**ORIGINAL ARTICLE**

# Resources and green strategic intent: towards improving the competitiveness of Tunisian industrial companies

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## Abstract

Nowadays, particular attention is given to the environmental issues related to companies' activities. Thus, a significant concern is granted to the environmental issues worldwide, including the business world. Drawing on the resource-based view and the strategic intent approach, this study examines the relationship between socio-organizational manoeuvres undertaken by companies to protect the environment, green strategic intent, and environmental competitiveness. It also explores the moderating effect of environmental culture on the relationship between green strategic intent and environmental competitiveness. This study was conducted among 62 Tunisian industrial companies. Structural equation modelling using SmartPLS 2.0 was used to investigate the relationships between the study variables. The results show the positive effect of awareness of environmental issues, practical and technical responses to the effects of pollution and revelation for green marketing on the companies' green strategic intent. The findings indicate that green strategic intent partially mediates the relationships between revelation for green marketing and environmental competitiveness. This study suggests that a decision-maker exploits environmental commitments in the exploration and exploitation of new keys to success, innovation, and improving the competitiveness of their enterprises. The results contribute to the environmental management literature by highlighting the socio-organizational manoeuvres undertaken by companies to protect the environment to act with a green strategic intent. Moreover, they emphasise the importance of the resources of the company to develop environmental strategic orientations and gain a competitive advantage.

**Keywords** Green strategic intent · Proactive environmental strategy · Company's resources · Environmental competitiveness · Environmental culture

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# Introduction

Environmental problems such as climate change, resource depletion, and the loss of biodiversity and ecosystem integrity produce significant and complex management problems in the world (Rugman and Verbeke 1998). So, taking into account the environmental values in the business world can promote their integration into the overall business strategy.

Industrial companies and managers must be aware of the importance of the resources and the environmental actions for sustainable development and competitive advantage (Hart 1995; Hart and Dowell 2011). According to Aragon-Correa et al. (2017), when companies integrate the environmental and social issues into their strategic orientations, they can maximise societal benefits, prosper business corporations and create economic value. Companies can maintain a balance between their goals and the needs of society.

Indeed, the consideration of the environmental issues in the overall business strategy can make partial or radical changes in the processes and the procedures adopted by organisations. Adopting a green strategic vision aims to master the environmental dimension (Hart 1997). Besides, the strategic intent involves a process of active management to draw the attention of companies to the essence of success, the mobilisation of efforts towards the achievement of a fixed and clear objective, the contribution of staff and employees to achieve this objective, to maintain enthusiasm through providing new operational orientations and making the best use of resources (Hamel and Prahalad 1989). Therefore, the green strategic intent is to pursue a green vision. That's why companies should mobilize resources and business skills to find innovative solutions to reduce the impacts of their activities on the natural environment and to succeed in their environmental orientations, which can result in a sustainable competitive advantage and values. This vision of environmental management justifies the interest to integrate environmental concerns into the overall business strategy. Reducing pollution is not only beneficial to the environment but also to enterprises.

Previous studies on environmental management have focused on the role of implementing environmentally responsible actions in the pursuit of environmental strategy (Brammer et al. 2012; Gribaa et al. 2010). Empirical studies show the relationship between corporate commitment to ecological issues and adopting a proactive strategy (Aragon-Correa 1998; Buysse and Verbeke 2003; Pondeville 2003a; Pondeville et al. 2013; Worthington and Patton 2005); and others focus on the mobilisation of internal resources to the development of a sustainable development strategy (Heikkurinen and Forsman-Hugg 2011; Toppinen et al. 2012; Wu et al. 2012). Drawing on the resource approach, the identification and the development of resources and skills of the company can promote the environmental strategic orientations and gain a competitive advantage (Heikkurinen and Forsman-Hugg 2011; Toppinen et al. 2012; Wu et al. 2012). Moreover, several studies have analysed the effect of environmental capabilities on business competitiveness (Brulhart and Gherra 2015; Graham and McAdam 2016) and firm performance (Dzhengiz and Niesten 2020; Perez-Valls et al. 2016).

Indeed, Aragon-Correa et al. (2013) analysed the importance of human resource practices to the development of proactive environmental approaches in the firm. They specifically examined the relationship between proactive environmental strategies and human resource practices of information sharing and promoting collaboration among employees. Another stream of research suggested the importance of levers of control to implement an environmental strategy (Arjaliès and Mundy 2013; Journeault et al. 2016). The integration of the environmental aspects into the management controls can turn the environmental strategic intents into eco-practices (Journeault et al. 2016).

The emphasis on the environmental issues in the world of business highlights the importance and urgency of reducing the impact of the production cycles on the environment (Henri and Giasson 2006). Although, firms have an important role in the appearance of ecological problems, they can still take advantage of the adoption of environmentally responsible vision.

According to Hart (1997), companies are increasingly committed to protecting the environment. Changes are introduced in products and the production processes that have become "cleaner". So, companies are increasingly aware of the importance of environmentally responsible policies. However, the green commitments require the mobilisation of various resources. Thus, companies can undertake socio-organizational manoeuvres to protect the environment through a combination of resources that will help build a sustainable competitive advantage.

This study will therefore ask the following research questions: do the socio-organizational manoeuvres undertaken by companies to protect the environment stimulate these companies to act with a green strategic intent? And is the relationship between the socio-organizational manoeuvres undertaken by companies to protect the environment, and the environmental competitiveness mediated by the green strategic intent?

