Sustainable Green Practice in SMEs – An Examination of VBN Framework for Improving Productivity

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***Abstract*— The last few years have seen an exponential increase in the significance of the environmental agenda at the global level. Despite decades of research, the motivations that drive managers to engage in sustainable green practices remained uncertain. This study examines the degree to which value-belief-norm framework in explaining engagement in sustainable green practices. The data for this study was collected from 260 manufacturing SMEs and was analyzed by employing Structural Equation Modelling. The results indicated that environmental beliefs have a significant positive effect on SME's sustainable green practices, but these effects have not been demonstrated by environmental norms and environmental values. In view of these results, the findings have both policy and education implications as it is believed that a behaviour which encourages manufacturing SMEs to adopt green practices with respect to environmental concerns.**

Keywords— *VBN Framework, Sustainability, SME, Manufacturing*

1. Introduction

Environmental and social science research in past decades has infrequently taken pathways and are meaningfully interconnected. Ecology views the human being as the catalyst for the external transformation of a particular system [1]. Hence, most of the time, human influences are controlled to eliminate any subjectivity. In this light, the environmental settings have been studied and discussed as part of anthropological research to understand aspects such as societal development, power over resources and human evolution [2].

Even though these concepts, such as niche theory, the theory of evolution and the common theory are often taken from other disciplines, they are rarely actively integrated, as at times, it is greatly discouraged. Consequently, starting in the mid of the last century, researchers began to focus on the roles humans play as a part of the components in the systems, and studies, such as [3] began to consider humans as part of the ecosystems. On the other hand, the systems' perception of humans received strong criticism as it does not tolerate any diversity [4]. Subsequently, the ecology that we know today presents important broadening scopes and outcomes to societies. Hence the scientific research is introduced as a mean to solve new issues on the relationship between these systems.

On the whole, SMEs drive economic expansion and they are the nodal points in the capital movement network in major institutions, but their survival is being threatened by the degradation of the global environment caused by larger corporations [5]. Past studies argued that through their significant impact on the environment, SMEs should be responsible for increasing global ecological ethics [6]. Considering this important responsibility, some SMEs have focused on fulfilling the goal of achieving sustainable green practices by implementing policies and practices in their organisation [7]. SMEs that focus on sustainable green practices have prioritised the goal of environmental preservation in their business goals. Subsequently, these organisations have transformed their services and products by adopting green technologies, incorporating environmental indicators into performance measure, and cultivating the environmental relationship with interlinked institutions and organisations [8].

In spite of previous research, the uncertainty still remains on what motivates managers to engage in sustainable green practice. Most of the researchers have investigated the role of environmental knowledge [9], environmental values and attitudes [10], and demographic characteristics and contextual factors [11] as the determinants of pro-sustainable green practice. Numerous theoretical frameworks have been developed to incorporate various combinations of environmental knowledge in several attempts to lead the design of behavioural interventions [12]. However, the

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complex nature of sustainable green practice still poses a challenge in explaining or predicting such behaviour.

This study provides an overview of how SMEs manager's VBN framework affect the firm's sustainable green practice environmental sustainability. The fundamental question in this research is, 'How does SMEs commitment to achieve environmental sustainability being internalised among their managers, and how does such commitment being transmitted through the managers' behaviours in influencing their employees?' Based on value-belief-norm (VBN) framework, this study examines the relationship between the manager's environmental orientation which consists of environmental values, beliefs and norms in shaping sustainable green practices. This framework is useful in framing and crafting effective long-term strategies to promote the firm's sustainable green practices and was tested through a survey-based field study among SMEs managers [13].

The present study focused on developing an understanding of the core factors that drive ecology sustainability in SME through VBN framework's environmental orientation and firm's sustainable green practices. The viability of the VBN framework to illuminate the direct relationship between environmental orientation and firm's sustainable green practices was first examined, followed by the acknowledgement on the relationship between environmental orientation and firm's sustainable green practices. In the VBN framework, values are taken as simple principles that guide evaluations or cognitive inferences that, in turn, influence attitudes and behaviours. Therefore, the values filter information about the consequences of particular environmental conditions and behavioural decisions are made to avoid or mitigate the perceived or expected consequences. In addition, these values are also linked to personal norms, since they determine the content to which the feelings of moral obligation are directed [9]. The environmental convictions and the environmental consequences refer, respectively, to beliefs about the relationship between human beings and the environment, as well as to the consequences of protection or ecological deterioration based on aspects of personal value. Therefore, all three components are involved in the consequences of the decision to carry out environmental protection practices.

Based on the above explanation, 3 hypotheses about the relationships between the manager's environmental values, beliefs and norms with the firm's sustainable green practices were formulated as below.

H1: Manager's environmental values have a significant relationship with firm's sustainable green practices.

H2: Manager's environmental beliefs have a significant relationship with firm's sustainable green practices.

H3: Manager's environmental norms have a significant relationship with firm's sustainable green practices.

