Do organizational citizenship behavior for the environment predict triple bottom line performance in manufacturing firms?

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Abstract

Purpose – Organizational citizenship behavior for the environment (OCBE) is vital for manufacturing firms' ability to improve their triple bottom line (TBL) performance. This study's objective was to examine the direct relationship between three OCBE key dimensions, i.e. eco-initiatives (EIs), eco-civic-initiatives and eco-helping (EH) and TBL performance, i.e. economic (ECOP), social (SOP) and environmental (ENP).

Design/methodology/approach – The quantitative design was used based on the positivist approach. A sample of 350 manufacturing firms was targeted using random probability sampling via a survey questionnaire. The data were analyzed through the structural equation modeling (SEM) technique employing AMOS 24 software.

Findings – Research findings confirmed a significant direct positive relationship between components of OCBE, i.e. EIs, eco-civic- initiatives and EH and TBL performance within ISO14001-certified Malaysian manufacturing firms.

Research limitations/implications – This research presents vital implications for both managers and organizations. The findings revealed that the three OCBE key dimensions, i.e. (EIs, eco-civic-initiatives and EH) are essential for enhancing TBL performance (ECOP, SOP and ENP), respectively. Manufacturing firms should modify the traditional OCB toward pro-environmental OCBE to improve TBL performance.

Originality/value – This research focuses on the impact of OCBE key types, i.e. EIs, eco-civic-initiatives and EH on TBL performance (ECOP, ENP and SOP) dimensions among ISO14001-certified Malaysian manufacturing firms.

Keywords Organizational citizenship behavior for the environment, Eco-initiatives, Eco-civic-initiatives, Eco-helping, Sustainable performance, Triple bottom line

Paper type Research paper

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1. Introduction

The manufacturing sector contributes around 23.80% to Malaysia's gross domestic product (GDP) (MITI, 2018). In developing countries much of their economic growth depends on manufacturing goods and services (Fuzi *et al.*, 2019). However, this contribution to the economy comes at the cost of environmental damage and sustainability issues. According to modern research, sustainability is one of the critical concerns for manufacturing firms. The high carbon dioxide (CO_2) emissions are worsening the world's pollution and adding to the solid waste that is evident on this planet (Horváthová, 2010; Khan *et al.*, 2017). Malaysia's environmental performance (ENP) has significantly declined in the last ten years (EPI, 2020), greatly damaging the environment and society's ability to remain sustainable. Increasingly serious ecological issues have forced companies to adopt the environmental management system ISO14001, by integrating organizational economic, social and ENP factors to improve the triple bottom line (TBL) (Ikram *et al.*, 2019; Epstein and Buhovac, 2014). TBL performance is vital for manufacturing firms to meet stakeholders' demands for environmental issues being managed and resolved better. TBL uses a holistic approach to manage imbalance between these three dimensions to help save the environment as much as possible (Maletič *et al.*, 2016; Elkington, 1994). Consequently, manufacturing organizations address environmental problems (IEA, 2015; Robertson and Barling, 2017) by adopting pro-environmental behaviors (PEB), protecting the environment and enhancing TBL performance. The PEB is relevant to all types of organizations irrespective of their kind and size (Boiral *et al.*, 2015a).

Previous research studies have investigated PEB-specific aspects, such as organizational citizenship behavior for the environment (OCBE), such as Lamm *et al.* (2013) and Boiral and Paillé (2012). OCBE is informal, voluntary in nature, demonstrated by individuals and essential for corporate greening (Boiral *et al.*, 2015a; Ciocirlan, 2017). Similarly, previous studies examined antecedents of OCBE, for instance personality traits (Terrier *et al.*, 2016), job commitment and intent to help others (Paillé *et al.*, 2016), psychological empowerment (Lamm *et al.*, 2015), environmental values, perceived behavior control (Liu *et al.*, 2020) perceived organizational, supervisory support and affective commitment (Raineri *et al.*, 2016). Some scholars highlighted various types of OCBE: first, direct behavior that results in saving or conserving energy, recycling; and second, indirect behavior that can take the form of eco-initiatives (EIs), eco-helping (EH) and eco-civic engagement (Paillé *et al.*, 2016). Another prominent branching of OCBE is that of the five taxonomies of green behaviors (Ones and Dilchert, 2012; Neessen *et al.*, 2021). Research has investigated the contextual factors related to OCBE operating at the organizational, unit and individual levels of analysis (Alt and Spitzeck, 2016; Rezapouraghdam *et al.*, 2018). Research has encouraged examining the determinants of OCBE (Yuriev *et al.*, 2020), in improving sustainable performance and adopting a meaningful environmental management system (Boiral *et al.*, 2015b).

Recent research investigated antecedents of sustainable performance and highlighting the importance of pro-environmental behaviors for corporate long-term sustainability (Khan *et al.*, 2020). However, very limited research examined the OCBE tridimensional model (EIs, eco-civic engagement and EH), personality traits (Terrier *et al.*, 2016) and antecedents of employee EIs in the workplace (Raineri *et al.*, 2016). Addressing the identified gap in the literature, this research examines the relationship between the tridimensional model of OCBE (EIs, eco-civic engagement and EH) and TBL performance, specifically ECOP, ENP and SOP, among ISO14001-certified manufacturing firms. This paper begins with a brief introduction of research, providing an overview of sustainability challenges encountered by manufacturing firms. Following this is the literature review by discussing key constructs, i.e. OCBE and TBL performance. After this the design and methodology are outlined, focusing on quantitative techniques and procedures. The second last section provides preliminary data analysis results and interpretation. Finally, the last section presents a comprehensive discussion of the findings, major limitations and conclusions.

2. Literature review

This section presents a detailed literature review on OCBE divided into two mainstreams: voluntary and prescribed tasks. Explained here are the three key dimensions (EIs, eco-civic engagement and EH). The concept of TBL or sustainable performance is based on sustainable development and it emerges here as an integrative concept based on the economic, social and environmental dimensions. The last section comprises the hypothesis development and the underpinning theoretical foundations based on the ability motivation opportunity (AMO) framework and social exchange theory (SET).

