

Antecedents of Green Innovation Performance: the case of Bahrain

Jaafer Mohammed Al-Mesaiadeen^{1,*}, Mehdi Mili², and Ghassan Abu AL-Soud³

¹Environment and Sustainable Development Program, College of Sciences, University of Bahrain (UOB), P.O.Box 32038, Kingdom of Bahrain

²Economic and Finance Department, College of Business Administration, University of Bahrain (UOB), P.O.Box 32038, Kingdom of Bahrain

³Banking and Finance Department, Business College, Bahrain polytechnic, Isa Town, PO Box 33349, Kingdom of Bahrain

Received: 29 Dec. 2022, Revised: 6 Jan. 2023, Accepted: 7 Feb. 2023.

Published online: 1 Mar. 2023.

Abstract: Environmental management and green practices have a tenuous relationship with organisational innovation. Green innovation (GI) pioneers may attain and maintain a competitive advantage. Thus, excellent green innovation performance assists businesses in increasing their efficiency and establishing and enhancing their core competencies. The objective of the paper is to test the variables that determine the performance of GI in Bahraini businesses. The antecedents selected are green innovation strategy (GIS), green organisational identity (GOI), Environmental organisational legitimacy (EOL), and green creativity (GC). This is hoped to set the base for future research in Bahrain, as this topic in general and those variables specifically are less prevalent in the literature in Bahrain. This study applies SEM modelling through a partial least square to a sample of 47 firms from the Bahraini companies. The results suggest that GIS, EOL, and GC significantly positively impact and improve the prediction of a firm's GI performance. The impact of GOI was not substantial. This might be because managers in Bahrain do not attach a high value to the cultural identity of the organisation's members for green development. They do not work to establish shared epistemological beliefs about protecting the environment to deal with complex environmental challenges.

Keywords: Green Innovation, Green Innovation Strategy, Environmental Organisational Legitimacy, Green Creativity, Green Organisational Identity, Bahrain.

1 Introduction

A company that wants to improve its green innovation performance should begin by creating a green innovation Strategy. According to Johnson et al. [1] an organisation's strategy points to the long-term scope and direction necessary to meet market demands and satisfy stakeholder expectations. Porter, [2] claimed that a strategy is built on specific activities, and organisations must deliberately select a set of activities that deliver a unique mix of value. When businesses create a strategy to preserve the environment, they create green innovation strategies. A GIS strengthens environmental sensitivity through pollution prevention, product supervision, and non-polluting technology [3]. By producing a variety of environmentally friendly initiatives, the green innovation strategy becomes an essential source of competitive advantages, which eventually will be reflected in the firm profitability [4].

This sort of conduct may boost an organisation's sense of identity when management and internal stakeholders adopt a strategy for GI to reduce the environmental hazards of manufacturing processes and product outputs [5]. An organisation's "identity" is a snapshot of how stakeholders inside and outside, such as employees, customers, and investors, perceive the company's leadership. Organisational identity and image are crucial in comprehending and responding to strategic change [6]. Green organisational identity was proposed by Chen [7] as an interpretative structure for environmental management

*Corresponding author e-mail: j.alsoudy76@gmail.com

and preservation constructed by company members. Companies with a green organisational identity will implement environmentally friendly technologies.

Firms with a green organisational identity will quickly gain acceptance in the green community. For an action to be legitimate, it must be based on a common set of values [8]. According to Dowling and Pfeffer [9], legitimacy occurs when a company's value system aligns with the broader social value system. To better understand how businesses interact with their surroundings, legitimacy theory provides a useful framework. Additionally, the legitimacy theory describes how businesses respond to social and environmental crises, such as disclosing their goals, plans, and disclosures to the public [10]. This means that if the value of a company is in line with society's expectations on environmental issues, the company has gained environmental organisational legitimacy. Legitimacy and trust in the eyes of the public may also serve as motivation and inspiration for an eco-friendly product or program development in the future. Since green innovation is a first-mover advantage, pioneers have reaped the rewards by charging more for their environmental products, strengthening their corporate image, and entering new markets [11,12].

It is possible for an organisation that has a strong sense of green organisational identity to create unique and helpful ideas when it is subjected to external pressure to solve environmental challenges [7,13]. Those fresh and effective green concepts aid in the advancement of green innovation.

The objective of the paper is to investigate the determinants of GI. The antecedents discussed will be GIS, GOI, GC, and EOL. Scholars have seldom studied how GIS influences green innovation performance. A developing country's environmental challenges are an excellent case study for testing the theories of organisational legitimacy and organisational identity and creativity in deciding the performance of GI. The focus is on examining and assessing whether GIS, GOI, GC, and EOL are antecedents of GI in Bahraini enterprises.

The study will provide further evidence about the impact of the antecedents of GI in a developing economy, which will create a base for future research on GI in Bahrain and help make it more prevalent in the literature in Bahrain.

The rest of the paper will be organised as follows: in section 2, the literature review will be presented; in section 3, hypothesis development; section 4 is the Methodology; Sections 5 the assessments of the measurement model, which mainly focus on the validity of constructs items and section 6 is the assessment of the Structural Model (Inner model), which is mainly related to hypothesis testing. Section 7 contains a discussion of the results, and finally, section 8 includes the conclusions.

2 Literature review

2.1 Green Innovation Strategy

GIS is a company strategy that actively reduces environmental effects across all business operations and incorporates environmental stewardship into strategic planning. Implementing the GIS is a critical instrument for ensuring organisations' sustainable growth in the face of rising environmental pressure. The use of GIS represents the concept of environmental protection in terms of product design and packaging, as well as enhancing differentiation-related advantages [14]. GIS deployment has the potential to significantly boost a business's resource productivity [15]. As a result, GIS development would aid in resolving tensions between environmental conservation and economic development.

Bahrain's leaders have taken several steps to show that they are serious about solving environmental deterioration. Bahrain's government has taken various legislative and administrative actions to correct environmental deterioration. As a result, environmental regulations have been tightened by the government. Businesses have been obliged to face these issues because of growing government obligations and the tightening of national environmental rules [16]. Corporations increasingly need to include environmental problems in their strategic planning processes to deal with the rising governmental and social awareness of environmental deterioration. To achieve this, they must view the actions of their companies from the perspective of natural resources [3,17]. Because of this, many scholars are examining how corporations formulate their environmental policies and the connections between these variables [12,18].

One of the most significant environmental initiatives is a green innovation strategy. Changes to production processes, such as adopting environmental management systems, reducing resource use, and stopping pollution, are all part of green innovation [19]. GIS has been studied in the past for its impact on business performance and competitive advantage. Some researchers have looked at the connection between green innovation strategies, organisational competencies, and competitive advantages, such as [20]. Stakeholder demands, managerial environmental concerns, absorptive capacity and government environmental restrictions were examined by Eiadat et al. [19] in their study of the development of a green innovation strategy.

