

Predicting employees' engagement in environmental behaviours with supply chain firms

Environmental
behaviours

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Abstract

Purpose – The aim of this study is to investigate the employee perceptions of organizational support for environmental behaviours and its impact on innovative environmental behaviours and frequency of involvement in upstream oil and gas supply chain management. The study also examines a new area where environmental work culture has been introduced as a facilitator on the relationship between employees' perceptions and engagement in supply chain management.

Design/methodology/approach – Self-administered questionnaires were used for collecting data from supply chain managers in production arrangement contractor and service provider company in Kuala Lumpur. Partial least squares was used for data analysis.

Findings – The findings reveal that supervisory support for environmental initiatives and environmental training is positively related to employees' perception of organizational support for environmental behaviours, while rewards provided by the organization for environmental behaviours are not associated with it. The employees' perceptions of organizational support for environmental behaviours have a significant impact on employees' engagement in environmental behaviours in both forms of employees' frequency of involvement and employees' innovative environmental behaviours. The findings also show that environmental work culture moderates positively the impacts of organization's support practices (supervisory support for environmental initiatives and rewards provided by the organization for environmental) on employees' perception of organizational support for environmental behaviours.

Originality/value – The study critically examines the possible impact of enablers of engagement in environmental behaviours and how employees' perceptions of organizational support reflect their engagement towards environmental behaviours of the organizational practices. The findings are useful for supply chain management practitioners in terms of exerting environmental behaviours and facilitating employees' environmental behaviours in the upstream oil and gas supply chain management sector.

Keywords Supply chain management, Organizational support, Work culture, Supervisory support, Employee perceptions, Management in practice, Environmental behaviours, Employee perceptions, Organizational support

Paper type Research paper



1. Introduction

Supply chain management has become one of the crucial factors in ensuring sustainable business and creating a competitive advantage (Rahman and Zailani, 2017; Shukor *et al.*, 2020; Newaz *et al.*, 2020). Malaysia Investment Development Authority (MIDA) reported

that the oil and gas business in Malaysia contributes to about 20% of Malaysia's gross domestic product (GDP) by 2015 and also holding the fourth highest oil reserves and third-highest natural gas reserve in the Asia-Pacific region (Bernama, 2019). Malaysia's oil and gas business is governed and managed by its national oil company, namely, Petroleum Nasional Berhad (PETRONAS). Based on the PETRONAS Activity Outlook 2019–2021, upstream facilities in Malaysia are currently operated by 26 petroleum arrangement contractor (PAC) (PETRONAS, 2018). The PAC is a contractor a contractor that having a license with PETRONAS to explore and produce oil field in Malaysia. Oil and gas supply chain drive worldwide financial advancement by giving vitality and other fundamental data sources required in almost all generation tasks (Ebrahimi *et al.*, 2018). The environment is an essential element in the oil and gas industry. Aziz (2019) reported in *The Edge Financial Daily* that PETRONAS has stressed in its Activity Outlook 2020–2022, the oil and gas industry continues to transform as economic, technological and environmental factors that change across the value chain. This study focuses on the energy-related sector, which engages in environmental practises, as the industry interacts directly with the environment. Kazemi *et al.* (2019) stated that the sustainable supply chain territory is perceived as a difficult zone. The multinational companies in the upstream oil and gas industry are progressively compelled by partners to focus on ecological manageability that surpasses their very own firm fringes. Therefore, many companies have started to focus on supply chain management environmentally maintainability programmes.

The environmental practices are always viewed as a significant concern within supply chain management (Cantor *et al.*, 2012). Prakash and Potoski (2006) stated that organizations nowadays engage with high amounts of environmental initiatives and practises that had caused concerns by the organizations due to various challenges associated with the implementation of those practices. The selection of environmental practises ranges from simple initiatives such as waste disposal and replacing the material with the one that is more environmentally friendly to complex initiatives that involve new technology and invention. However, there is limited research available on how to address the challenges of human resource management related to the implementation of organizational environmental behaviours (Jabbour and Santos, 2008). Besides, as firms practise various environmental management initiatives, employee engagement in environmental behaviours has become one of the concerns and challenges (Babiak and Trendafilova, 2011; Ma *et al.*, 2020). The question of how to encourage an employee to become engaged in environmental behaviours remains a vital topic in today's global economy (Saleem *et al.*, 2020). Firms are searching for the answer on how to boost the motivation of their employees in engaging firms' environmental activities (Singh *et al.*, 2020) as they led a business of maintainability to ponder, which uncovered that corporate officials chose "representative enthusiasm for supportability" as an issue that can significantly affect an organization (Berns *et al.*, 2009; Danso *et al.*, 2019).

The current study focuses on environmental behaviours as one of the main aspects of the sustainable supply chain. Barbosa-Póvoa *et al.* (2018) and Newaz *et al.* (2020) proposed comprehensive research frameworks that identify the needs and characteristics of employee engagement and supply chain management. It is imperative to determine the enablers of engagement in environmental behaviours in energy-related sectors such as the oil and gas as an environment is an essential element in the oil and gas industry. Huzaini *et al.* (2020) mentioned that the environment is an important element is upstream oil and gas facilities, as they involve high-risk activities and exposed employees with a challenging work environment. Mingliang (2020) points out that the Association of Southeast Asian Nations (ASEAN) has announced the aim to guarantee more noteworthy security and provincial

supplies through broadening, advancement and preservation of assets; the proficient use of vitality; and the more extensive use of earth sound innovations.

Despite these essential commitments, resources, proficient use and environmental practices, there is a need for hypothetical improvement and experimental testing of elements that advance representative commitment in ecological practices (Lange and Dewitte, 2019). There is minimal hypothetical understanding for how a company's enablers of engagement in environmental behaviours improved worker contribution or engagement in the behaviours (Li *et al.*, 2019). It is necessary to know how much of the time employees participate in environmental practices and whether they take part in innovative environmental practices. Environmental work culture is an important element of this study as in the realm of employment. Work pressure issues were frequently experienced by representatives and had an effect on the worker execution (Kazmi *et al.*, 2008). Also, Kazmi *et al.* (2008) reported that a worker's execution was influenced by numerous things, including work culture and occupation fulfilment. Drawing upon the literature of behavioural research, this study used the organizational support theory to investigate the enablers of engagement in environmental behaviours among supervisory support, training and reward provided by the organization. The employees' perception of organizational support can reflect employees' engagement in environmental behaviours (i.e. participating in the firm's environmental practices and proposing innovative environmental initiatives).