The actions of Tunisian companies to protect the environment constitute a contribution to the international efforts deployed for the natural environment. In the context of Tunisia, most studies focus on the environmental commitments (Gribaa et al. 2010; Turki 2009). So we found it useful to conduct a study on the environmental strategic orientations, especially the green strategic intent. We analyse how the socio-organizational manoeuvres to protect the environment strengthen the environmental strategic orientations of companies and their competitiveness. We use resource-based view (RBV) theory and strategic intent approach to develop an integrated model to (1) investigate the effects of socio-organizational manoeuvres to protect the environment on green strategic intent, (2) explore how green strategic intent mediates the effect of socio-organizational manoeuvres to protect the environment on environmental competitiveness, (3) examine how environmental culture moderates the relationship between green strategic intent and environmental competitiveness. We use survey data from 62 Tunisian enterprises to test our conceptual model. This study contributes to the strategic environmental management literature by linking the mobilisation of various resources within the company to green strategic intent. We analyse how these environmental strategic orientations contribute to the improvement of environmental competitiveness. The contingent role of environmental culture has been incorporated into the model.

The remainder of this paper is organised as follows. The next section presents the theoretical framework. The third section describes the methodology, including a sample definition and the measures of constructs. The fourth section presents the findings, followed by the discussion and conclusion of this study.

## Theoretical framework

In the mid-eighties, the concept of strategic intent appeared mainly in the work of Hamel and Prahalad (1989), in opposition to the strategies based on imitation. Strategic intent is a new concept of the corporate strategy proposed by Hamel and Prahalad (1989). The company no longer seeks to adapt to its competitive environment but to transform it. Therefore, the company that has unique resources and core competencies can create a new market space (Saï as and Metais 2001, p 198).

### Resources and strategic intent

Due to the increasingly complex and unstable environments, the old approach of strategic planning and strategic positioning is no longer compatible with the new context. Strategies focused on intent and movement are then best suited to a completely open environment (Cadet et al. 2008). Besides, the strategic intent is the result of an ambitious vision of the future and combines the resources needed to achieve one or more expected goals (Varraut 1998). To rely on its resources and core competencies, company can change industry rules to outpace competitors.

The resource-based view (RBV) theory suggested that only the resources of the firm that are heterogeneous and imperfectly mobile can build a competitive advantage. These resources must be valuable, rare, imperfectly imitable and non-substitutable (Barney 1986).

The work of Barney (1986), Penrose (1959) and Wernerfelt (1984) contributed to the progressive development of the concept of resources, which is considered a fundamental element of the strategy. These authors contributed to identifying how strategic resources can drive business growth and diversification, or the creation of sustainable competitive advantage (Sanchez 2000, p 61).

According to Sanchez (2000, p 61), parallel to the role of resources in the identification of strategic behaviour of the firms, there is a growing awareness of the importance of the relative abilities of firms to use their resources and create new ones. The concept of dynamic capabilities has been developed in the work of Amit and Schoemaker (1993), Nelson and Winter (1982) and Teece et al. (1997). They developed an analysis of the key features of the dynamic capabilities of the firms to create and use resources. Furthermore, Nelson and Winter (1982) affirmed that the expertise of the firm resides on organisational routines, which are defined as repetitive activities that develop when using specific resources. These routines develop organisational learning and thus their expertise.

According to Grant (1991, p 131), the approach based on resource concerns not only the exploitation of existing resources but also the development of the firm's

portfolio of resources to achieve a competitive advantage and expand strategic opportunities of the firm. While the traditional view of strategy "focuses on the degree of fit between existing resources and current opportunities, strategic intent creates an extreme misfit between resources and ambitions" (Hamel and Prahalad 1989, p 153).

However, the strategic intent that incorporates the strategic direction and marketing objectives of a company helps the company to more effectively combine its resources and capacities to develop organisational skills. With reference to the principles of strategic intent, companies impose their resources as key factors in their success.

## The contribution of the company's resources to the development of a proactive environmental strategy and to the improvement of competitiveness

For several years, management research has focused on environmental responsibility, since it represents a source of new strategic opportunities for managers. Some research has suggested several types of environmental strategy (Hunt and Auster 1990; Roome 1992). These typologies classify companies based on their management practices of protecting the natural environment. Moreover, they match the pattern of corporate social responsibility developed by Carroll (1979) that identifies in his model four types of business strategy: reactive, defensive, accommodative, and proactive.

Indeed, Hart (1995) developed the natural-resource-based view (NRBV) of the firm, which is based on the RBV. Hart (1995) proposed three strategies that arise from the relationship between the company and the natural environment: pollution prevention, product stewardship and sustainable development. The strategy for preventing pollution stipulates the continuous compliance of processes and products of companies with legal requirements. Product stewardship requires that products and manufacturing processes are designed to minimise the negative environmental impacts during the life cycle of products. Finally, sustainable development seeks to minimise the environmental impact of business growth through the development of clean technologies. The third strategy requires a long-term vision shared by all stakeholders and the moral qualities of the entrepreneur (Buysse and Verbeke 2003).

According to Buysse and Verbeke (2003), the classification of Hart (1995) enables us to differentiate five types of resources allocated by a company to become "green". These types are the following:

– Investments in green technologies.
– Investments in employee skills, allocation of resources for environmental education.
– Investments in organisational skills (R & D, procurement, production, sales, environmental management …)
– Investments in environmental management system: the definition of environmental policy, the environmental disclosure and the analysis of the product life cycle.

– Efforts to redesign the strategic planning process, considering the environmental issues.

The NRBV is reviewed by Hart and Dowell (2011). These authors suggested how the NRBV informs research on the resources and capabilities needed to adopt proactive environmental strategies. The NRBV is included in several studies, like those of Aragon-Correa and Sharma (2003), Buysse and Verbeke (2003), Rugman and Verbeke (1998) and Sharma and Vredenburg (1998). These authors examined the development of a proactive environmental strategy based on the available resources and expertise. More recent works have focused on NRBV, highlighting the relevance of strategic resources for proactive environmental strategy and company competitiveness (Brulhart and Gherra 2015; De Stefano et al. 2016; Graham 2018; Graham and McAdam 2016). Indeed, Hart (1995, p 2003) suggested a relationship between the resources necessary for sustainable development and the establishment of a shared vision of the future. Thus, the following hypothesis is proposed:

**H1** The more companies undertake socio-organizational manoeuvres to protect the environment, the more they are likely to act with a green strategic intent.