There are two essential benefits of utilising GIS in the automobile industry. To begin, it comprises monetary incentives for

developing ecologically sustainable goods, as well as financial benefits that boost competitiveness. In general, clients desire ecologically sustainable services and goods. As a result, GIS is viewed as a critical necessity for businesses, as it increases the likelihood of meeting client expectations without negatively impacting the environment. Historically, corporations saw investment in environmentally friendly activities as an unnecessary expense, but in light of current ecological conditions and a growing sense of environmental consciousness, firms have begun to alter their policies, competitive tactics, and business practices [21]. Second, the "green" designation is viewed as an incentive that promotes ongoing innovation and aids in developing innovative market prospects for businesses that may meet consumer expectations, create value, and improve performance [22]. For instance, Newsweek announced in 2017 that Toyota, the Japanese carmaker, was dubbed the world's greenest corporation and rated 16th on Newsweek's Global 500 list of the world's greenest firms in 2017. It was, nonetheless, ranked first in the automobile category. Toyota launched the automobile industry's first green bond backed by assets in 2014. 'Green bonds are financial instruments whose revenues are used only to support climate and ecologically sustainable programs, enabling the development and marketing of green automobiles and also contributing to Toyota's environmental commitment. [23].

2.2 Green organisational identity

2.2.1 The concept of Green Organisational Identity

The concept of organisational identity refers to everything that members of the organisation feel, what they think and what they hold of standard attitudes and visions towards their organisation, values, philosophy, organisational structures and work style, which are formed through many factors and influences. The green organisational identity expresses the beliefs adopted by the organisation's workers who care about the environment and how to protect it. The green organisational identity incentivises workers to strengthen relations with consumers and suggest creative and innovative methods to solve the problems they face [12]. The green organisational identity focuses on how to take care of the environment and the social responsibility of organisations through their success in producing green products or providing green services [24]. The green organisational identity is also concerned with the environmental management of organisations through developing green behaviours for their employees [25]. Social media can be used to build a green organisational identity by transforming social media into employee organisational storytelling as they are discussed in informal personal conversations between co-workers [26].

The organisational identity concept is relatively recent, as the research presented by Albert & Whetten [27] was considered the real beginning of this concept. Organisational identity is defined as the distinctive personality of the organisation that is perceived through the pervasive values that appear in the organisation's contacts abroad [28]. Organisational identity lies in the shared explanatory schemes that members build collectively to provide meaning for their experience. Although organisational identity can influence the thinking and behaviour of members of the organisation, they, especially leaders, can adjust their interpretations or reinforce new concepts that can reshape organisational identity when they are dealing with environmental changes [7]. It can be said that an organisation's identity is a list of the most essential, unique, and long-lasting beliefs that the organisation holds [5]. According to Albert et al. [29], the members of an organisation can better understand it, be more aware of its goal, and keep up with the organisation because they have an "organisational identity."

Chen [7] used the term "green organisational identity" to refer to an interpretative scheme concerning environmental management and preservation that members establish together to provide a kind of meaning to their actions [13]. Thus, a green organisational identity is a snapshot of how a business views its green management and how it wishes to be regarded by internal or external stakeholders, customers, and investors [30]. The more employees feel their organisational identity, the more their faith in the organisation increases, and the positives with it increase, as it directly affects their behaviour, so the organisation's goals become their goals, and its success or failure, success or failure for them. Studies have shown a mutual influence relationship between corporate social responsibility and green organisational identity. There is also a statistically significant relationship between the green organisational identity and both green vision, green products, and green behaviours of employees Chang and Chen [13], in addition to a statistically significant relationship between the green organisational identity and the environmental performance of organisations [31].

Organisations are paying more attention to environmental management issues now that there is more international regulation and customers are more aware of the environment. They also emphasise reducing environmental pollution through changing organisational behaviour [13]. Chen [7] came up with the idea of GOI, which was based on the idea that environmental protection should be a part of the organisation's identity. This way, we could ensure that organisational development and protecting the environment didn't conflict with each other [7]. The following research has looked into the link between GOI and innovation performance. Chang and Chen [13] looked into the relationship between GOI and green innovation performance. They said GOI directly affects green innovation performance but didn't say how.

Bahraini businesses have made some changes in how they think about the environment. Still, there aren't many studies in

Bahrain that are theoretically and empirically relevant to these changes. So, we need to examine whether GOI is an antecedent of GI.

2.2.2 *The positive effect of green organisational identity*

In a company, what members think about its identity affects how they feel about strategic issues. This is because the interpretations of strategic matters could change the behaviour of members of a business [31,32,33]. If environmental issues positively affect the organisation's identity, this would make the managers more likely to look for opportunities and less likely to avoid threats [34]. As a result, people who make environmental interpretations or put forward a strategic environmental vision and then follow through on it can have a green advantage [34]. An important identity can make people look for solutions and make them feel like they belong together, which can help a company do better [33]. Organisational identity, which is a core skill, can help a company be more competitive by putting new adaptive behaviours in context and giving them meaning. Organisational identity is a resource that can't be duplicated and can lead to long-term advantages. Organisational identity contributes to long-term competitive advantage by embedding activities with meanings that are distinctive to the company's context in which they are performed. Because identities are part of cultural systems of meaning, valued organisational identities can last for a long time and give them a long-term advantage over their competitors [35].

Organisational identity may not only impact member behaviour, but it can also serve as a point of reference for management interpretations of strategic concerns [33]. Thus, an organisation's thinking is moulded by its organisational identity [7]. If ecological concerns become a central part of an organisation's identity, they might be perceived positively, encouraging members to dedicate more time and effort to environmental initiatives [36].

2.3 *Environmental organisational Legitimacy*

Acquiring and sustaining environmental legitimacy has evolved into a top priority for businesses. As a result, management research has increasingly focused on how organisations acquire and maintain environmental legitimacy [37]. There are diverse individual aspects that affect stakeholder perceptions of business legitimacy. This may include, but is not limited to, environmental performance, green patenting, third-party certifications, voluntary disclosure and public communication, charitable contributions, and the worldwide reach of environmental activities [38].

EOL is described as the degree to which an organisation's environmental aims and operations conform to a widely held system of environmental standards, beliefs, and values among its stakeholders. [7]. Xiyang et al, [39] describe environmental legitimacy as "the widespread belief or assumption among stakeholders that a firm's environmental activity is desirable, legitimate, or suitable." This concept considers the notion that environmental legitimacy is a designation bestowed on a business by its external and internal constituencies, i.e., its stakeholders.

Interdependence between organisations and their stakeholders is critical not just for their existence but also for their legitimacy [40]. According to institutional theory, substantial external constraints would compel enterprises to comply with environmental norms, expectations, and laws [41]. Organisational legitimacy may assist businesses in achieving congruence between their performance and the expectations of the environment [42]. Legitimacy is critical for a company's long-term success, according to institutional theory, and hence organisational legitimacy is positively related to organisational performance [32]. Firms' primary objective is not necessarily to maximise profits but to adhere to external constraints for legitimacy [20]. If enterprises have a greater level of environmental and organisational legitimacy, they may garner additional resources and support for their Green corporate identity from stakeholders, resulting in improved green innovation performance.