2. Research Methodology

SMEs in the manufacturing sector were chosen as the unit of measurement because of their importance to the economy. Thus, this study involves managers of manufacturing SME and specifically probe on their intention and the constraints of environmental measures. The target population for this study consists of 37,861 manufacturing SMEs in Malaysia, identified from the Malaysia SME Business Directory (2015). Considering the size of the target population and their various locations across the country, it was considered appropriate to take a representative sample of the population. Consequently, 1,000 manufacturing SMEs were chosen by using simple random sampling method. The respondents of the research are managers of Malaysian manufacturing SMEs that are involved in activities that can cause significant environmental problems [14]. Out of the 1,000 manufacturing SMEs contacted, only 272 or 27.2 % of the manufacturing SMEs returned the survey via conventional mail. In the process of minimizing response bias, 12 responses which contained more than 20.0 % missing data were excluded. Therefore, the usable data are 260 sets which are equivalent to 26.0 % rate of return. The descriptive analysis between SME manufacturing was analyzed using the SPSS version 22. On the other hand, the analysis of the research model and the hypothesis test was carried out using Partial Least Squares (SmartPLS software 3.0). The questionnaire was placed into five sections: respondent's personal and company's basic information, VBN framework (values, beliefs and norms), and sustainable practices. A five-point Likert scale, anchored by 'strongly disagree' to 'strongly agree' for all the items were used. To ensure content validity, questions from previous questionnaires were adopted into the questionnaire as follow: values [15], beliefs [10], norms [16] and sustainable green practices [7].

3. Findings

3.1 Descriptive analysis

The summary of the demographic profile related to the representatives of the sample manufacturing SMEs is tabulated in Table 1.

3.2 Testing the measurement model

The measurement model consists of the relationships between the latent variables and the indicators (items) that underlie each latent variable. The validity of the construction refers to the extent to which the indicators reflect their underlying constructs (latent variables). To establish the validity of the construction, the elements in the measurement model must demonstrate both convergent and discriminatory validity.

Table 1. Demographic Profile

Demographic Variables	Frequency	%	Cum. %
Gender of respondent			
Male	222	85.4	85.4
Female	38	14.6	100.0
Age of respondents			
Less than 30 years	8	3.1	3.1
30 to 40 years	71	27.3	30.4
41 to 50 years	140	53.8	84.2
Above 50 years	41	15.8	100.0
Designation			
Owner	57	21.9	21.9
Manager	98	37.7	59.6
Owner and manager	19	7.3	66.9
Director	46	17.7	84.6
Head of department	40	15.4	100.0
Year of attachment in organization			
< 2 years	2	0.8	0.8
2 to 5 years	62	23.8	24.6
6 to 10 years	129	49.6	74.2
> 10 years	67	25.8	100.0
Year of attachment in industry			
< 2 years	-	-	0.0
2 to 5 years	9	3.5	3.5
6 to 10 years	42	16.2	19.7
> 10 years	209	80.3	100.0
Company's number of employees			
5 to 75	65	25.0	25.0
76 to 200	195	75.0	100.0
Company's annual sales turnover			
Between RM 10m and RM 20m	40	15.4	15.4
Between RM 21m and RM 40m	47	18.1	33.5
Between RM 41m and RM 50m	173	66.5	100.0
Accredited with ISO 14000 series			
Yes	63	24.2	24.2
No	197	75.8	100.0

Establishing a convergent validity implies complying with the conditions imposed on the indicators' loadings, reliability and average variance extracted (AVE). Table 2 lists the indicator loading, the composite reliability and the average extracted variance (AVE) for all the reflective elements listed in the model. The loadings of all the reflective indicators have exceeded the required minimum level of 0.60 except EN2, EN6, and SGP6. Therefore, the 3 elements have been eliminated from the model. Furthermore, the values of the reliability of the compound show the degree to which the elements indicated as a latent construction ranged from 0.925 to 0.954, exceeding the recommended values of 0.7. The AVE was between 0.742 and 0.806, which exceeded the recommended value of 0.5.

3.3 Testing the structural model

The structural model includes the hypothetical relationship between exogenous and endogenous variables in the model and it shows how well the theoretical model predicts hypothetical paths. As we can see in Table 3, the interaction between EB * SGP is positive. Therefore, we can say positive significant relationship. On the other hand, the remaining two hypotheses relationship were not significant.

Table 2. Reliability and Validity test of model

Constructs	Items	Loadings	CR	AVE
Environmental Belief	EB1	0.849	0.952	0.770
	EB2	0.958		
	EB3	0.724		
	EB4	0.904		
	EB5	0.849		
	EB6	0.958		
Environmental Norms	EN1	0.814	0.931	0.772
	EN3	0.925		
	EN4	0.919		
	EN5	0.851		
Environmental Values	EV1	0.797	0.945	0.742
	EV2	0.916		
	EV3	0.927		
	EV4	0.931		
	EV5	0.750		
	EV6	0.829		
Sustainable Green Practices	SGP1	0.827	0.954	0.806
	SGP2	0.900		
	SGP3	0.892		
	SGP4	0.917		
	SGP5	0.948		

Notes: EB = Environmental Belief, EN = Environmental Norms, EV = Environmental Values, SGP = Sustainable Green Practices Items EN2, EN6 and SGP6 are deleted due to low loadings