Strategic intent highlights an ambitious vision and devotes efforts to build a new competitive advantage to make the most of limited resources (Hamel and Prahalad 1989, p 153). Drawing on the RBV and NRBV, green strategic intent involves a shared vision of the future. Environmental issues are perceived as a source of long-term competitive advantage.

According to Judge and Douglas (1998), the resources provided to natural environmental issues allow companies to integrate environmental issues into the strategic planning process and the strengthening of environmental performance. The firm's resources contribute to developing strategic capabilities that facilitate environmental sustained activity and gain a competitive advantage (Hart 1995; Hart and Dowell 2011).

Moreover, the implementation of specific organisational structures and green practices helps firms to develop an environmental strategy and to be more agile and versatile in their responses to environmental issues. Thus, it will be easy to increase saving costs and to stimulate differentiation (Perez-Valls et al. 2016).

Thus, recent research has examined the relationship between environmental capabilities, environmental strategy, firm performance, and competitiveness (Bae 2017; Borland et al. 2016; Brulhart and Gherra 2015; Dzhengiz and Niesten 2020). Environmental capability, such as a firm's ability to reduce damage to the natural environment, entails a change at the level of the organisation, leading to the development of environmental competencies and performance (Dzhengiz and Niesten 2020). Environmental capabilities as resources are a positive effect on environmental strategy, and firms can gain a competitive advantage (Bae 2017). Integrating environmental concerns into strategic orientations contributes to reducing costs and to have positive effects on the corporate image and reputation

(Borland et al. 2016). So, firms can improve the innovation process and develop a strategic opportunity for differentiation through products that respect the environment (Brulhart and Gherra 2015).

Indeed, the environmental strategy enables enterprises to develop unique competitively valuable organisational capabilities (Sharma and Vredenburg 1998) that positively influence environmental competitiveness (Wagner and Schaltegger 2004). Moreover, Wagner and Schaltegger (2004) define environmental competitiveness that "part of overall corporate competitiveness and economic performance of company, which is created and influenced by environmental management". Thus, environmental competitiveness is the company's ability to maintain and increase its market share based on an eco-friendly commitment. Environmental improvement is an economic and competitive opportunity, not as an inevitable threat (Porter and Linde 1995). Therefore, the following hypothesis is proposed:

**H2** Green strategic intent mediates the relationship between socio-organizational manoeuvres to protect the environment and environmental competitiveness.

According to Hofstede (1990), organisational culture is observed through the behaviour of the members of the organisation. It represents a set of shared values that guide their actions. An environmental culture (green corporate culture) is an organisational culture that is based on environmental protection goals (Pondeville 2003b). Some studies emphasise the environmental culture. Guo et al. (2020) examined the relationships between corporate environmental ethics, green innovations and firm economic performance. They conclude that environmental culture and investment resources are important to develop enterprises' environmental ethics, pro-environmental orientations and firm performance.

Thus, the internal resources and capacities of the company contribute to the development of an environmental strategy to obtain a competitive advantage. A proactive environmental culture contributes to the development of environmental objectives, improving the performance and competitiveness of the company. Metcalf (2012) presented a study on the development of employee environmental culture and the impact on the firm. He proposed the moderating effect of environmental culture on the relationship between management practises and environmental performance.

Moreover, Gupta and Kumar (2013) explored the effect of integrating the three dimensions of sustainable development into the corporate culture on adopting environmental initiatives. Indeed, Hart (1995) noted the contribution of resource-based theory in the development of environmental policies. Corporate culture is expected to improve the internal capacities, the development of environmental objectives and competitiveness. Therefore, the following hypothesis is proposed:

**H3** Environmental culture positively moderates the effect of green strategic intent on environmental competitiveness.

**Table 1** Demographic characteristics of sampled companies

|  | Frequency | Percentage (%) |
|---|---|---|
| Industry categories | | |
| Agro-food industries | 12 | 19.4 |
| Building materials, ceramic and glass industries | 3 | 4.8 |
| Mechanical and metallurgical industry | 3 | 4.8 |
| Electrical, electronic and household appliances industry | 6 | 9.7 |
| Soaps, detergents, cleaning products, perfume and cosmetic products | 4 | 6.5 |
| Rubber and tyre industry | 2 | 3.2 |
| Plastic industries | 10 | 16.1 |
| Paints, glues, resins and inks | 5 | 8 |
| Pharmaceutical industry | 2 | 3.2 |
| Other chemical products (essential oils, industrial gases, explosives) | 4 | 6.5 |
| Textile and clothing industries | 2 | 3.2 |
| Wood, cork and furniture industries | 1 | 1.6 |
| Leather and footwear industries | 4 | 6.5 |
| Diverse industries | 4 | 6.5 |
| Total | 62 | 100 |
| Number of employees | | |
| 10–50 | 19 | 30.6 |
| 50–100 | 11 | 17.7 |
| 100–150 | 5 | 8.1 |
| 150–250 | 10 | 16.1 |
| 250 or more | 17 | 27.4 |
| Total | 62 | 100.0 |

# Research methodology

## Sample

The research methodology is based on empirical data collected through a question-naire sent to Tunisian manufacturing firms. According to statistics compiled by the Ministry of Industry related to the polluting companies operating in Tunisia,[1] almost 20% of Tunisian industrial companies are pollutants, 70% of which are classified as highly pollutant. Most highly pollutant companies operate in the food industry, the chemical industry, the textile and clothing, and in the leather industry and footwear. Most surveyed firms belong to these sectors (Table 1). However, there is no list of pollutant companies. Therefore, a list provided by the National Agency for Environmental Protection that includes companies receiving subsidies for environmental protection in the region of Sfax (A town in Tunisia) was used for constituting the