In the relevant literature, four factors can be found which decide organisational legitimacy; the following is a description of those factors:

2.3.1 *Environmental Performance*

It is widely described as "measurable outcomes associated with the management of activities, goods, or services that have the potential to interrelate safely with the ecosystem" (ISO 14001, 2015). One may argue that the relationship between financial performance and legitimacy is self-evident: the greater the environmental performance, the more legitimate.

However, stakeholders are not always in a position to witness and evaluate enterprises' environmental performance as a whole. To begin, stakeholders typically lack comprehensive information on a firm's environmental objective. Even if managers act honestly, the lack of standards in reporting may create difficulties when evaluating environmental performance among organisations. Second, performance measurements, regardless of whether they indicate economic or environmental performance, are often backwards-looking and have little utility for judging a firm's current or future success, as they may not accurately reflect future actions [38].

2.3.2 Initiatives towards internal adaptation

Stakeholders form opinions about a firm's behaviour based on not just the current environmental effect but also on the anticipated future impact [43]. They may be ready to dismiss the business's existing negative environmental effect if they perceive the firm is making significant investments to mitigate it [44]. Two characteristics are particularly noticeable to stakeholders: the firm's efforts to change its operational processes and products, as this may indicate a strong commitment to environmental performance improvement, and the firm's efforts to monitor the environmental impact of operating activities, as this enables effectively maintaining successful adaptation initiatives and discontinuing unsuccessful ones [45].

2.3.3 Initiatives on a global scale

The third component refers to the scope of a business's environmental operations and worldwide coordination. Indeed, as their operations become more global, most businesses must decide whether to prioritise (1) the application of standard processes on a worldwide level organised by their head office or (2) their response to local special demands [46]. This decision may have ramifications for a firm's entire validity.

One may anticipate that large-scale efforts initiated and promoted internationally by the parent company would have a greater impact on stakeholders' perceptions of the company's environmental attitude. Multinational corporations face growing pressure to be more environmentally conscious on a worldwide scale Christmann [47], global stakeholders gain prominence, and environmental challenges such as climate change require global-level firm answers [45]. On the other hand, multinational corporations respond to local isomorphic forces [48,49]. Additionally, by adhering to local environmental standards, businesses may establish social contracts with the people in their area, demonstrating their dedication to and integration into their communities [50].

2.3.4 Impression Management Approaches

Firms' impression management strategies are designed to influence stakeholders' perceptions of the organisation. They rely on enterprises' use of language and messaging in their interactions and communication with their audiences [51]. Three distinct elements of impression management strategies are identified in the literature: (1) corporate donations Ashforth & Gibbs [52]; (2) and environmental certifications Christmann & Taylor [53], (3) the degree to which an organisation communicates both internally and publicly its environmental commitment. [54].

In summary, past research identifies four distinct sets of factors critical to the complicated processes of stakeholder assessment. They, we argue, combine in a complex fashion to account for stakeholders' perceptions of a firm's environmental conduct. As a result, we avoid establishing a priori assumptions and instead use a quasi-inductive approach to theory development.

2.4 Green Creativity

Green creativity and green innovation are related but distinct concepts, and both are essential for the success of a business in conserving the environment. The most important element is that green creativity is still a notion and not yet a reality [55]. In contrast to conventional creativity, green creativity emphasises environmental stewardship and sustainability in goods, services, and behaviours [13]. Through tenacious green creativity, businesses and society may attain environmental sustainability [56]. Additionally, green creativity is critical for adapting to global ecological sustainable changes and gaining competitive advantages.

To have a deeper understanding of how green creativity develops, we may need to go beyond the organisational level and into the individual since an individual's green creativity serves as the foundation for the organisation. Previous research has focused on the intrinsic process of green creativity [57]. Indeed, external environmental pressures on businesses may motivate executives and staff to explore green ingenuity [11]. To pursue green growth, it is critical for businesses to embrace a strategy of integrating internal resources and significant external collaboration with stakeholders, which is sometimes referred to as "open innovation" [58]. Open innovation may assist businesses in acquiring external knowledge and resources, compensating for internal inadequacies, reducing the uncertainty associated with research and development, and enhancing their learning capacity [59]. On the other hand, it would aid businesses in developing or embedding inventive external networks, expanding living space, and integrating internal and external technology in order to enhance their innovation capability [55]. As a result, businesses may develop a matching green innovation strategy that is able to reflect the impact of external influences on the company and the requirements of internal action for green innovation. Numerous studies have established a clear correlation between a green innovation strategy and green creativity [5]. However, group work is becoming more widespread, and a green innovation strategy is frequently created by senior executives, with team leaders being unable to influence this process directly in modern organisations. In light of a green innovation strategy that shows a company's commitment to environmental stewardship and establishes an atmosphere

conducive to a team's green invention Song and Yu [5], the researcher views the green innovation strategy as similar to a boundary spanner affecting green creativity.

The importance of green creativity is highlighted by reducing adverse effects on the environment for organisations to reach their primary purpose in achieving their social responsibility through their management of the green creativity cycle represented by exploration and the efficiency of its operations. Their adoption of green creativity as an organisational culture and its inclusion in their business strategies led to achieving a desirable performance environment [60]. Green creativity benefits society and the organisation and improves environmental performance [61]. In the same direction, Chen and Chang [56] showed that green creativity plays a crucial role in the organisation's environmental, social and economic performance. Therefore, it is one of the primary measures in determining its overall performance of GI.

3 Hypothesis Development

Firms must establish methods for implementing innovations in order to mitigate the negative environmental impacts of their operations. Green innovations encompass a range of technologies that enable the elimination of negative environmental consequences, hence providing significant potential for businesses to meet environmental objectives and benefits [11]. A strategy is the long-term direction and scope of an organisation in order to meet market requirements and the expectations of the stakeholder [1]. According to Eiadat et al [19], GI is a term that relates to an invention that places a premium on waste reduction, pollution avoidance, and the development of environmental management systems. Thus, GIS is a form of strategy that a business uses to execute green innovation in order to gain a competitive edge, meet market demands, and meet the expectations of stakeholders. According to Song and Yu [5], businesses should adopt a green innovation strategy in order to encourage green innovation. The following initial hypothesis is offered based on the preceding justification:

H1. Green innovation strategy in Bahraini firms has a positive impact on green innovation.

Organisational identity is a snapshot of how a business views its style of management and how it wishes to be seen by internal and external stakeholders, such as consumers and investors. Chen [7] used the term "green organisational identity" to refer to a jointly constructed interpretative system of managing and preserving environment that members in the organisation use to give meaning to their activities [7]. When environmental stewardship becomes an inherent part of an organisation's identity, environmental management and challenges become more difficult to ignore, and workers make voluntary contributions to the environment [62].

Globally, businesses have been driven to innovate and produce green goods in response to growing environmental concerns and challenges raised by stakeholders [36,63,64]. Businesses with a green organisational identity are more likely to incorporate environmentally friendly technologies into their operations, such as systems of environmental management and energy-efficient types of equipment that may assist minimise pollution and waste caused by their operations .

