

## THE EFFECT OF MANAGER'S ECOLOGICAL CONCERN AND FIRM'S SUSTAINABLE GREEN PRACTICES

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### Abstract

Despite decades of research, the motivations that drive managers to engage in pro-ecological behaviour remained uncertain. The complex nature of manager's ecological concern and other forms of pro-environmental behaviour poses a challenge in explaining and predicting the sustainable green practice. This study examines the degree to which value-belief-norm framework in explaining engagement in sustainable green practices with the mediating effects of manager's ecological concern. A questionnaire-based survey was used to collect data from 260 SMEs manufacturing firms. The data collected was analysed by employing Structural Equation Modelling. Results indicated that ecological values and ecological beliefs have significant positive effect on firm's sustainable green practices, but such effects were not shown by ecological norms. Furthermore, manager's ecological concern found to mediate the relationship between the two ecological concern factors (i.e. Ecological values and ecological beliefs) and firm's sustainable green practices. These results suggested that managers' ecological behaviour is a critical component in achieving firm's sustainable green practices apart from ecological concern factors.

**Keywords:** ecological orientation, sustainable green practices, manager's ecological concern.

### Introduction

Ecological 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. Hence, most of the time, human influences are controlled to eliminate any subjectivity. In this light, the ecological settings have been studied and discussed as part of anthropological research to understand aspects such as societal development, power over resources and human evolution (Boyd & Richerson, 2005; Scoones, 2016). 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 Little and Leslie (1999) and Markwell, Rivera, Gonzales and Garcia (2016) 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 (Moran, 2011). 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.

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In spite of previous research, the uncertainty still remains on what motivates managers to engage in pro-ecological behaviour and sustainability. Most of the researchers have investigated the role of ecological knowledge (e.g., Abrahamse, Steg, Vlek & Rothengatter, 2007; Bradford & Fraser, 2008), ecological values and attitudes (e.g., Stern, 2000; Milfont, Duckitt, & Wagner, 2010), and demographic characteristics and contextual factors (e.g., Schultz & Oskamp, 1996; Yeboah & Kaplowitz, 2016) as the determinants of pro-ecological behaviour and sustainability. Numerous theoretical frameworks have been developed to incorporate various combinations of ecological knowledge in several attempts to lead the design of behavioural interventions. However, the complex nature of pro-ecological behaviour still poses a challenge in explaining or predicting such behaviour.

This study provides an overview of how SMEs manager's ecological values affect firm's ecological sustainability behaviour, mediated by manager's ecological concern. The fundamental question in this research is, 'How does SMEs commitment to achieve ecological 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 manager's ecological orientation which consists of ecological values, beliefs and norms in shaping pro-ecological behaviour with the mediating effect of manager's ecological concern. This framework is useful in framing and crafting effective long-term strategies to promote firm's sustainable green practices and was tested through a survey-based field study among SMEs managers. The SMEs chosen have been known to commit itself to achieve ecological sustainability, parallel with the ideal discussed above.

The present study focused on developing an understanding of the core factors that drive ecology sustainability in SME through VBN framework's ecological orientation and firm's sustainable green practices via manager's ecological concern. The viability of the VBN framework to illuminate the direct relationship between ecological orientation and firm's sustainable green practices was first examined, followed by the acknowledgement of the mediation effect of manager's ecological concern on the relationship between ecological orientation and firm's sustainable green practices. Therefore, three hypotheses about the relationships between manager's ecological orientation, manager's ecology concern and firm's sustainable green practices were formulated as below.

- H1 : Manager's ecological values have a positive significant relationship with firm's sustainable green practices.
- H2 : Manager's ecological beliefs have a positive significant relationship with firm's sustainable green practices.
- H3 : Manager's ecological norms have a positive significant relationship with firm's sustainable green practices.

Next, manager's ecological concern was hypothesized to determine the firm's sustainable green practices.

H4 : Manager's ecological concern has a positive significant relationship with firm's sustainable green practices.

Finally, manager's ecological concern was hypothesised as the mediator between manager's ecological orientation and firm's sustainable green practices.

H5 : Manager's ecological concern mediates the relationship between manager's ecological values and firm's sustainable green practices.

H6 : Manager's ecological concern mediates the relationship between manager's ecological beliefs and firm's sustainable green practices.

H7 : Manager's ecological concern mediates the relationship between manager's ecological norms and firm's sustainable green practices.