2.1 Organizational citizenship behavior for the environment (OCBE)

The previous literature on the concept of PEB is divided into two types, differentiating between voluntary and prescribed tasks. The first stream focuses on prescribed behaviors and tasks, including formal and organizational level practices such as EMS and environmental policy (Paillé *et al.*, 2013). This perspective also fosters individual and voluntary initiatives and behaviors related to formal organizational talks. The second stream of the literature is mainly based on research in industrial and organizational (IO) psychology. This research stream has received significant attention from researchers who concentrated on voluntary and discretionary behaviors (Lülfs and Hahn, 2013). One of the main types of PEB is OCBE. Research on it is based on the second stream of research, which has important managerial implications for organizations, i.e. individuals' behaviors that contribute to environmental sustainability like reducing energy consumption and waste, recycling and fostering environmental activism.

2.1.1 *The concept of OCBE.* In the literature, discretionary behaviors are discussed in reference to organizational citizenship behavior (OCB) by Organ (1988). OCB is defined as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the organization's effective functioning" (Organ, 1988, p. 4). These behaviors proposed that personnel in organizations are free to act or not to act. The action resulting from these behaviors cannot be entirely controlled. For example, the terms of the employment contract may have positive or negative outcomes regarding actions that are pursued. Moreover, building arguments about discretionary behaviors through OCBE originated from OCB classical assumptions (Organ, 1988). Similarly, OCBE represents employees' voluntary behaviors and their willingness to help both their workplace and the environment (Luu, 2017; Paillé *et al.*, 2019). According to Ones and Dilchert (2012, p. 456), all PEB by default are not discretionary; around 15–30% is considered part of a formal job. Based on this assumption, most environmental behaviors of approximately 70%–85% are discretionary, which can be regarded as OCBE. Despite not formally being an aspect of one's workplace role, these behaviors are vital for fostering corporate greening and enhancing TBL performance (Lamm *et al.*, 2013; Yuriev *et al.*, 2020). It is essential to operationally define OCBE and discuss its dimensions in predicting TBL performance.

Based on Organ's (1988) seminal work on OCB, Boiral (2006) explored six dimensions of OCBE: (1) helping, (2) sportsmanship, (3) organizational loyalty, (4) corporate compliance, (5) individual initiative and (6) self-development. This classification was several years ago criticized by Lamm *et al.* (2013) because of its broader categorization. This study proposed a 12-item framework to operationalize OCBE using: recycling bottles, re-using scrap paper, printing double-sided and turning off lights after leaving the office. These items representing OCBE are more relevant and doable in people's working lives. This finding suggested that the classification provided by Boiral (2009) is quite broad and generic; future studies should use OCBE specific dimensions such as EIs. The current research will focus on specific employees' "green" behavior, which primarily fosters their and their organization's commitment to the environment (Ones and Dilchert, 2012). This study will operationalize OCBE based on three

dimensions (EIs, eco-civic engagement and EH) proposed by Boiral and Paillé (2012). The EIs dimension is similar to the concept of OCBE proposed by Lamm *et al.* (2013) and the concept of direct behavior devised by Smith and O'Sullivan (2012).

2.1.2 Dimensions of OCBE. Table 1 explains the main dimensions, including (EIs, eco-civic engagement and EH). EIs refer to discretionary behavior and suggestions to improve environmental practices. "Eco-civic engagement" means voluntary participation in an organization's environmental programs, while EH represents voluntary and mutual support activities that help to integrate ecological concerns. The relevant details are summarized in Table 1, specifically how OCBE consists of three main dimensions and their utility for the firm and the environment.

Recent research on PEB has proposed that future studies should explore long-term positive effects of PEB and the directional relationship between green behaviors and workplace outcomes (Boiral *et al.*, 2015a). Additionally, longitudinal studies are required to examine the temporal changes in green behaviors (Ones and Dilchert, 2012). One PEB survey revealed that much has to be explored theoretically and empirically in investigating green behaviors that exist in organizations (Paillé *et al.*, 2013). Future research should study individuals' motivation about PEB (Lamm *et al.*, 2013) and examine employees' PEBs in an organizational context (Boiral *et al.*, 2015b). Similarly, current research focuses on specific types of OCBE in predicting TBL performance. This study measured OCBE based on three dimensions, i.e. (1) EH, (2) EIs and (3) eco-civic-engagement (Boiral and Paillé, 2012).

2.2 Triple bottom line (TBL)

In the past, businesses aimed to concentrate on their services, market reach and making profits, and generally ignoring corporate social responsibility such as care for the environment (Maletic *et al.*, 2015; Yusoff *et al.*, 2019). To meet stakeholders' expectations, organizations are now more inclined to be sustainable by incorporating practices that help the wider society and nature (Fauzi *et al.*, 2010). Several studies have discussed sustainability as a business case (Schaltegger *et al.*, 2019; Dahlgaard-Park *et al.*, 2015). According to this perspective, the research highlighted either it pays to be green or not. Based on practicalities, organizations only employ sustainably oriented practices if it is worth the cost and meets

| Dimensions	Eco-initiatives	Eco-civic engagement	Eco-helping
Definitions	Employees proactively taking charge of environment-related initiatives of their organizations and practically contributing toward it	Employee willingly becomes a participant in environment-focused events that are held in the organization	Eco-helping relates to helping out colleagues in terms of the environment
Purpose	Take environmental initiatives that are personal and direct in nature at the workplace	Acknowledge and support employees involving in ecological practices	Providing mutual support mechanism for environmental concerns
Relevance	Mitigating negative impacts on the environment. Fostering sustainable practices, e.g. reducing waste and saving energy, water	Identifying ecological issues. Participating in environmental practices meeting sustainability goals and promoting a green corporate image	Enhancing cooperation to resolve complex environmental issues and modifying traditional behavior toward more pro-environmental behavior

Table 1.
The main dimensions of OCBE

Source(s): Boiral and Paillé (2012)

consumers' expectations and demands (Marcus and Fremeth, 2009). Similarly, manufacturing firms face pressures from stakeholders to address environmental issues and achieve sustainability (Ghazilla *et al.*, 2015). Multiple labels are used in the literature explaining the concept of sustainability, e.g. TBL, sustainability performance (SP) and corporate sustainability (Fauzi *et al.*, 2010; Nicolăescu *et al.*, 2015; Maletic *et al.*, 2015).