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[1] WMC Actualités, "Tunisie Industrie: 20% des entreprises industrielles sont polluantes", 17 Novembre 2009.

sample. Also, the list of Tunisian industrial companies certified ISO14001 published on the website of the Promoting Investment Agency is used. Therefore, the sample includes companies certified ISO14001 and companies receiving subsidies for environmental protection. A pre-test of the questionnaire is planned with ten firms from various industries. Ten people from the chief executive officer and heads of the environment department participated in the pre-test. Some changes were introduced so that the content can become clearer. Such changes consist of reformulating ambiguous questions and eliminating irrelevant ones. The final questionnaire version was sent to a sample of 300 Tunisian manufacturing firms from different Tunisian cities. The administration of the questionnaire was conducted by two methods, face-to-face interview and by e-mail. The questionnaire was sent to entrepreneurs and environmental managers. Among the 300 companies surveyed, 62 responded to the survey, which represents a response rate of 20.66%. Non-response to the questionnaire is due to the time pressure and reluctance to participate in surveys about environmental issues. An analysis of non-response bias was conducted to confirm the validity of the data. The comparison between the first and last respondents (10%) revealed no significant differences in their responses. It seems that non-response bias does not pose a serious problem in this study. The classification of firms by the industry categories and the number of employees is shown in Table 1.

## Constructs measures

Table 2 presents model constructs and the variables used to measure each construct. Eighteen variables adapted to those used by Aragon-correa (1998), Gonzalez-Benito and Gonzalez-Benito (2005) and Nakamura et al. (2001) are used to measure socio-organizational manoeuvres for the protection of the environment. Respondents are asked to indicate the level of importance of environmental practices in their businesses using a five-point Likert-type scale (1 = not at all important, 5 = very important). A high score indicates greater use of these practices.

Six items developed by Henriques and Sadorsky (1999) are used to measure the green strategic intent. Respondents are asked to indicate the priority level for their businesses, concerning the following statements on a five-point Likert-type scale (1 = low priority, 5 = essential priority): having a written document describing their environmental policy, having environmental objectives, communicating the environmental policy to employees and other stakeholders, availability of an environmental department and a manager.

Thus, five items developed by Figge et al. (2002) are used to measure environmental competitiveness. Respondents are asked to assess the contribution of environmental strategic orientations to the environmental competitiveness of their companies. A five-point scale (1 = not at all, 5 = very much) is used.

For the environmental culture, four items developed by Chan et al. (2012) are used, which we measured on a five-point scale (1 = strongly disagree, 5 = strongly agree).

To check the quality of the measurement scales, two steps are considered: the exploratory factor analysis (EFA) and the confirmatory factor analysis (CFA).

**Table 2** List of measurement items

| Concepts | Measurement items | Code | References |
| --- | --- | --- | --- |
| Green strategic intent | Submission of a written document describing the environmental policy | INT1 | Henriques and Sadorsky (1999) |
| | Environmental objectives that are part of a continuous improvement process | INT2 | |
| | Communicating the environmental policy to employees | INT3 | |
| | Communicating the environmental policy to other stakeholders | INT4 | |
| | Having a department for the control, monitoring of environmental impacts and problem solving | INT5 | |
| | Having an environmental manager | INT6 | |
| Socio-organizational manoeuvres to protect the environment | Seminars on the natural environment for executives | MAN01 | Aragon-correa (1998) |
| | Training programmes on the natural environment for the managers and employees | MAN02 | |
| | Participation in natural environment programmes funded by the government | MAN03 | |
| | Self-financing of investment projects in the environmental protection | MAN04 | Nakamura et al. (2001) |
| | Self-financing of investments in energy saving | MAN05 | |
| | Credits to finance investments in the environmental protection | MAN06 | |
| | Credits to finance investments in energy saving | MAN07 | |
| | Using environmental arguments in marketing | MAN08 | Aragon-correa (1998) |
| | Audit systems to check the environmental programme | MAN09 | |
| | Regular information on the environmental management is provided to clients and institutions | MAN10 | Gonzalez-Benito (2005) |
| | Waste recycling | MAN11 | Aragon-correa (1998) |
| | Filters and controls on emissions and discharges | MAN12 | |
| | Insurance against pollution damage | MAN13 | |

**Table 2** (continued)

| Concepts | Measurement items | Code | References |
|---|---|---|---|
| | Programmes which focus on reducing energy and resource consumption during the process of production and distribution | MAN14 | Figge et al. (2002) |
| | Programmes which focus on reducing waste during the production process | MAN15 | |
| | Acquisition of clean technologies | MAN16 | |
| | Aspects of the natural environment in administrative work | MAN17 | |
| | Performing an analysis of the life cycle of the product | MAN18 | |
| Environmental competitiveness | Production of green products | EC 01 | |
| | Improved customer relationship | EC 02 | |
| | Improvement of the company's image and reputation | EC 03 | |
| | Revenue from waste recycling | EC 04 | |
| | Improvement of innovation processes | EC 05 | |
| Environmental culture | In our company, we try to make employees understand the importance of environmental preservation | CULT 01 | Chan et al. (2012) |
| | Our company has a clear policy regarding environmental awareness | CULT 02 | |
| | Preserving the environment is a high priority activity in our company | CULT 03 | |
| | Preserving the environment is a core value of our company | CULT 04 | |

Initially, principal component analysis (PCA) is used for factor extraction. Items with loadings of 0.5 or greater are retained. To verify the reliability of each construct, we examined Cronbach's alpha coefficient. The internal validity of each construct is given to a value greater than 0.7 (Nunnally 1978; Thiétart 1999).