This study will contribute to identify employees' engagement in environmental behaviours among upstream oil and gas supply chain management employees in Malaysia. The main significance of this research will contribute to the environmental work culture, supervisory support and environmental training, which encourage the employee to become engaged in environmental behaviours. Employees' engagement in environmental behaviours has become one of the concern and challenge in today's global economy. By identifying the enablers' engagement in environmental behaviours, it may support supply chain firms to meet the objectives of their environmental management practises and make it more effective and efficient. This study investigates the influencing factors that reflect employees' perceptions of organizational support for environmental behaviours, which motivated their engagement in innovative environmental behaviours and frequency of involvement. The study also attempts to address the new role of environmental work culture that has a significant relationship between enablers of engagement in environmental behaviours and employees' engagement in environmental behaviours.

2. Literature review

2.1 Supervisory support

Supervisory support refers to the extent to which leaders value their employees' contributions and care about their well-being. Fukui *et al.* (2019) stated that the supervisor support can make employees feel heard, cared and valued. Earlier research on authoritative help (Farooq *et al.*, 2019) proposes that when representatives trust, associations care about workers get their full of feeling pledge to the organization. Bishop *et al.* (2005) identified perceived support from two unmistakable substances such as organization and group. Turban and Greening (1997) examined observational help that organizations do send signs of authoritative qualities through their social arrangements and projects. Explicitly, they observed that free corporate social performance evaluations impacted the notoriety and subsequent engaging quality of firms. Gilbreath and Karimi (2012) found that supervisory associations give automatic chances to workers to contribute to a full of feeling hierarchical responsibility. Representatives are allowed the chance to show support for a significant reason embraced by the association, they are bound to display full of feeling hierarchical

responsibility. [Raineri and Paillé \(2016\)](#) findings support the idea that when supervisory support for environmental initiatives is valued, organization members are more likely to have a responsibility to firm environmental goals, which is passed through the employee perception of organizational support for environmental behaviours. Encouragement and backing by the management staff social or natural activities is an approach to pick up organizational employees' commitment to accomplish social upgrades.

Particularly administrators are in a situation to fill the job of the change specialist who encourages the coordination of manageability and corporate social responsibility (CSR) exercises into organization methodology, culture, structure and conduct. This is because administrators give direction on how representatives ought to contribute their time and exertion. They can be initiators of hazard-taking, thought age and experimentation at work. Along these lines, [Cantor et al. \(2012\)](#) speculate that supervisory support can have an enormous effect if representatives perceive that their bosses give the assets and criticism to take an interest in environmental activities. Directors effectively cultivate a mutual vision and accord for new hierarchical practices among the employees they work with. Supervisory help can affect representatives' work ([Cantor et al., 2012](#); [Yu et al., 2020](#)), and this supervisory acts might be close to home activities to improve the activity held by the employees. Thus, we hypothesized that:

- H1.* Supervisory support is positively related to employee perception of organizational support for environmental behaviours.

2.2 Environmental training

Training is an essential method by which associations secure and create human capital, which thus improves hierarchical limit and execution ([Jabbour, 2015](#)). The environmental training to an employee is the crucial matter for the organizations ([Singh and El-Kassar, 2019](#)), as it develops a firm's competitiveness and environmental performance; however, it is still in its early stage and needs additional investigation ([Singh et al., 2019](#)). The organization's need to control external pressure with the environmental training to employees becomes a significant component to manage such pressure ([Longoni et al., 2018](#); [Singh et al., 2019](#)), which can influence employees' perception of organizational support for environmental behaviours. [Cassells and Lewis \(2017\)](#) postulated that the management of the employee is a crucial factor in a firm's environmental management behaviours. Employees' environmental training improves the firm's competitiveness and performance ([Young et al., 2015](#)). [Kim et al. \(2019\)](#) stated that environmental training is an essential ingredient that increases the performance of the organization. The accomplishment of environmental programmes is subject to the preparation of a company's workers ([Fernández et al., 2003](#)). Preparing programmes are used to strengthen the significance of the association's responsibility for environmental activities ([Brío et al., 2007](#)). [Choi and Hwang \(2015\)](#) present instances of ecological preparation, e.g. approaches and strategies for eco-plan, life cycle evaluation, reusing and reusing of materials. The personal engagement in top management in environmental training to employees can improve environmental performance ([Young et al., 2015](#); [Kim et al., 2019](#)) and in turn influence employees' perception of organizational support. The firms' efforts to invest their resource and time to employees in environmental training can influence employees' perceptions of organizational support for environmental behaviours. As a result, we propose that:

- H2.* Environmental training is positively significant with employees' perception of organizational support for environmental behaviours.

2.3 Rewards

The organization provides rewards to the employees to influence environmental activities (Singh *et al.*, 2019; Boiral *et al.*, 2015) (e.g. environmental management practice, eco-innovation, pollution prevention) and employees' perception of organizational support for environmental behaviours. Boyt *et al.* (2001) bring up prizes structure signs to the employees that the association esteems: the person's commitment to the firm, free basic leadership, proficient advancement exercises and proficient conduct. Rhoades and Eisenberger (2002) point out that hierarchical prizes have generally demonstrated solid associations with employee perception. The employee needs leadership for inventive answers for environmental issues. Paillé and Meija-Morelos (2019) argue that organizational support may not always be enough to encourage employee environmental performance. Rewards provided by the organization with high symbolic value (e.g. job title, favourable work location, preferred work hours) provide a way to indicate voluntary support by the organization (Shanock *et al.*, 2019; Nazir *et al.*, 2019). Organizational rewards have positively demonstrated strong relationships with employees' perceptions. Jensen and Meckling (1995) additionally contend that it is crucial to provide monetary incentives to employees in an organization for their self-interest and goal for the organizations. It pursues that employees who are rewarded for acting with the company's environmental objectives will perceive management support of environmental behaviours. Thus, we postulated that:

- H3. Rewards provided by the organization for environmental behaviours have a positive effect on employee perception of organizational support for environmental behaviours.