Additionally, organisations that care about the environment recognise the critical nature of environmental protection; hence, they demonstrate their commitment via their activities. When environmental problems become the primary focus of an organisation's identity, it motivates its members to contribute more to the environment [11]. As a result, the second hypothesis is as follows:

H2. Green organisational identity in Bahraini firms positively impacts green innovation.

In general, a business's financial aim is to maximise investors' equity. However, profit maximisation is not always the primary purpose, as a business must also contend with a variety of external influences in order to obtain legitimacy [20]. The Legitimacy theory provided a framework for understanding the interaction between companies and society. Dowling and Pfeffer [9] defined organisational legitimacy as the degree to which an organisation's operations conform to connected beliefs, norms, values, definitions, and the expectations of the stakeholders. Environmental legitimacy is defined as the widespread belief or assumption that a company's environmental performance is desirable, legitimate, or suitable [43]. People nowadays are extremely concerned and conscious of the environment, and as a result, customers have developed a strong preference for eco-friendly items. As a result, corporations are required to embrace green innovation in order to meet stakeholder expectations. Green innovation encompasses all areas of product and process development that are environmentally friendly, including pollution control, energy conservation, product design, waste recycling, and environmental management [39]. Organisational legitimacy can assist businesses in aligning their actions with societal expectations [65]. Chen et al [12] discovered that corporate social responsibility and social legitimacy are positively connected with business performance in three Mexican and five Spanish enterprises. The more a firm's legitimacy among stakeholders, the more resources and support it may obtain from both external and internal stakeholders in order to produce superior green innovations [5]. As a result, the third hypothesis is as follows:

H3. Environmental organisational legitimacy in Bahraini firms positively impacts green innovation.

Creativity is the key necessity for developing novel solutions [66]. In an organisational setting, creativity can be defined as innovative and helpful ideas, whereas innovation refers to the use of creative ideas to improve organisational processes, practices, or products [67]. While creativity is concerned with generating ideas, innovation is concerned with implementing those ideas; hence, creativity is frequently viewed as the precursor to organisational innovation [67].

Green creativity entails generating unique, creative, and beneficial concepts for environmentally friendly goods, services, processes, and activities [13]. So, when a business adopts such unique and beneficial green concepts, it initiates a process that fosters green innovation. Green clients' demands for environmental products and their behaviours may compel a business to develop concepts for green processes or products that fulfil these requirements. By meeting these needs, a business overcomes practical obstacles and strengthens its ability to create green inventions [11]. Secondly, environmental rules represent the interests of many stakeholders. Today, businesses face a rising number of strict environmental government regulations [19]. Because stakeholders demand to deal with environmental challenges, managers have started using green innovation strategies that can provide unique and beneficial ideas for green goods, services, processes, and behaviours. When a business adopts innovative green concepts to improve its operations, practices, or products, this contributes to green innovation. As a result, we suggest Hypothesis No. :4

H4: Green Creativity in Bahraini businesses positively affects Green Innovation.

4 Methodology

The study used the survey research approach. A questionnaire of 30 items was utilised to assess GI, GIS, GOI, EOL, and GC. The questionnaire was created using previously tested and validated instruments.

The questionnaire is intended for managers, supervisors, and environmental professionals working in Bahraini firms. Bahraini businesses employ various nationalities (Arab, Non-Arab, and Bahrainis). In addition, as Arabic is the primary language of the people of Bahrain, the final questionnaire was completed in English and then translated into Arabic. The eight multiple-choice questions are linked to demographic characteristics that reflect the sample's composition and distribution; these variables include Gender, level of education, age, time in service and time in present employment, as well as job and financial versus nonfinancial sector status. The range of possible solutions on a scale may be rather extensive. Respondents utilised a five-point Likert scale to indicate their level of agreement or disagreement with each item in the conceptual model's construct.

Population and sampling

The population studied to validate the conceptual model consisted of, environmental specialists, supervisors, and managers employed by (42) listed companies on the Bahrain bourse and five non-listed companies, which were added because they are regarded as major polluters due to the nature of their activities. A total of 3,600 people was evaluated for this study, from which 350 responses were obtained. The researchers ensured a response rate of one hundred percent by collecting 350 responses.

5 Assessment of measurement model

Convergent validity

As indicated in Table 1, three elements are extracted to verify convergent validity: factor loading (Individual Item reliability), composite reliability, and average variance. According to the commonality test, because all the loading values in the table are more than the threshold value (0.7), there is no problem with this data. For each construct, the composite reliability indicators were more than 0.70. Additionally, we examined the average variance extracted (AVE) for every construct. The results were much greater than the 0.5 criteria proposed by Chin [68].

Table 1: Results of Measurements Model-Convergent Validity.

Construct	Items	Loading	CR	AVE
Green innovation strategy	GIS1	0.742	0.870	0.574
	GIS2	0.771		
	GIS3	0.783		
	GIS4	0.817		
	GIS5	0.763		
Green organisation Identity	GOI1	0.735	0.894	0.585
	GOI2	0.794		

	GOI3	0.815		
	GOI4	0.777		
	GOI5	0.760		
	GOI6	0.702		
Environmental organisational legitimacy	EOL1	0.776	0.840	0.513
	EOL2	0.760		
	EOL3	0.796		
	EOL4	0.677		
	ELO5	0.762		
Green Creativity	GC1	0.739	0.907	0.619
	GC2	0.826		
	GC3	0.740		
	GC4	0.784		
	GC5	0.840		
	GC6	0.786		
Green Innovation	GI1	0.764	0.892	0.509
	GI2	0.746		
	GI3	0.745		
	GI4	0.717		
	GI5	0.771		
	GI6	0.754		
	GI7	0.703		
	GI8	0.697		

Discriminant validity

Discriminant validity refers to the extent to which items distinguish between constructs or measure different concepts. This is done by looking at the correlations between measures of constructs that might overlap. To test this type of validity, Cross-loading Variable and Correlation-Root square using Fornell-Larcker criterion comparisons were conducted in Tables 2 and 3. Table 2 shows that the square root of AVE for each construct was higher than the inter-scale correlation. Table 3 shows that all items loaded in a higher value with the same construct than other variables. This comparison satisfies the discriminant validity suggested by Chin's [68] criteria. In summary, these results indicate satisfactory reliability and convergent validity.

Table 2: Square root of AVE (Latent variable Correlation) according to the Fornell-Larcker criterion.

	Environmental organisational Legitimacy	Green Creativity	Green Innovation	Green innovation strategy	Green organisational Identity
Environmental organisation Legitimacy	0.716				
Green Creativity	0.407	0.787			
Green Innovation	0.500	0.367	0.713		
Green innovation strategy	0.352	0.314	0.451	0.758	
Green organisational Identity	0.401	0.254	0.358	0.418	0.765

Note: Bold values indicate higher factorial loads

Table 3: Discriminant Validity- Cross Loading.

