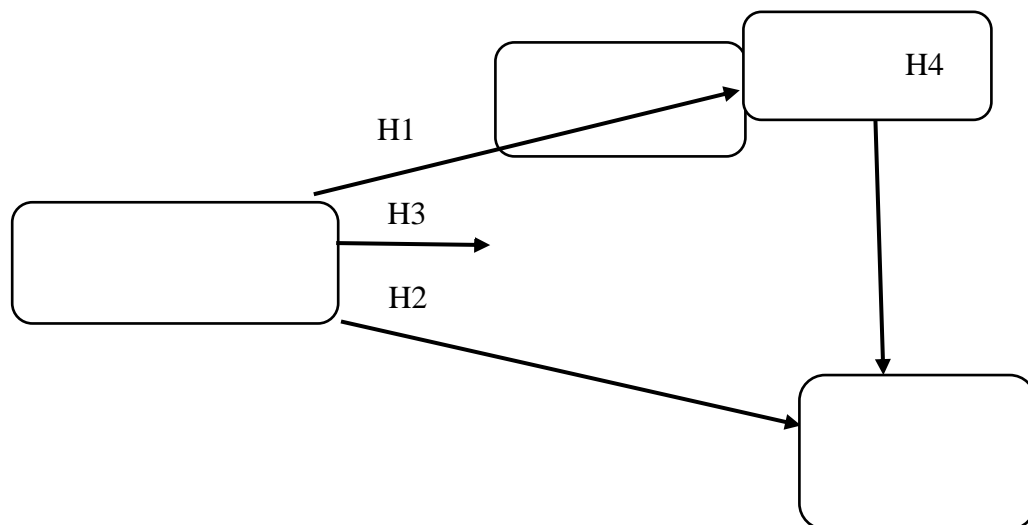


Figure 1. Conceptual Framework

VII. Conclusion

This conceptual paper proposes research that will examine the effect of EIP on green product innovation performance, providing a better knowledge and understanding of how firms' innovation practices that affect the green product innovation which in turn promote their innovation performance. Furthermore, organizational creativity theory is used to underpin the research to better explicate the environmental management and the necessary antecedents for green innovation performance. The research places special focus on creativity climate perspective which can create an atmosphere allowing firms to enable the necessary climate for novel and useful ideas related to environmental-friendly products that leads to improved green product innovation performance. Green creativity is vital for green product innovation that results in promoting firm's green innovation performance. To the best that can be discerned from literature, this proposed theoretical model is the first of its kind to be applied in the context of Gambian water bottling industry. Therefore, this research is expected have theoretical and practical implications for the Gambia water bottling industry. Theoretically, the research may contribute to expanding the green innovation literature in the context of a developing country like the Gambia. Secondly, this research may add

to increase the green knowledge and consciousness of industry managers and employees, and enhance creation of green organizational climate in the Gambian manufacturing industries.

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