For the socio-organizational manoeuvres to protect the environment, the exploratory factor revealed a four-factor structure with an eigenvalue greater than 1. The four-factor solution for the eighteen items explained 70.841% of the total variance.

The first factor (six items, $\alpha = 0.88$) referred to "the awareness of environmental issues" (AEI), the second (three items, $\alpha = 0.88$) to "the financial resources for environmental protection" (FREP), the third (three items, $\alpha = 0.82$) to "revelation for green marketing" (RGM), and fourth (six items, $\alpha = 0.87$) to "practical and technical responses to the effects of pollution" (PTR).

In addition, EFA shows the one-dimensional nature of the green strategic intent ($\alpha = 0.945$), environmental competitiveness ($\alpha = 0.845$) and environmental culture ($\alpha = 0.914$), while the total variance explained of three variables were 78.884, 61.935, 79.563, respectively.

Statistics from Bartlett's test of sphericity were significant for all factors, and the Kaiser–Meyer–Olkin measures of sampling adequacy were greater than 0.60. All Cronbach's alphas exceeded 0.70 in support of the satisfactory internal reliability of measures.

Table 3 shows the descriptive statistics based on the weighted average scores of the multi-item variables.

# Results

The structural equation modelling using SmartPLS 2.0 was used to test the hypotheses of the conceptual model. PLS-SEM is a causal modelling approach that maximises the explained variance of endogenous constructs. There are several advantages for PLS-SEM that explained why it's increasingly applied in business disciplines. PLS-SEM is more appropriate for high model complexity (many indicators, constructs and relationships). Unlike covariance-based structural equation modelling (CB-SEM), PLS-SEM does not require a normal distribution of data. It is also

**Table 3** Descriptive statistics

| Variables | Mean | Standard deviation |
|---|---|---|
| Green strategic intent | 3.28 | 1.17 |
| The awareness of environmental issues | 3.40 | 0.97 |
| The financial resources for environmental protection | 3.19 | 1.18 |
| Revelation for green marketing | 3.05 | 1.18 |
| Practical and technical responses to the effects of pollution | 3.70 | 0.92 |
| Environmental competitiveness | 3.24 | 0.86 |
| Environmental culture | 4 | 0.92 |

suitable for a small sample and readily incorporates formative and reflective constructs. However, some disadvantages constrain the use of PLS-SEM. One disadvantage is that PLS-SEM parameter estimates are not optimal regarding bias and consistency. Also, PLS-SEM is focused on maximising partial model structures. There is no adequate global measure of goodness of model fit (Benitez et al. 2020; Hair 2011).

Moreover, the choice between the analysis of CB-SEM and the PLS-SEM is determined by the objective of the research. If the research objective is theory testing and confirmation, the first method can be more appropriate. Then, if the theory is less developed and the research objective is not to confirm a theory, the second method will be appropriate. However, the PLS-SEM is preferred when the research objective is prediction and theory development (Hair 2011).

The choice of PLS-SEM is explained by the complexity of our model, the presence of several constructs and the small number of observations. So, the research objective consists of corroborating or refuting what is presented in the theoretical framework. Thus, the PLS model was evaluated in two steps. First, we assessed the psychometric properties of the measurement model. Second, we tested the structural model that represented the relationship between constructs.

## Measurement model assessment

It is recommended to use confirmatory factor analysis (CFA) to verify the factor structure of a set of observed variables. CFA using SMART PLS 2.0 was conducted to examine the measurement model. Reliability (Joreskog 1971), convergent validity (Fornell and Larker 1981) and discriminant validity are three important components of construct validity.

The composite reliability is used to assess the reliability (rho of internal consistency proposed by Joreskog 1971). As shown in Table 4, the composite scale reliability was exceeding 0.7 as suggested by Nunnally and Bernstein (1994). The AVE for all constructs exceeded the 0.5 cut-off value suggested by Hair et al. (2011). The results confirmed the reliability and the convergent validity of the constructs.

The discriminant validity assessment has the goal to ensure that each construct has stronger relationships with its own measures than any other constructs in the model (Chin 1998; Hair et al. 2017). Thus, the square root of the AVE must exceed the construct inter-correlations in the model. As shown in Table 5, the construct inter-correlations in the model are less than the square root of the AVE. Therefore, the discriminant validity of the constructs is confirmed.

## Structural model assessment

The structural model, also called an internal model, represents the relationship between the latent variables. According to Hair et al. (2011, p 147; 2012, p 426; 2014, p 113), the criteria for evaluation of the structural model are $R_2$ measures,

