
Navigating Sustainability: Social Entrepreneurship, Government, and Eco-Innovation in Malaysia

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Abstract— Eco-innovation helps social entrepreneurs find solutions to the environmental problems they face. The aim of this research is to analyse the effect of social entrepreneurship on eco-innovation. This study also examined the role of government intervention as a moderating variable to eco-innovation. The sample in this study was the social entrepreneurs listed in the Malaysian Global Innovation and Creativity Centre, with a total of 193 respondents. The data were obtained using a cross-sectional approach, with questionnaires distributed online. The results of the study showed that social entrepreneurship has a significant positive effect on eco-innovation. Government intervention has a significant positive effect on eco-innovation, and government intervention moderated the positive relationship between social entrepreneurship and eco-innovation. The results of this study give social entrepreneurs real-world evidence of how critical eco-innovation practices are. This study provides numerous managerial-level instructions for social entrepreneurs who wish to adopt eco-innovation methods by utilising the government's role within an organization.

Index Terms - Eco-innovation, Government intervention, social entrepreneurship, and Sustainability

1. Introduction

Entrepreneurship plays a crucial role in driving economic growth, with extensive research highlighting a direct correlation between entrepreneurship and economic expansion (Acs, Audretsch, Braunerhjelm, & Carlsson, 2012; Audretsch & Keilbach, 2004; Urbano, Aparicio, & Audretsch, 2019). Entrepreneurial activity leads to increased production, job creation, and heightened demand, fostering economic development.

In Malaysia, while social values have long been integral to community well-being, the concept of social enterprise remains relatively unexplored (Kadir et al., 2019). Many Malaysian social enterprises address poverty, education, rural and indigenous development, environmental sustainability, and employment for marginalized youth (MaGIC, 2015). Unfortunately, limited institutional and community support hampers these enterprises, deterring young talent from pursuing them due to perceived high risks (Ghazali, 2019). To bolster social enterprises, significant support is required to nurture talent and facilitate their growth (MaGIC, 2015). Absence of expertise inhibits their capacity to attract investment, scale up, or engage in mergers and acquisitions (MaGIC, 2015).

Social enterprises have evolved as powerful tools for social entrepreneurs to address societal issues (Sivalingam, 2020). Success is no longer solely tied to financial performance but also to broader social impact. This represents a new form of social capital that combines revenue generation and profit with purpose-driven services (Sivalingam, 2020). It serves as a platform to effectively pursue social goals and engage with the public (Windasari, Lin, & Chen, 2017).

Governments recognize eco-innovation as pivotal for growth amidst global challenges, harmonizing economic priorities with environmental concerns (Machiba et al., 2012). While the government has established regulatory frameworks, social entrepreneurs face hurdles in accessing funding to establish and expand their enterprises (MaGIC, 2015). Access to financial capital is limited not only by social enterprises' inexperience but also by financial institutions' misunderstandings.

Although government support for financial capital is limited, social enterprises primarily rely on fundraising and grants, with some increasingly seeking support from banks and venture capitalists (Bryson & Buttle, 2005).

This paper seeks to uncover the government's moderating role in the connection between social entrepreneurship and eco-innovation. It addresses the need to enhance the supportive ecosystem for social enterprises, allowing them to better leverage their impact on both economic and social fronts.

2. Literature Review

2.1 Social Entrepreneurship (SE)

Social Entrepreneurship (SE) involves pursuing a social mission to benefit communities by combining fresh ideas and resources strategically, resulting in both social and economic value (Mahfuz Ashraf, Razzaque, Liaw, Ray, & Hasan, 2019). SE has gained significant research attention due to its global impact on generating social and economic value (Choi & Majumdar, 2014; Jung & Lee, 2018). Governments worldwide are increasingly supporting SE to address unemployment and societal challenges (Ferreira, Fernandes, Peres-Ortiz, & Alves, 2017).

Despite its growing popularity, SE's definition remains debated. Social entrepreneurs are seen as creatively leading social ventures (Dees, 1998). SE may also possess a lasting competitive advantage to achieve its social goals and bring about policy changes. In Malaysia, social enterprises are emerging, driven mainly by localized communities (Md Ladin et al., 2017). Though nascent, this sector shows potential in addressing social issues through profit and non-profit strategies (Md Ladin et al., 2017).