The concepts of TBL and SP have been employed interchangeably, and in this research, TBL and SP both serve to refer to SP. Organizations proactively integrate the TBL approach to foster corporate greening according to recent research (Zhao and Zhou, 2020; Khan *et al.*, 2021), helping to reduce production costs and add environmental value and productivity (Koo *et al.*, 2014). The research on TBL, where economic performance (ECOP) and profitability are covered, is positively correlated to sustainability (Wagner, 2010). Moreover, the social aspects of TBL positively impact on SP. This balance between TBL dimensions can reduce business costs and risks, providing a competitive advantage and enhancing a firm's reputation and ability to meet stakeholders' demands (Carroll and Shabana, 2010). TBL is an integrative concept (Elkington, 1994; Furnish *et al.*, 2013) and this study conceptualizes TBL based on three measured elements: (1) economic, (2) social and (3) environmental, as illustrated in Figure 1. Achieving TBL performance requires firms to manage the complexity and variability between these elements. Consequently, these three components must be synchronized to improve TBL performance (Chardine-Baumann and Botta-Genoulaz, 2014).

It can be summarized here that manufacturing organizations are the primary engines that contribute to an economy's growth and progress. The pace of change in manufacturing industries can be accelerated according to social, economic and environmental factors. Therefore, antecedents like PEB specifically OCBE, is vital for corporate greening and enhancing TBL performance. The literature on TBL consisted of three key dimensions and these are explained in more detail below.

2.2.1 Economic performance. The first fundamental component of sustainability is ECOP. In the literature this was evaluated based on various indicators, for example profit, tax, income (Zhu *et al.*, 2012), return on assets, market share (Green *et al.*, 2012), financial statistics (Lopes de Sousa Jabbour *et al.*, 2020), assets and liabilities (Iqbal *et al.*, 2020). Stakeholders pushing organizations to meet environmental goals are equally important as ECOP creating a pathway toward achieving SP (Lopes de Sousa Jabbour *et al.*, 2020).
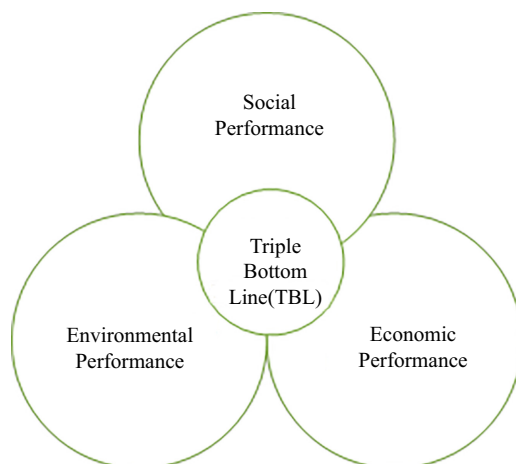
Source(s): Elkington (1994)

Figure 1.
Triple bottom line
(TBL) performance

2.2.2 Social performance. The second essential component of sustainability is social performance (SOP). It assesses firm performance in terms of social indicators such as social commitment, training and development, welfare support, working conditions and other employee-related issues (Amui *et al.*, 2017). SOP is just as important as financial figures (Lopes de Sousa Jabbour *et al.*, 2020). Other assessment indicators include employee programs, occupational health and safety, product responsibility and consumer relationships management (Pislaru *et al.*, 2019).

2.2.3 Environmental performance. Organizations are planning to meet their environmental goals so that long-standing profits can be secured. The third key component of sustainability is ENP, and its goals are equally important as economic and social ones. Businesses look for a win-win situation integrating these critical components and endorsing sustainability (Chardine-Baumann and Botta-Genoulaz, 2014, Henao *et al.*, 2019). In literature, the ENP of firms was assessed using various indicators, e.g. minimal usage of harmful materials (Akanmu *et al.*, 2020), reducing CO_2 emissions and waste generation (Iqbal *et al.*, 2018), mitigating environmental damage and reporting environmental policy compliance (Pislaru *et al.*, 2019).

2.3 Research objectives

Research objectives provide an accurate description of the questions that need to be answered (Bryman, 2007). Research objectives are formulated based on the devised questions so that the right conclusions are reported. The current study has formulated one primary objective and four sub-objectives. These are documented immediately below:

(1) To investigate the relationship between organizational citizenship behavior for the environment (OCBE) is positively related with triple bottom line (TBL) performance among manufacturing firms.

(2a) To investigate the relationship between eco-helping (EH) is positively related to social performance (SOP) among manufacturing firms.

(2b) To investigate the relationship between eco-helping (EH) is positively related to economic performance (ECOP) among manufacturing firms.

(2c) To investigate the relationship between eco-helping (EH) is positively related to environmental performance (ENP) among manufacturing firms.

(3a) To investigate the relationship between eco-civic engagement (ECE) is positively related to social performance (SOP) among manufacturing firms.

(3b) To investigate the relationship between eco-civic engagement (ECE) is positively related to economic performance (ECOP) among manufacturing firms.

(3c) To investigate the relationship between eco-civic engagement (ECE) is positively related to environmental performance (ENP) among manufacturing firms.

(4a) To investigate the relationship between eco-initiatives (EIs) is positively related to social performance (SOP) among manufacturing firms.

(4b) To investigate the relationship between eco-initiatives (EIs) is positively related to economic performance (ECOP) among manufacturing firms.

