Journal of Innovation & Knowledge 9 (2024) 100566

Journal of Innovation & Knowledge

https://www.journals.elsevier.com/journal-of-innovation-and-knowledge

The role of green social behavior in frugal innovation and entrepreneurial success: The moderating impact of knowledge management

Yu-Te Tu

Department of Business Administration, Chihlee University of Technology, Taiwan

ARTICLE INFO

Article History:
Received 11 October 2023
Accepted 26 August 2024
Available online 9 November 2024

Keywords:
Knowledge management
Social innovation
Technological innovation
Business innovation
Entrepreneurial success
Green social behavior

JEL Code:
Q55
L26
D80

ABSTRACT

Entrepreneurial success has become a necessary element of economic survival due to the current economic conditions and uncertainty worldwide. Thus, in this research, we explore green social behavior's impact on social, technological, and business innovation in a sample of Vietnamese manufacturing firms. Results of a PLS methodology reveal that green social behavior positively impacts the three aspects of innovation. The research aims to find the mediating and moderating aspects of social, technological, and business innovation and knowledge management. The outcomes confirm that only social and business (excluding technological) innovation effectively mediate the links between green social behavior and entrepreneurial success whereas knowledge management is a significant moderator. However, knowledge management insignificantly moderates the relationship between technological innovation and entrepreneurial success. This research guides policymakers in making policies related to entrepreneurial success using green social behavior, innovation, and knowledge management.

Introduction

Entrepreneurship significantly drives social progress and economic growth by bringing new business models, products, and services to the market, creating jobs, spurring innovation, and generating wealth. Entrepreneurial firms play a crucial role in addressing societal challenges, such as climate change, poverty, and inequality (Li et al., 2020). Entrepreneurs focus on profit maximization as well as environmental and social considerations (Amoroso et al., 2018). High population density, deforestation, global warming, pollution, and ozone layer and natural resource depletion have led to a currently ongoing environmental crisis. Gas, coal, and oil production release billions of tons of carbon dioxide into the atmosphere, resulting in a huge amount of greenhouse gas emissions each year (Chand et al., 2022; Salvia et al., 2019). Governments, industrialists, and nonprofit organizations recognize the urgent need to emphasize green activities and sustainable processes for a safe planet and human life. Firms and organizations face huge pressure globally to focus on environmental sustainability. As a result, they endeavor to integrate green policies that diminish the negative environmental impacts of their products or services (Tomislav, 2018). Customers have gained awareness of organic and green products and strive to implement green purchasing behavior. Stakeholders and partners are interested in investing in environment-friendly firms and focus on eradicating the negative environmental impacts of business activities. As a result, firms, particularly entrepreneurial ones, move toward sustainability to gain a competitive edge. Entrepreneurial firms with green strategies play a critical role in addressing the challenges of climate change, resource depletion, and pollution because they introduce sustainable technologies, services, and products that reduce negative environmental impacts. By focusing on sustainability, entrepreneurs can conserve natural resources for future generations, minimize waste, and support a sustainable environment for human beings (Muo & Azeez, 2019). Moreover, they can ensure that their business venture not only provides economic benefits by creating jobs and promoting social equity but also helps environmental sustainability. Firms with a sustainable business model are adaptable and resilient, enabling them to respond to market demands and trends (Lotfi et al., 2018). Over time, consumers become socially and environmentally aware and are increasingly attracted to sustainable businesses. Entrepreneurial firms with sustainable practices and ethical values can gain a competitive edge in the market. Due to global pressure, governments worldwide are now recognizing the significance of sustainability; they are integrating and introducing policies, incentives, training programs, and legal flexibility to encourage and support sustainable

E-mail address: williamtu@mail.chihlee.edu.tw

https://doi.org/10.1016/j.jik.2024.100566

entrepreneurship (Shafi et al., 2022; Soomro et al., 2020). Firms that prefer sustainability have an advantage and thus may receive support from governments, stakeholders, and other investors interested in green business ventures. In addition to being a crucial driver of social and economic growth, these firms can earn a competitive advantage if they move toward sustainability. This aspect makes them distinct from their competitors. However, to become successful, entrepreneurial firms should consider internal and external factors that are significant in business operations. These factors include green social behavior, social innovation, business innovation, technological innovation, and knowledge management (Hutasuhut et al., 2023; Li & Xu, 2022).

Green social behavior refers to sustainable and environmentally responsible behavior. Socially green behavior reduces the negative environmental effects of business activities, thus promoting sustainability (Streimikiene, 2023; Varela-Candamio et al., 2018). Accordingly, it significantly contributes to minimizing industrial pollution and waste and protecting planetary well-being. Technological innovation is the process of introducing and developing innovative and new technologies that not only address problems but also improve efficiency and enhance business activities by combining or creating new and valuable solutions (Chege & Wang, 2020; Khan & Tao, 2022). It significantly contributes to organizational success by creating new opportunities, driving progress, and dealing with challenges such as energy security and climate change. Furthermore, it can enhance productivity, business operations, and economic growth. Social innovation refers to the implementation of new ideas, processes, and strategies that address environmental and social challenges and create a positive impact through innovative solutions to complex problems. Non-profit organizations, government agencies, and social enterprises support social innovation. Their action involves collaboration between various stakeholders to create scalable and sustainable solutions. Social innovation is important as it enables firms to develop effective ways to create positive changes and promote sustainability (Dionisio & de Vargas, 2020; Dvorský et al., 2023). Moreover, business innovation refers to creating and implementing new strategies, ideas, business models, and policies that enable firms to improve their performance and gain competitive advantage by concentrating on new ways of doing business to meet market conditions. Business innovation can take place in the form of organizational, product, or process innovation, which involves adaptability, responsiveness, and willingness to change traditional processes (Lim et al., 2020). Knowledge management in firms is the process of creating, using, sharing, and managing information and knowledge. It helps in capturing, identifying, storing, and utilizing knowledge and making it accessible to employees. Knowledge management culture enhances organizational performance as well as innovation and effectiveness (Gao et al., 2018). All these variables contribute to entrepreneurial firms' success, encouraging them to move toward sustainability.

The manufacturing sector in Vietnam has an essential role in the country's economic growth, increasing the employment rate and exports. In 2022, the sector accounted for 24.76 % of the country's GDP (Fig. 1). As the sector's production index increased, the percentage of individuals employed in the sector also increased (Statista, 2024). Vietnam's manufacturing industry comprises small and medium-sized enterprises and large firms. Entrepreneurial firms in the manufacturing industry contribute to job creation and employment (Le, 2020). In 2020, Vietnam ranked 42nd on the global innovation index among 131 countries. This achievement highlights the significant contribution of entrepreneurial firms to innovation progress. However, with increases in business growth, the manufacturing sector faces challenges, particularly in terms of the environmental crisis (Vietnamnews, 2020). Vietnam's manufacturing industry contributes considerably to resource depletion, environmental degradation, and greenhouse gas and carbon dioxide emission reduction. Entrepreneurial firms must address these challenges to create a sustainable environment (Canh et al., 2019). Manufacturing firms in Vietnam are under immense pressure from the government to suppress their negative environmental impacts. Accordingly, this research intends to help them do so. In this paper, we explore entrepreneurial firms in the manufacturing industry of Vietnam to analyze how to increase their chances of succeeding in the market