Malaysia confronts ongoing development challenges, particularly related to poverty reduction and opportunities for vulnerable communities (British Council, 2018). Social enterprises in the country aim to address these challenges by tackling social and environmental issues (Md Ladin et al., 2017). Unlike solely profit-oriented businesses, these enterprises generate revenue while pursuing their social objectives. Despite being relatively new, social enterprises, often in the form of cooperatives, are gaining ground, fostering economic benefits and collaboration between local and government sectors (Md Ladin et al., 2017).

To combat rising unemployment, there is a call for the Malaysian government to integrate social enterprises into its strategies. While Malaysia's SE sector is in its infancy, it holds potential to make meaningful contributions to community enhancement and economic growth by aligning profit motives with social goals.

2.2 Eco-Innovation

Eco-innovation refers to an innovative process or product that is primarily aimed at generating positive environmental outcomes. The aforementioned advantages can be derived from enhancing the efficacy of natural resource utilization, mitigating or reducing adverse environmental consequences, and fostering the development of new environmentally conscious societal perspectives (Koszarek-Cyra, 2019). Numerous scholarly inquiries have been undertaken by researchers to explore various dimensions of eco-innovation as documented in the extant academic literature. Scholars have conducted investigations into the assessment of eco-innovation. Horbach, Rammer, and Rennings (2012) and Rennings and Rammer (2011), have focused on measuring eco-innovation in terms of eco-product and eco-process innovation. However, Colin C Cheng and Shiu (2012), Yurdakul and Kazan (2020) and Rennings and Rammer (2011) have directed their attention towards the quantification of eco-innovation, specifically in relation to eco-product and eco-process innovation. A considerable proportion of the extant scholarly work concerning eco-innovation is centered on the spheres of product, process, and organization. This study diverged from previous research by investigating the concept of eco-innovation through the utilization of a framework consisting of three separate dimensions: eco-product, eco-process, and eco-organizational. It is described in depth below:

2.2.1 Eco-Product

Eco-product innovation can be defined as the development of new or considerably enhanced products or services with characteristics such as technical component advancements and eco-friendly packaging, construction, and materials (Colin CJ Cheng, Yang, & Sheu, 2014; He, Miao, Wong, & Lee, 2018; Pujari, Peattie, & Wright, 2004). Eco-product innovation is commonly driven by the use of cutting-edge eco-technologies, which result in the reduction of product life cycles and intensify market rivalry (Del Río, Carrillo-Hermosilla, & Könnölä, 2010). The obstacles associated with shortening product life-cycle and implementing sophisticated green technology are consistently growing due to market rivalry, particularly within the technology industry (Del Río et al., 2010). The achievement of these goals is improbable without a transition from the current technological

paradigm to alternative stages of design and innovation processes that prioritize sustainability (Gaziulusoy, 2015). The concept of eco-product innovation proposes that the process of product development should be streamlined by using novel technologies such as dematerialisation or electronic bookkeeping. Additionally, it advocates for the utilization of components and materials that possess the ability to be readily recycled or decomposed.

2.2.2 Eco-Process

The concept of eco-process innovation refers to the incorporation of novel components inside an organization's production system with the aim of manufacturing environmentally-friendly products (Negny, Belaud, Robles, Reyes, & Ferrer, 2012). In general, eco-process innovation adds new components to a company's eco-product production system njui8(Colin CJ Cheng et al., 2014; Dahan & Taib, 2017). This finding implies that eco-process strategies often involve the incorporation of innovative alterations to operational processes or equipment with the aim of mitigating pollution, adhering to stricter environmental standards, and reducing carbon emissions. Hence, through the prioritization of material productivity optimization, emphasis on energy efficiency, utilization of waste for value generation, and adoption of renewable processes, organizations can augment their environmental performance while simultaneously enhancing their economic capabilities (e.g., cost reduction and increased profit) and/or social accomplishments (Chen, Lai, & Wen, 2006; Colin CJ Cheng et al., 2014; Liao, 2018; Negny et al., 2012).