(4c) To investigate the relationship between eco-initiatives (EIs) is positively related to environmental performance (ENP) among manufacturing firms.

2.4 Hypothesis development for OCBE and triple bottom line (TBL) performance

The literature review highlights the importance of PEB to corporate greening (Hart, 1995; Antonio Ruiz-Quintanilla *et al.*, 1996; Paillé and Boiral, 2013; Paillé *et al.*, 2016, 2019). The PEB is

a broader umbrella covering various themes, for example environmental behaviors, eco-behaviors and green behaviors, to improve businesses' ENP (Paillé *et al.*, 2014; Roy *et al.*, 2013). However, the current study uses OCBE, a specific type of PEB, as discretionary behavior. The literature has been associated with three main issues: first, addressing preventing pollution and improving organizations' ENP; second, internalizing ecological management practices; and thirdly, fostering eco-innovation and knowledge management and performance (Boiral *et al.*, 2015a). Other studies have classified OCBE into indirect behaviors – EIs, EH, eco civic engagement – and direct behaviors, such as saving energy or recycling (Paillé *et al.*, 2016). Consequently, OCBE has mostly been regarded as one of the key antecedents for improving ENP by implementing EMS such as ISO14001 certification (Roy *et al.*, 2013). Similarly, all discretionary green behaviors and especially OCBE, make a significant contribution to corporate ENP at the organizational and individual levels (Lamm *et al.*, 2013; Paillé *et al.*, 2014). Moreover, OCBE refers to initiatives on the part of an individual whose actions are voluntary and informal in nature. The individual and their activities' position may account for the variance in its impact on outcomes. In this respect the likelihood of a substantial effect of OCBE on financial and green performance is relatively greater (Boiral *et al.*, 2015a, b).

The role of OCBE is essential for corporate greening and good ENP (Lamm *et al.*, 2013; Paillé *et al.*, 2014; Alt and Spitzeck, 2016) and motivating employees to demonstrate a great commitment to organizational sustainability (Luu, 2017). Based on the previous empirical evidence, this study proposes the following hypotheses:

H1. Organizational citizenship behavior for the environment (OCBE) is positively related to triple bottom line (TBL) performance.

H2a. Eco-helping (EH) is positively related to social performance (SOP).

H2b. Eco-helping (EH) is positively related to economic performance (ECOP).

H2c. Eco-helping (EH) is positively related to environmental performance (ENP).

H3a. Eco-civic engagement (ECE) is positively related to social performance (SOP).

H3b. Eco-civic engagement (ECE) is positively related to economic performance (ECOP).

H3c. Eco-civic engagement (ECE) is positively related to environmental performance (ENP).

H4a. Eco-initiatives (EIs) are positively related to social performance (SOP).

H4b. Eco-initiatives (EIs) are positively related to economic performance (ECOP).

H4c. Eco-initiatives (EIs) are positively related to environmental performance (ENP).

2.5 Research model and theoretical foundation

This research study's model consists of key dimensions of OCBE (EH , eco-civic engagement and EIs) as exogenous variables and TBL dimensions. These dimensions are ECOP, social and ENP and they serve as endogenous variables, as depicted in Figure 2.

AMO theory is one of the most used concepts for examining the impact of discretionary behaviors on empirical studies' exploration of organizational performance theory (Appelbaum, 2000). Researchers have begun to incorporate AMO framework components because they are perceived to improve performance outcomes (Boselie, 2010). Similarly, another predominant conceptual prism utilized to understand individuals' behaviors in the workplace is social exchange theory (SET) (Emerson, 1976; Cook *et al.*, 2013). Within the organizational context, social exchange occurs when a valuable commodity is exchanged between a firm and its employees. As mentioned above,
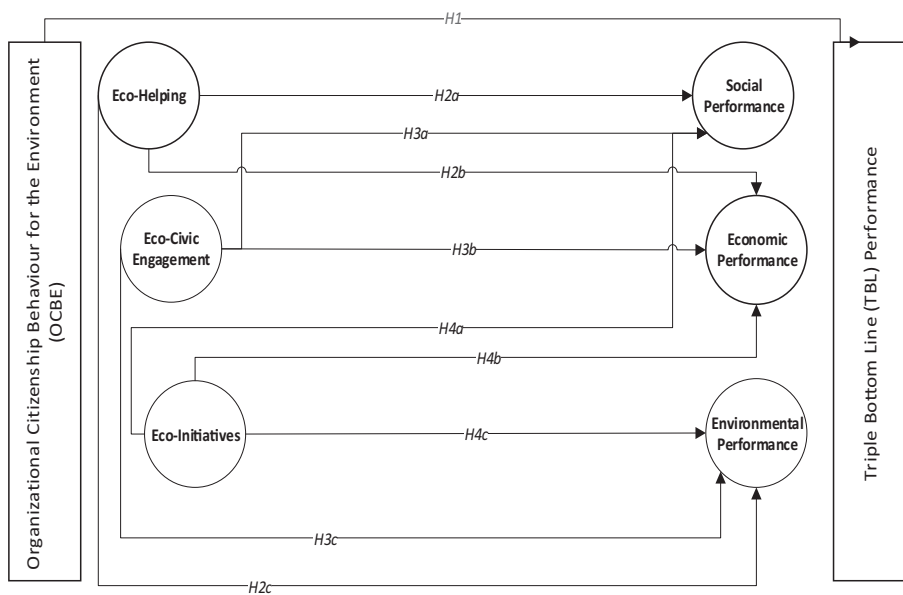
Figure 2.
Research model

utilizing SET to assess the phenomenon makes it possible to understand the norm of reciprocity (Lavelle *et al.*, 2007). In the literature on environmental psychology and sustainable behaviors, SET can be applied based on the assumption that employees are aware of their organization's concern for environmental issues, so they reciprocate favorably by enacting OCBE. Bingham *et al.* (2013) posited that employees might voluntarily indulge in such behaviors requiring them to go the extra mile for the causes and issues championed by their employer.