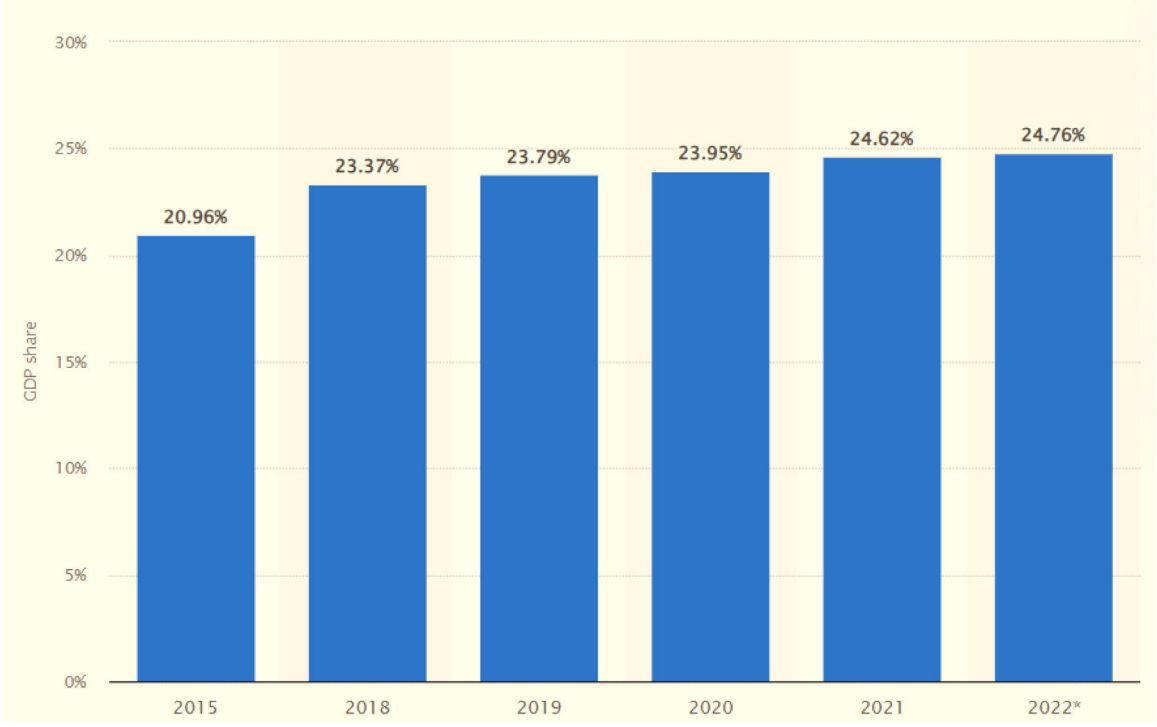

Fig. 1. GDP Contribution to Vietnam's Manufacturing Sector (2015–2022).

and the role of green social behavior in this success. The direct, mediating, and moderating roles of the various factors discussed above in the success of entrepreneurial firms are examined.

The paper is presented in five sections. Section 1 is the introductory section where the research gap and contribution are highlighted. Section 2 is a synthesized literature review through which the hypotheses are formulated. Section 3 presents the methodology, which covers the data collection, sampling method, and study population. Section 4 presents the data analysis and results of the study. In light of the findings, Section 5 provides policy implications and discusses the study's limitations.

Literature review

Resource-based view theory

The present study uses an integrated framework based on resource-based view and flow theories. The integrated perspective is best fitted as it explains the factors that lead to entrepreneurial success. The principles of growth that can be governed by an organization and the pace of growth that it should maintain must be identified, rather than determining whether it can grow or not. In this regard, Penrose's ground-breaking work on the resource-based view should be acknowledged (Hameed et al., 2016, 2021). The work highlights the significance of internal resources in firm growth. Thus, the absence or lack of such resources hinders the achievement of the desired growth. The resource-based view focuses on the need for internal resources that give a sustainable competitive edge. Resources are related to a firm's strengths and weaknesses (Alvarez & Busenitz, 2001; Barney, 1991) and can be tangible (such as machinery, skilled personnel, and capital) or intangible (such as effective procedures, brand reputation, and trade contracts). Resources can take many forms, including assets, knowledge, attributes, information, capabilities, and processes, which are all helpful in value-creation strategies. The literature highlights three categories of resources: physical, human, and organizational (Hameed & Irfan, 2019). Green entrepreneurial support is linked to sustainable entrepreneurial processes, which include actors, resources, and institutional settings. Yi (2021) follows Timmons and Spinelli (2003) argument and suggests that resource-based theory emphasizes entrepreneurial resources as core factors of the survival and success of start-ups. In other words, entrepreneurial success relies on various kinds of resources. The present study integrates the resource-based view with the resources needed to launch green ventures and make them successful, namely, business, social, and technological innovation, green social behavior, and knowledge management.

Flow theory

Flow theory explains (Alam et al., 2019; Liao, 2006): state in which people are so intensely involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it" (Alam et al., 2019; Liao, 2006). Flow theory was initially proposed by Csikszentmihalyi (1990) to explain the concept of motivation. According to theory, flow is a psychological state which highlights "the peak feelings of cognitively efficient, motivated, and happy individuals" (Csikszentmihalyi, 1990) This subjective experience, along with motivation and personality, suggests flow theory, which offers insight into intrinsic motivation which may lead to relevant behaviour. Environmentally motivated individuals look for sustainable opportunities due to their green social behaviour that can increase the chances of business success (Shi et al., 2020). Through entrepreneurial skills, relevant knowledge, and green behaviour, motivation occurs that can lead to entrepreneurial success (Tomášková and Kaňovská, 2022).

Hypothesis development

Green social behavior determines the actions organizations and individuals take to suppress negative environmental impacts and encourage and promote sustainability, In contrast, technological innovation refers to the development and implementation of innovative technologies in the market. Consumer demand for eco-friendly services and products induces firms' desire to develop innovative technologies that minimize waste and are energy efficient and thus have less environmental impact (Pletnev & Kozlova, 2022; Varela-Candamio et al., 2018). Industries' green behavior creates sustainable production methods. As a result, the adoption of a circular economy, the use of renewable energy sources, and waste reduction and recycling initiatives have led to the development of new business models and technologies. The world has been experiencing environmental challenges due to high emissions, overreliance on natural resources, and ozone layer depletion. Thus, human beings must take green initiatives. This situation pressures industrialists, governments, and firms to tackle the environmental crisis. Government policies and strategies are required to adopt green social behavior that encourages the implementation of technological innovation (Hudáková et al., 2023; Song et al., 2019). Therefore, green social behavior positively impacts technological innovation as it promotes sustainable production. Accordingly, we propose the following hypothesis:

Hypothesis 1 (H1). Green social behavior positively impacts technological innovation.

Social innovation supports the development of new and innovative solutions to address social problems, such as environmental degradation, inequality, and poverty. These solutions may be in the form of new business models, social programs, green policies, or new technologies (Wittmayer et al., 2019). As the environmental crisis increases due to business operations, firms must adopt green behavior as it positively impacts the social innovations that enhance sustainability and minimize environmental impacts. Additionally, the use of renewable energy sources and green strategies promotes the development of new business models and innovative technologies that utilize natural resources sustainably and thus minimize carbon emissions. Green social behavior initiates social innovation through knowledge-sharing and collaboration among organizations and individuals. Communities and firms that engage in sustainable and green practices can share their experiences, thus creating new solutions to environmental and social issues (Soma et al., 2018; Vainauskienė & Vaitkienė, 2022). Social innovation refers to the collaboration between stakeholders, non-profit organizations, and governments. It focuses on creating a positive environmental impact and improving the standards of living. Therefore, green social behavior plays a significant role in encouraging social innovation to promote businesses' sustainability. Accordingly, the following hypothesis is formulated:

Hypothesis 2 (H2). Green social behavior positively impacts social innovation.

Green social behavior indicates a company's or individual's action to encourage environmental sustainability and eradicate negative impacts, whereas business innovation refers to firms' processes of introducing new and creative ideas, methodologies, and products or services. The natural resources of the earth are vanishing at an alarming rate, and deforestation, climate change, and pollution issues are increasingly becoming evident by the day. Industrialists and business organizations must take the necessary steps to tackle these issues. Green social behavior significantly influences business innovation (Matenda & Sibanda, 2023). Firms with green social behavior enable employees to concentrate on new services, products, a technologies that are eco-friendly and sustainable. By adopting green practices and sustainable activities in business operations, firms can minimize costs through resource and energy efficiency measures, leading to profitability and enhanced business innovation (Gao et al., 2021). In

today's world, customers are aware of green products and services and are environmentally conscious. They support businesses and brands with a commitment to sustainability. To gain a competitive edge, firms need to innovate their business operations and introduce solutions to their business activities' negative environmental impacts. Green social behavior stimulates innovation and creativity by encouraging employees to think differently about their work operations and their ability to minimize the negative environmental impact of their services or products. Thus, firms and organizations can embrace innovative technologies and redesign processes and activities to eradicate carbon emissions and waste. Thus, we propose the following hypothesis:

Hypothesis (H3). Green social behavior positively impacts business innovation.