2.2.3 Eco-Organizational

Eco-organizational innovation pertains to the establishment of a corporate culture and management framework that actively engages in ecological initiatives and regularly oversees and controls its environmental impact throughout the entirety of the organization (Colin CJ Cheng et al., 2014; He et al., 2018; Liao, 2018). Eco-organizational innovation also refers to the implementation of new modifications in the management infrastructure, such as the utilization of eco-audit instruments, as well as in the service systems, such as electricity demand or trash management(de Jesus Pacheco et al., 2017). According to Gaziulusoy (2015), it is imperative for organizations to undergo a shift in their organizational culture in order to cultivate a competitive edge that is in harmony with their innovation strategies.

2.3 Government Intervention

Government intervention refers to the involvement of the state in the economy. The behavior of small businesses can be influenced by intervention, which encompasses the involvement of third parties such as the government. This influence is exerted through various means, including regulation, financial incentives, and education (Tilley, 1999). Government intervention encompasses regulatory actions that shape decisions by individuals, groups, and organizations regarding social and economic matters (Van der Waldt, 2015). Collaborative efforts are crucial in overcoming sustainability challenges encompassing economic, social, and environmental issues, necessitating government intervention (Batie, 2008; Rittel & Webber, 1973). Such intervention can also drive organizations beyond mere sustainability management (Barnett, Henriques, & Husted, 2018).

The involvement of the government in the economy has a significant impact on the motivations and capabilities of entrepreneurs to utilize scientific information (McMullen, Bagby, & Palich, 2008). Moreover, the government assumes a pivotal role in evaluating requirements, distributing resources, and developing social infrastructure at the local and regional levels to enhance community engagement in the process of development. Direct financial support for social enterprises, including labour costs, can lead to job creation and social service provision (Doh, 2020).

Prior studies have examined the moderating effects of government involvement in different circumstances. Several scholarly research have examined the impact of government involvement on the association between entrepreneurship and small and medium-sized enterprise (SME) growth (Mohd Shariff, Peou, & Ali, 2010). Others considered government intervention as a potential moderator in outcome-determinant relationships (Eniola & Entebang, 2015). Empirical studies also highlighted government intervention's role in moderating relationships between entrepreneurial networks and small business performance (Alhnaity, Almuala, & Elmasri, 2018).

The inclusion of government intervention as a mediator has the potential to enrich theoretical comprehension and provide empirical observations. By augmenting entrepreneurs' knowledge base through public policies,

government intervention could strengthen the link between entrepreneurship and economic development (Zahra & Wright, 2011). However, government policies may not guarantee sustainable impact on the public sector without considering social enterprises and unintended implications, as seen historically (Jeong, 2015).

Recent research emphasizes government support in creating an environment conducive to economic growth for entrepreneurs (Saberi & Hamdan, 2019). Nonetheless, more exploration is needed to justify government intervention in enterprises, encompassing all facets of such intervention (Moeljadi, Suman, & Sherlinda, 2015).

From the above literature, the following hypotheses were proposed:

- H1: There is a positive relationship between social entrepreneurship and eco-innovation.
- H2: There is a positive relationship between government intervention and eco-innovation.
- H3: Government intervention positively moderates the relationship between social entrepreneurship and eco-innovation.

3. Methodology

Using the simple random sampling technique, e-mails attached with an online link for Google Forms were sent to 200 respondents who were social entrepreneurs listed in Malaysian Global Innovation and Creativity Centre (MaGIC) to complete the survey. If emails bounced, alternate contact methods were used. Follow-up efforts, including calls and reminders, were employed to ensure a good response rate. Ultimately, 193 out of 200 companies responded, resulting in a 96.5% response rate, which surpasses the minimum required sample size determined by G*Power analysis. This ensures the adequacy of the sample size to represent the population.

The measurement for SE was adapted and adopted from Tepthong (2014), work and had a total of 16 items. The measurement of eco-innovation contained 15 items adopted from the works of Colin C Cheng and Shiu (2012) and Colin CJ Cheng et al. (2014). Meanwhile, the measurement for government intervention comprises 5 items adopted from Li et al. (2020). On a five-point Likert scale, responses to each item fell along the following range: (5) strongly agree to (1) strongly disagree.