## Literature Review

### Ecological orientation

Past research has been done to comprehend and explain the factors that influence individual engagements in pro-ecological behaviours (Inglehart, 1995; Stern, Dietz, Abel, Guagnano, & Kalof, 1999; Dunlap, Van Liere, Mertig, & Jones, 2000; Kaida & Kaida, 2016; Murtagh, Gatersleben, Cowen, & Uzzell, 2015). Some papers argued that pro-ecological behaviours based on cultural biases (Tapia-Fonllem, Corral-Verdugo, & Fraijo-Sing, 2017) or deep-rooted dispositions (Stachowska, 2016; Allevalo, 2017) while others described it as the ethical response which reflects on one's spiritual perspective of the world (Reave, 2005). These studies include altruistic values (Stern, Kalof, Dietz, & Guagnano, 1995), New Ecological Paradigm (Dunlap et al., 2000), post-materialist view (Inglehart, 1995) as well as the activation of individual moral norms (Stern, 2000). In recent years, some studies showed that there are relationships between some of these theories, and consequently, allowing more comprehensive discussion on how individuals respond to ecological issues (Batel & Devine-Wright, 2015; Mai, 2016).

Building on previous theories of environmentalism, Stern (1995, 1999, 2000) collaborated with other researchers to develop the value-belief-norm (VBN) framework, which links environmental beliefs, value theories (Schwartz, 1992, 1994; Stern & Dietz, 1994), New Environmental Paradigm (Dunlap & Van Liere, 1978), and the norm-activation theory (Schwartz, 1977) into a causal chain of variables leading to pro-ecological behaviour. Each of the three components has a proven and extensive track record independently of each other (Steg, Perlaviciute, van der Werff, & Lurvink, 2014). According to the VBN framework, an individual ecological behaviour is based on his/her values, beliefs and norms that urge him/her to demonstrate the behaviour in support of the environment. Therefore, the proposed VBN chain moves from the

predominantly central, stable belief structure and personality elements into more specific beliefs about the relationship between humans and the environment, their results and individuals' responsibility to improve the environment. Inherently, each adjacent variable in the chain will affect each other, and it also could directly influence other outlying variables in the chain.

Researchers have used the VBN framework in its entirety or parts thereof (i.e., subsections of it) in a range of research including consumer behaviour (Kaiser, Hubner, & Bogner, 2005), willingness to sacrifice (Stern et al., 1999), readiness to decrease use of motored vehicles (Nordlund & Garvill, 2003), acceptability of energy policies (Steg, Dreijerink, & Abrahamse, 2005), and consumers' adoption of high involvement eco-innovation (Kaiser et al., 2005; Ibtissem, 2010; Bossle, de Barcellos, Vieira, & Sauvée, 2016). In support, past studies including Steg et al. (2005) and Yeboah and Kaplowitz (2016) illustrate that the VBN is able to explain 19% to 35% of the variance from the respondents' self-reported pro-environmental behaviour depending on the form of behaviours (environmental citizenship, private-sphere behaviour and policy support action). Thus, the VBN framework has been providing an effective and strong framework in explaining a range of ecological behaviours, such as private sector actions, ecological citizenship and political support.

Given the weight of previous VBN study, the framework for this study is adapted from the work of Stern and Vlek (2009). This current framework proposes that managers behaviour for supporting firm's sustainable green practices stem from managers' (1) perceived ecological values, reflected through human-ecology relations; (2) ecological beliefs as shown by their support for the New Ecological Paradigm; (3) ecological norms for behaviour within the organisation, which is represented by affective commitment to the organisation. Similar to the VBN framework proposed by Stern and Vlek (2009), each variable in the chain is expected to directly affect the subsequent variable, as well as other outlying variables down the chain.

### **Manager's ecological concern**

Managerial support is eminent in determining the success of an organisation's pro-ecological activities (Daily & Huang, 2001). Past studies have shown that the adoption of sustainable green practice is related to support from the management and other aspects, which include green supply chain management (Liu, Yang, Qu, Wang, Shishime, & Bao, 2012), and environmentally preferable purchasing (Liobikienė, Mandravickaitė, & Bernatoniene, 2016). Consequently, managers could gain many incentives for the support of ecological friendly endeavours. Meanwhile, the perceived need to enhance an organisation's corporate image and the concern over threats to the legitimacy of the environment motivates managers to adopt sustainable green practises. Such practices include incentive from powerful stakeholders (Garces-Ayerbe, Torres, & Luna, 2012), and adherence to environmental reporting (Belal & Owen, 2007). It is notable that managers place emphasis on the management of ecological issues based on the stakeholders' expectations, particularly those of capital providers (Schaltegger, Lüdeke-Freund, & Hansen, 2012). Furthermore, managers are driven to facilitate ecological activities such as carbon reduction and energy conservation as the firm will obtain economic benefits, parallel to the shareholders' goal of maximizing their wealth (Zhang, Wang, Yin & Su, 2012). In addition, the