The business world is constantly changing because of updated technologies in business operations. As a result, only those firms that integrate innovative technologies can survive. Technological innovation creates new demands and markets for products and services, thus allowing entrepreneurial firms to develop new business models that tackle environmental issues as well as provide sustainable and innovative solutions (Lin & Zhu, 2019). Entrepreneurs can enhance their business activities and operations by integrating new technological innovations, thus improving their productivity and efficiency. Automated technologies that enhance the bottom line and streamline operations can help achieve this target. A combination of technological innovation and green social behavior will enable entrepreneurial firms to produce new products and services that meet the environmental demand and help them achieve sustainable and innovative goals. Furthermore, through technological innovation, entrepreneurial firms can scale up their business activities to meet industrial and customer demands. These innovations include the use of e-commerce and social media to connect to customers globally. Hence, technological innovation not only enhances consumer experience by providing improved services and communication channels but also gives firms a competitive edge by improving efficiency, productivity, and scalability and creating new opportunities. With the increasing environmental issues, governments, customers, and policymaking bodies are favoring firms that contribute positively to the environment and reduce their negative environmental impacts (Al−Jinini et al., 2019). The mediating characteristics of technological innovation indicate that firms need to introduce green behavior and strategies into their operations to enhance sustainability through the latest technologies and thus ensure success. Accordingly, the following hypothesis is formulated:

Hypothesis (H4). Technological innovation mediates the relationship between green social behavior and entrepreneurial success.

Entrepreneurial firms need various factors for successful business operations. In this regard, social innovation is essential as it helps them in implementing and developing new strategies, processes, and ideas. These new developments fulfill social needs sustainably and innovatively and address social challenges. Social innovation can further help entrepreneurial firms by creating a competitive advantage, thus providing profitable services and products with positive environmental impacts. Moreover, social innovation helps entrepreneurial firms improve their reputations by strengthening their commitment to social responsibility, hence positively influencing the business world. Through social innovation, entrepreneurial firms can address social challenges, such as inequality and environmental degradation, helping them build strong relationships with stakeholders and contribute to societal improvement. Their green social behavior can also assist them in introducing socially responsible and environmentally sustainable approaches and solutions (Carberry et al., 2019). If they embrace creative strategies and processes in their operations to manage the current global environmental degradation, entrepreneurial firms can survive in the business world. Thus, social innovation not only helps entrepreneurial firms develop a distinctive position in the market but also contributes to sustainability. Accordingly, the following hypothesis is proposed:

Hypothesis (H5). Social innovation mediates the relationship between green social behavior and entrepreneurial success.

In the current era, businesses should innovate their activities, processes, and operations to meet consumer demand. Their management must focus on implementing innovative policies and strategies to become successful. Business innovation can increase entrepreneurial firms' efficiency by reducing costs through improved processes, automation, and new technologies. Business innovations enable entrepreneurial firms to follow current and future trends in the market, helping them gain a competitive advantage in the industry. Green social behavior among organizations and individuals helps them integrate green policies into business operations (Demirel et al., 2019). Business innovation also helps improve brand image by presenting firms as innovators strongly committed to environment-friendly processes. This aspect not only attracts stakeholders and investors but also satisfies customers. Only firms that can adapt to customer needs and industry trends with responsiveness, flexibility, and agility can survive in the market. These firms can stay competitive and seize new opportunities, contributing to the development of a strong relationship between green social behavior and entrepreneurial firm success. Thus, the following hypothesis is proposed:

Hypothesis (H6). Business innovation mediates the relationship between green social behavior and entrepreneurial firms.

Knowledge management includes firms' processes of creating, sharing, and utilizing knowledge. With proper knowledge management, firms can use their knowledge and capabilities efficiently to enhance their competitiveness and performance. They can create and share knowledge and information among individuals and organizations, helping them identify new improvement and innovation opportunities and create a culture of continuous improvement and learning. Knowledge management culture can enable firms to implement and invest in innovative technologies that contribute to their success. The moderating role of knowledge management refers to the proper management of knowledge in entrepreneurial firms, thus enhancing the impact of technological innovation (Mardani et al., 2018; Sulistiawan et al., 2022). Through a knowledge management culture, employees feel acknowledged and empowered and can share their ideas with the organization. This condition helps them adopt technological innovation. In this era, entrepreneurial firms can only achieve profitability and meet the needs of the business market successfully if they implement technological innovation in their business operations. By adopting a knowledge management culture, firms can enhance their technological innovation, which, in turn, contributes to their success. Accordingly, the following hypothesis is proposed:

Hypothesis (H7). Knowledge management moderates the relationship between technological innovation and entrepreneurial success.

Social innovation refers to "the process of integrating new solutions to address environmental and social challenges" by understanding community needs and the impact of proposed solutions. Knowledge management culture plays a critical role in entrepreneurial firms' effective communication of their knowledge and experience. Knowledge management emphasizes communication, collaboration, and continuous learning. Entrepreneurial firms with such a culture have a valuable understanding of the environmental and social challenges they face and thus implement innovative and successful solutions. Moreover, knowledge management helps entrepreneurs refine and develop their solutions through social innovation, contributing to their success (Ali et al., 2020; Chau et al., 2023). Therefore, the moderating role of knowledge management in the relationship between entrepreneurial success and social innovation is crucial. By integrating knowledge management culture,

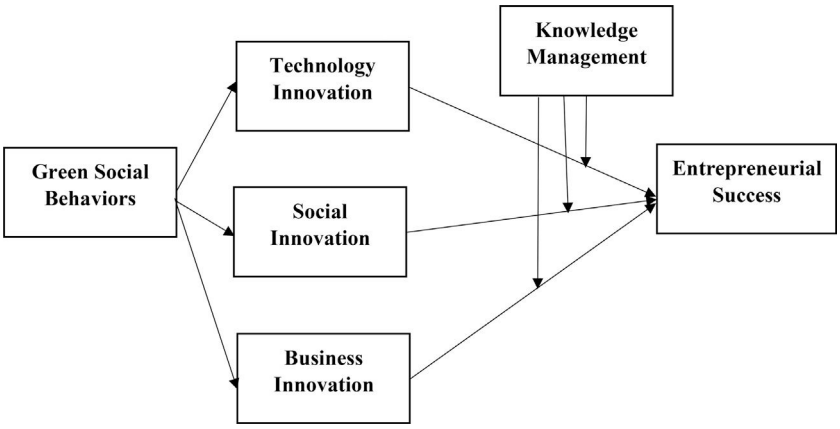

Fig. 2. Theoretical Model.

entrepreneurs can use their knowledge and information to tackle environmental and social challenges, promote sustainability, and create a positive impact. Accordingly, the following hypothesis is proposed:

Hypothesis (H8). Knowledge management moderates the relationship between social innovation and entrepreneurial success.

Knowledge management plays a significant role in organizational development. With the rapidly changing business environment, firms need to be innovative to stay in competition. Entrepreneurial success is achieved by identifying new opportunities and maintaining and building successful models, thus improving decision-making and minimizing risk (Mardani et al., 2018; Zhou et al., 2023). Firms can increase their ability to develop and innovate new business models, products, and services with proper knowledge management. Hence, knowledge management significantly encourages business innovation, which enhances entrepreneurial firms' success. With the help of a knowledge management culture, firms can improve their ability to adapt to current trends, innovate, and gain long-term success. Thus, we propose the flowing hypothesis:

Hypothesis (H9). Knowledge management has a positive moderating role in the relationship between business innovation and entrepreneurial success.