	Environmental organisation Legitimacy	Green Creativity	Green Innovation	Green innovation strategy	Green organisational Identity
EOL1	0.676	0.256	0.343	0.230	0.323
EOL2	0.660	0.181	0.198	0.191	0.182
EOL3	0.796	0.289	0.404	0.242	0.315
EOL4	0.677	0.380	0.407	0.340	0.299
EOL5	0.762	0.302	0.371	0.227	0.276

GC1	0.326	0.739	0.231	0.238	0.184
GC2	0.317	0.826	0.280	0.254	0.189
GC3	0.315	0.740	0.275	0.232	0.189
GC4	0.294	0.784	0.331	0.246	0.222
GC5	0.337	0.840	0.314	0.244	0.200
GC6	0.335	0.786	0.289	0.268	0.212
GI1	0.370	0.274	0.764	0.345	0.196
GI2	0.317	0.316	0.746	0.385	0.276
GI3	0.312	0.287	0.645	0.310	0.205
GI4	0.373	0.293	0.717	0.367	0.281
GI5	0.376	0.196	0.671	0.268	0.228
GI6	0.381	0.250	0.754	0.349	0.280
GI7	0.340	0.199	0.703	0.311	0.300
GI8	0.385	0.27	0.697	0.218	0.271
GIS1	0.201	0.138	0.190	0.642	0.257
GIS2	0.259	0.252	0.288	0.771	0.275
GIS3	0.285	0.249	0.345	0.783	0.343
GIS4	0.309	0.262	0.423	0.817	0.346
GIS5	0.264	0.261	0.404	0.763	0.346
GOI1	0.276	0.201	0.351	0.280	0.735
GOI2	0.306	0.177	0.242	0.283	0.794
GOI3	0.314	0.243	0.264	0.329	0.815
GOI4	0.284	0.181	0.248	0.313	0.777
GOI5	0.337	0.194	0.288	0.400	0.760
GOI6	0.312	0.164	0.238	0.294	0.702

Note: Bold values indicate higher factorial loads.

6 Assessment of the Structural Model (Inner model)

R-squared

The R-squared value, also referred to as the coefficient of determination, is a crucial parameter for evaluating the structural model in PLS-SEM [69,70]. R-squared indicates how much variance in the dependent variable(s) can be explained by one or more predictor factors. [71,72].

Although the acceptable level of R^2 value depends on the research context Hair et al [71] and Falk and Miller [73] propose an R-squared value of 0.10 as a minimum acceptable level.

Meanwhile, Chin [74] suggests that the R-squared values of 0.67, 0.33, and 0.19 in PLS-SEM can be considered substantial, moderate, and weak, respectively. For the suggested study model, $R^2 = 0.363$, which is acceptable according to Hair et al [69] and Falk and Miller [73], and a moderate explanatory power according to Chin [74].

Effect Size (F^2)

Effect size denotes the relative effect of a certain external latent construct on latent endogenous variable(s) through R-squared changes [74].

It is determined as the ratio of the increase in R-squared of the latent construct to which the route is associated to the percentage of unexplained variance in the latent variable. [74].

According to Cohen [75], F^2 above 0.35 are considered a large effect size, F^2 ranging from 0.15 to 0.35 are medium effect size, F^2 between 0.02 to 0.15 considered a small effect size, and values less than 0.02 are considered with NO effect size. Table (4) shows that all the predictors have a small effect size except GOI which appears that it has no size effect on the outcome.

Q-squared

In addition to evaluating the magnitude of the R^2 values as a criterion of predictive accuracy, researchers should also examine Stone-Geisser's Q^2 value [76,77]. This measure indicates the model's out-of-sample predictive power or predictive relevance. In the structural model, Q^2 values larger than zero for a specific reflective endogenous latent variable indicate

the path model's predictive relevance for a particular dependent construct. The Q^2 value in the table (4) shows that the Q^2 values are above 0, which means that the model has predictive relevance for the endogenous construct.

Table 4: R-square, F-square, and Q-square for the Model Predictors.

Predictor(s)	Outcome	R Square	F square	Q square
Green Innovation Strategy	Green	0.363	0.084	0.336
Green Organisational Identity	Innovation		0.010	
Environmental Organizational Legitimacy			0.115	
Green Creativity			0.021	

The goodness of Fit of the Model (GoF)

Chiou et al [78] defined GoF as the global fit measure, the geometric mean of both average variances extracted (AVE) and the average R^2 of the endogenous variables. The purpose of GoF is to account for the study model at both levels, namely the measurement and structural model, focusing on the model's overall performance [68,79].

The calculation formula of GoF is as follows:

$$\text{GoF} = \sqrt{(R^2) \times (AVE)}$$

The criteria of GoF to determine whether GoF values are no fit, small, medium, or large, to be considered a globally valid PLS model have been given by Wetzels [80].

Table 5: below presents these criteria.

GoF less than 0.1	No fit
GoF between 0.1 to 0.25	Small
GoF between 0.25 to 0.36	Medium
GoF greater than 0.36	Large

According to table 5 above and the value of the Gof (0.430), it can be concluded that the GoF model of this study is medium enough to consider sufficient global PLS model validity.

Hypothesis Testing

Table 6: Path Coefficient of Research Hypotheses.

Hypo	Relationship	Std. Beta	Std. Error	T-Value	P-value	Decision
H1	Green innovation strategy -> Green Innovation	0.266	0.052	5.077	0.000	Supported**
H2	Green organisational Identity -> Green Innovation	0.093	0.051	1.832	0.067	Not Supported
H3	Environmental organisational Legitimacy -> Green Innovation	0.319	0.046	6.981	0.000	Supported**
H4	Green Creativity -> Green Innovation	0.133	0.057	2.305	0.021	Supported*

*Significant at 0.01 level.

7 Results discussion

According to the table above, GIS in Bahraini firms positively affects GI ($\beta=0.266$, $p<0.01$), so hypothesis 1 is supported. This result suggests that the GIS, which is a strategy that a company should implement to incorporate GI over the long term to fulfil the requirements of the marketplace and the environmental considerations of their stakeholders and to reduce the environmental impact of their operation and service activities, should be adopted as the initial step to improve green

innovation performance, which is essential for achieving a competitive advantage.

A strategy incorporating green innovations into its long-term plans, values, and objectives so that green innovation becomes an integral part of the company's operational processes would surely enhance the performance of environmental innovations inside the business.

The table also shows no statistical evidence that GOI in Bahraini firms positively affects GI ($\beta=0.093$, $p>0.05$), so H2 is not supported. It seems that managers in Bahrain do not attach much importance to the social and cultural identity of the organisation's members for green development and that they do not work to establish shared epistemological beliefs about protecting the environment to deal with complex environmental challenges. It also seems that the Bahraini society and its institutions have not yet succeeded in creating a green atmosphere. There are shortcomings by the institutions' managers in collecting the latest green knowledge. They are unsuccessful in forming a green interpretation method in which the link between organisational identity and green innovation is documented through the establishment and improvement of green knowledge and the provision of a mechanism for the institution's employees to provide expertise and technical guarantees for innovation and development of green products. The researcher acknowledges that this interpretation needs further testing and investigation.