**Table 4** Reliability and convergent validity

| Latent variables | Items | Factor loadings | Composite reliability ($\rho$) and Cronbach's alpha ($\alpha$) | AVE |
|---|---|---|---|---|
| Green strategic intent | INT1 | 0.882 | $\rho = 0.957$ | 0.789 |
| | INT2 | 0.911 | $\alpha = 0.946$ | |
| | INT3 | 0.818 | | |
| | INT4 | 0.915 | | |
| | INT5 | 0.895 | | |
| | INT6 | 0.902 | | |
| The awareness of environmental issues | MAN01 | 0.837 | $\rho = 0.909$ | 0.626 |
| | MAN02 | 0.778 | $\alpha = 0.880$ | |
| | MAN03 | 0.803 | | |
| | MAN04 | 0.802 | | |
| | MAN11 | 0.730 | | |
| | MAN13 | 0.791 | | |
| The financial resources for environmental protection | MAN05 | 0.879 | $\rho = 0.920$ | 0.792 |
| | MAN06 | 0.887 | $\alpha = 0.876$ | |
| | MAN07 | 0.904 | | |
| Revelation for green marketing | MAN08 | 0.819 | $\rho = 0.891$ | 0.732 |
| | MAN09 | 0.925 | $\alpha = 0.817$ | |
| | MAN10 | 0.819 | | |
| Practical and technical responses to the effects of pollution | MAN12 | 0.727 | $\rho = 0.900$ | 0.601 |
| | MAN14 | 0.765 | $\alpha = 0.866$ | |
| | MAN15 | 0.872 | | |
| | MAN16 | 0.838 | | |
| | MAN17 | 0.703 | | |
| | MAN18 | 0.733 | | |
| Environmental competitiveness | EC01 | 0.783 | $\rho = 0.886$ | 0.609 |
| | EC02 | 0.827 | $\alpha = 0.844$ | |
| | EC03 | 0.811 | | |
| | EC04 | 0.793 | | |
| | EC05 | 0.679 | | |
| Environmental culture | CULT01 | 0.835 | $\rho = 0.939$ | 0.795 |
| | CULT02 | 0.907 | $\alpha = 0.914$ | |
| | CULT03 | 0.939 | | |
| | CULT04 | 0.833 | | |

their importance[2] , and the significance of the regression coefficients using T-Student. A low value of $R_2$ shows that the model is unable to explain the endogenous latent variable and it should be asked about its theoretical foundations (Henseler et al. 2009, p 303). Moreover, we should examine the effect size ($f^2$). Thus, the $f^2$

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[2] Chin (1998, p. 323) describes the $R^2$ values in the PLS models, values near 0.67 are substantial; equal 0.33 they are medium and low when below 0.19.

**Table 5** Discriminant validity

|   | Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 1 | Green strategic intent | **0.888*** | | | | | | |
| 2 | AEI | 0.660 | **0.791*** | | | | | |
| 3 | FREP | 0.339 | 0.555 | **0.889*** | | | | |
| 4 | RGM | 0.711 | 0.716 | 0.551 | **0.855*** | | | |
| 5 | PTR | 0.662 | 0.739 | 0.504 | 0.689 | **0.775*** | | |
| 6 | Environmental competitiveness | 0.550 | 0.504 | 0.322 | 0.657 | 0.533 | **0,780*** | |
| 7 | Environmental culture | 0.713 | 0.590 | 0.327 | 0.610 | 0.668 | 0,534 | **0,892*** |

*Square root of the average variance extracted must be greater than correlations

value ranging from 0.02 to 0.150, 0.150 to 0.350, greater than or equal to 0.350, the effect size is respectively considered weak, medium and large (Benitez et al. 2020). We also need to assess the extent of $Q_2$ redundancy of the endogenous variable should be greater than 0, VIF values should be less than 5 and assess the Goodness-of-fit indices GoF[3]. Hypothesis testing is based on analyses of structural equation modelling performed using SMART PLS 2.0. The relationships between the variables are shown in Fig. 1.

Moreover, the regression coefficients describe the relationship between a predictor variable and the response and check the importance of the causal relationship. The significance of this coefficient is measured by $T$ student.[4] According to PLS approach, the significance of each coefficient is tested according to a resampling procedure called bootstrap with 500 replications and the same number of observations as the original sample (Chin 1998). According to Chin (1998), the number of observations must be equal to ten times the greatest number of structural paths that point to a particular dependent variable in the model. Hence, the size of the sample (62 observations) is sufficient to test the model of this study.

Table 6 contains the hypothesis results. $R_2$ values show a good fit of the models. Similarly, the index of redundancy $Q_2$ is positive, and thus the three models have predictive validity. The VIF values are ranged from 1.000 to 2.809, suggesting that multicollinearity is not a serious problem. The $f^2$ values for the hypothesised relationship range from 0.005 to 0.957, indicating a more important result for RGM. Therefore, the index of GoF is relatively satisfactory and confirms the good fit of the models.

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[3] GoF index is the geometric mean of the average of the commonalities and the average $R$ square values (Tenenhaus et al. 2005). This value must exceed the value of 0.1 for small samples (Wetzels et al. 2009).

[4] Hair (2011, p 145) argues that the critical value of t-student for a two-tailed test is 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.58 (significance level = 1%).
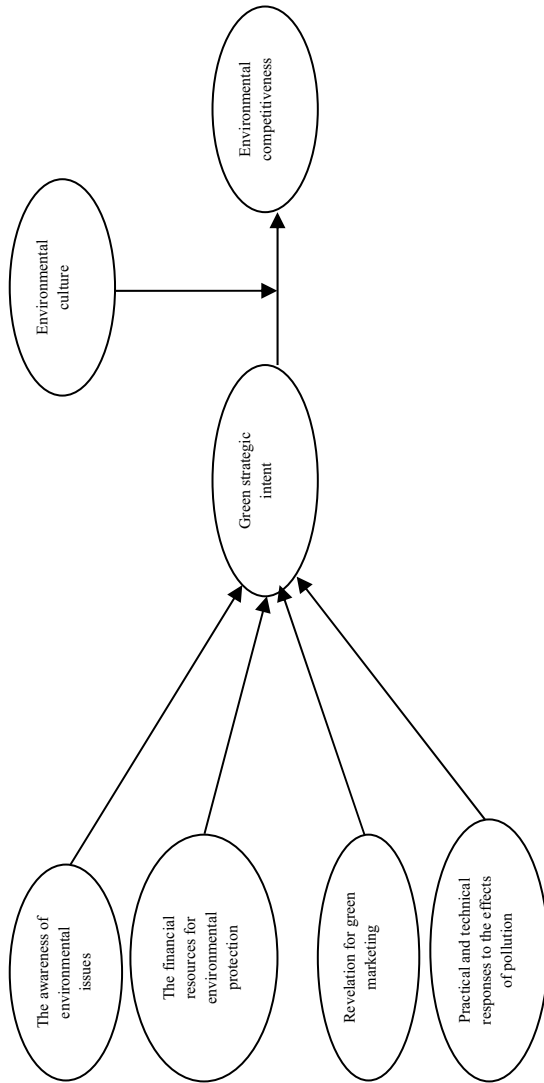
**Fig. 1** Structural model