Methodology

This research explores the effectiveness of green social behavior on social, technological, and business innovation in the presence of mediators and a moderator, namely, social, technological, and business innovation and knowledge management in the Vietnamese manufacturing sector. The researchers used primary data collected from manufacturing employees, and variables were measured with items adapted from previous literature. Green social behavior, knowledge management, entrepreneurial success, social innovation, technological innovation, and business innovation were measured with items taken from Al−Ghazali and Afsar (2021), Choi et al. (2020), Vodă and Florea (2019), Hsu et al. (2019), Jean et al. (2010), and Lin et al. (2010), respectively. Appendix A provides details of these measurements.

The study sample was selected based on simple random sampling. A total of 538 questionnaires were delivered to employees via email, of which 294 valid responses were received. These responses were used for data analysis. PLS methodology was used to evaluate the relationship as the method is suitable for primary data. It offers appropriate outcomes when complex large samples are used (Hair et al., 2014). The methodology is based on two steps: a measurement model and a structural model. The measurement model ensures reliability and validity through discriminant and convergent validity, which indicate the correlation between variables and between items, respectively (Hair et al., 2017). Convergent validity is calculated via Cronbach's alpha, where the standard value should be >0.70. Similarly, composite reliability (CR) should also be >0.70. Factor loadings and average variance extracted (AVE) should also be >0.50 (Hair Jr. et al., 2020).

Discriminant validity is measured by the Fornell−Larcker criterion (Ringle et al., 2015) and finally checked using the heterotrait−monotrait (HTMT) ratio, for which the values should be lower than 0.90 (Hair et al., 2017). The structural model deals with the association between variables (Fig. 2). The t-values should be >1.96, and the p-values should be <0.05, showing the significance of the associations (Hair Jr. et al., 2020).

Results and discussion

Research findings

The study outcomes indicate the correlations between the study items, showing convergent validity. Cronbach's alpha, CR, and AVE were used to examine convergent validity. Convergent validity is established when values of CR, Cronbach's alpha, and AVE are at least 0.7, 0.6, and 0.5, respectively. All the values presented in Table 1 meet the threshold criteria, thus confirming convergent validity.

In contrast, the Fornell−Larcker criterion was used to examine the discriminant validity. As per the criteria, the first value is greater than the remaining values in the same column, indicating a low correlation between variables. Table 2 presents the Fornell−Larcker discriminant validity results.

Table 3 presents the outer loadings results. As the study involves six variables, the table shows the items against each variable in their respective columns. No cross- or double-loading issue was observed in the outer loading results. Outer loadings refer to estimated

Table 1
Construct reliability and validity.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted
BIN	0.895	0.897	0.896	0.632
ENS	0.905	0.906	0.905	0.657
GSB	0.856	0.858	0.856	0.665
KNM	0.873	0.874	0.873	0.697
SIN	0.929	0.931	0.929	0.725
TIN	0.819	0.825	0.819	0.603

Table 2
Fornell–Larcker discriminant validity results.

	BIN	ENS	GSB	KNM	SIN	TIN
BIN	0.795					
ENS	0.777	0.811				
GSB	0.443	0.482	0.815			
KNM	0.73	0.808	0.5	0.835		
SIN	0.706	0.627	0.439	0.609	0.851	
TIN	0.534	0.497	0.403	0.436	0.415	0.777

associations in the reflective measurement model and explain the absolute contribution of an item to its assigned construct.

Discriminant validity was examined using cross-loadings, and the values determine whether the linkages with the construct are larger than the linkages with other constructs. These figures indicate a low correlation between the variables. Table 4 provides the figures.

Finally, discriminant validity was checked using the HTMT ratio. The outcome values are lower than 0.90, indicating a low correlation between the variables. Table 5 provides the figures.

Table 6 presents the results of the model fitness test. In the present study, the researchers assessed model fitness to measure the discrepancies between the observed and model-implied correlation matrices. The results indicate that the saturated and estimated values of model fitness meet the threshold criteria. The model is fit, indicating that path analysis can be performed.

The research examines the direct association of the variables using path analysis. The outcomes in Table 7 reveal that green social behavior positively impacts social, technological, and business innovation, thus supporting H1–H3 (Fig. 3).

Then, the research examines the indirect association using path analysis. The outcomes in Table 8 reveal that social and business innovation significantly mediate the relationship between green social behavior and entrepreneurial success. Therefore, H5 and H6 are accepted. The mediation of technological innovation in the relationship between green social behavior and entrepreneurial success is insignificant, thus rejecting H4. The outcomes reveal that knowledge management significantly moderates the relationship between social and business innovation and entrepreneurial success in the manufacturing industry of Vietnam, thus accepting H8 and H9. Knowledge management insignificantly moderates the relationship between technological innovation and entrepreneurial success. Therefore, H7 is rejected (see Fig. 4).

Discussion

The results confirm that green social behavior is positively related to technological innovation. Green social behavior refers to the positive behavior of employees, stakeholders, and organizations aimed at minimizing negative environmental impacts. In the context of the manufacturing sector of Vietnam, this study indicates that green social behavior plays a crucial role in the emergence of technological innovation. Green behavior leads to the development of innovative and creative solutions and technologies that help minimize costs, enhance business operation efficiency, and promote sustainability. The analysis shows that green social behavior positively impacts social innovation in the manufacturing industry of Vietnam. A previous study by Hoppe and De Vries (2018) also determines the role of social innovation. Green social behavior encourages organizations to promote sustainable green practices through social innovation. Social innovation helps deal with environmental challenges through creative solutions and ideas. As the world faces huge sustainability challenges, firms need to tackle the environmental crisis, and green social behavior plays a crucial role. To address environmental challenges, firms must adopt green behavior. Previous studies, such as Lüdeke-Freund et al. (2018), indicate that green or sustainable behavior promotes business innovation. With the constant changes in the business world, only those firms that innovate their operations according to market trends will survive. Green social behavior requires innovative and new ideas and solutions to address the industrial sustainability crisis, and firms should embrace changes to gain a competitive edge. The results lead us to conclude that firms with green social behavior promote and support innovations in business operations.

Table 3
Outer loadings.

	BIN	ENS	GSB	KNM	SIN	TIN	KNM × SIN	KNM × TIN	KNM × BIN
BIN1	0.764								
BIN2	0.746								
BIN3	0.783								
BIN4	0.847								
BIN5	0.83								
ENS1		0.802							
ENS2		0.824							
ENS3		0.794							
ENS4		0.773							
ENS5		0.858							
GSB1			0.863						
GSB2			0.814						
GSB3			0.766						
KNM1				0.816					
KNM2				0.853					
KNM3				0.835					
SIN1					0.856				
SIN2					0.85				
SIN3					0.791				
SIN4					0.854				
SIN5					0.902				
TIN1						0.852			
TIN2						0.754			
TIN3						0.718			
KNM × SIN							1		
KNM × BIN									1
KNM × TIN								1	

Table 4
Cross-loading results.