mission to gain ecology protection from parent companies and international buyers is also one of the motivations for ecology protection decision among top management (Belal & Owen, 2007).

Managers have different responsibilities as compared to the shareholders and owners. They are the ones who play the daily role of managing the company so that the company can achieve the goal specified by the owners and shareholders (Rosemann & vom Brocke, 2015). This illustrates a relationship between the owner as the principle, and the manager as an agent. Consequently, the shareholders or owners have to identify how they can overcome strict communication structures. This is to prevent managers from maximising their own utility at the company's expenses (Müller & Turner, 2005). Inherently, managers are more concerned about business performance, particularly on improving efficiency and reducing cost. They directly influence the company's daily operations and corporate strategy while the owners have power in the corporate decision through the managers. Past studies showed that managers moderate the relationship between pressures from shareholders and ecological activity when the shareholders place emphasis on ecological issues (Garces-Ayerbe et al., 2012; Chen, Tang, Jin, Li, & Paillé, 2015). This role leads to the organisational emphasis on good practices, including ecological protection activities that are beneficial to the company and better corporate image in the eyes of stakeholders and society (Williamson, Lynch-Wood, & Ramsay, 2006; Mazutis & Slawinski, 2015). This concern has led to the focus on ecological pressures from shareholders (Belal & Owen, 2007). On the other hand, manager's environment concern is rarely discussed, thus the link between manager's ecological concern and corporate strategies and activities remains unclear (Zhang, Wang, & Lai, 2015).

### **Sustainable green practices**

SMEs drive economic expansion and they are the nodal points in the capital movement network in major institutions (Marra, Antonelli, & Pozzi, 2017) but their survival is being threatened by the degradation of the global environment caused by larger corporations (Korten, 2001; Cheruiyot & Tarus, 2017). Past studies argued that through their significant impact on the environment, SMEs should be responsible for increasing global ecological ethics (Garcia-Johnson, 2000; Lee, Herold, & Yu, 2016). 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 (Govindan, Azevedo, Carvalho, & Cruz-Machado, 2015). SMEs that focus on sustainable green practices have prioritised the goal of ecological 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 ecological relationship with interlinked institutions and organisations (Jackson & Bührs, 2015).

Many SMEs are displaying their commitment to sustainable green practices publicly. At its centre, organisation's ethical ideal of sustainable green practices reflects the organisation's goal of achieving a product or service that can maximise the conservation of resources and energy through its life cycle extraction, production, distribution, use, disposal and recycling (Fernando, 2017). Since the year 2000, there is a significant increase in the number of sustainable reports on SMEs, especially

among SMEs in the manufacturing sectors as they have shown a significant direct impact on the environment (Bos Brouwers, 2010; Milne & Gray, 2007). Additionally, past studies on environmental issues showed that companies that embarked on various types of environmental reporting fall short in sustainability reports (Hahn, 2013; Caritte, Acha, & Shah, 2015). Such variations and inadequacies in sustainability reporting are caused by the challenges faced in attaining sustainability. Such difficulty is caused by factors like the inconsistent national policy, SMEs ineffective management practise and company cultural norms.

SMEs face great challenges to achieve sustainable green practices and they remain under- researched (Garcia-Johnson, 2000), and consequently, the increase of sustainable green practices among SMEs call for a multi-faceted enacted relationship in every context and level (Starik & Rands, 1995; Wyrick, Natarajan, & Eseonu, 2013). Furthermore, there is a need for the top management to emphasis on sustainable green practices to be disseminated to every employee, where SMEs managers have the role as the critical personnel who bridge the communication between top management and employees. Hence, the managers should internalise sustainable green practices espoused by the top management (Signori, Flint, & Golicic, 2015) by eliciting behaviours that incite sustainability behaviours among employees (Stillman, 2015). This study offers an overview of how SMEs goals of sustainable green practices can be decimated across the organisation through the sustainable practices of managers.