2.4 Employee perceptions of organizational support

The hierarchical approach can be used to analyze the connections among representative frames of mind and practices towards an authoritative objective (Tseng and Bui, 2017). This system for seeing such connections attests that representatives will follow up for an association to be a degree that the association is seen as eager and ready to respond with suitable initiative, preparing and compensation. Cantor *et al.* (2012) have built up a model using hierarchical help hypothesis of how worker impression of authoritative support rehearses impact representative commitment in ecological practices. The model adds to the inventory network discipline by using a conduct hypothesis, authoritative help hypothesis, to address a contemporary production network the executive issue (Allaoui *et al.*, 2019; Qin *et al.*, 2019). Cantor *et al.* (2012) closely incorporate hypothesis from the board and social brain research literary works to build up a model that gives bits of knowledge into how representatives are affected by company's ecological administration practices to take part in natural practices. The employees' perception of organizational support positively influences a firm's performance to innovative environmental behaviour and frequency of involvement (Caesens *et al.*, 2017). Employees with high levels of perception of organizational support should engage in the organization behaviours, as they feel a stronger obligation to help the organization to achieve its objectives. The perception of organizational support for environmental behaviours clarifies employees' engagement in environmental behaviours particularly on employees' frequency of involvement and innovative environmental behaviours. Therefore, we postulated the following hypotheses:

- H4. Employee perception of organizational support for environmental behaviours has a positive effect on an employee's innovative environmental behaviours.

- H5. Employee perception of organizational support for environmental behaviours has a positive effect on an employee's frequency of involvement.

2.5 Environmental work culture

The quality work culture is noteworthy to ensure the agents served the predominant help of the customers (Dhamija *et al.*, 2019). The lifestyle chooses how agents delineate where they work, how they appreciate the business and how they believe themselves to be a bit of the affiliation. In the domain of business, employees' work load issues are solved by representatives, by agents and affected the specialist execution, while the workers' execution was impacted by various things including work culture and occupation satisfaction (Kazmi *et al.*, 2008). Culture is likewise a driver of choices, activities and at last the general execution of the association. Employee engagement in environmental behaviour issues at a firm level can be addressed through environmental work culture because work culture is defined by Rasool *et al.* (2020) as work pressure issues frequently experienced by representatives, and it affected the worker execution. Organizational work culture contends the supervisors' activity (Hartnell *et al.*, 2019). Fernández *et al.* (2003) incorporated hierarchical culture and natural administration underscoring the significance of authoritative culture alongside authoritative association, preparing and inspiration. It is expressed that a successful association must have a work culture that underpins its representatives. Clear targets in terms of mission and vision will lead the association in a superior manner to accomplishment in the future. Rachman and Sari (2019) featured work culture straightforwardly sways business fulfilment and subsequently would improve execution. In case of low elements of fulfilment, it would cut down the execution. Jain and Hyde (2020) illuminated that when stress was in unusual states, work fulfilment reduced, and when the sentiment of tension was low, then the execution would be improved. In this study, the literature supports that environmental work culture has been identified as the moderator that moderates the relationship of the effect of organizational enablers on employee perception of organizational support for environmental behaviours. Environmental work culture as a moderator is the examination that is intrigued to look at how worker impression of the executives rehearses impact representative commitment in ecological practices, e.g. taking an interest in natural administration exercises, advancing ecological activities and proposing inventive ecological practices. Thus, we hypothesized that:

- H6. Environmental work culture moderates positively the impacts of (a) supervisory support, (b) environmental training and (c) rewards on employee perception of organizational support for environmental behaviours in manufacturing companies.

2.6 Conceptual framework and underpinning theory

This study used employee perceptions of environmental management practices (Cantor *et al.*, 2012), which may influence employee engagement in innovative environmental behaviours and frequency of involvement in upstream oil and gas supply chain management. Rhoades and Eisenberger (2002) highlighted that the organizational support theory discovered the magnitudes of perception of organizational support. An empirical test of the organizational support theory has indicated that employees make every effort to repay the firm for the support given by the firm to the employee via active participation and increase in efforts to assist the firm in reaching its business goals (Aselage and Eisenberger, 2003). Cantor *et al.* (2012) have built up a model using hierarchical help hypothesis of how worker impression of authoritative help rehearses impact representative commitment in

ecological practices. The model adds to the inventory network discipline by using a conduct hypothesis, authoritative help hypothesis, to address a contemporary production network. Cantor *et al.* (2012) explained empirically the expansion use of the organizational support theory to other spheres by shifting of the intended target of support from the individual employee to organizational support of the environment, as perceived by the employee. The organizational support theory contends that favourable conduct by organizations should increase the perception of organizational support. Besides, perception of organizational support for environmental behaviours clarifies employee understanding of the extent to which the organization values the environment and seeks employee involvement in pro-environmental behaviours. Employees with high levels of perception of organizational support should, thus, reciprocate by actively engaging in the organization behaviours or initiatives, as they would feel a stronger obligation to help the organization achieve its objectives. A wide array of literature has been reviewed to develop the hypotheses for the current study. Figure 1 shows the conceptual model, which is adapted from previous studies particularly from Cantor *et al.* (2012). The model has a new contribution of environmental culture and innovative environmental behaviours in Malaysian upstream oil and gas supply chain management.

3. Research methodology

3.1 Operationalization of constructs

This study used the SmartPLS 3.0 version to assess the proposed conceptual model. The partial least squares method was used, as it supports a small sample size (Hair *et al.*, 2011) and a two-step approach (Hair *et al.*, 2013; Kline, 2015) is applied to analyze the data and test the hypotheses relationship in the proposed conceptual model of this study. In the first step, we have applied confirmatory factor analysis to analyze the convergent validity using a series of tests that compared the measurement model. In the second step, we have measured the hypothesized relationship to assess the fit of the structural model. This method is used to determine how reliable and valid the measurement items are before recognizing the hypotheses relationships.

This study used a survey instrument consisting of five sections: firms’ general information, drivers of environmental initiatives for an organization (supervisory support, environmental training and rewards), perceptions, engagement in environmental behaviours (innovative environmental behaviours and frequency of involvement) and work culture. To design and validate the survey instrument of this study, the review of the literature was considered to identify the measurement scale that is used in previous studies and some of the factors identified earlier. The supervisory support provides a chance to employees for contributing to a hierarchical responsibility. For this study, supervisory support for the environmental initiative was measured using eight items adapted from