Thus, it strongly suggests that employees conduct OCBE if they believe their organization is concerned about environmental problems. OCBE is, therefore, known as individual discretionary behaviors contributing to better TBL performance. The current study focuses on the role of green behaviors, i.e. OCBE, incorporate sustainability research; SET suggests a higher likelihood of firms' employees undertaking OCBE but only if they believe themselves to be supported by their employers (Paillé *et al.*, 2016). Scholars must account for another condition of employees' environmental values. The values held by them regarding the environment must reflect those of their employers. In contrast, SET is limited in its applicability because it cannot account for the scenarios wherein employees are skeptical of their respective employers (Delmas and Montes-Sancho, 2011). In summary, the current study uses AMO and SET theory as the theoretical basis for explaining the relationship between key dimensions of OCBE with TBL performance, i.e. economic, social and environmental factors.

3. Research methodology
The research method provides a plan for conducting a problem under investigation (Creswell and Creswell, 2017). This study research employed a quantitative methodology based on a positivist approach to answer research questions. Positivist approach refers to philosophical assumptions determining the cause and effects or outcomes (Creswell, 2013).

3.1 Sampling techniques and data collection

The current study used simple random sampling (Cooper and Schindler, 2001), which is more appropriate. Each outcome is provided an equal chance of selection and enhances the results' generalizability (Sekaran and Bougie, 2016). Data collected through questionnaires from a sample of 210 ISO14001-certified manufacturing firms.

3.2 Measures

The adopted questionnaire was used to measure two holistic constructs: (1) OCBE, including three dimensions: EIs, eco-civic engagement and EH; and (2) TBL performance which is based on three dimensions – economic, social and environmental. This study measured OCBE multi-dimensional variables, i.e. EIs, eco-civic engagement and EH, with a 12-item scale developed by Boiral and Paillé (2012). TBL based on economic, social and ENP was measured using a 13-item scale developed by Maletič et al. (2014) using a 5-point Likert scale. The details of questionnaire items are listed in Appendix survey instruments.

3.3 Sample size, data collection, response rate and analysis techniques

The target population for this study was 492 ISO14001-certified manufacturing companies registered in the Federation of Malaysian Manufacturers (FMM) directory (FMM, 2018). Using Krejcie and Morgan (1970), the minimum sample for this population should be 216. This study used random probability sampling for choosing 350 ISO14001-certified manufacturing firms, their managers were the key respondents, and the unit of analysis was organizational. To get the desired sample relatively a larger sample of 350 ISO14001-certified firms were targeted to manage low response issues. However, 245 questionnaires were returned with a response rate of 70%. After removing 31 outliers and 4 incomplete cases, the cleaned data comprised 210 responses for structural equation modeling (SEM) using AMOS 24 software (Bryman and Bell, 2015).

4. Results and findings

Quantitative data analysis was applied to the results and data interpretation via SEM using AMOS 24. First, quantitative data was refined through various data cleaning tests and procedures. Analysis of the data comprised several steps and procedures. Initially, the company background information was discussed.

4.1 Company background

Descriptive results confirmed that nine manufacturing firms participated in this study. The bulk of them comprised 21.9% of the sample and operated in the food, beverages and tobacco sector. The smallest percentage (4.8%) belonged to other category. The remaining companies amounted to less than 18%, and in terms of employee numbers they were 50–100 (16.6%), 0–50 (10%) and 1000 (9.5%). In summary, most large-scale companies (500 or more employees) followed by medium-sized companies (101–250 workers) participated in this study. Small-sized manufacturing firms were only 10.4% (employees 0–50) of the sample. Statistics showed that more than 50% of companies have operated for the last 30 years and most were established during 1991–2000 (32.4%). For the others the breakdown was: 2001–2010 (24.8%) and 2011–2020 (18.6%). Fewer companies (11.4%) operated during the years 1981–1990 and only 9.0% operated during 1971–1980. These results establish the fact that most companies in the survey are stable and have done business for a fair amount of time. All these companies are ISO14001-certified (see Table 2).

Demographic characteristics	N	%	Cum %
Industry			
Food, beverages and tobacco	46	21.9	21.9
Chemical including petroleum	30	14.3	36.2
Electrical and electronics	38	18.0	54.2
Fabricated metal	21	10.0	64.2
Machinery	19	9.1	73.3
Plastic	14	6.7	80.0
Transport	17	8.1	88.1
Rubber	15	7.1	95.2
Others	10	4.8	100
Total	210	100	
Number of employees			
0–50	22	10.4	10.4
50–100	35	16.6	27.0
101–250	48	22.9	49.9
251–500	38	18.1	68.0
501–1000	47	22.5	90.5
1000+	20	9.5	100
Total	210	100	
Year of establishment			
Before 1970	08	3.8	3.8
1971–1980	19	9.0	12.8
1981–1990	24	11.4	24.2
1991–2000	68	32.4	56.6
2001–2010	52	24.8	81.4
2011–2020	39	18.6	100
Total	210	100	

Table 2.
Company background

4.2 Measurement model
The SEM technique contains two steps which are measurement and the structural model. The measurement model was performed first by assessing convergent and later discriminant validity (DV). First, to evaluate convergent validity (CV) and model fit, adjustments had to be made. The first step was to remove all items with a factor loading of less than 0.50 (Hair *et al.*, 2010). To begin with, standardized loading < 0.50 was removed and revised. Values for the goodness-of-fit after removing items loading > 0.50 showed that the model fit values did significantly improve (Hair *et al.*, 2010; and see Figure 3).

4.2.1 Convergent validity. Assessment of CV is an essential component in assessing the measurement model. The assumption of CV is based on three critical criteria: (1) factor loading value more than 0.50; (2) average variance extracted (AVE) of 0.50 or higher is evidence of adequate convergence; and (3) the standard is a construct reliability (CR) of 0.7 or above. It can be concluded that the CV assumption is not violated (see Table 3).