### **Methodology**

SMEs in the manufacturing sector were chosen as the unit of measurement because of their importance to the economy. Prior to the financial crisis in 1990, job creation and production were dependent on large companies (Tybout, 2000). Consequently, the economic crisis brought upon the increasing importance of SMEs in the manufacturing industry, as shown by Karlsson and Karlsson (2002), as well as the empirical study of Bridge and Wood (2005). Meanwhile, these firms' competitiveness fundamentally relies on the owners and managers to invest in technology and equipment, as well as their capacity for dynamic innovation (Sánchez-Medina, Quintero, & Cabrera, 2014). Thus, this study involves managers of manufacturing SME and specifically probe on their intention and the constraints of ecological 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, 1000 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 (Biondi, Iraldo, & Meredith, 2002). Out of the 1000 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.

Pertaining to the questionnaire's low return rate, Macpherson and Wilson (2003) and, Gadenne, Kennedy, and McKeiver (2009) stated that low rates of participation in research among SME managers are normal.

### **Measurement Scale**

Research questions were adapted from the work of a few researchers. The questionnaire comprises six sections and has 25 items. Section A of the questionnaire contains seven demographic questions. Section B assessed ecological values by using five questions which are adapted from Schwartz (1992, 1994) and, Stern and Dietz (1994). Section C assessed ecological beliefs by using five questions which are adapted from Dunlap and Van Liere (1978), and Dunlap et al. (2000). Section D assessed ecological norms by using 5 questions which are adapted from Schwartz (1977). Section E assessed manager's ecological concern - the mediating variable and it was measured by five questions adapted from Cordano, Marshall, and Silverman (2010) and, Cassells and Lewis (2011). Finally, in section F, the dependent variable - firms' sustainability was assessed by using five questions that adapted from Kerr (2006) and Cassells and Lewis (2011). For section A, nominal and ordinal scales were applied in measurement whereas, for section B to F, five-point Likert scale from 'strongly disagree' to 'strongly agree' was used.

### **Data analyses**

Descriptive analysis was conducted on the data collected from the manufacturing SMEs by using SPSS version 22. Followed on, two-step approach of structural equation modelling was employed in the analysis of the data by using AMOS 22. software (Anderson & Gerbing, 1988). Firstly, Confirmatory Factor Analysis (CFA) was executed to estimate the reliability and validity of measurement model and secondly, Structural Equation Modelling (SEM) was carried out to assess the relationships among the five constructs of this study. Bollen's (1990) and, Hu and Bentler's (1999) recommendations were applied in selecting and examining multiple indices of the model. This includes the  $\chi^2$  statistics, Root Mean Square Error of Approximation (RMSEA), Composite Fit Index (CFI), Normative Fit Index (NFI) and Joreskog's (1993)  $\chi^2$ /degree of freedom ratio.

## **Result**

### **Descriptive analysis**

Table 1 contains the demographic information of the respondents. The respondents consist of 85.4% males and 14.6% females, while the largest age group ranges between 41 to 50 years (53.8%), followed by 31 to 40 years (27.3%), above 51 years (15.8%) and below 30 years (3.1%). Most of the respondents are managers (37.7%), followed by owners (21.9%), directors (17.7%), heads of department (15.4%) and owner/manager (7.3%). Almost half of the respondents have six to ten years attachment in the organizations (49.6 %), followed by more than 10 years (25.8%), two to five years (23.8%) and less than two years (0.8%). Majority of the respondents have more than 10 year's attachment in the industry (80.4%), followed by six to ten years (16.2 %) and two to five years (3.5%). Majority of the respondents were working

in medium-sized SMEs with 76 to 200 employees (75%), while another 25% working in small-sized SMEs with 5 to 75 employees. Most of the companies had an annual sales turnover between RM41- RM50 million (66.5%), followed by between RM21- RM40 million (18.1%) and between RM10 - RM20 million (15.4%).