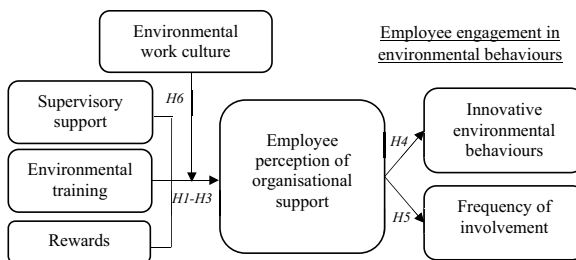


Figure 1. Conceptual framework

Cantor *et al.* (2012), Gilbreath and Karimi (2012) and Raineri and Paillé (2016). Environmental training provided to an employee by the organization was evaluated using eight items modified from Cantor *et al.* (2012). Six items were modified from the Cantor *et al.* (2012), Shanock *et al.* (2019) and Nazir *et al.* (2019) to measure the rewards provided by the organization for environmental behaviours. Based on Shanock *et al.* (2019) and Eisenberger *et al.* (2019), nine items were modified for assessing employee perception of organizational support for environmental behaviours. Environmental work culture was measured using six items adapted from Iranmanesh *et al.* (2019). Thirteen items were adapted from Montabon *et al.* (2007) and Cantor *et al.* (2012) for evaluating innovative environmental behaviours and frequency of involvement. All items of this study were measured on a five-point Likert scale based on the adaptation of the previous studies. Section A is constructed to determine the demographic and confirm the consent of the sample. Section B described the questions related to independent variables, which have a five-point Likert-scale range from 1–5, which refer as very little extent for 1, little extent for 2, some extent for 3, greatly extent for 4 and very great extent for 5. Section C presents the questions related to the perceptions on the managerial support for environmental behaviours in the firm, which has a five-point Likert-scale range from 1–5, which refer as strongly disagree for 1, disagree for 2, neutral for 3, agree for 4 and strongly agree for 5. Sections D and E defined the questions related to the moderator and dependent variable which has a five-point Likert-scale range from 1–5, which refer as very little extent for 1, little extent for 2, some extent for 3, greatly extent for 4 and very great extent for 5. Finally, the last two sections. The questionnaire was passed to an industrial practitioner and expert in the field of environmental behaviours for further review of the contents and validity. Health, safety and environment manager were engaged for this pre-test exercise, which independently evaluated each of the measurement in the questionnaire. Amendments were made following his feedback to ensure consistency incomprehension.

3.2 Data collection and sample

Individual manufacturing firms were defined as the unit of analysis for this study. The population frame for this research is obtained from the estimation of employees from both PAC and service provider companies that involve in upstream oil and gas floating facilities. The list of those company is gathered via PETRONAS through its Activity Outlook 2019–2021 report and SWEC database. The target population of this research is the employees of the nine PACs and 26 service providers registered under SWEC Code: SF2010000. Based on available data from respective companies' website, the total population is estimated around 10,000 employees where both groups of PACs and service provider companies are estimated to have similar total employees of 5,000 as PAC companies are normally three times bigger than a service provider company because PAC is the owner of oil fields that are responsible to manage the whole life cycle of the field from exploration, development, production up until abandonment. Hence, the similarity of the total employee for both group of PACs and service provider companies is in line with the ratio of 1:3 of the target population.

The sampling for this research is based on stratified random sampling with the target of respondents. The prospective respondents (managers, chief executive officers (CEOs) and senior executives of the companies) were chosen conveniently. This procedure enabled the researcher to access a sufficient number of prospective participants for this study. Questionnaires were collected using the face-to-face survey method. We obtained approval from the top management of the human resource (HR) department of the respective company. After obtaining permission to collect data, the first author of this study went on site to distribute questionnaires to frontline employees. The questionnaire included a plain

language statement of the project and a survey, which took around 20 min to complete. The respondents were assured that their involvement was completely voluntary and their anonymity guaranteed. The participants were sent the completed surveys directly to the researchers of this study. We provided an RM20 cash incentive to each respondent who received our invitation to participate in this research project. A total of 400 questionnaires were distributed, and 340 were returned with a return response rate of 85%. This is perhaps the top management employees (CEO, managers) are always busy with their duty or in meeting in the company; therefore, some participants may not be able or forget to complete each section of the questionnaire. Also, in the case of the missing data, this might be occurred because respondents filled in the surveys without the help of trained investigators. Out of 340 returned questionnaires, only 200 were appropriately completed for data analysis, yielding a usable response rate of 50%. This response rate is adequate for this study because research at the organization level, using top management (e.g. CEOs or managers) as respondents may have a smaller sample size than research at the individual level (Memon *et al.*, 2020). Besides, a sample size greater than 30 and less than 500 is suitable for most behavioural studies (Roscoe, 1975), while a sample size larger than 500 may lead to a Type II error (Sekaran and Bougie, 2016). For the more robustness to validate the sample size of this study, G*Power 3.1.9.2 approach was used for estimating 200 usable samples. The findings reveal a significant value of 0.05 yielded a power of 0.99, which is larger than 0.80, indicating the adequacy of sample power in this study (Chin *et al.*, 2003).

The data was collected (June to August 2019) from managers or CEO of PAC and service provider companies in Kuala Lumpur, Malaysia. Suitable inquiries were taken in the poll organization and sent to focus respondents for their input and reactions. Polls are appropriated with covering letter clarifying the motivation behind the investigation and the respondent's classification of giving the appropriate response. This will give urge respondents to certainly take an interest in the poll and enthusiastically give exact responses to the survey. The poll strategy is a proficient information accumulation instrument when the researcher knows precisely what is required and how to gauge the factors of intrigue (Sekaran and Bougie, 2010). As we used existing scales to measure variables that were written originally in English, we used translated scales in Bahasa Malay that the literature recommends, ensuring the validity of the translated scales (Stening and Zhang, 2007). We used two sets of the questionnaire and an expert on the topic who were bilingual. The translated version was pre-tested using six experts who commented on items that were difficult to understand. A minor adjustment was made before the final data collection in both sets of English and Bahasa Malay version.

3.3 Common method bias

In this study, we have used several procedures for measuring the common method bias. In the period of distribution questionnaires, we followed the recommended procedure to provide statements to respondents that the current study will use only study purpose, responses were confidential and there was no correct and wrong response. The study also used Harman's one-factor test to identify the problem of common method bias. Factor analysis was used on seven factors whose eigenvalues were above 1. The first estimated 33.12% of the total variance, and with all factors accounting for 69.23% of the total variance, which indicates that common method bias is not an issue in the data. For more robustness, we have used the VIF threshold in common method bias test. Kock (2015) arguably discussed the common method bias should be somewhat higher than VIF score 3.3 when factor-based partial least squares structural equation modelling (PLS-SEM) is used. In this

study, the VIF score is lower than 3 (Table 1), indicating no probable multicollinearity issue in predicting variables (Becker *et al.*, 2015).