**Table 6** Hypotheses test results

| | Hypothesised paths | Path coefficient | T student | R₂ | Effect size ($f^2$) | Q₂ | VIF | GoF |
|---|---|---|---|---|---|---|---|---|
| Model 1 (H1) | AEI—> Green strategic intent | 0.236* | 1.798 | 0.594 | 0.049 | 0.439 | 2.809 | 0.642 |
| | FREP—>Green strategic intent | −0.175* | 1.779 | | 0.049 | | 1.565 | |
| | RGM—>Green strategic intent | 0.459**** | 5.047 | | 0.213 | | 2.442 | |
| | PTR—>Green strategic intent | 0.260** | 2.278 | | 0.066 | | 2.510 | |
| Model 2 (H2) | Step1 | | | 0.475 | | 0.279 | | 0.557 |
| | AEI—> Environmental competitiveness | 0.080 | 0.449 | | 0.005 | | 2.743 | |
| | FREP-> Environmental competitiveness | −0.070 | 0.466 | | 0.006 | | 1.510 | |
| | RGM-> Environmental competitiveness | 0.575**** | 4.053 | | 0.282 | | 2.230 | |
| | PTR-> Environmental competitiveness | 0.125 | 0.860 | | 0.012 | | 2.559 | |
| | Step 2: See Model 1 | | | | | | | |
| | Step 3 and 4 | | | | | | | 0.476 |
| | Green strategic intent—> Environmental competitiveness | 0.478*** | 4.174 | 0.229 | 0.957 | 0.167 | 1.000 | |
| | RGM—> Green strategic intent | 0.423*** | 3.502 | 0.417 | 0.308 | 0.231 | 1.957 | |
| | RGM—> Environmental competitiveness | 0.326*** | 3.132 | | 0.016 | | 1.957 | |
| Model 3 (H3) | (1) Green strategic intent—> environmental competitiveness | 0.555*** | 7.266 | 0.308 | 0.445 | 0.151 | 1.000 | 0.461 |
| | (2) Green strategic intent—> Environmental competitiveness | 0.344*** | 2.243 | 0.344 | 0.089 | 0.168 | 2.040 | 0.501 |
| | Environmental culture—> Environmental competitiveness | 0.289* | 1.796 | | 0.062 | | 2.040 | |
| | (3) Green strategic intent—> Environmental competitiveness | 0.359*** | 2.284 | 0.369 | 0.098 | 0.207 | 2.050 | 0.322 |
| | Environmental culture—> Environmental competitiveness | 0.205 | 1.189 | | 0.031 | | 2.309 | |
| | Green strategic intent × Environmental culture-> Environmental competitiveness | −0.179 | 1.030 | | 0.032 | | 1.205 | |

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

### Test of the relationship between socio-organizational manoeuvres to protect the environment and green strategic intent

The results of model 1 (Table 6) in terms of regression coefficients show the positive effect of AEI ($\beta = 0.236$, $p < 0.1$), RGM ($\beta = 0.459$, $p < 0.01$) and PTR ($\beta = 0.260$, $p < 0.05$) on the green strategic intent. However, the relationship between FREP ($\beta = -0.175$, $p < 0.1$) and Green strategic intent is negative. Hence, this relationship is not verified.

### Test of mediation effect

Hypothesis 2 posited a mediating effect of green strategic intent on the relationship between socio-organizational manoeuvres to protect the environment and environmental competitiveness. To examine the mediating effect, four steps are recommended by Baron and Kenny (1986).

First, the independent variables (AEI, FREP, RGM and PTR) should be significantly related to the dependent variable (Environmental competitiveness). Model 2/Step1 (Table 6) showed that RGM was significantly and positively affected environmental competitiveness ($\beta = 0.575$, $p < 0.01$).

Second, the independent variables (AEI, FREP, RGM and PTR) should be significantly related to the mediator variable (Green strategic intent). Model 1 (Table 6) showed that AEI, RGM, and PTR positively affected green strategic intent.

Third, the mediator (green strategic intent) must affect the dependent variable (environmental competitiveness); the effect of the independent variable (RGM) on the dependent variable (environmental competitiveness) is controlled. Model 2/Step3 and 4 (Table 6) showed that green strategic intent positively affected environmental competitiveness ($\beta = 0.326$, $p < 0.01$).

Fourth, the previously significant relationship between the independent variables (RGM) and the dependent variable (environmental competitiveness) should be either reduced or insignificant when controlling for the mediator (green strategic intent). Model 2/Step3 and 4 (Table 6) showed that RGM was still positively affected environmental competitiveness ($\beta = 0.423$, $p < 0.01$), but the correlation coefficient decreased from $\beta = 0.575$ ($p < 0.01$) to $\beta = 0.423$ ($p < 0.01$). In line with Baron and Kenny (1986), we concluded that green strategic intent partially mediated the relationship between RGM and environmental competitiveness. These results suggest that RGM can improve environmental competitiveness by promoting green strategic intent.

To corroborate the mediating effect of green strategic intent between RGM and environmental competitiveness, we conducted the Sobel test. The test is significant ($Z = 2.505$; $p < 0.05$). Hence, the mediating effect on this relationship is verified.