The results in the above table also show a significant relationship between EOL and GI in Bahraini firms ($\beta=0.319$, $p<0.01$). The findings suggest that managers must assess the roles of green organisational identity and environmental organisational legitimacy in their organisations. In an era of environmental consciousness, managers must design a green innovation strategy. However, managers must also recognise that the existence of a strategy alone is inadequate to improve green innovation performance directly. Managers must investigate methods for creating a robust green company identity and use this identity to acquire environmental legitimacy from stakeholders. Organisational legitimacy may assist businesses in aligning their actions with societal expectations. Business success is positively correlated with social legitimacy. The more a company can get legitimacy from stakeholders, the larger its access to resources and assistance from internal and external stakeholders for developing better green innovation. The result is consistent with Bansal and Clelland [43], who demonstrated that environmental legitimacy might favour a company's stock price and appraisal of unsystematic risk. Better access to resources enables legitimate businesses to compete more successfully and enjoy advantageous circumstances with exchange partners [81]. If a company's stakeholders are not adequately legitimised, customers may alter their consumption, shareholders may sell their shares, and workers and suppliers may withhold their allegiance.

Finally, the results show a significant relationship between GC and GI in Bahraini firms ($\beta=0.133$, $p<0.05$). This gives support to the fourth hypothesis. This implies that when companies develop creative and valued green ideas, a mechanism to accelerate green innovation is promoted. A novel green idea or concept may effectively affect the performance of the creation of new green products. Team green creativity, which refers to the group-level green creativity created via the interactions of team members, is favourably associated with team performance. Team green creativity is one of the primary sources of green innovation for businesses. Therefore, team creativity correlates positively with new green product development performance, which refers to the development performance of products that have less of an impact on the environment, are less harmful to human health, are formed or partially formed from recycled components, are manufactured in a more energy-efficient manner, or are distributed with less packaging. Therefore, fostering green creativity in businesses is important. Some management initiatives, such as team building, brainstorming contests, and payment schemes for boosting green innovation, are viable choices.

8 Conclusions

The results show that GIS, EOL, and GC would positively affect GI performance in the context of the Bahraini business sector. Those three variables also explain 36% of the changes in GI performance. It can be concluded that fostering GI can be achieved by GIS. Having a GIS minimises the pressure of governmental policies on the business. Businesses with a proactive green innovation strategy may encourage environmental innovation Eiadat et al [19] instead of just reacting to what the government tells them to do. While executing its GIS, a company may organise the resources required for green goods or processes, fostering green innovation.

According to Chen et al [12], a GIS helps a company avoid environmental degradation's social and economic effects. It also helps the company find new market opportunities and improve its competitive advantages. People are more willing to buy eco-friendly products and even pay more for them because they care more about the environment [22]. Green product innovation and meeting customer needs require a strategy for green innovation [82]. An environmental strategy might encourage a company to use green ideas in its product designs and packaging. This would increase the degree of GI.

This research revealed that green innovation might be enhanced through GC. In other words, GC is a significant factor in determining the amount of GI inside a business. So, when companies use original, new, and valuable ideas for better green

products, services, processes, and practices, it starts a process that can help green innovation. However, we did not find a direct effect of GOI on GI. This result can be justified by the fact that companies in emerging economies like Bahrain, unlike businesses in developed countries, are still figuring out what they want to do to cut their emissions. The awareness of environmental protection is slowly growing. Under such circumstances, whether GOI can effectively promote GI has not been proven. This result gives researchers an incentive to discover the indirect impact of GOI on GI.

Finally, the study found that EOL is a variable that determines GI performance in Bahrain. This result confirms the legitimacy theory for explaining GI performance. The result also shows that for a business to have better GI performance, it needs to be accepted by the society in which it operates. Thus, the managers of companies in Bahrain should realise that GI performance will be improved with more substantial legitimacy and with the support of society.

This study relies on a cross-sectional survey, which makes it hard to establish a causal relationship between the factors under consideration. We suggest that future research utilise a longitudinal design to determine how green innovation strategy, green organisational identity, Environmental organisational legitimacy, green creativity, and green innovation affect each other at different stages of their development in various industries.

All the studied variables emerge from the same survey instrument, so common method variance is a potential problem. The researcher separated the independent and dependent variables psychologically so that respondents may not perceive the measurement of the independent variable to be related to the dependent variable, which will reduce this issue and is unlikely to be serious. For future studies, the researcher recommends collecting data from different information sources for the independent and dependent measures, especially if the dependent variable will be measured by statements rather than secondary data. This approach can reduce the possibility of common method variance.

The study also cannot be generalised to cover entire emerging economies. Our findings stem from a Bahraini context only.

This study explored how green innovation strategy affects green innovation through GOI, EGL, and GC mechanisms. This study did not consider other factors such as leadership, human resource management, etc. Therefore, future studies could use a longitudinal research design to investigate how the interactions between leadership, human resource management and green innovation strategy affect green innovation at the different stages, which may find different results.

In this study, empirical data are taken from several industries in Bahrain. Even if the study findings are generalisable regarding green innovation, each industry survey has specific characteristics. Thus, further research can helpfully focus on particular industries, such as manufacturing. In addition, the cultural aspects of the sample may limit the generalizability of our findings. The researcher suggests that researchers conduct a similar investigation in a western cultural context to determine the applicability of our results.

References

- [1] Johnson G., Scholes K. and R Whittington. Exploring Corporate Strategy, 7th Edition, Prentice Hall (2005).
- [2] Porter, M. What is strategy? Harvard Business Review., **74(6)**, 61–78 (1996).
- [3] Hart, S. L. Beyond Greening: Strategies for a Sustainable World Harvard Business Review., **75(1)**, 67-76 (1997).
- [4] DeBoer, J., Panwar, J. and Rivera, J. Toward a Place-Based Understanding of Environmental Sustainability: The Role of Green Competitors and Green Locales in Firms' Voluntary Environmental Engagement. Business Strategy & the Environment., **26**, 940–955 (2017).
- [5] Song, W. and Yu, H. "Green innovation strategy and green innovation: the roles of green creativity and green organisational identity", Corporate Social Responsibility and Environmental Management., **25(2)**, 135-150 (2017).
- [6] Gioia, D.A. "From individual to organisational identity", in Whetten, D.A. and Godfrey, P.C. (Eds), Identity in Organisations: Developing Theory through Conversations, Sage Publication, Thousand Oaks, CA., 17-31 (1998).
- [7] Chen, Y.S. "Green organisational identity: sources and consequence", Management Decision., **49(3)**, 384-404 (2011).
- [8] Parsons, T. Structure and Process In Modern Societies, Free Press, New York, NY (1960).
- [9] Dowling, J. and Pfeffer, J. "Organisational legitimacy: social values and organisational behavior", The Pacific Sociological Review., **18(1)**, 122-136 (1975).
- [10] Mousa, G.A. and Hassan, N.T. "Legitimacy theory and environmental practices: short notes", International Journal of Business and Statistical Analysis, Vol. 2 No. 1, pp. 41-53 (2015).
- [11] Lin, R.J., Chen, R.H. and Huang, F.H. "Green innovation in the automobile industry", Industrial Management & Data Systems, Vol. 114 No. 6, pp. 886-903 (2014).