4. Analysis and results

4.1 Respondents' profile analysis

For the 200 usable samples, a total of 22.8% of the respondents were from PAC and 77.2% from the service provider company. The respondents' firms 84.2% were Malaysia owned, 7.9% local and foreign joint venture (JV) companies, while the remaining 7.9% were owned by non-Malaysian. The respondents' firms 6.9% have been in the business for less than five years, while the highest 47.5% have been in business from six to ten years. The respondents' firms 13.9, 9.9 and 21.8% were in the business about 6–10, 11–20, 21–30 and above 30 years, respectively. The respondents' firms 15.8% having several employees less than 100, while the other 7.9, 8.9, 37.6 and 29.7% of respondents' firms having the number of employees from 101–250, 251–500, 501–1,000 and more than 1,000 correspondingly. The results also showed that respondents 28.7% claimed that their firms were having all the three certified management systems (ISO 9001, OHSAS 18001/ISO 45001 and ISO 14001). Most of the respondents' firms are certified with ISO 9001 where the percentage was 94.1%, followed by OHSAS 18001/ISO 45001 and ISO 14001 at 36.6 and 34.7%, respectively. The top three environmental management that implemented by the correspondents' firms were total preventive maintenance, 5S practices and quality control circle with a percentage of 60.4, 43.6 and 42.6%, respectively. Male respondents encompassed 85.1%, while female

Characteristics	Categories	(%)	Characteristics	Categories	(%)
Firm in upstream oil and gas floaters business	PAC	22.8	Top three environmental management implemented	Total preventive maintenance	60.4
	Service provider company	77.2		5S practices	43.6
Firm ownership	Malaysian owned	84.2	Gender	Male	85.1
	Local and foreign JV	7.9		Female	14.9
	Non-Malaysian owned	7.9	Age	Below 30 years	14.9
Duration in business	Less than 5 years	6.9		30–40 years	69.3
	6–10 years	47.5		41–50 years	10.9
	11–20 years	13.9		51+	4.9
	20–30 years	9.9		Position in the firm	Executive
	Above 30 years	21.8	Management		27.7
Number of employees	Less than 100	15.8	Senior management	6.0	
	101–250	7.9	Experience working in the firm	Less than 2 years	25.7
	250–500	8.9		2–5 years	36.6
	501–1,000	37.6		6–10 years	22.8
More than 1,000	29.7	More than 10 years		14.9	
Certified management system	ISO 9001	94.1			
	OHSAS 18001/ISO 45001	34.7			
	ISO 14001	36.6			
	All the above	28.7			

Table 1.
Respondents' profile

respondents covered 14.9%. A total of 69.3% were between 30 and 40 years old, followed by 14.9% were below 30 years old, 10.9% were between 41 and 50 years old and 4.9% were 51 years old and above. Among the respondents, 66.3% were holding the positions of the executive, while the other 27.7 and 6.0% were holding a position of management and senior management, respectively. Furthermore, 25.7% were working with the firms less than two years, 36.6% were working with the firms between two and five years, 22.8% were working with the firms between six and ten years and 14.9% were working with the firms more than ten years. [Table 1](#) illustrates the summary of respondents' demographic profile.

4.2 Measurement model assessment

For the measurement model test, the multicollinearity issue is examined by using the partial least square analysis through the variance inflation factor (VIF) score. The results of the first-step analysis are shown in [Appendix](#). Internal reliability is evaluated using Cronbach's α value, which ranged from 0.910–0.951, which is greater than 0.70, indicating a satisfactory level of reliability ([Hair et al., 2013](#)). Convergent validity is achieved when since-factor loadings are significant and above 0.60 (ranged from 0.736–0.932), average variance extracted (AVE) exceeds 0.50 (ranged from 0.690–0.803) and composite reliabilities (CR) are greater than 0.60 (ranged from 0.930–0.961) ([Fornell and Larcker, 1981](#)). Discriminant validity is achieved if the values surpass 0.85 or 0.90 ([Fornell and Larcker, 1981](#)). The heterotrait-monotrait (HTMT) ratio value of 0.85 is a stringent criterion than the 0.90. The findings show in [Table 2](#) that all the construct's values are lower than the stringent value of HTMT (0.85), which indicates that the discriminant validity of the model is ascertained.

4.3 Structural model and hypotheses test

The assessment of the structural model involved a coefficient of determination (R^2) and path coefficient. The R^2 value elucidates the endogenous constructs using its amount of variance, as explained by the exogenous constructs. It implies that a greater value of R^2 will escalate further the structural model of its predictive ability. The bootstrapping function is used to gain the t -statistic values. The findings revealed that the perception of organization support explained 35.4 and 32.3% of the variance in frequency of involvement and innovative environmental behaviours, respectively. The idiosyncrasies of supervisory support, training and reward together explain 44.6% of the variance in perception of organizational support. We used t -statistics for all the paths to examine the significance level where the t -statistics were created using the bootstrapping 5,000 samples. Nonparametric bootstrapping was connected ([Wetzels et al., 2009](#)) with 5,000 replications to test the basic model. The bootstrapping method is appropriate for the data used in this study because it assigns measures of accuracy (e.g. prediction error, bias, confidence interval and variance) to estimate the sample regarding employees' engagement in environmental behaviours in upstream oil and gas supply chain management. Researchers use a bootstrapping method to

Constructs	FII	FI	CP	BR	BSS	BET
Frequency of involvement (FFI)						
Innovative environmental behaviour (FI)	0.831					
Employee perceptions (CP)	0.622	0.599				
Reward (BR)	0.672	0.631	0.562			
Supervisory support (BSS)	0.703	0.654	0.652	0.698		
Training (BET)	0.685	0.645	0.589	0.785	0.684	

Table 2.
Discriminant validity

simulate many repeated sampling (Cramer *et al.*, 1988). After processing the replicates, the average of the number is correctly identified and make a confidence interval with the test data sample. The output of *t*-statistics and *p*-value determined the significance level of each connectivity between constructs. About the path coefficient analysis, the supported hypotheses are showing *t*-values ≥ 2.32 , which consider a significant level at 0.01, and *t*-values ≥ 1.64 , which consider a significant level at 0.05. Referring to the results presented in the structural model, it is revealed that *H1*, *H2*, *H4* and *H5* are significant, while *H3* is insignificant (Figure 2).

From the analysis and in terms of employees' perception, it reveals that supervisory support for environmental initiatives has a high impact on employee perception of organizational support for environmental behaviours ($\beta = 0.413, t = 3.301, p < 0.01$), while environmental training provided to an employee by the organization has a significant relationship with employee perception of organizational support for environmental behaviours ($\beta = 0.231, t = 2.188, p < 0.05$), but rewards provided by the organization for environmental behaviours do not seem to have a significant effect on employee perception of organizational support for environmental behaviours ($\beta = 0.102, t = 0.946, p > 0.05$), supporting *H1* and *H2*, and not supporting *H3*. The results also indicate that employee perception of organizational support for environmental behaviours have a strong significant effect on employee's innovative environmental behaviours ($\beta = 0.569, t = 9.326, p < 0.01$) and on employee's frequency of involvement ($\beta = 0.595, t = 9.726, p < 0.01$), indicating *H4* and *H5* are supported.