	BIN	ENS	GSB	KNM	SIN	TIN	KNM × SIN	KNM × TIN	KNM × BIN
BIN1	0.764	0.585	0.355	0.554	0.607	0.413	−0.29	−0.113	−0.225
BIN2	0.746	0.594	0.304	0.534	0.521	0.416	−0.247	−0.082	−0.204
BIN3	0.783	0.603	0.356	0.562	0.529	0.362	−0.243	−0.099	−0.16
BIN4	0.847	0.656	0.379	0.65	0.586	0.465	−0.248	−0.12	−0.213
BIN5	0.83	0.647	0.364	0.597	0.566	0.465	−0.25	−0.15	−0.172
ENS1	0.643	0.802	0.384	0.65	0.471	0.408	−0.342	−0.128	−0.329
ENS2	0.651	0.824	0.403	0.662	0.537	0.368	−0.309	−0.136	−0.33
ENS3	0.613	0.794	0.389	0.641	0.491	0.411	−0.327	−0.175	−0.391
ENS4	0.585	0.773	0.352	0.64	0.474	0.398	−0.267	−0.158	−0.35
ENS5	0.655	0.858	0.42	0.682	0.562	0.43	−0.324	−0.144	−0.386
GSB1	0.391	0.441	0.863	0.459	0.365	0.355	−0.138	−0.031	−0.181
GSB2	0.36	0.368	0.814	0.352	0.354	0.335	−0.074	−0.06	−0.163
GSB3	0.331	0.366	0.766	0.41	0.357	0.295	−0.076	−0.06	−0.158
KNM1	0.573	0.66	0.412	0.816	0.499	0.3	−0.32	−0.149	−0.271
KNM2	0.65	0.689	0.431	0.853	0.539	0.404	−0.371	−0.222	−0.338
KNM3	0.605	0.675	0.41	0.835	0.486	0.387	−0.377	−0.234	−0.306
SIN1	0.577	0.508	0.419	0.506	0.856	0.348	−0.211	−0.094	−0.212
SIN2	0.579	0.532	0.374	0.523	0.85	0.366	−0.273	−0.113	−0.274
SIN3	0.567	0.517	0.315	0.487	0.791	0.328	−0.228	−0.113	−0.256
SIN4	0.609	0.539	0.369	0.514	0.854	0.359	−0.209	−0.076	−0.216
SIN5	0.672	0.57	0.39	0.56	0.902	0.364	−0.248	−0.101	−0.248
TIN1	0.445	0.411	0.361	0.369	0.323	0.852	−0.11	−0.187	−0.137
TIN2	0.429	0.388	0.286	0.36	0.333	0.754	−0.088	−0.168	−0.095
TIN3	0.369	0.358	0.288	0.284	0.313	0.718	−0.118	−0.158	−0.107
KNM × SIN	−0.32	−0.387	−0.119	−0.427	−0.275	−0.14	1	0.386	0.753
KNM × BIN	−0.25	−0.441	−0.206	−0.366	−0.283	−0.15	0.753	0.372	1
KNM × TIN	−0.14	−0.183	−0.061	−0.242	−0.116	−0.22	0.386	1	0.372

Table 5
Heterotrait–monotrait ratio results.

	Saturated model	Estimated model
SRMR	0.035	0.194
d_ULS	0.376	11.299
d_G	0.486	0.772
Chi-square	742.261	1102.755
NFI	0.871	0.809

The mediation results show that technological innovation is an insignificant mediator in the relationship between green social behavior and entrepreneurial success. Business and social innovation are found to be significant mediators in the relationship between green social behavior and entrepreneurial success. The results confirm that social innovation is a significant mediator. Eichler and Schwarz (2019) also indicate that sustainable behavior promotes social innovation, improving firm performance. Social innovation leads to the development of creative and innovative solutions to

Table 6
Model fitness test results.

	BIN	ENS	GSB	KNM	SIN	TIN	KNM × SIN	KNM × TIN	KNM × BIN
BIN									
ENS	0.778								
GSB	0.442	0.48							
KNM	0.73	0.809	0.5						
SIN	0.707	0.626	0.439	0.609					
TIN	0.534	0.498	0.401	0.435	0.417				
KNM × SIN	0.322	0.387	0.118	0.427	0.275	0.136			
KNM × TIN	0.142	0.183	0.062	0.242	0.117	0.22	0.386		
KNM × BIN	0.246	0.441	0.205	0.366	0.283	0.146	0.753	0.372	

Table 7
Direct path analysis.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistic (|O/STDEV|)	P-value
GSB → BIN	0.379	0.378	0.052	7.313	0
GSB → SIN	0.404	0.405	0.055	7.285	0
GSB → TIN	0.334	0.333	0.053	6.273	0
KNM × SIN → ENS	0.108	0.11	0.049	2.221	0.027
KNM × TIN → ENS	0.031	0.03	0.041	0.771	0.441
KNM × BIN → ENS	−0.269	−0.269	0.051	5.257	0

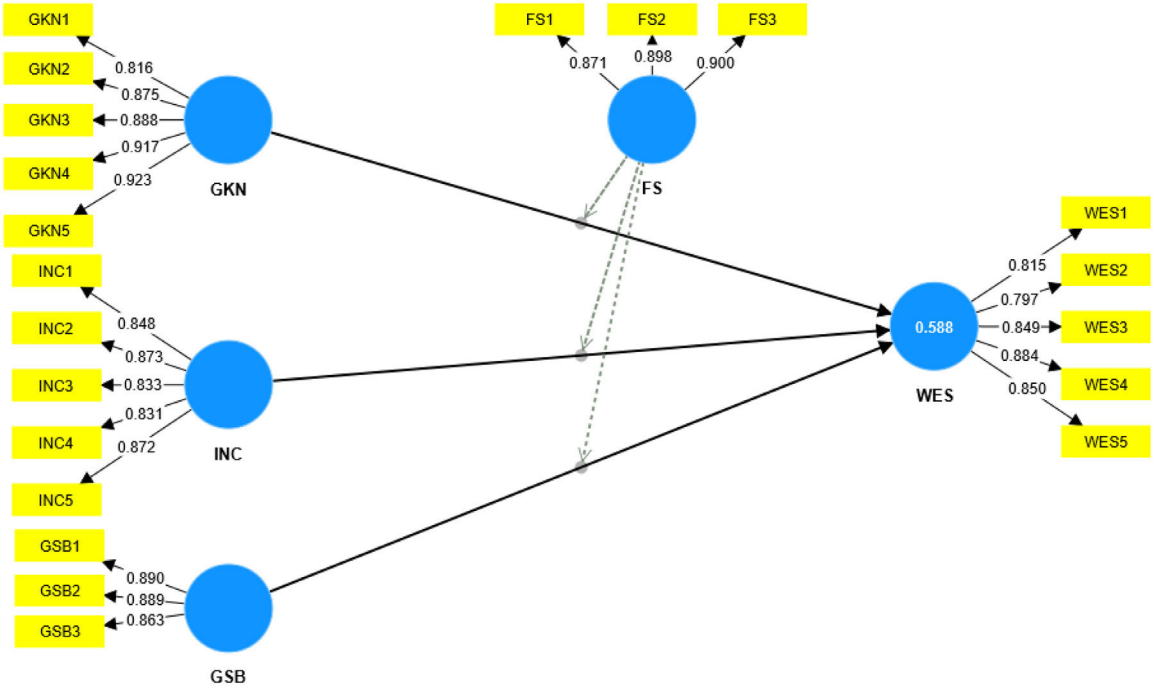

Fig. 3. Measurement Assessment Model.

Table 8
Specific indirect effect.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistic (|O/STDEV|)	P-value
GSB → BIN → ENS	0.128	0.126	0.031	4.184	0
GSB → SIN → ENS	0.044	0.044	0.021	2.084	0.038
GSB → TIN → ENS	0.023	0.023	0.016	1.486	0.138

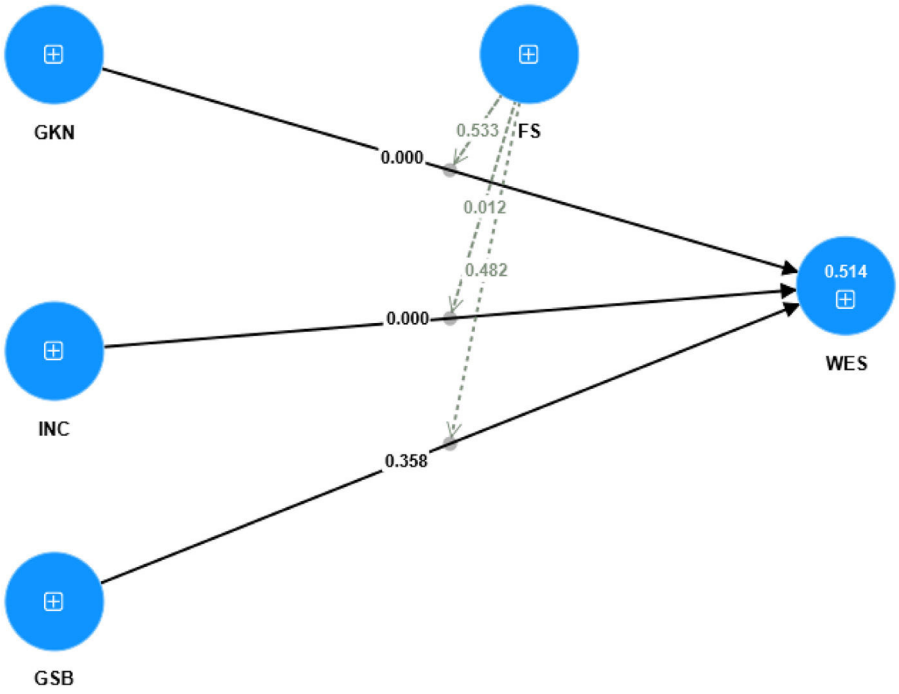

Fig. 4. Structural Assessment Model.