4.2.2 Discriminant validity. DV was calculated through the Master Validity Plugin using AMOS 24. The output shown in Table 4 confirms that the square root of AVE (diagonal value in bold) is greater than the inter-construct correlation value. Subsequently, it is evident that the assumption of DV is not violated. Following measurement confirmation, which is done in the next step, the structural model was assessed by testing the proposed hypotheses.
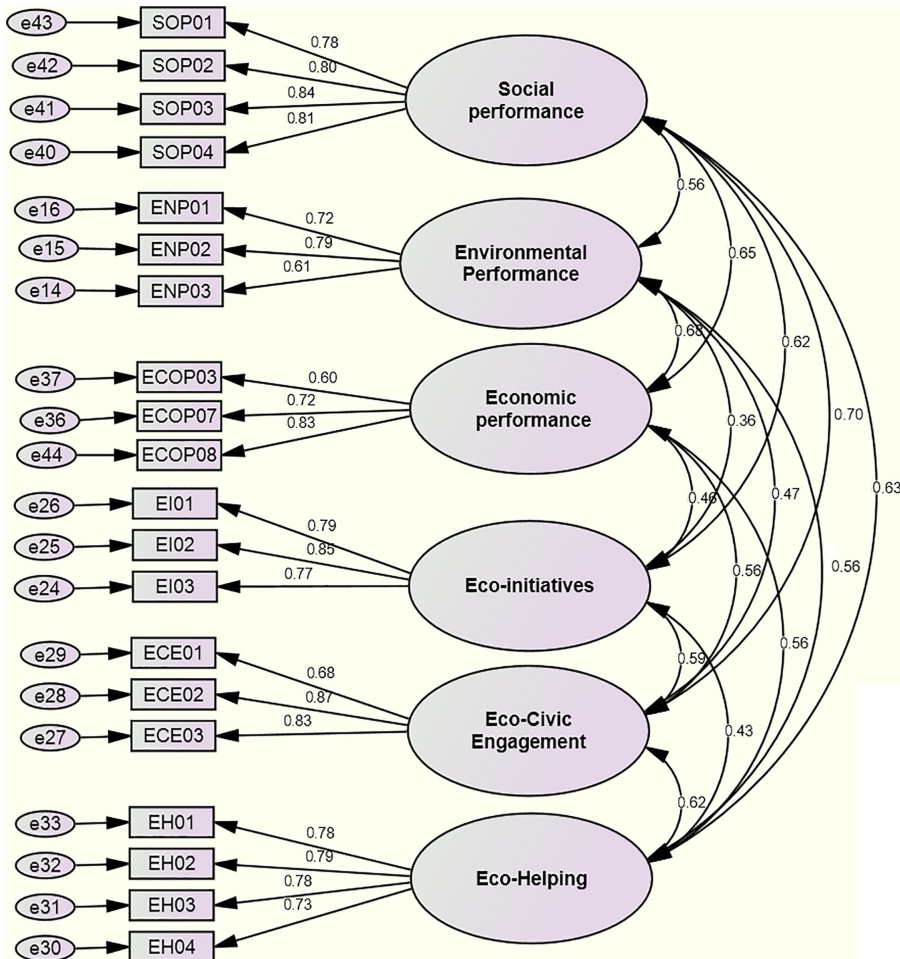
P-Value = 0.002
RMSEA = 0.040
GFI = 0.918
AGFI = 0.889
CFI = 0.975

TLI = 0.970
NFI = 0.915
Chisqdf = 1.367
RMR = 0.035

Figure 3.
Measurement model

4.3 Structural model direct effects of OCBE on TBL performance
This study employs structural equation modeling (SEM) to assess the structural model. Based on specific research questions, the devised objectives tested the relationship between OCBE key components and sustainability dimensions (ECOP, ENP and SOP) through nine hypotheses.

4.3.1 OCBE with SP as a holistic construct (TBL). Structural model results confirmed H1: that OCBE is positively related with SP (representing TBL performance as a

Variables	Items	Factor loading	CR	AVE
Economic performance	ECOP03	0.829	0.764	0.523
	ECOP02	0.722		
	ECOP01	0.601		
Environmental performance	ENP03	0.606	0.748	0.500
	ENP02	0.788		
	ENP01	0.716		
Social performance	SOP04	0.807	0.883	0.653
	SOP03	0.842		
	SOP02	0.800		
	SOP01	0.783		
Eco-initiatives	EI03	0.769	0.845	0.646
	EI02	0.847		
	EI01	0.793		
Eco-civic engagement	ECE03	0.832	0.839	0.636
	ECE2	0.866		
	ECE01	0.683		
Eco-helping	EH04	0.734	0.854	0.595
	EH03	0.781		
	EH02	0.791		
	EH01	0.778		

Table 3.
Convergent validity

	CR	AVE	EH	ENP	SOP	EI	ECE	ECOP
Eco-helping	0.854	0.595	*0.771*					
Environmental performance	0.748	0.500	0.559	*0.707*				
Social performance	0.883	0.653	0.635	0.563	*0.808*			
Eco-initiatives	0.845	0.646	0.426	0.360	0.623	*0.804*		
Eco-civic-engagement	0.839	0.636	0.622	0.466	0.703	0.586	*0.798*	
Economic performance	0.764	0.523	0.563	0.684	0.649	0.455	0.556	*0.723*

Table 4.
Convergent validity

holistic construct) with a path coefficient value of $b = 0.504$, critical ratio $t = 13.903$ and $p = 0.000$, as shown in Figure 4.