- [12] Chen, Y.S., Lai, S.B. and Wen, C.T. "The influence of green innovation performance on corporate advantage in Taiwan", *Journal of Business Ethics*, Vol. 67 No. 4, pp. 331-339 (2006).
- [13] Chang, C.H. and Chen, Y.S. "Green organisational identity and green innovation", *Management Decision*, Vol. 51 No. 5, pp. 1056-1070 (2013).
- [14] Li XW, Du JG, Long HY . Dynamic analysis of international green behavior from the perspective of the mapping knowledge domain. *Environ Sci Pollut Res* 26(6):6087–6098 (2019).
- [15] Porter, M.E. and Van der Linde, C. "Green and competitive: ending the stalemate", *Harvard Business Review*, Vol. 73 No. 5, pp. 120-134 (1995).
- [16] AL-sartawi, A. & Al-Affifi, A., Badawi, S., Hamdan, A. Reyad, S. & Elshaker, A. *Joining the Green Movement: The Relationship Between Green Innovation and Business Performance*. Conference: 20th European Conference on Knowledge Management at Portugal, Volume 2 (2021).
- [17] Chan, R. Y. Does the natural-resource-based view of the firm apply in an emerging economy? A survey of foreign invested enterprises in China. *Journal of Management Studies*, 42(3), 625–672 (2005).
- [18] Qi, G. & Zeng, S. & Chiming, Tam & Yin, Haitao & Zou, Hailiang. Stakeholders' Influences on Corporate Green Innovation Strategy: A Case Study of Manufacturing Firms in China. *Corporate Social Responsibility and Environmental Management*. 20.(1) (2013).
- [19] Eiadat, Y., Kelly, A., Roche, F. and Eyadat, H. "Green and competitive? An empirical test of the mediating role of environmental innovation strategy", *Journal of World Business*", Vol. 43 No. 2, pp. 131-145 (2008).
- [20] Sharma, S., Pablo, A.L. and Vredenburg, H. "Corporate environmental responsiveness strategies: the importance of issue interpretation and organisational context", *The Journal of Applied Behavioral Science*, Vol. 35 No. 1, pp. 87-108 (1999).
- [21] Porter, Michael & Reinhardt, Forest. A strategic approach to climate. *Harvard Business Review*. 85. 22-26+162 (2007).
- [22] Chen, Y.S. The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms. *Journal of Business Ethics*, 77, 271-286 (2008).
- [23] Lin W.L., Cheah J.H., Azali M., Ho J.A., Yip N. Does firm size matter? Evidence on the impact of the green innovation strategy on corporate financial performance in the automotive sector *J. Clean. Prod.*, 229, pp. 974-988 (2019).
- [24] Tepe Küçükoğlu, Mübeyyen & Pınar, R. Positive Influences of Green Innovation on Company Performance. *Procedia - Social and Behavioral Sciences*. 195 (2018).
- [25] Rasool, Samma Faiz, Mansi Wang, Minze Tang, Amir Saeed, and Javed Iqbal. "How Toxic Workplace Environment Effects the Employee Engagement: The Mediating Role of Organizational Support and Employee Wellbeing" *International Journal of Environmental Research and Public Health* 18, no. 5: 2294 (2021).
- [26] Madsen P. *Challenging Identities* (1st ed.). Taylor and Francis (2016).
- [27] Albert, S. and Whetten, D.A. "Organisational identity", *Research in Organizational Behavior*, Vol. 7, pp. 263-295 (1985).
- [28] Aust, Philip. Communicated values as indicators of organisational identity: A method for organisational assessment and its application in a case study. *Communication Studies*. 55. 515-534 (2004).
- [29] Albert S, Ashforth BE, Dutton JE. Organisational identity and identification: charting new waters and building new bridges. *Acad Manag Rev* 25(1):13–17 (2000).
- [30] Soewarno, N., Tjahjadi, B., & Fithrianti, F. Green innovation strategy and green innovation: The roles of green organisational identity and environmental organisational legitimacy. *Management Decision*, 57 (11), 3061–3078 (2019).
- [31] Xing X, Wang J, Tou L. The Relationship between Green Organization Identity and Corporate Environmental Performance: The Mediating Role of Sustainability Exploration and Exploitation Innovation. *Int J Environ Res Public Health*. 14;16(6):921 (2019).
- [32] Gioia, D.A. and Thomas, J.B. "Identity, image, and issue interpretation: sense making during strategic change in

- academia", *Administrative Science Quarterly*, Vol. 41 No. 3, pp. 370-403 (1996).
- [33] Dutton, J. E., & Dukerich, J. M.. Keeping an eye on the mirror: Image and identity in organisational adaptation. *Academy of Management Journal*, 34(3), 517–554 (1991).
- [34] Fernández, E.; Junquera, B.; Ordiz, M. Organisational culture and human resources in the environmental issue: A review of the literature. *Int. J. Hum. Resour. Manag.* 2003, 14, 634–656 (2003).
- [35] Fiol, C.M. "Revisiting an identity-based view of sustainable competitive advantage", *Journal of Management*, Vol. 27 No. 6, pp. 691-9 (2001).
- [36] Sharma, S. "Managerial interpretations and organisational context as predictors of corporate choice of environmental strategy", *Academy of Management Journal*, Vol. 43 No. 4, pp. 681-697 (2000).
- [37] Gomulya, D., & Mishina, Y. Signaler credibility, signal susceptibility, and relative reliance on signals: How stakeholders change their evaluative processes after violation of expectations and rehabilitative efforts. *Academy of Management Journal*, 60(2), 554–583 (2017).
- [38] Berrone, Pascual & Fosfuri, Andrea & Gelabert, Liliana. Does Greenwashing Pay Off? Understanding the Relationship Between Environmental Actions and Environmental Legitimacy. *Journal of Business Ethics*. 144 (2017).
- [39] Xiyang Luo, Ruimin Zhang & Wei Liu. Environmental legitimacy pressure, political connection and impression management of carbon information disclosure, *Carbon Management*, 13:1, 90-104 (2022).
- [40] Massey, J.E. "Managing organisational legitimacy: communication strategies for organisations in crisis", *The Journal of Business Communication*, Vol. 38 No. 2, pp. 153-183 (2001).
- [41] Scott, W. Richard Scott Institutions and Organisations. Ideas, Interests and Identities. *Management*. 17. 136 (1995).
- [42] Kostova, T. and Zaheer, S. "Organisational legitimacy under conditions of complexity: the case of the multinational enterprise", *The Academy of Management Review*, Vol. 24 No. 1, pp. 64-81 (1999).
- [43] Bansal, P., Clelland, I., Talking trash: Legitimacy, impression management, and unsystematic risk in the context of natural environment. *Acad. Manag. J.* 47 (1), 93-103 (2004).
- [44] Bansal, P. Evolving Sustainably: A Longitudinal Study of Corporate Sustainable Development. *Strategic Management Journal*, 26, 197-218 (2005).
- [45] Zollo M., Bettinazzi E., Neumann K., Snoeren P. Toward a comprehensive model of organisational evolution: Dynamic capabilities for innovation and adaptation of the enterprise model. *Global Strategy Journal*, 6, 225-244 (2016).
- [46] Husted, Bryan & Allen, David. Corporate Social Strategy in Multinational Enterprises: Antecedents and Value Creation. *Journal of Business Ethics*. 74. 345-361 (2007).
- [47] Christmann, Petra. Multinational Companies and the Natural Environment: Determinants of Global Environmental Policy Standardization. *Academy of Management Journal*. 47. 747-760 (2004).
- [48] Durand, R., & Jacqueminet, A. Peer conformity, attention, and heterogeneous implementation of practices in MNEs. *Journal of International Business Studies*, 46(8): 917–937 (2015).
- [49] Rathert, N. Strategies of legitimation: MNEs and the adoption of CSR in response to host-country institutions. *Journal of International Business Studies*, 47(7): 858-879 (2016).
- [50] Donaldson, T., & Dunfee, T. Ties that Bind: A Social Contracts Approach to Business Ethics. Harvard Business School Press (1999).
- [51] Suddaby, R. O. Y., Bitektine, A., & Haack, P. Legitimacy. *Academy of Management Annals*, 11(1): 451–478 (2017).
- [52] Ashforth, B. E., & Gibbs, B. The double-edge of organisational legitimation. *Organisation science*, 1(2): 177–194 (1990).
- [53] Christmann, P., & Taylor, G. Firm self-regulation through international certifiable standards: determinants of symbolic versus substantive implementation. *Journal of International Business Studies*, 37(6). 863–878 (2006).
- [54] Suddaby, R., & Greenwood, R. Rhetorical Strategies of Legitimacy. *Administrative Science Quarterly*, 50(1): 35–67 (2005).