Table 1: Respondents Background

<b>Respondents Background</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Cumulative percentage</b>
<b>Gender of respondent</b>			
Male	222	85.4	85.4
Female	38	14.6	100.0
<b>Age of respondents</b>			
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
<b>Designation</b>			
Owner	57	21.9	21.9
Manager	98	37.7	59.6
Owner manager	19	7.3	66.9
Director	46	17.7	84.6
Head of department	40	15.4	100.0
<b>Year of attachment in organization</b>			
< 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
<b>Year of attachment in industry</b>			
< 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
<b>Company's number of employees</b>			
5 to 75	65	25.0	25.0
76 to 200	195	75.0	100.0
<b>Company's annual sales turnover</b>			



Between RM10m and RM20m	40	15.4	15.4
Between RM21m and RM40m	47	18.1	33.5
Between RM41m and RM50m	173	66.5	100.0
<b>Total</b>	260	100	

Table 2 displays the results of VBN framework, managerial ecological concern and firm's sustainable green practices. Generally, all the items recorded mean values above 3.00 and below 5.00. This result showed that all the items are relevant to the research and are moderately strong related to the constructs of study. Most of the standard deviation values were slightly over 1.00, if not close to 1.00, indicating a good dispersion from the mean. On the other hand, 'I feel personally responsible for my contribution towards the global climate change problem' and 'Enhances employee's motivation and satisfaction' appeared to be the least popular compared to the other practices as observed from its low mean value of 3.124 and 3.147. Furthermore, the descriptive statistics in Table 2 indicates that the data collected is not deviated from the normal distribution and good for further analyses.

Table 2: Extent of sustainable green practices implementation

Factor	Items	Mean	SD	
<b>Values</b>	EV1	Equality - equal opportunity for all	4.763	1.214
	EV2	Respecting the Earth harmony with other species	3.324	1.065
	EV3 -	Unity with Nature - fitting into nature	4.902	1.053
	EV4	Social Justice - correcting injustice, care for the weak	3.617	1.084
	EV5	Protecting the Environment - preserving nature	4.758	1.054
<b>Beliefs</b>	EB6	Human has the rights to modify the natural environment to suit their needs	4.619	1.065
	EB7	When human interferes with nature, it often produces disastrous consequences	3.904	0.961
	EB8	Human severely abusing the environment	3.171	1.031
	EB9	The balance of nature is strong enough to cope with the impacts of modern industrial nations	4.256	0.990
	EB10	Despite our special abilities humans are still subject to the laws of nature	4.916	1.012

<b>Norms</b>	EN11	Environmental quality will improve if we emit less greenhouse gases	3.163	0.959
	EN12 -	I do not feel personally responsible for my emissions of greenhouse gases	3.515	1.084
	EN13 -	I do feel morally obliged to reduce my greenhouse gas emissions, regardless of what others do	4.651	0.987
	EN14	I feel personally responsible for my contribution towards the global climate change problem	3.124	1.053
	EN15	I feel jointly responsible for worldwide greenhouse gas emissions	4.462	0.964
<b>Managers Ecological Concern</b>	MEC16	Improve financial performance	4.651	0.931
	MEC17	Benefit from Government's incentives	3.502	1.066
	MEC18	Gain market opportunities	3.372	1.200
	MEC19	Adhere to Malaysia Green Technology Policy	4.241	1.055
	MEC20	Enhances employee's motivation and satisfaction	3.147	0.937
<b>Firm's Sustainability</b>	MEC21	Manufactures product in a way that minimizes impacts on the environment	4.642	1.345
	MEC22	Products are designed in a way that minimizes adverse impact on the environment.	4.214	1.091
	MEC23	Uses Life Cycle Analysis to assess the environmental impact of the product	4.815	1.065
	MEC24	Identifies activities that are environmentally harmful and provides alternatives that minimize these harmful effects	3.673	1.013
	MEC25	Has a clear vision of the importance of environmental policies	4.151	1.172

### Measurement Model

CFA by means of SEM was used in this research to evaluate manager's ecology orientation on firm's sustainable green practices. SEM is used since it could relate a series of observable variables to be directly or indirectly related to the latent variables or factors (Hays, Revicki, & Coyne, 2005). As shown in Table 3, the factor loadings, Cronbach's Alpha scores, Average Variance Extracted (AVE) and Composites Reliability indices of all factors are with high value. The Cronbach's Alpha and composite reliability values all above 0.70 shows that the measurement of the constructs is all reliable (Hair, Black, Babin, & Anderson, 2010). According to Fornell

and Larcker (1981) average variance extracted that higher than 0.50 assuring that more than 50% of the variance of the factor are due to its indicators and is considered valid. Since all the items of the model have high factor loadings (above 0.70) the AVE of the constructs are 0.76 and higher (as shown in table 3), these readings show that the constructs are content valid (Hair et. al, 2010). Furthermore, the high AVE and Composites Reliability values prove that the model is convergent validity (Hair et. al, 2010).