societal and environmental challenges, thus increasing entrepreneurial firms' efficiency and performance. Sulistyo and Ayuni (2020) also indicate that business innovation is crucial for entrepreneurial firms' success. Firms with a business innovation culture that follows the trends of the business world strengthen the integration of green behavior. As customers, stakeholders, and various other partners increasingly become environmentally conscious, they favor sustainable firms. To attract customers and gain competitive advantage, firms need to innovate their business operations, following the trends of the business world and moving toward sustainability.

The present study finds that knowledge management moderates the relationship between technological innovation and entrepreneurial success in the context of the manufacturing industry. The moderating role of knowledge management in the relationship between business and social innovation and entrepreneurial success is significant, whereas it is insignificant in the relationship between technological innovation and entrepreneurial success. Therefore, knowledge management plays a positive moderating role between social innovation and entrepreneurial success. Vézina et al. (2019) highlight the importance of knowledge management in social innovation for entrepreneurial firms' success. Knowledge management promotes a culture of ideas and information sharing, whereas social innovation deals with societal challenges through creative ideas, strategies, and solutions. Organizations that can adapt to and embrace changes can succeed in the market. Therefore, knowledge management positively moderates the relationship between business innovation and entrepreneurial success in the context of the manufacturing industry. Bolisani and Bratianu (2018) determine the importance of knowledge management in promoting business innovation. A knowledge management culture allows firms to adopt innovative strategies, policies, and ideas. As consumer needs change constantly, firms must innovate to address them efficiently and responsively. Responsiveness, flexibility, and agility lead to the success of entrepreneurial firms.

Conclusion

The manufacturing sector is facing immense pressure from various bodies globally because of its negative environmental impact. Environmental issues are increasing day by day, which threatens not only the safety of the planet but also the lives of future generations. The increasing population is also creating a huge gap in the job market, which can only be covered by entrepreneurial firms. In this study, we analyzed the positive impact of green social behavior on social, business, and technological innovation and determined how green behavior promotes and encourages these factors for firms' success. The mediating impact of social and business innovation on the relationship between green social behavior and entrepreneurial success was analyzed. The resort indicated that by using these factors, firms can gain a competitive edge. The role of knowledge management as a moderator between the variables was also analyzed. The results showed that entrepreneurial firms with knowledge management cultures can enhance their performance as well as move toward sustainability. Firms need innovative and creative solutions, ideas, and methodologies in their business activities to stay competitive. Industrialists learned that they cannot attract customers, stakeholders, and partners without integrating environment-friendly policies into their business operations. Thus, this awareness provides the insight that social, technological, and business innovations play a crucial role in the successful implementation of green behavior and operations of businesses. Through the lens of resource-based view and flow theories, this study successfully proves the point that a firm's resources shape its success in the market. The motivation of entrepreneurship is one of the factors that translate green social behavior into a key to entrepreneurial success. This study also reveals the advantageous mediating consequences of social and business innovation in the direction of entrepreneurial success, offering pragmatic implications. The study recommends that knowledge management and useful resources shape individual behaviors, thus facilitating success in the market. Thus, to nurture talent and abilities, feasible and reliable resources are needed, which encourage sustainable entrepreneurship.

Theoretical implications

This research contributes significantly to the literature, particularly in the context of the manufacturing industry of Vietnam. Entrepreneurial firms in the manufacturing industry contribute significantly to national economic growth. They create jobs and enhance economic progress through innovative and new business ventures. However, these firms face huge environmental pressure worldwide due to ozone and natural resource depletion, pollution, and waste management that negatively impact the environment. The government, policymaking bodies, and nonprofit organizations are taking initiatives to strengthen and encourage the development of sustainable entrepreneurial firms. In this study, we analyze the role of technological, business, and social innovation, green social behavior, and knowledge management. This study suggests that firms and organizations must focus on internal and external factors that motivate them to implement green strategies in their business operations to achieve successful performance.

Managerial implications

In the current era, business policies and strategies change rapidly, compelling entrepreneurial firms to focus on current trends in the business environment. This study provides insights for policymakers, regulatory bodies, managers, and governments to understand the factors involved in firms' success and motivation to become environment-friendly firms. To promote firms' sustainability through green products and services, green social behavior along with technological, social, and business innovation plays a significant role. This research guides policymakers in making policies related to entrepreneurial success using green social behavior, innovation, and knowledge management. Entrepreneurial firms must adopt a culture of knowledge management to become successful as it can act as a bridge between social innovation, technological innovation, and entrepreneurial success.

Limitations

This study has certain limitations that should be addressed in future studies. First, this research focuses on the role of green social behavior in social, business, and technological innovation. In the future, the impact of green innovation and green processes could also be studied. Second, in this study, we tested the roles of social, business, and technological innovation as mediators. In future studies, other mediators such as green management, product innovation, and process innovation could be used. Third, we tested the role of knowledge management as a moderator in the relationship between social, business, and technological innovation and entrepreneurial success. In the future, knowledge creation and knowledge application could be explored as moderators. Lastly, this study was conducted in the Vietnamese manufacturing sector, which is considered a developing economy. Thus, the results may not apply to developed countries. Therefore, similar studies could be conducted in the context of developed industries and countries.

CRediT authorship contribution statement

Yu-Te Tu: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Appendix A. Variables with measurement scale

Item	Statement	Source
Green social Behavior		
GSB1	"I plan to act in an environment-friendly way."	(Al-Ghazali & Afsar, 2021)
GSB2	"I intend to show environment-friendly behavior."	
GSB3	"I intend to show environment-beneficial behavior."	
Knowledge management		
KNM1	"My company quickly delivers information on the executive board's decisions to departments."	(Choi et al., 2020)
KNM2	"My company shares special knowledge with organizational members to contribute to the task performance of the entire organization."	
KNM3	"My company reflects market trends, information, and knowledge of new products."	
KNM4	"My company applies cases of best practices to its work."	
Entrepreneurial success		
ENS1	"I become a successful entrepreneur."	(Vod & Florea, 2019)
ENS2	"I strive to start and run my firm."	
ENS3	"I am determined to create a firm in the future."	
ENS4	"I have seriously considered starting a firm."	
ENS5	"I start a firm successfully using adequate knowledge and behavior."	
Social innovation		
SIN1	"The firm established new service processes for social work."	(Hsu et al., 2019)
SIN2	"The firm improved existing services for social work."	
SIN3	"The organization repackaged existing services for social work."	
SIN4	"The firm extended service lines for social work."	
SIN5	"The organization developed new services that competitors do not offer for social work."	
Technology innovation		
TIN1	"The technology in our industry is changing rapidly."	(Jean et al., 2010)
TIN2	"Technology changes provide big opportunities in our industry."	
TIN3	"Our industry has high technological innovations."	
Business innovation		
BIN1	"Our company launches new products."	(R. J. Lin et al., 2010)
BIN2	"Our company diversifies product lines."	
BIN3	"Our company engages in NPD to obtain patents."	
BIN4	"With NPD, our company expands to new markets."	
BIN5	"Our company launches customized products according to market demands."	