### Test of moderation effect

To test the moderation effect, the moderated regression analysis (MRA) (Choe 2004; Sharma et al. 1981) was conducted. A PLS regression modelling (Chin et al. 2003)

in Smart PLS was used. In applying MRA three equations were tested (Model 3, Table 6).

$$Y = a + b_1 X \tag{1}$$

$$Y = a + b_1 X + b_2 Z \tag{2}$$

$$Y = a + b_1 X + b_2 Z + b_3 XZ \tag{3}$$

where $Y$ is environmental competitiveness, $b$ the regression coefficient, $X$ the green strategic intent (predictor variable), $Z$ the environmental culture (moderator variable), $XZ$ the interaction term 'Green strategic intent × Environmental culture'.

Hypothesis 3 posited that environmental culture moderates the effect of green strategic intent on environmental competitiveness. Model 3 (Table 6) showed that the interaction term was statistically insignificant. Thus, H3 was not supported.

## Discussion and conclusions

This study examines the relationship between socio-organizational manoeuvres undertaken by companies to protect the environment, green strategic intent and environmental competitiveness. Drawing from the resource-based view and the strategic intent approach, it uses a structural equation model to study how AEI, FREP, RGM and PTR promote the green strategic intent, and therefore the environmental competitiveness. Then, the moderating effect of environmental culture on the relationship between green strategic intent and environmental competitiveness was examined. The results indicate that AEI, RGM and PTR positively affected green strategic intent. Furthermore, green strategic intent mediates the relationship between RGM and environmental competitiveness. This study makes several contributions to the literature and to the managerial perspective.

### Theoretical implications

This study contributes to the literature of environmental management by using RBV to provide a theoretical framework for examining the role of resources in improving competitiveness through a green strategic intent. Hence, it emphasises the importance of the capacities of the companies to use their resources and to create new resources to protect the environment. Thus, the mobilisation of resources and expertise of the company to achieve a specific goal, mainly, becoming a green business creating a competitive advantage. This study responds to the call of Hart and Dowell (2011), to examine proactive environmental strategies using an approach that integrates the ideas of the Natural Resource-Based view (NRBV) with the dynamic capabilities perspective.

Several authors have demonstrated that the development of organizational resources and capabilities related to environmental responsiveness improves business competitiveness (Aragon-Correa and Sharma 2003; Brulhart and Gherra 2015; Graham and McAdam 2016; Rugman and Verbeke 1998; Sharma and Vredunberg 1998).

Numerous studies have addressed to the concept of corporate environmental strategy (Buysse and Verbeke 2003; Pondeville 2003a; Wagner and Schaltegger 2004). This study contributes to the literature of environmental management by providing an empirical basis for adopting an environmental vision of companies. The results show the foundation of the environmental responsibility on the resources and the core competencies of a company. Besides, this study extends the literature of management by successfully linking RGM, green strategic intent, and environmental competitiveness.

## Managerial implications

This research highlights the importance of preserving the environment in business. Thus, the evolution of the competitive conditions explains the environmental concerns of businesses. Companies seek to expand into new markets and build a strong competitive position. To ensure their sustainability, a legitimating effort is organised to accept the new product and associated technologies (Debenedetti et al. 2020). The revelation for green marketing significantly alters an organisation's strategy and its competitive position. Indeed, an eco-friendly strategy, based on resources and core competencies of the company, changes its position on the market. Investing in environmental activities provides business opportunities in terms of cost reductions or increased competitiveness (Debenedetti et al. 2020). This work suggests that managers and business decision-makers exploit their environmental commitments in the exploration and exploitation of new keys to success, innovation and improvement of the competitiveness of their enterprises.

According to Marrewijk and Werre (2003), the development of complexity is the result of the value and belief systems, the procedures for decision making and working in the business, the industry conditions, the living conditions, the globalisation of business, and the social issues and regulations resulting therefrom. It raises ethical challenges. Formerly, the manager is mainly interested in maximising profits. Now, the company should consider the interests of all stakeholders without favouring one over the other. Therefore, the new role of business is to bring attention to organisational ethics, corporate social responsibility and sustainable development. The company is invited to consider its role towards society. It must adapt its system of values and therefore its strategic vision.

The results demonstrate the dependence of green strategic intent on awareness of environmental issues, the revelation for green marketing, and practical and technical responses to the effects of pollution. These results led to distinguish the socio-organizational manoeuvres that stimulate companies to act with a green strategic intent. Thus, the resources and skills serve as foundations for a green strategic intent. Technical and human resources are identified as important factors for adopting an eco-friendly

strategy. The results corroborate the study of Aragon-Correa et al. (2013) that confirms the relationship between human resources practices and the development of a proactive natural environmental strategy for a firm. Besides, the findings are consistent with other studies that analyse proactive environmental strategy that includes voluntary eco-efficient practices (Aragon-Correa et al. 2008; Buysse and Verbeke 2003; Sharma 2000; Sharma and Vredenburg 1998).

Moreover, the results demonstrate that RGM affects environmental competitiveness through green strategic intent. Debenedetti et al. (2020) find that to maintain their legitimacy, firms communicate to their customers about environmental actions, which can influence consumer perception and attitude towards this organisation's products and brands. Then, environmental disclosure can build a competitive advantage.

Finally, this work has helped clarify the concept of green strategic intent and the importance of mobilising resources and business skills for environmental preservation and strengthening competitiveness.

## Limitations and future research directions

This study has several limitations. First, the data are collected only in Tunisia. Further studies can verify whether the results also apply to other countries or other fields with different institutional contexts. Second, this paper has focused on the influence of internal resources in proactive environmental strategy and competitiveness. Further efforts should consider the important role of stakeholder pressures. Indeed, further studies can verify the relationship between environmental competitiveness and economic performance. Finally, about the moderator effect, further research needs to test if environmental culture moderates the effect of green strategic intent on environmental competitiveness. Furthermore, further studies can introduce control variables in their conceptual framework.

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