In order to examine the proposed hypotheses, the research employed structural equation modeling, specifically partial least squares structural equation modeling (PLS-SEM). The technique described is commonly employed in the field of management research for the purpose of estimating the relationship analysis between theoretical and causal modeling (Hair, Risher, Sarstedt, & Ringle, 2019; Hair, Howard, & Nitzl, 2020).

4. Findings

4.1 Respondents Profile

Table 1 displays the participating social entrepreneurs' characteristics. Among 193 respondents, 59.07% are females, and 40.93% are males. Around 63.21% are aged 31-40, while 24.87% fall in the 41-50 range, and 11.92% are aged 51-60. Job-wise, 47.15% are senior executives, 38.34% are general managers/managers, and 14.51% are CEOs/Presidents/Vice Presidents. About 32.64% established their social enterprises in 2016-2020. Regarding employees, 81.34% have 0-50 employees.

Table 1: Demographic Profile

Demographic	Frequency	Percentage (%)		
Gender				
Male	76	40.93		
Female	93	59.07		
Age				
31-40	122	63.21		
41-50	48	24.87		
51-60	22	11.92		
61 and above	0	0.00		
Job Position				
CEO/President/Vice President	28	14.51		
General Manager/Manager	74	38.34		
Senior Executive	91	47.15		
Year Founded				
1990-1995	24	12.43		

1996-2000	13	6.73		
2001-2005	20	10.36		
2006-2010	17	8.80		
2011-2015	63	32.64		
2016-2020	56	29.01		
Number of employees				
0-50 employees	157	81.34		
51-100 employees	17	8.80		
101-150 employees	2	1.04		
151-200 employees	13	6.74		
201-250 employees	4	2.08		
251 employees and above	0	0.00		

4.2 Measurement Model

As shown in Table 2, the measurement model comprises factor loading, Cronbach's alpha, and composite reliability. In order to establish a high level of reliability, it is recommended that the values for Cronbach's alpha and composite reliability surpass the thresholds of 0.70 and 0.80, respectively, as indicated by previous studies (Hair et al., 2019; Hair et al., 2020). In this study, SE's values are 0.84 (Cronbach's alpha) and 0.83 (composite reliability); eco-innovation's are 0.87 and 0.87; and government intervention's are 0.85 and 0.88. These values meet the reliability criteria. Convergent validity, assessed by average variance extracted (AVE), should be above 0.50 (Bagozzi & Yi, 1989). Here, SE's AVE is 0.61, eco-innovation's is 0.70, and government intervention's is 0.51, all exceeding 0.50. Thus, the AVE values meet the criteria too.

Table 2: Measurement Model

Variable	Cronbach's α	CR	AVE
SE	0.84	0.83	0.61
Eco-Inno	0.87	0.87	0.70
GI	0.85	0.88	0.51

ote: SE: Social entrepreneurship Eco-Inno: Eco-innovation GI: Government intervention

The Heterotrait-Monotrait ratio of the correlations (HTMT) approach was then applied to determine the discriminant validity (Henseler, Ringle, & Sarstedt, 2015). According to scholarly recommendations, the occurrence of discriminant validity issues arises when the HTMT value beyond the threshold of 0.85 or 0.90. The findings given in Table 3 indicate that all HTMT values satisfy the recommended threshold of 0.85, as proposed by Kline (2015).

Table 3: Discriminant Validity (HTMT Ratio)

	Eco-Inno	GI	SE
Eco-Inno			
GI	0.39		
SE	0.30	0.61	

4.3 Structural Model

The structural model illustrates the proposed relationships between the constructs. To establish significance, t-statistics were calculated for all paths using 5000 bootstrap samples at a 5% significance level ($\alpha = 0.05$), with one-tailed tests (Ramayah, Cheah, Chuah, Ting, & Memon, 2018). Results are summarized in Table 4 for direct and indirect effects. R^2 value of 0.18 indicates 18% of eco-innovation variance explained by SE. A positive relationship between SE and eco-innovation (t-value = 4.29, p<0.05) supports H1. H2 confirms a significant correlation between government intervention and eco-innovation (t-value = 1.97, p<0.05).