References

Alam, M. Z., Kousar, S., & Rehman, C. A. (2019). Role of entrepreneurial motivation on entrepreneurial intentions and behaviour: Theory of planned behaviour extension on engineering students in Pakistan. *Journal of Global Entrepreneurship Research*, *9*, 1–20. doi:10.1186/s40497-019-0175-1.

Al-Ghazali, B. M., & Afsar, B. (2021). Retracted: Green human resource management and employees' green creativity: The roles of green behavioral intention and individual green values. *Corporate Social Responsibility and Environmental Management*, *28*. doi:10.1002/csr.1987 536-536.

Al-Jinini, D. K., Dahiyat, S. E., & Bontis, N. (2019). Intellectual capital, entrepreneurial orientation, and technical innovation in small and medium-sized enterprises. *Knowledge and Process Management*, *26*, 69–85. doi:10.1002/kpm.1593.

Ali, A., Bahadur, W., Wang, N., Luqman, A., & Khan, A. N. (2020). Improving team innovation performance: Role of social media and team knowledge management capabilities. *Technology in Society*, *61*, 101259. doi:10.1016/j.techsoc.2020.101259.

Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, *27*, 755–775. doi:10.1177/014920630102700609.

Amoroso, S., Audretsch, D. B., & Link, A. N. (2018). Sources of knowledge used by entrepreneurial firms in the European high-tech sector. *Eurasian Business Review*, *8*, 55–70. doi:10.1007/s40821-017-0078-4.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*, 99–120. doi:10.1177/014920639101700108.

Bolisani, E., & Bratianu, C. (2018). *The emergence of knowledge management*. Springer International Publishing.

Canh, N. T., Liem, N. T., Thu, P. A., & Khuong, N. V. (2019). The impact of innovation on the firm performance and corporate social responsibility of vietnamese manufacturing firms. *Sustainability*, *11*, 3666. doi:10.3390/su11133666.

Carberry, E. J., Bharati, P., Levy, D. L., & Chaudhury, A. (2019). Social movements as catalysts for corporate social innovation: Environmental activism and the adoption of green information systems. *Business & Society*, *58*, 1083–1127. doi:10.1177/0007650317701674.

Chand, A., Kumar, N., Kumar, R. R., Prasad, S., Patel, A., & Stauvermann, P. J. (2022). Determinants of social and environmental accounting information disclosure: An analysis of top 50 firms in New Zealand. *Engineering Economics*, *33*, 118–131. doi:10.5755/j01.ee.33.2.20819.

Chau, K. Y., Hong, M. P., Lin, C.-H., Ngo, T. Q., Phan, T. T. H., & Huy, P. Q. (2023). The impact of economic and non-economic determinants on circular economy in Vietnam: A perspective of sustainable supply chain management. *Technological and Economic Development of Economy*, *29*, 1587–1610. doi:10.3846/tede.2023.19452.

Chege, S. M., & Wang, D. (2020). Information technology innovation and its impact on job creation by SMEs in developing countries: An analysis of the literature review. *Technology Analysis & Strategic Management*, *32*, 256–271. doi:10.1080/09537325.2019.1651263.

Choi, H.-J., Ahn, J.-C., Jung, S.-H., & Kim, J.-H. (2020). Communities of practice and knowledge management systems: Effects on knowledge management activities and innovation performance. *Knowledge Management Research & Practice*, *18*, 53–68. doi:10.1080/14778238.2019.1598578.

Csikszentmihalyi, M. (1990). Literacy and intrinsic motivation. *Daedalus*, *11*, 115–140.

Demirel, P., Li, Q. C., Rentocchini, F., & Tamvada, J. P. (2019). Born to be green: New insights into the economics and management of green entrepreneurship. *Small Business Economics*, *52*, 759–771. doi:10.1007/s11187-017-9933-z.

Dionisio, M., & De Vargas, E. R (2020). Corporate social innovation: A systematic literature review. *International Business Review*, *29*, 101641. doi:10.1016/j.ibusrev.2019.101641.

Dvorský, J., Bednarz, J., & Blajer-Gołębiewska, A. (2023). The impact of corporate reputation and social media engagement on the sustainability of SMEs: Perceptions of top managers and the owners. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *18*, 779–811. doi:10.24136/eq.2023.025.

Eichler, G. M., & Schwarz, E. J. (2019). What sustainable development goals do social innovations address? A systematic review and content analysis of social innovation literature. *Sustainability*, *11*, 522. doi:10.3390/su11020522.

Gao, T., Chai, Y., & Liu, Y. (2018). A review of knowledge management about theoretical conception and designing approaches. *International Journal of Crowd Science*, *2*, 42–51. doi:10.1108/ijcs-08-2017-0023.

Gao, Y., Sun, Y., Yuan, Y.-H., Xue, X., & Sheng, F. (2021). Exploring the influence of resource management between green innovation strategy and sustainable competitive advantage: The differences between emerging and traditional industries. *International Journal of Technology Management*, *85*, 101–126. doi:10.1504/IJTM.2021.115267.

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*, 1–12.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: A comparative evaluation of composite-based structural equation