Table 3: Reliability and Validity test of model

<b>Items</b>	<b>Factor Loading</b>	<b>Cronbach's Alpha</b>	<b>Average Variance Extracted</b>	<b>Composite Reliability</b>
FSGP21	0.89	0.949	0.87	0.95
FSGP23	0.95			
FSGP25	0.95			
EV3	0.76	0.901	0.76	0.80
EV4	0.96			
EV5	0.89			
EB6	0.87	0.951	0.81	0.95
EB7	0.99			
EB8	0.93			
EB9	0.95			
EB10	0.73			
EN12	0.95	0.917	0.85	0.92
EN15	0.90			
MEC16	0.79	0.920	0.80	0.92
MEC18	0.94			
MEC19	0.95			

Note. FSGP - firm's sustainable green practices, EV - ecological values, EB - ecological beliefs, EN - ecological norms, MEC – manager's ecological concern.

Table 4 shows the squared correlation coefficient of the constructs and the bolded numbers are the AVE of the respective construct. Since all the AVE values are above squared correlation coefficient of the related constructs, the discriminant validity of all constructs are proven (Hair et. al, 2010). With all these values, it has proven that the measurement of the model met the requirement of reliability, content validity, convergent validity and discriminant validity. Therefore, the testing of the structural model was followed suit.

Table 4: Discriminant validity

	<b>EV</b>	<b>EB</b>	<b>EN</b>	<b>MEC</b>	<b>FSGP</b>
EV	<b>0.76</b>				
EB	0.39	<b>0.81</b>			
EN	0.07	0.26	<b>0.85</b>		
MEC	0.28	0.36	0.11	<b>0.80</b>	
FSGP	0.35	0.36	0.11	0.40	<b>0.87</b>

Note. FSGP - firm's sustainable green practices, EV - ecological values, EB - ecological beliefs, EN - ecological norms, MEC – manager's ecological concern

### Overall model fit

To complete the structural model evaluation, goodness-of-fit indices were checked. As observed in Table 5 the fit indices are satisfactory and hence it may be concluded that the proposed structural equation models are capable of correctly explaining the covariance of the sample. As shown in Table 5, the normed Chi-square is below 3 which is below the recommended cut off value by Kline (1998) and composite fit index (CFI) is more than 0.90, adhered to the recommendation by Byrne (2013), normed fit index (NFI) is more than 0.90, adhered to the recommendation by Bentler and Bonnet (1980) and RMSEA is below 0.07 adhered to the recommendation of Steiger (2007). Hence the value of these indices showed that the hypothesized model is accepted.

Table 5: Fit indices for the hypothesized model

<b>Fit Indices</b>	<b>Values of Fit Indices for Proposed Model</b>	<b>Desired Values for Good Fit</b>
Relative $\chi^2(\chi^2/df)$	141.770/94 = 1.508	$\leq 3.00$ (Kline, 1998)
CFI	0.989	$\geq 0.90$ (Byrne, 2013)
NFI	0.967	$> 0.90$ (Bentler & Bonnet, 1980)
RMSEA	0.046	$< 0.07$ (Steiger, 2007)

Table 6 shows the hypotheses, parameter estimated and their respective p-value. The result shows that there is a positive and significant direct relationship between ecological values, ecological beliefs and managers' ecological concern towards firm's sustainable green practices ( $\beta = 0.355$ ,  $p < 0.001$ ;  $\beta = 0.333$ ,  $p < 0.010$ ;  $\beta = 0.320$ ,  $p < 0.001$ , respectively). Therefore, hypothesis 1, 2 and 4 are accepted. These results show that for every unit increase of EV, FSGP will be increased by 0.355 units and for every unit increase of EB, FSGP will be increased by 0.333 units and for every unit

increase of MEC, FSGP will be increased by 0.320 units. On the other hand, the result revealed that there is no significant relationship between ecological norms and firm’s sustainable green practices ( $\beta = 0.001$ ,  $p = 0.991$ ). Consequently, hypothesis 3 was not accepted.

Table 6 : Hypothesis testing

Hypotheses	Parameter Estimate	P-Value	Acceptance of Alternative Hypothesis
H1: FSGP <--- EV	.355	<0.001	Accepted
H2: FSGP <--- EB	.333	.005	Accepted
H3: FSGP <--- EN	.001	.991	Rejected
H4: FSGP <--- MEC	.320	<0.001	Accepted

Note. FSGP = firm’s sustainable green practices, EV = ecological values, EB = ecological beliefs, EN = ecological norms, MEC – manager’s ecological concern.