In terms of moderating effect, environmental work culture (EEWC) moderates the relationship of the effect of supervisory support for environmental initiatives (BSS) on employee perception of organizational support for environmental behaviours (CP) ($\beta = 0.117, t = 1.651, p < 0.05$). The results also indicate that EEWC moderates the relationship of the effect of rewards provided by the organization for environmental behaviours (BR) on CP ($\beta = 0.132, t = 1.672, p < 0.05$), while EEWC does not moderate the relationship of the effect of environmental training provided to an employee by the organization (BET) on CP ($\beta = 0.009, t = 0.118, p > 0.05$). Hence, it is concluded that *H6a* and *H6c* are supported, but *H6b* is

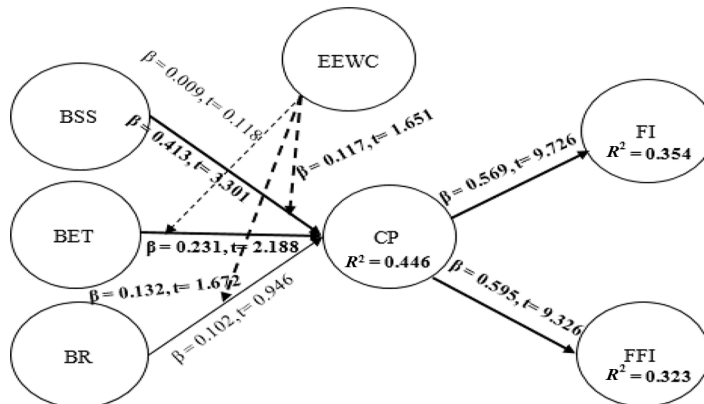


Figure 2.
Path co-efficient
model

Notes: Supervisory support (BSS), training (BET), reward (BR), employee perceptions (CP), frequency of involvement (FFI), innovative environmental behaviour (FI), environmental work culture (EEWC)

not supported. The summarized results are shown in Table 3. Based on Figure 3, it demonstrates that the relationship is stronger when EEWC is higher than when it is low. The interaction term was significant at 0.05. We show this moderating effect of EEWC on the relationship between BSS on CP. Similarly, Figure 4 demonstrates that EEWC moderated the effect of rewards provided by the organization for environmental behaviours on employee perception of organizational support for environmental behaviours (at 0.05 significant level) such that the relationship is stronger when EEWC is higher than when it is low. Therefore, the data support H6a and H6c.

Hypothesis	Relationship	Path coefficient	t-statistics
H1	Supervisory support (BSS) → Perception (CP)	0.413	3.301**
H2	Training (BET) → Perception (CP)	0.231	2.188*
H3	Reward (BR) → Perception (CP)	0.102	0.946
H4	Perception (CP) → Innovative environmental behaviours (FI)	0.569	9.326**
H5	Perception (CP) → Frequency of involvement (FFI)	0.595	9.726**
<i>Moderating effect of EEWC</i>			
H6a	EEWC*BSS → Perception (CP)	0.117	1.651*
H6b	EEWC*BET → Perception (CP)	0.009	0.118
H6c	EEWC*BR → Perception (CP)	0.132	1.672*

Note: *t*-values ≥ 2.32 considers significant level at 0.01 and *t*-values ≥ 1.64 considers significant level at 0.05

Table 3.
Hypothesis testing

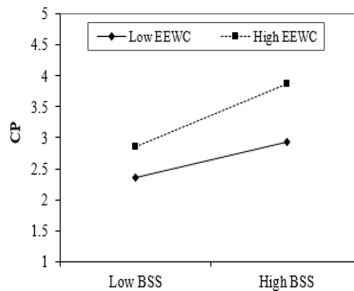


Figure 3.
Moderating effect 1

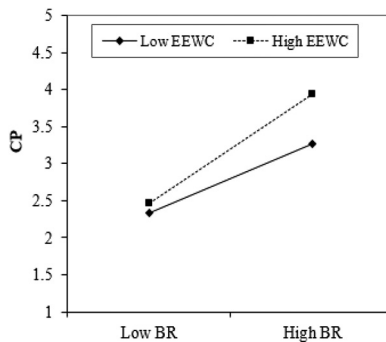


Figure 4.
Moderating effect 3

5. Discussion

This study reveals that supervisory support and training are the most powerful component of employees' perception of organizational support. The supervisory support, training and reward have been discussed in a different context in various studies (Hsu *et al.*, 2010; Zhang *et al.*, 2008; Bartlett and Kang, 2004; Cantor *et al.*, 2012). In this study, the supervisory support and training are the significant influencing factors for the support of organization, but the role of rewards has an insignificant influence on employee perception of organizational support in Malaysian upstream oil and gas supply chain management. This is perhaps because organizations are more likely to think that supervisory support and training are the more crucial factors affecting employees' perceptions of organizational support for environmental behaviours. However, rewards role provided by the organization for environmental behaviours is not more effective for the employees' perception of organizational support for environmental behaviours. Sartirana *et al.* (2019) recommended for administrators to consider the management practice such as directors in empowering professional natural practices. Administrators fill in as instrumental change specialists because these people furnish representatives with the fundamental assets to encourage ecological conduct. Besides, supervisors or managers can decidedly impact the workers full of feeling promise to environmental practices, which make a positive impact on representative commitment in natural practices. Cantor *et al.* (2012) indicated that environmental practices (e.g. supervisory, training, rewards) are more promptly supported through boards of trustees that straightforwardly make and reward practices for expert natural conduct when contrasted with individuals from the company's top supervisory group.

The environmental training has a positive contribution to employee's perception of organizational support and subsequently creates a positive influence on employee engagement in environmental behaviours. This finding is related to previous research (Sarkis *et al.*, 2010; Cantor *et al.*, 2012) that accentuated the requirement to provide training programmes to support the kinds of conduct that association needs the firm's employees to esteem and display. Allaoui *et al.* (2019) provided the exploratory confirmation that urges agents to participate in the biological organization works out. This findings will enrich previous studies on training that positively contribute to employees' perception of organizational support and creates a positive influence on employee engagement in environmental behaviours.