modeling methods. *Journal of the Academy of Marketing Science*, *45*(5), 616–632. doi:10.1007/s11747-017-0517-x.
Hair, J. F., Jr., Howard, M. C., & Nitzl, C (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101–110. doi:10.1016/j.jbusres.2019.11.069.
Hameed, I., & Irfan, Z. (2019). Entrepreneurship education: A review of challenges, characteristics and opportunities. *Entrepreneurship Education*, *2*, 135–148. doi:10.1007/s41959-019-00018-z.
Hameed, I., Khan, M., Shahab, A., Hameed, I., & Qadeer, F. (2016). Science, technology and innovation through entrepreneurship education in the United Arab Emirates (UAE). *Sustainability*, *8*, 1280. doi:10.3390/su8121280.
Hameed, I., Zaman, U., Waris, I., & Shafique, O. (2021). A serial-mediation model to link entrepreneurship education and green entrepreneurial behavior: Application of resource-based view and flow theory. *International Journal of Environmental Research and Public Health*, *18*, 550. doi:10.3390/ijerph18020550.
Hoppe, T., & De Vries, G. (2018). Social innovation and the energy transition. *Sustainability*, *11*, 141. doi:10.3390/su11010141.
Hsu, H.-Y., Liu, F.-H., Tsou, H.-T., & Chen, L.-J. (2019). Openness of technology adoption, top management support and service innovation: A social innovation perspective. *Journal of Business & Industrial Marketing*, *34*, 575–590. doi:10.1108/jbim-03-2017-0068.
Hudáková, M., Masár, M., Buganová, K., & Môcová, L. (2023). Fostering entrepreneurship through the assessment of business risks for SMEs in V4 countries. *Engineering Economics*, *34*(4), 384–396. doi:10.5755/j01.ee.34.4.29412.
Hutasuhut, S., Thamrin, T., & Ridwan, M. (2023). A creative model of entrepreneurship learning to improve self-efficacy, entrepreneurial intention, and student achievement. *Creativity Studies*, *16*, 578–592. doi:10.3846/cs.2023.13468.
Jean, R. J. B., Sinkovics, R. R., & Kim, D. (2010). Drivers and performance outcomes of relationship learning for suppliers in cross-border customer-supplier relationships: The role of communication culture. *Journal of International Marketing*, *18*, 63–85. doi:10.1509/jimk.18.1.63.
Khan, A., & Tao, M. (2022). Knowledge absorption capacity's efficacy to enhance innovation performance through big data analytics and digital platform capability. *Journal of Innovation & Knowledge*, *7*, 100201. doi:10.1016/j.jik.2022.100201.
Le, T. T. (2020). The effect of green supply chain management practices on sustainability performance in Vietnamese construction materials manufacturing enterprises. *Uncertain Supply Chain Management*, *8*, 43–54. doi:10.5267/j.uscm.2019.8.007.
Li, B., & Xu, Z. (2022). A comprehensive bibliometric analysis of financial innovation. *Economic Research-ekonomska Istraživanja*, *35*, 367–390. doi:10.1080/1331677x.2021.1893203.
Li, H., Terjesen, S., & Umans, T. (2020). Corporate governance in entrepreneurial firms: A systematic review and research agenda. *Small Business Economics*, *54*, 43–74. doi:10.1007/s11187-018-0118-1.
Liao, L.-F. F. (2006). A learning organization perspective on knowledge-sharing behavior and firm innovation. *Human Systems Management*, *25*, 227–236. doi:10.3233/hsm-2006-25401.
Lim, K. Y. H., Zheng, P., & Chen, C.-H. (2020). A state-of-the-art survey of digital twin: Techniques, engineering product lifecycle management and business innovation perspectives. *Journal of Intelligent Manufacturing*, *31*, 1313–1317. doi:10.1016/j.ibusrev.2019.101641.
Lin, B., & Zhu, J. (2019). The role of renewable energy technological innovation on climate change: Empirical evidence from China. *Science of the Total Environment*, *659*, 1505–1512. doi:10.1016/j.scitotenv.2018.12.449.
Lin, R., Chen, R., & Kuan-shun Chiu, K. (2010). Customer relationship management and innovation capability: An empirical study. *Industrial Management & Data Systems*, *110*, 111–133. doi:10.1108/02635571011008434.
Lotfi, M., Yousefi, A., & Jafari, S. (2018). The effect of emerging green market on green entrepreneurship and sustainable development in knowledge-based companies. *Sustainability*, *10*, 2308. doi:10.3390/su10072308.
Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., & Breuer, H. (2018). The sustainable business model pattern taxonomy—45 patterns to support sustainability-oriented business model innovation. *Sustainable Production and Consumption*, *15*, 145–162. doi:10.1016/j.spc.2018.06.004.
Mardani, A., Nikoosokhan, S., Moradi, M., & Doustar, M. (2018). The relationship between knowledge management and innovation performance. *Journal of High Technology Management Research*, *29*, 12–26. doi:10.1016/j.hitech.2018.04.002.
Matenda, F. R., & Sibanda, M. (2023). The influence of entrepreneurship on economic growth in BRICS economies. *Economic Research-ekonomska Istraživanja*, *36*, 2275582. doi:10.1080/1331677x.2023.2275582.
Muo, I., & Azeez, A. A. (2019). Green entrepreneurship: Literature review and agenda for future research. *International Journal of Entrepreneurial Knowledge*, *7*, 15–27. doi:10.37335/ijek.v7i2.90.
Pletnev, D., & Kozlova, E. (2022). Employee's behavioral opportunism and alienation: Exploring the factors. *Contemporary Economics*, *16*, 106–120. doi:10.5709/ce.1897-9254.471.
Ringle, C., Da Silva, D., & Bido, D. (2015). Structural equation modeling with the smartPLS. *Brazilian Journal of Marketing*, *13*, 29–36.
Salvia, A. L., Leal Filho, W., Brandli, L. L., & Griebeler, J. S. (2019). Assessing research trends related to sustainable development goals: Local and global issues. *Journal of Cleaner Production*, *208*, 841–849. doi:10.1016/j.jclepro.2018.09.242.
Shi, L., Yao, X., & Wu, W. (2020). Perceived university support, entrepreneurial self-efficacy, heterogeneous entrepreneurial intentions in entrepreneurship education. *Journal of Entrepreneurship in Emerging Economies*, *12*, 205–230. doi:10.1108/jeee-04-2019-0040.
Shafi, M., Szopik-Depczyńska, K., Cheba, K., Ciliberto, C., Depczyński, R., & Ioppolo, G. (2022). Innovation in traditional handicraft companies towards sustainable development. A systematic literature review. *Technological and Economic Development of Economy*, *28*, 1589–1621. doi:10.3846/tede.2022.17085.
Soma, K., Van Den Burg, S. W. K., Hoefnagel, E. W. J., Stuiver, M., & Van Der Heide, C. M (2018). Social innovation - A future pathway for Blue growth? *Marine Policy*, *87*, 363–370. doi:10.1016/j.marpol.2017.10.008.
Song, M., Fisher, R., & Kwoh, Y. (2019). Technological challenges of green innovation and sustainable resource management with large scale data. *Technological Forecasting and Social Change*, *144*, 361–368. doi:10.1016/j.techfore.2018.07.055.
Soomro, B. A., Ghumro, I. A., & Shah, N. (2020). Green entrepreneurship inclination among the younger generation: An avenue towards a green economy. *Sustainable Development*, *28*, 585–594. doi:10.1002/sd.2010.
Statista. (2024). *Manufacturing sector in Vietnam - statistics & facts*. Minh-Ngoc Nguyen. Jul 5, 2024; Retrieved from https://www.statista.com/topics/10098/manufacturing-sector-in-vietnam/#topicOverview.
Streimikiene, D. (2023). Transformative changes towards carbon neutral society: Barriers and drivers. *Contemporary Economics*, *17*, 351–360. doi:10.5709/ce.1897-9254.515.
Sulistiawan, J., Moslehpour, M., Diana, F., & Lin, P. K. (2022). Why and when do employees hide their knowledge? *Behavioral sciences*, *12*(2), 56.
Sulistyo, H., & Ayuni, S. (2020). Competitive advantages of SMEs: The roles of innovation capability, entrepreneurial orientation, and social capital. *Contaduría Y Administración*, *65*, 156. doi:10.22201/fca.24488410e.2020.1983.
Timmons, E., & Spinelli, S. (2003). Entrepreneurship for the 21 St Century. *New venture creation*, *3*, 249–256.
Tomášková, E., & Kaňovská, L. (2022). Impact of cooperation flexibility on innovation flexibility in SMEs. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *17*, 533–566. doi:10.24136/eq.2022.019.
Tomislav, K. (2018). The concept of sustainable development: From its beginning to the contemporary issues. *Zagreb International Review of Economics & Business*, *21*, 67–94. doi:10.2478/zireb-2018-0005.
Vainauskienė, V., & Vaitkienė, R. (2022). Challenges to the learning organization in the context of COVID-19 pandemic uncertainty: Creativity - based response. *Creativity Studies*, *15*, 332–347. doi:10.3846/cs.2022.15109.
Varela-Candamio, L., Novo-Corti, I., & García-Álvarez, M. T. (2018). The importance of environmental education in the determinants of green behavior: A meta-analysis approach. *Journal of Cleaner Production*, *170*, 1565–1578. doi:10.1016/j.jclepro.2017.09.214.
Vézina, M., Ben Selma, M., & Malo, M. C. (2019). Exploring the social innovation process in a large market based social enterprise. *Management Decision*, *57*, 1399–1414. doi:10.1108/md-01-2017-0090.
Vietnam News. (2020). Retrieved from https://vietnamnews.vn/economy/771982/vietnam-42nd-in-global-innovation-index.html.
Vodă, A. I., & Florea, N. (2019). Impact of personality traits and entrepreneurship education on entrepreneurial intentions of business and engineering students. *Sustainability*, *11*, 1192. doi:10.3390/su11041192.
Wittmayer, J. M., Backhaus, J., Avelino, F., Pel, B., Strasser, T., Kunze, I., & Zuijderwijk, L. (2019). Narratives of change: How social innovation initiatives construct societal transformation. *Futures*, *112*, 102433. doi:10.1016/j.futures.2019.06.005.
Yi, G. (2021). From green entrepreneurial intentions to green entrepreneurial behaviors: The role of university entrepreneurial support and external institutional support. *International Entrepreneurship and Management Journal*, *17*, 963–979. doi:10.1007/s11365-020-00649-y.
Zhou, H., Zhang, X., & Ruan, R. (2023). Firm's perception of economic policy uncertainty and corporate innovation efficiency. *Journal of Innovation & Knowledge*, *8*, 100371. doi:10.1016/j.jik.2023.100371.