To test the mediating effects of firms sustainable green practices, the manager’s ecological concern were introduced to the direct effects model (see Figure. 1).

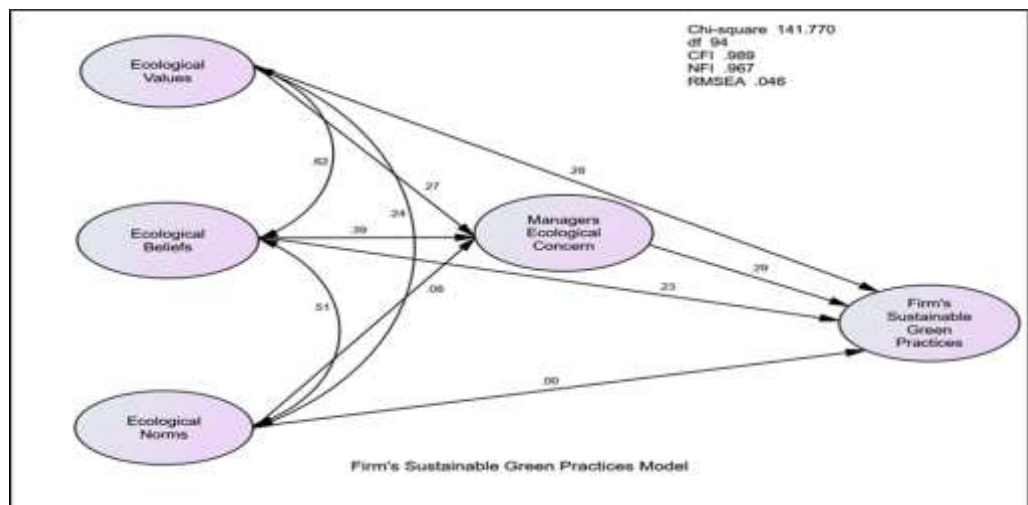


Figure.1. Structural model for the direct and indirect relationship of firm’s sustainable green practices

Table 7 provides a summary of the mediating effect. As shown in Table 7, there is an indirect relationship in between EV and FSGP mediated by MEC and the p-value is <0.001, therefore hypothesis 5 is accepted. This result shows that manager's ecological concern mediates the relationship between ecological values and firm's sustainable green practices. Table 7 also shows that there is an indirect relationship in between EB and FSGP mediated by MEC and the p-value is <0.001, therefore hypothesis 6 is accepted. This result shows that manager's ecological concern mediates the relationship between ecological belief and firm's sustainable green practices. However, the result show that there is no significant indirect relationship between EN and FSGP whereby the p-value is 0.991, therefore hypothesis 7 is rejected. This result show that manager's ecological concern does not shows significant influence on the relationship between EN and FSGP. In conclusion hypothesis 5 and 6 are accepted, but hypothesis 7 is rejected.

Table 7: Mediation Test: Standardized Total effects, Direct Effects, and Indirect Effects

Independent variables	Dependent variables	Total effect	Direct effect	Indirect effect	P value
EV	MEC	0.272	0.272		
	FSGP	0.356	0.277	0.079	<0.001
EB	MEC	0.395	0.395		
	FSGP	0.343	0.228	0.115	<0.001
EN	MEC	0.075	0.075		
	FSGP	0.023	0.001	0.022	0.991
MEC	FSGP	0.291	0.291		

Note. FSGP = firm's sustainable green practices, EV = ecological values, EB = ecological beliefs, EN = ecological norms, MEC = manager's ecological concern

The viability of the VBN framework was first examined to illuminate the direct relationship between ecological orientation and firm's sustainable green practices as central to the SME's sustainability and then acknowledge the mediation effect of manager's ecological concern on the relationship between ecological orientation and firm's sustainable green practices. In the present study, ecological values and ecological beliefs showed a significant direct effect on firm's sustainable green practices. The positive direct effect of ecological values and ecological beliefs in this study is in line with prior findings of Nordlund and Garvill (2002), Bock, Zmud, Kim, and Lee (2005) and, Milfont et al., (2010). Managers are more inclined to demonstrate

pro-ecological 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 the ecological 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 (e.g. Starik & Rands, 1995; Andersson & Bateman, 2000; Cordano & Frieze, 2000; Ramus & Steger, 2000).