The findings indicate that organizational support can create a positive perception of employees towards the firm concerning environmental initiatives. Like the training programmes, this research at first imagined that prizes would support and strengthen practices that the association anticipates that its workers should esteem and show as an aspect of their responsibilities obligations and duties. In any case, the information essentially does not bolster this line of thinking. It is observed that rewards are having the lowest mean value ($M = 2.67$ using a 1–5 metric), which indicates the association or employee is not believed to give numerous prizes to ecological exercises, particularly contrasted with supervisory help ($M = 3.21$), which was likewise surveyed using a similar 1–5 metric. Until associations start to advance or all the more effectively give prizes to representatives to environmental practices, prizes will not precisely serve to flag authoritative aim. The impression of the absence of remunerations may show to workers that natural practices are not genuinely valued by the association.

The study also proved that employee perception of organizational support for environmental behaviours has a positive effect on employee engagement in environmental behaviours in both forms of employees' frequency of involvement and employees'

innovative environmental behaviours. This is in line with previous study that explained the expansion use of the organizational support theory to other spheres by shifting of intended “target of support” from the “individual employee” to “organizational support of the environment”, as perceived by the employee (Cantor *et al.*, 2012). This study further proved that favourable treatment by organizations should increase the perception of organizational support. Besides, the perception of organizational support for environmental behaviours clarifies employee understanding of the extent to which the organization values the environment and seeks employee involvement in pro-environmental behaviours. Employees with high levels of perception of organizational support should, thus, reciprocate by actively engage in the organization behaviours or initiatives, as they would feel a stronger obligation to help the organization achieve its objectives.

The key study finding was that the EEWC moderates the relationship of the effect of organizational enablers on employee affective commitment to environmental behaviours. The literature supported that work culture can affect an employee’s perception and involvement (Rachman and Sari, 2019). Work culture plays the moderating role between enablers of engagement in environmental behaviours, and perception of organizational support could be because perception is directly created by favourable treatment by organizations (Cantor *et al.*, 2012). The work culture moderates the relationship of the effect of supervisory support and reward to employee’s perception of organizational supports but not effect on training. As work culture itself is an after-effect event, the effect of work culture could not moderate the effect between environmental training provided to the employee by the organization and employee perception of organizational support for environmental behaviours. In specific affiliations, quality work culture is noteworthy to ensure the agents served a predominant help of the customers (Iranmanesh *et al.*, 2019). It might need other enablers of engagement to create the effect of moderation. The importance of work culture in employee engagement could not be discarded because employee engagement in environmental behaviour issues at the firm level can also be addressed through EEWC. As Rachman and Sari (2019) featured, work culture straightforwardly sways business fulfilment and subsequently would improve execution. The literature (Kazmi *et al.*, 2008) stated that in the domain of business, workload issues as often as possible experienced by agents and affected the specialist execution, while the workers’ execution was impacted by various things, including work culture, reward and satisfaction.

6. Practical and managerial implications

The findings of this study report an emerging organizational phenomenon for environmental behaviours that has theoretical, practical and managerial value to explain how supervisory support, training and reward influences employee perception and in turn reflect their innovative environmental behaviours and frequency of involvement. The impacts of this study among others are the evaluation of a causal model deliberated with enhancement in the theoretical contribution by having the new element of the work culture as moderator, which explained employee engagement in environmental behaviours. The employees’ engagement in environmental behaviours (frequency of involvement and innovative environmental behaviours) in the upstream oil and gas floaters industry could be better explained by this research. The result of this study is based on a data set of the two main categories of companies involved in upstream oil and gas floating facilities. This study has been developed and examined based on the behavioural theory and employees’ perceptions of organizational support for environmental management practice, which contribute employees’ engagement in upstream oil and gas supply chain management. The findings reveal that supervisory support and training contributed to supply chain

employees' engagement in environmental behaviours. The findings of the existing study will help supply chain firms understanding the effect of management practice on employees' engagement in environmental behaviours. This study has the theoretical contribution to explain how supervisory support and training provided by the organizations try to influence their employees' engagement in environmental activities.

This study has made a noteworthy commitment to how organizations can provide opportunities for their employees towards increasing environmental behaviours. There is an open door for others to study in a different context. It is recommended for the expanded investigation of individual supply chain managers (i.e. inquire about where singular representatives are the unit of examination). The observational discoveries given by production network representatives and managers who working in a solitary firm demonstrated that there was inconstancy in employees' cooperation in environmental practices that reflect individual contrasts in recognitions and frames of mind. The fluctuation in employees' environmental practice may be the consequence of lacking prizes rehearses by this association. The employees may take part in practices on the off chance that they are appropriately repaid to do as such.

7. Limitation and future study

This research likewise discovered that the more prominent representative full of feeling the responsibility to environmental practices, the more noteworthy the employees' ecological conduct. There has been constrained research that has unequivocally created and estimated representative investment in ecological practices. This exploration found the connection among responsibility and conduct using two unmistakable estimates, which are recurrence of inclusion in ecological practices and imaginative natural practices. Along these lines, this study has a limited extent at various parts of representative ecological conduct. Future research should keep on investigating in what way these and different measures, e.g. the measure of time consumed on natural activities, could contribute significant knowledge into how employees are occupied with environmental behaviours. This exploration suggests for employees to take part in more ecologically cognizant practices, they have to build up a feeling of enthusiastic promise to such natural causes. The supply chain managers or representatives will participate in increasingly natural practices, on the off chance that they "need" to do as such. Future research should keep on inspecting the arrangement between a company's prizes practices and their natural practices. The future research may likewise analyze representative commitment in progressively custom-fitted proportions of ecological conduct intended for representatives working in explicit utilitarian regions (e.g. coordination, buying). Additionally, future research could unequivocally concentrate on whether employees' ecological conduct influences the yearly execution survey process.