- [55] Yun, J.J.; Lee, M.H.; Park, K.B.; Zhao, X. Open innovation and serial entrepreneurs. *Sustainability*, 11, 5055 (2019).
- [56] Chen YS, Chang CH. The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics* 116(1): 107–119 (2013).
- [57] Mittal, S.; Dhar, R.L. Transformational leadership and employee creativity: Mediating role of creative self-efficacy and moderating role of knowledge sharing. *Manag. Decis.*, 53, 894–910 (2015).
- [58] Chesbrough, H. *Open Innovation, the New Imperative for Creating and Profiting from Technology*; Harvard Business School Press: Boston, MA, USA (2003).
- [59] Setini, M.; Yasa, N.N.K. Gede Supartha, I.W.; Ketut Giantari, I.G.A.; Rajiani, I. The Passway of Women Entrepreneurship: Starting from Social Capital with Open Innovation, through to Knowledge Sharing and Innovative Performance. *J. Open Innov. Technol. Mark. Complex.* 6, 25 (2020).
- [60] Reuvers, F. What is new about green innovation, MA thesis, University of Twente (2015).
- [61] Diegel, O., S. Singamneni, S. Reay, and A. Withell. Tools for sustainable product design: Additive manufacturing. *Journal of Sustainable Development* 3(3): 68–75 (2010).
- [62] Smith, A. M., & O'Sullivan, T. Environmentally responsible behavior in the workplace: An internal social marketing approach. *Journal of Marketing Management*, 28(3–4), 469–493 (2012).
- [63] Tseng, M.L., Tan, R.R. and Siriban-Manalang, A.B. "Sustainable consumption and production for Asia: sustainability through green design and practice", *Journal of Cleaner Production*, Vol. 40, pp. 1-5 (2013).
- [64] Green, K.W. Jr, Zelbst, P.J., Bhadauria, V.S. and Meacham, J. "Do environmental collaboration and monitoring enhance organisational performance?", *Industrial Management & Data System*, Vol. 112 No. 2, pp. 186-205 (2012).
- [65] Bettinazzi, E.; Massa, L.; Neumann, K. Sustainability as a competitive tool for the brave? Or for the best? A behavioral theory perspective. *Organization and Environment*, Organization & Environment. - SAGE Publications, vol. 33, no. 3, p. 408-436 (2019).
- [66] Halbesleben, J.R.B.; Novicevic, M.M.; Harvey, M.G.; Buckley, M.R. Awareness of temporal complexity in leadership of creativity and innovation: A competency-based model. *Leadersh. Q.*, 14, 433–454 (2003).
- [67] Anderson, N., Potočník, K., & Zhou, J. Innovation and creativity in organisations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40, 1297-1333 (2014).
- [68] Chin, W. W. How to write up and report PLS analyses. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial least squares: concepts, methods, and applications in marketing and related fields* (pp. 655–690). Berlin: Springer (2010).
- [69] Hair, J. F., Ringle, C. M., & Sarstedt, M. PLS-SEM: Indeed, a silver bullet. *Journal of Marketing Theory and Practice*, 19,(2) 139–151 (2011).
- [70] Hair, J.F., Sarstedt, M., Ringle, C.M. Mena J. A. An assessment of partial least squares structural equation modelling in marketing research. *J. of the Acad. Mark. Sci.* 40, 414–433 (2012).
- [71] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. *Multivariate data analysis* (7th ed.). Englewood Cliffs: Prentice Hall (2010).
- [72] Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall (2006).
- [73] Falk, R. F., & Miller, N. B. *A primer for soft modeling*. University of Akron Press (1992).
- [74] Chin, W. W. Commentary: Issues and Opinion on Structural Equation Modeling. *MIS Quarterly*, 22(1), vii–xvi (1998).
- [75] Cohen, J. *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum (1988).
- [76] Geisser, S. A Predictive Approach to the Random Effects Model, *Biometrika*, 61(1): 101-107 (1974).
- [77] Stone, M. Cross-Validatory Choice and Assessment of Statistical Predictions, *Journal of the Royal Statistical Society*, 36(2): pp 111-147 (1974).
- [78] Chiou T., Chan H. K., Lettice F. Chung S. The Influence of Greening the Suppliers and Green Innovation on

- Environmental Performance and Competitive Advantage in Taiwan Transportation Research Part E Logistics and Transportation Review 47(6):822-836 (2011).
- [79] Henseler J. and Sarstedt M. Goodness-of-Fit Indices for Partial Least Squares Path Modeling Computational Statistics 28(21):565-580.Author (2013).
- [80] Wetzels, M., Odekerken-Schroder, G. and Van Oppen, C. Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. MIS Quarterly, 33, 177-195 (2009).
- [81] Oliver, C. Strategic Responses to Institutional Processes. The Academy of Management Review, 16(1), 145–179(1991).
- [82] Driessen PH, Hillebrand B, Kok RA, Verhallen TM. Green new product development: the pivotal role of product greenness. IEEE Transactions on Engineering Management 60(2): 315–326 (2013).