Surprisingly, the ecological norms do not show the significant direct relationship with sustainable green practices. The rejection of this hypothesis may be 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 ecological sustainability, personal and corporate norms may possibly have a greater effect on the sustainability behaviours among the employees. Past research hold two different views on this construct. For example, this finding is in accordance with the work of Hopper and Nielsen (1991), Lindenberg and Steg (2007), Steg and Vlek (2009) and, Philippe and Durand (2011) that shown that ecological norm does not significantly affect firm's sustainable green practices. However, some researchers (e.g. Harland, Staats, & Wilke, 1999; Bamberg & Möser, 2007; Turaga, Howarth, & Borsuk, 2010) found that ecological norm is significant in their studies and recognized that the feelings of personal obligation were linked to one's self-expectations. Undoubtedly, further investigation is needed to examine the association between ecological norms and firm's sustainable green practices in Malaysia. Besides, possible affective organizational commitment may have an indirect effect on manager's ecological orientation through several different types of job performance, including manager's in-role and extra-role behaviours (Kataria, Garg, & Rastogi, 2012). 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 ecological measures in SMEs and vice versa.

With regards to mediation effects, manager's ecological concern found to mediate the relationship between ecology orientation (ecological values and ecological beliefs) and firm's sustainable green practices. The results provide strong initial support for the VBN framework's contention that ecological values and ecological beliefs are the main basis for managers' general predispositions to pro-ecological action. Nevertheless, these results illustrate how individual behaviours are strongly influenced by corporate values (Turnbull, 2001; Groves & LaRocca, 2011). Furthermore, the study found that each organisation has different factors that drive them to adopt different pro-ecological behaviours which are in line with prior research findings of Leonidou, Leonidou, and Kvasova (2010) and, Kasser (2011).

However, it is apparent with the result that there is no indirect link of ecological norm towards firm's sustainable green practices via manager's ecological concern. The result shows that the mediated effect for ecological norm is contradictory of the expected outcome even though the finding is in line with previous research of Menguc, Auh, and Ozanne (2010) and, Boiral, Talbot, and Paillé (2015). While manager's ecological concern were important, manager's norms and engagement with

environmental issues need a fit between personal and professional values (Williams & Schaefer, 2013). This is essential in underpinning manager's ecological engagement with sustainable green practices and encouraging a sense of personal responsibility of self-transcendence/openness to change. Therefore, additional studies are needed to further explore the construct of Schwartz' cultural value scores as well as manager's ecological concern in Malaysia. Future studies that derive data from these samples, along with the measurement of a wider array of ecological manifestations, may provide an outlook on the relationship between ecological norms and sustainable green practices of a firm based on the manager's ecological concern.

### **Conclusion**

This paper has empirically tested a research model that explaining the role played by manufacturing SME manager's ecological concern in influencing a firm's sustainable green practices. The manager's ecological orientation included in the model relates to the firm's sustainable green practices, which was identified using VBN framework. The VBN framework is a proposed model, which yet to gain broad recognition in research. However, compared to most previous studies, this paper contributes to the literature by building a connection between the manager's ecological orientation and firm's sustainable green practices via manager's ecological concern. In evidence, this work supports the idea that manager's ecological concern plays a significant role in connecting a firm's sustainable green practices and manager's ecological orientation. However, only ecological values and ecological beliefs are related to the manager's ecological concern but ecological norms do not 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.

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 ecological 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-ecological behaviour and sustainability. To be effective and to reflect the values of the manager's, such organisational education programs need to be enforced (Schultz & Zelezny, 2003) to initiate pro-ecological behaviour which could embark on to increased organisational sustainability. In other words, educational program is needed to equip managers with the relevant skills and behaviour to initiate the anticipated behavioural changes (Kaplowitz, Thorp, Coleman, & Yeboah, 2012). Besides harnessing the understanding of ecological behaviour the managers also able to deliver simplified messages of their life experience in ecological 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 versions of ecological behavioural scales has proven to be effective in other studies (e.g., Bord, O'Connor, & Fisher, 2000;



Scherbaum, Popovich, & Finlinson., 2008). In addition, future studies may seek to understand on a coherent set of ecological 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. Kormos and Gifford (2014) 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. However, it can be argued that manager's ecological 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 ecological 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.

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