Table 3. Hypotheses Testing

Hypothesis	Relationship	Std. Beta	T Values	P Values	Decision
H1	EB -> SGP	0.432	4.716***	0	Supported
H2	EN -> SGP	0.05	0.439	0.33	Not Supported
H3	EV -> SGP	0.031	0.334	0.369	Not Supported

Note: *p < 0.10, **p < 0.05, ***p < 0.01 (based on one-tailed test)

4. Discussion

The viability of the VBN framework was examined to illuminate the direct relationship between environmental framework and firm's sustainable green practices as central to the SME's sustainability. In the present study, environmental beliefs showed a significant direct effect on the firm's sustainable green practices. The positive direct effect of environmental beliefs in this study is in line with prior findings of [16]. Managers are more inclined to demonstrate pro-environmental behaviours that are directed toward employees when they think that their companies have shown commitment to sustainable green practices. Inherently, these SMEs managers are aware of sustainable green practices [9]. The effect of tailored information, goal setting, and tailored feedback on household energy use, energy-related environmental sustainability values and they are able to demonstrate these values in their everyday interaction with employees. These results affirmed the findings of scholars who have documented the positive effects that accrued from the atmosphere of corporate ecology commitment [17].

Surprisingly, the environmental norms and environmental values do not show a significant direct relationship with sustainable green practices. The rejection of this hypothesis may due to the managers' personal environmentalism along with their affective commitment in forecasting the behaviours that supportive of sustainability. Therefore, in an organisation that has a weak sustainability value and/or no publicly known emphasis on environmental sustainability, personal and corporate norms may possibly have a greater effect on the sustainability behaviours among the employees. Past research holds two different views on this construct. For example, this finding is in accordance with the work of [18] that showed that environmental norm and environmental values does not significantly affect the firm's sustainable green practices. However, some researchers [19] found that environmental norm and environmental values are significant in their studies and recognised that the feelings of personal obligation were

linked to one's self-expectations. Undoubtedly, further investigation is needed to examine the association between environmental norms, environmental values and firm's sustainable green practices in Malaysia. Besides, possible affective organisational commitment may have an indirect effect on the manager's environmental orientation through several different types of job performance, including manager's in-role and extra-role behaviours [20]. For example, when managers maintain a strong relationship with employees, they are more likely to engage in more frequent and constructive communication on ecology issues, which in turn associated with the strong demand side of environmental measures in SMEs and vice versa.

The findings provide acumens toward shaping an effective strategy to stimulate ecology citizenship in organisational settings. It is suggested that organisational education programs that reinforce manager's environmental orientation to be in place and highlight the negative impacts of individuals' behaviour on the environment to induce a sense of responsibility to initiate pro-environmental behaviour and sustainability. To be effective and to reflect the values of the manager's, such organisational education programs need to be enforced [15] to initiate sustainable green practice which could embark on to increased organisational sustainability. In other words, the educational program is needed to equip managers with the relevant skills and behaviour to initiate the anticipated behavioural changes [21]. Besides harnessing the understanding of sustainable green practice among managers also able to deliver simplified messages of their life experience in an environmental and sustainable manner.

Although this study has some valuable findings, it has several limitations which leave for future study. First, the use of large numbers of survey items from VBN components such as the New Environmental Paradigm scale. Bearing in mind the time and cognitive burdens on respondents, we have used the shortened versions of the VBN constructs in data collection as this version of environmental behavioural scales has proven to be effective in other studies [22]. In addition, future studies may seek to understand on a coherent set of environmental attitudinal factors that are significantly related to each other in a causal chain. Second, this study's findings were based on self-reports; including psychological and behavioural measures. Dependence on self-reports can be regarded as one of the disadvantages of the study. Past study also illustrated that 79% of the variance remained unexplained in a meta-analysis aimed at examining the association between self-reported and objective measures of sustainability behaviour, despite effect sizes that indicated moderate to strong associations between the two types of measures [23]. However, it can be argued that the manager's environmental concern and firm's sustainable green practices are quite different. Self-reports on sustainable behaviours, especially regarding values, beliefs and norms may be more influenced by social desirability as compared to their environmental concern. Therefore, it will be important to carry out some case studies in future to further testing the conclusion that been made in this study.

5. Conclusions

This paper has empirically tested a research model that explaining the role played by manufacturing SME manager's environmental concern in influencing a firm's sustainable green practices. The manager's environmental orientation included in the model relates to the firm's sustainable green practices, which was identified using VBN framework. The results of this study indicated that environmental beliefs have a significant positive effect on SME's sustainable green practices, but these effects have not been demonstrated by environmental norms and environmental values. However, compared to most previous studies, this paper contributes to the literature by building a connection between the manager's environmental orientation and firm's sustainable green practices via manager's environmental concern. In evidence, this work supports the idea that the manager's environmental concern plays a significant role in connecting a firm's sustainable green practices and manager's environmental orientation. However, only environmental beliefs related to the manager's environmental concern but environmental norms and environmental values failed to show such association. Therefore, this study added another research context by successfully demonstrating the application of the framework and provides an explanation on how firm's sustainable green practices in SMEs are influenced by VBN framework leading to the fulfilment of this research's objective.

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