8. Conclusion

The sustainable supply chain has become the area of interest in conducting upstream oil and gas business, particularly in a fast-growing business segment such as upstream oil and gas floating facilities that aim towards the goal of integrating three main aspects of economic, environmental and social. Environmental behaviours remain an interesting topic because today's business landscape requires firms to continuously involve in environmental initiatives, and the success of those initiatives is reliant on its employee's engagement. Drawing upon the behavioural research literature, this research used the organizational support theory as the framework to investigate what are the organization support practices. The supervisory support, training and reward are found to have crucial factors that influence employees' perception of organizational support and subsequently reflect

employees' engagement in environmental behaviours (e.g. firm's environmental practices and proposing innovative environmental initiatives). Although the rewards provided by the organization for environmental behaviours have an insignificant effect on employee perception, it is important for the organizational support for environmental behaviours. The study also proved that employee perception of organizational support for environmental behaviours is crucial for the engagement in environmental behaviours in both forms of employees' frequency of involvement and innovative environmental behaviours. The study carried out a further examination in new areas where EEWC has been introduced as a crucial factor for employees' engagement in environmental behaviours and employee perception of organizational support for environmental behaviours. It implies that the study offers a practical contribution for managers in Malaysian upstream oil and gas supply chain management. The findings assist supply chain managers to understand the importance of supervisory support and training in developing environmental practices as a fundamental need for supply chain companies to compete in the competitive market. According to the findings of this study, the employees' engagement in environmental behaviours (e.g. innovative environmental behaviours and frequency of involvement) in upstream oil and gas supply chain management has been considered crucial for the organizational support. The supply chain managers should give attention to developing organizational infrastructure on innovative environmental and involvement. The managers may consider the interacting role between the employees and organizations for enhancing organizational structure. It means that supply chain managers should operate the employees and organizational structure based on the companies' resources and environmental activities to meet the goals successfully.

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Dimension and indicators	Code	Drop item	Factor loading	AVE	CR	C- α	VIF
Supervisory support (BSS)				0.737	0.951	0.940	1.608
My supervisor directly encourages me to work on eco-initiatives	BSS1		0.849				2.521
When engaging in eco-initiatives activities, my supervisor is very supportive	BSS2		0.874				2.072
My supervisor provides me with useful advice related to eco-initiatives	BSS3		0.906				2.707
I find my supervisor very helpful in performing eco-initiative activities	BSS4		0.884				2.526
I trust my supervisor capability in executing the eco-initiative activities	BSS5		0.859				1.843
My supervisor neglects me as the importance of human capital for eco-initiatives activities	BSS6	drop	0.464				–
My supervisor ensures strong participation and commitment from me all the time	BSS7		0.775				1.021
My supervisor ensures the objectives of eco-initiatives are readily understood by me in taking actions	BSS8		0.854				2.357
Training (BET)				0.761	0.957	0.947	
I have received training related to environmental issues (e.g. global warming)	BET1		0.901				2.241
I have received training related to environmental management practices	BET2		0.902				2.205
I have received training related to environmental tools/techniques	BET3		0.905				1.765
I have received training related to the environmental information systems	BET4		0.903				2.241
My firm cannot make rapid IT change while assigning me to conduct environmental management	BET5	drop	0.445				–
My firm provides me with modern and computer-assisted environmental tools and techniques	BET6		0.798				1.199
My firm conducts training for me to gain more information about environmental-related work	BET7		0.898				1.786
My firm enhances my competency with appropriate education, training, skills and experience	BET8		0.789				1.904
Reward (BR)				0.695	0.932	0.911	
I am recognized for keeping up with the latest environmental developments in my field	BR1		0.790				1.217
I am rewarded for performing work that has a positive environmental impact on firm and society	BR2		0.862				1.783
I am recognized for exhibiting positive attitudes toward my company's environmental objectives	BR3		0.900				2.090
My firm appreciated me by providing incentives when I have solved environmental issues	BR4		0.886				1.527
My firm hires appropriate personnel in helping me in solving the environmental management issues	BR5		0.736				1.432

Table A1.
Convergent validity results

(continued)

								Environmental behaviours
Dimension and indicators	Code	Drop item	Factor loading	AVE	CR	C- α	VIF	
I have been acknowledged for my skills in meeting the company's overall environmental objectives	BR6		0.817				1.065	
Employee perception of organizational support (CP)				0.729	0.955	0.947		
My firm is willing to assist employees in solving environmental problems	CP1		0.859				1.044	847
Help is available in my firm when environmental problems arise	CP2		0.850				1.286	
My firm is willing to extend itself to solve an environmental problem	CP3		0.876				1.644	
My firm motivates employees to improve innovation on environmental initiatives	CP4		0.897				1.223	
My firm inspires employees to reduce the number of complaints on environmental problems	CP5		0.864				1.810	
My firm excites in identifying customer needs on environmental initiatives	CP6		0.874				2.049	
My firm demands to enhance customers' commitment to legal quality, environment and safety	CP7		0.817				1.455	
My firm disregards customer and supplier pressures on quality and environment requirements	CP8	drop	0.484				–	
My firm ensures mutual beneficial relationships between the company and the customer–supplier	CP9		0.788				1.032	
EEWC				0.803	0.961	0.951		
Meaningful incentives that reward eco-initiatives progress are in place	EEWC1		0.841				2.183	
A non-blaming, performance-oriented, process-driven organizational atmosphere exists	EEWC2		0.896				1.851	
There is regular, direct personal involvement by senior management with operating workforce concerning eco-initiatives	EEWC3		0.909				1.847	
Management encourages work area eco-initiatives for continuous improvement knowledge and skills	EEWC4		0.884				1.069	
The organization's senior managers are actively leading the deployment of eco-initiatives	EEWC5		0.932				1.209	
Eco-initiatives targets are defined and have been effectively communicated	EEWC6		0.912				2.627	
Innovative environmental behaviour (FI)				0.690	0.930	0.910		
I look for opportunities to reduce pollution from work-related activities	FI1		0.800				1.881	
I actively research solutions to my company's environmental problems	FI2		0.860				1.707	
I am highly motivated to replace materials with those that are more environmentally friendly	FI3		0.796				1.432	
I champion the use of energy conservation efforts in my department	FI4		0.795				1.040	
	FI5		0.857				1.328	

(continued)

Table A1.

MRR 44,6	Dimension and indicators	Code	Drop item	Factor loading	AVE	CR	C- α	VIF
848	I demonstrate good time management by delivery of a good-quality audit on time							
	I deliver firms' eco-initiatives against the environmental plan	FI6		0.874	0.760	0.950	0.936	1.796
	Frequency of involvement (FFI)							
	I often thinking of eco-initiatives ideas that would benefit the firm and society	FFI1		0.868				2.096
	I often shared formal eco-initiative ideas with others	FFI2		0.916				1.524
	I easily communicated ideas on eco-initiatives to my supervisors	FFI3		0.896				1.431
	I had problems in persuading my team to be dedicated to work related with the eco-initiative	FFI4	drop	0.357				–
	I always shared the success of the implementation of any eco-initiatives with my colleagues	FFI5		0.920				1.813
I often submitted eco-initiative proposals to my management for their considerations	FFI6		0.800				2.042	
I will always be loyal to any of eco-initiatives project been assigned to me	FFI7		0.825				1.458	
Notes: AVE: average variance extracted; CR: composite reliability; C- α : Cronbach's α , VIF: variance inflation factor								

Table A1.

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