4.3.2 Dimensions of OCBE and SP. H2a: EH is positively related to SOP. H2b: EH is positively associated with ECOP. However, only H4c: EIs are positively related to ENP is not supported. AMOS 24 output as results tested all ten proposed hypotheses, i.e. (H1, H2a, H2b, H2c, H3a, H3b, H3c, H4a, H4b and H4c) are highlighted in Table 5 and Figure 5.
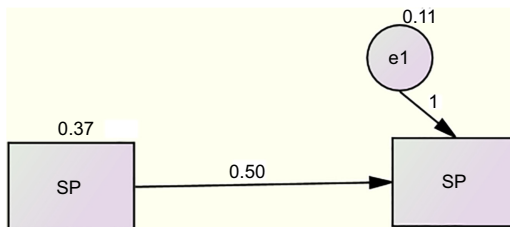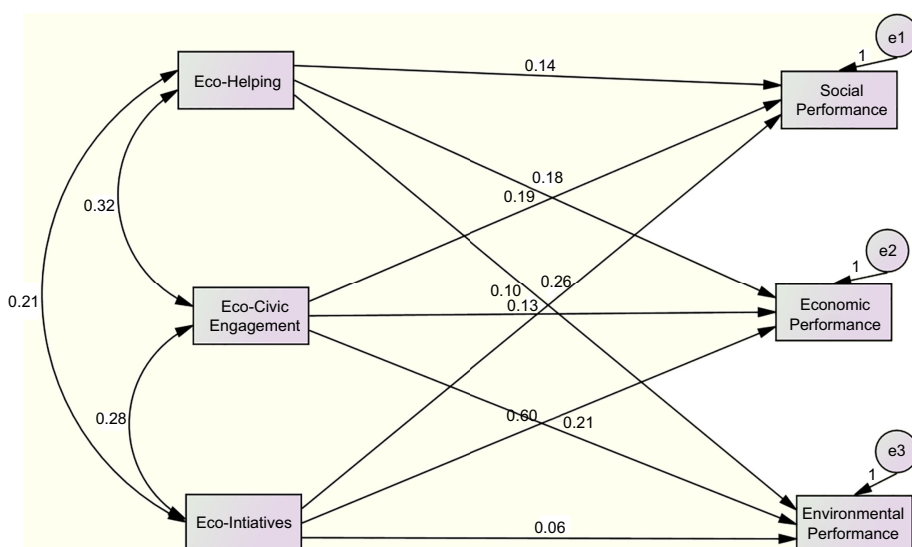

Figure 4.
OCBE and SP

S. No	Sub hypothesis	S.E.	C.R.	P	Results
H1	OCBE → TBL	0.504	13.903	0.000	Accepted
H2a	EH → SOP	0.164	5.222	0.000	Accepted
H2b	EH → ECOP	0.183	3.515	0.000	Accepted
H2c	EH → ENP	0.256	5.805	0.000	Accepted
H3a	ECE → SOP	0.153	3.728	0.000	Accepted
H3b	ECE → ECOP	0.192	4.231	0.000	Accepted
H3c	ECE → ENP	0.215	4.239	0.000	Accepted
H4a	EI → SOP	0.602	18.178	0.000	Accepted
H4b	EI → ECOP	0.210	2.438	0.015	Accepted
H4c	EI → ENP	0.061	1.313	0.189	Rejected

Note(s): Triple bottom line = (TBL), Organizational citizenship behavior for the Environment = (OCBE), Eco-Initiatives = (EI), Eco-civic-engagement = (ECE), Eco-helping = (EH), Social performance = (SOP), Economic performance = (ECOP), Environmental performance = (ENP)

Table 5.
Structural model

Figure 5.
Individual dimensions of OCBE with SP

5. Discussion and policy implications

This research examined the direct relationship between three OCBE key dimensions, these being EIs, Eco-civic-initiatives and EH and TBL performance (ECOP, ENP and SOP), respectively. Based on the objectives, this study proposed ten hypotheses. This section discussed comprehensively the objectives and it emerges that hypothesis H1: OCBE is positively related with SP according to the results. Furthermore, hypotheses H2a, H2b, H2c, H3a, H3b, H3c, H4a and H4b) were supported. Results confirmed that key OCBE dimensions (EH, ECE, EI) have a positive relationship with TBL performance dimensions (ECOP, ENP and SOP). Results for H1, H2a, H2b, H2c, H3a, H3b, H3c, H4a and H4b do agree with what other research has reported (Boiral, 2009; Paillé *et al.*, 2016; Lamm *et al.*, 2013; Boiral and Paillé, 2012; Raineri *et al.*, 2016). PEB are vital for corporate greening success (Hart, 1995; Antonio Ruiz-Quintanilla *et al.*, 1996). Previous research reported that ENP, which is an important dimension of sustainability, depends on PEB. Similarly, ordinary discretionary

green behaviors contribute to corporate ENP at both individual and organizational levels (Lamm *et al.*, 2013; Paillé *et al.*, 2014; Alt and Spitzeck, 2016). Only the H4c sub-hypothesis was not supported. Eco Initiatives (EI) does not predict ENP, which is the TBL performance's key dimension. The umbrella PEB is deeply rooted in industrial and organizational (IO) research (Lülfs and Hahn, 2013). OCBE is a specific type of discretionary and voluntary behavior not linked to a formal reward system. Therefore, these voluntary behaviors may not necessarily foster corporate greening and enhance TBL performance (Lamm *et al.*, 2013).

This study's finding that EI does not predict ENP may be possible in some cases. Moreover, environmental incentive plans should cover ENP, one of the components of TBL. In cases where the environmental rewards are not aligned with ENP, this scenario can create an imbalance among TBL dimensions (del Brío *et al.*, 2007; Fernández *et al.*, 2003). Similarly, in the case of Malaysian manufacturing, firms' rewards are based on ECOP. However, rewards and performance assessment are loosely linked to the environmental dimension of sustainability (Khan *et al.*, 2021), which is one of the key areas for manufacturing firms to manage environmental issues. Stakeholders pressure manufacturers to improve their OCBE and in turn TBL performance (Khan *et al.*, 2021; Onwunta and Casper, 2020), so that at the very least, environmental problems are being respected. Based on this kind of stakeholder pressure, manufacturing firms must address the key antecedents of TBL performance, such as discretionary behaviors, for instance OCBE and employees' pro-environmental behaviors or actions. The researchers agreed that, especially in manufacturing industries, OCBE includes waste reduction and reducing energy consumption for both individuals and organizations. Firms need to modify OCB so that it results in more pronounced pro-environmental behaviors, e.g. OCBE (Zhao and Zhou, 2020; Neessen *et al.*, 2021). A recent study on OCBE revealed that OCBE positively impacts on sustainability in manufacturing firms. If or when employees implement pro-environmental behaviors, it fosters overall OCBE in the workplace and enhances the viability of sustainability. It is established that OCBE is integral for enhancing TBL in manufacturing businesses (Khan *et al.*, 2021; Neessen *et al.*, 2021).