Testing H3, the moderating effect of government intervention, employed the product-indicator approach (Henseler & Fassott, 2010). Introducing the interaction term of SE and eco-innovation increases R^2 to 0.03, with a 3.0% R^2 change. The interaction effect is significant (t-value = 2.58, p<0.05).

Table 4: Hypothesis Testing

	Eco-Innovation					
	Direct effect			Moderating effect		
	Pat	T-	P-	Pat	T-	P-
	h	Value	Value	h	Value	Value
	Coe			Coe		
	ffici			ffici		
	ent			ent		
SE	0.32	4.29*	0.00	0.27	3.69*	0.00
		*			*	
GI	0.16	1.97*	0.04	0.15	1.87*	0.06
GI * SE				0.15	2.58*	0.01
					*	
\mathbb{R}^2	0.18		0.21			
\mathbb{R}^2	0.18		0.03			
change						

Note: **p< 0.05, *p< 0.1

As suggested by Dawson (2014), the interaction effect was graphically represented in order to examine the manner in which the moderator influences the relationship between SE and eco-innovation. The outcome is depicted in Figure 1. The relationship between SE and eco-innovation is stronger when government intervention is high, whereas low government intervention has no impact on the SE and eco-innovation relationship.

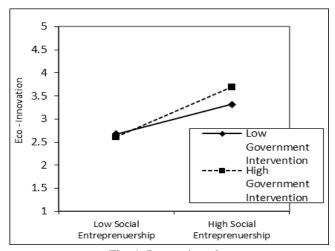


Fig. 1: Interaction plot

5. Discussion

Entrepreneurs are known for driving innovation by identifying market opportunities and creating new products or services (Singh & Gaur, 2018). SE extends this innovation to benefit society's welfare (Ahlstrom, Chang, & Cheung, 2019). SE aims to elevate societal innovation for a better quality of life (Fridhi, 2021). H1's significant relationship (t-value = 4.29, p<0.05) between SE and eco-innovation reinforces this notion. Other studies have similarly linked SE and innovation, especially with good governance (Ho & Yoon, 2022), influencing social networks, performance, and sustainability (Mitra, Kickul, Gundry, & Orr, 2019).

Next, the link between government intervention and eco-innovation also displays significance relationship (t-value = 1.97, p <0.05). SE has become integral in a landscape dominated by innovation and technology. This highlights a close connection between SE and innovation, fostering innovative contributions to businesses and

society (Van der Have & Rubalcaba, 2016). The government strives to enhance R&D investment and innovation through financial support, aiming to address key challenges (Nam, Kim, & Kang, 2022; Vuong et al., 2020).

Lastly, the study reveals a significant moderating effect (t-value = 2.58, p <0.05) of government intervention between SE and eco-innovation. Access to finance is vital for firms' innovation and growth (Kerr, Kerr, & Nanda, 2015; Lepoutre, Justo, Terjesen, & Bosma, 2013). External funding, including subsidies and venture capital, becomes crucial when internal funds are inadequate (Nam, Kim, & Kang, 2022; Vuong et al., 2020). The government's role in resource allocation, infrastructure provision, and direct financial support for social businesses holds critical importance. This assistance aids job creation and social service provision through the establishment and operation of social enterprises (Doh, 2020).

6. Conclusion

SE is a powerful means of addressing society's social, economic, and environmental challenges through innovative solutions. Government support is crucial in aiding social entrepreneurs, offering tools like funding, intellectual property protection, and university-private sector collaboration. This study explores the relationship between SE and eco-innovation, with government involvement as a moderator. The findings support all three hypotheses presented.

In essence, this study sheds light on SE, eco-innovation, and government intervention in Malaysian social entrepreneurship. Insights gained could lead to further research to address challenges and sustain business performance for social entrepreneurs. The study's empirical data emphasizes the importance of eco-innovation for social entrepreneurs, offering managerial guidance and leveraging government roles for adoption. Ultimately, this can contribute to enhanced industry performance and sustainable solutions.

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