This study's findings have key implications for both managers and their companies. The findings revealed that OCBE three key dimensions, i.e. EIs, eco-civic-initiatives and EH, are vital for enhancing TBL performance (ECOP, ENP and SOP), respectively. Manufacturing firms should modify traditional OCB so that PEB improves the TBL. Managers should adopt green behaviors and policies so that their business is responsive to the environment (Renwick *et al.*, 2013). For successful EMS ISO14001 implementation and SP effectiveness, the PEB must be respected by employees (Robertson and Barling, 2017). In Malaysia, around 20% of firms are ISO14001-certified (FMM, 2018) compared with developed economies such as those in the OECD (US, UK, Japan, Germany, Sweden, Australia). The findings reported here are well aligned with the Environmental Performance Index (EPI), National Policy on the Environmental (NEP) and Compendium of Environment Statistics Malaysia (Department of Statistics, Malaysia, 2020). This research also provides good information that can shape the National Development Policy (NDP) and the National Vision Policy (NVP) so that environmental regulations make EMS (ISO14001) compulsory in Malaysia for all businesses no matter their type or size. The government should provide an enforceable policy and institutional framework for TBL throughout the manufacturing sector. The Eleventh Malaysia Plan (EMP, 2016–2020) is the current platform for the country's economy and how to drive a truly "green" development strategy (Department of Statistics, Malaysia, 2020).

5.1 Conclusion

This study has investigated the relationship between OCBE key types, namely EIs, eco-civic-initiatives and EH, and how they respectively predict TBL performance in three

aspects – ECOP, ENP and SOP. However, this research does have some limitations. It was conducted among only ISO14001-certified Malaysian manufacturing firms, which hinders generalization of these findings to firms without this certification. Although the data is collected geographically from various businesses in different industries, results cannot be generalized to other ASEAN nations. Second, this study used cross-sectional data that ultimately restricts generalizing the findings to other manufacturing firms or sectors. Thirdly, although adequate for SEM analysis, using a relatively small sample ($n = 210$) further limits this research's results generalization. Fourthly and lastly, the primary data collected randomly from managerial staff further limits the generalizability of results to all employees. This study provides directions and clues for future analyses to research with reference to businesses' pro-environmental behaviors and practices, e.g. OCBE and TBL performance, to advance research knowledge. This study also measures TBL performance based on three dimensions (economic, environmental and social) as reflective measures. Future research should use SP as a formative construct replicating this study framework with a larger sample in other sectors. This research recommends future studies to examine the mediating role of other key green constructs such as HRM practices, EMS and the influence of company context.

In conclusion, this study significantly contributed to knowledge on this subject, addressing critical gaps identified in the literature and provides constructive insights about antecedents of OCBE among manufacturing firms. The current study confirmed there is a direct positive relationship between key OCBE types (EH, ECE and EI) and sustainability dimensions (ECO, ENP and SOP) applicable to manufacturing firms. Economic sustainability is primarily linked to manufacturing firms' TBL performance. Based on previous literature and empirically tested research models, this study suggests one practical remedy to achieve sustainable performance, i.e. equitable and consistent improvement in three areas (economic, environmental and social). Finally, Malaysian manufacturing firms should focus on OCBE to enhance their sustainability.

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Appendix
Survey instruments
The key constructs of this study, e.g. OCBE and SP, were measured with a 5-point Likert scale (Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5).

Organizational citizenship behavior for the environment (OCBE) Items

OCBE01: I spontaneously give my time to help my colleagues take the environment into account in everything they do at work.

OCBE02: I encourage my colleagues to adopt more environmentally conscious behavior.

OCBE03: I encourage my colleagues to express their ideas and opinions on environmental issues.

OCBE04: I spontaneously speak to my colleagues to help them better understand environmental problems.

OCBE05: I stay informed of my company's Environmental initiatives.

OCBE06: I actively participate in environmental events organized in and/or by my company.

OCBE07: I undertake environmental actions that contribute positively to the image of my organization.

OCBE08: I volunteer for projects, endeavors or events that address environmental issues in my organization.

OCBE09: In my work, I weigh the consequences of my actions before doing something that could affect the environment.

OCBE10: I voluntarily carry out environmental actions and initiatives in my daily work activities.

OCBE11: I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility.

OCBE12: I suggest new practices that could improve the environmental performance of my organization.

Sustainable performance (SP) Items

ECOP01: Return on investment (ROI) has increased above industry average during the last 3 years.

ECOP02: Sales growth has increased above industry average during the last 3 years.

ECOP03: Profit growth rate has increased above industry average during the last 3 years.

ECOP04: Market share has increased during the last 3 years.

ENP01: The efficiency of the consumption of raw materials has improved during the last 3 years.

ENP02: The resource consumption (thermal energy, electricity, water) has decreased (e.g. per unit of income, per unit of production) during the last 3 years.

ENP03: The percentage of recycled materials has increased during the last 3 years.

ENP04: The waste ratio (e.g. kg per unit of product, kg per employee per year) has decreased during the last 3 years.

SOP01: The turnover ratio has decreased during the last 3 years.

SOP02: The employees' satisfaction has increased during the last 3 years.

SOP03: The employees' motivation has increased during the last 3 years.

SOP04: Health and safety performance have improved during the last 3 years.

SOP05: Employee education and training (man-days per employee per year) have increased during the last 3 years.

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