

Green Finance, 4(1): 36–53. DOI: 10.3934/GF.2022002 Received: 14 September 2021

Revised: 14 October 2021 Accepted: 30 November 2021 Published: 20 December 2021

http://www.aimspress.com/journal/GF

## Research article

# The role of financial resources in SMEs' financial and environmental performance; the mediating role of green innovation

Rizwan Ullah Khan<sup>1,\*</sup>, Hina Arif<sup>2</sup>, Noor E Sahar<sup>3</sup>, Arif Ali<sup>4</sup> and Munir A. Abbasi<sup>3</sup>

- <sup>1</sup> Graduate School of Business, Universiti Sains Malaysia, 11800 Gelugor, Penang, Malaysia
- <sup>2</sup> Institute of Business Administration, University of Sindh, Jamshoro, Pakistan
- <sup>3</sup> Benazir School of Business, Benazir Bhutto Shaheed University, Karachi, Pakistan
- <sup>4</sup> Muhammad Ali Jinnah University, Karachi, Pakistan
- \* Correspondence: Email: rizwankhan@student.usm.my.

**Abstract:** The current study investigates the influence of financial resources on environmental and financial performance with the mediating role of green practices (innovation) in manufacturing firms of the emerging economy, Pakistan. The research model and its proposed hypothesis was using 294 manufacturing firms' samples, for fruitful insights, the hypothesis was tested through a structured equation model using Smart PLS 3. Our results exhibited a positive and significant impact of financial resources on financial performance but not on environmental performance. However, green innovation fully mediates the relationship between financial resources and financial performance, while partially mediate the relationship between financial resources and environmental performance. Considering our insight, we suggest to the government that financially support the SMEs sector because they have a lack of tangible and intangible resources due to small size, and to easily adapt the green practices.

**Keywords:** financial resources; green innovation; financial and environmental performance; emerging economy; Pakistan; Smart PLS

**JEL Codes:** B26, C36, G32

#### 1. Introduction

Green innovation has become a focus of organizations whichever small, medium, or large due to environmental and institutional pressure (Dias et al., 2018; Qi et al., 2021). Green innovation not just only help of the organization to improve their environmental performance but also help to enhance financial performance (Kraus et al., 2020). This tandem approach (environmental and financial) of the organization should be achieved through green innovation, therefore all organizations are irrespective focusing on the adoption of green innovation ability (Gupta and Barua, 2018). However, small and medium-sized enterprises (SMEs) are a little bit reluctant as per the adoption of green initiatives for the organization, due to many barriers (Santoro et al., 2018). Previous literature highlights the main barriers to the adoption of green innovation, such as lack of interest, lack of financial resources (Gohoungodji et al., 2020), weak awareness (Saade et al., 2019), and lack of their negative influence on the environment due to the small size (Huang et al., 2020). In general, SMEs are preferring to perform low costly operational activities due to their scarce resources. For that reason, organizational resources significantly matter for the adoption of green innovation ability to maximize profit. Additionally, it is also evident from the literature that access to resources is needed for more effective green innovation (Gohoungodji et al., 2020), but researchers or academicians have not noticed this causal relationship between financial resources and green innovation in small size firms. Therefore, this research is trying to bridge the gap to the impact of financial resources on organizational financial and environmental performance through green innovation.

Hence, literature mentioned the SMEs desired towards the adoption of green initiatives from traditional, it attributes to several reasons, for example, Ch'ng et al. (2021) suggest that organizations focusing on the financial and environmental performance in the high uncertainty market, the adoption of green innovation significantly contribute to sustainable competitive advantage (Nanath and Pillai, 2017). Organization's tendency to implement green technologies and differentiate their product and ideas from competitors, are the main source to enhance growth and survival for the long term. Organizations imitator other objective achieving organizations in the industry, and they consider that these are successful in the domain. Small size organization's top management decisions are different from the large size firms; therefore, we cannot generalize the adoption of green technologies and differentiated their product and services design policies of small firms from large firms. Because small size firm's objective and their mission are different from the large size firms due to high climate change and negative impact on the environment (Ch'ng et al., 2021). The adoption of green technologies and innovative new products and services are the main source of sustained competitive advantage (Sellitto and Hermann, 2019). In previous literature, several researchers (Raza et al., 2021; Sahoo and Vijayvargy, 2020) pointed out that implement the green initiative and providing corporate social responsibility are very important predictors for the enhancement of environmental and financial performance. Hence, our research examining that how small-size firms are unleashed green innovativeness to sustain organizational performance. Our research will recommend several suggestions to the managers and policymakers that financial resources are the main predictor to enhance sustainable performance through green innovation.

The main objective of the current study is to examine the importance of organizational financial resources in persuading to adopt green initiatives and innovativeness that to enhance financial and environmental performance. The finding of this study is imperative for top management and policymakers of small-size firms of unearthing the relationship between green initiatives and

innovativeness on environmental and financial performance. The current study encourages the managers and policymakers to take initiatives steps for the adoption of green technologies by utilizing access to financial resources. The implication of the current study is very important for the top management who thinking that how to improve financial and environmental performance. Considering the theoretical underpinning importance of the current study, this study supported by Resource-Based View theory which explains that organization having rare, valuable and immovable tangible and intangible resources can sustain competitive advantage and high performance (Barney, 1991). Barney defined the tangible and intangible resources, and stated that a firm's having VIROs lens, arguing that resources are valuable, inimitable, rare, and organizational embedded are the one that sustain competitive advantage in dynamic market (Barney, 2001). Additionally, RBV concept stated that some organizational resources have certain qualities that make them of mainspring of such advantage in dynamic market (Madueno et al., 2016). Hence, the current study tried to underpin the framework through RBV, because finance aspect is the core resources for a firm to take any initiative steps and to sustain competitive performance. Excess of finance resources can promote strategic decision-makers to implement green initiative, because it helps to society and environment (Aragón-Correa et al., 2008). Whilst, green initiatives are the main source to sustain competitive advantage (Utomo et al., 2020). Therefore, the current study trying to support the adapted framework (figure 1.) through RBV, because finance and green initiative are the core resources to sustain competitive advantage in context of financial and environmental growth in emerging economy.

#### 2. Literature review

# 2.1. Financial resources and firm performance

Firms strive to have access to tangible and intangible resources in the turbulent market to gain high financial growth (Khan et al., 2019). Access to finance resources of the organization, can support the organizations during competitive market (Songling et al., 2018), and also find out the suitable opportunity for a financial decision, debt managing, and efficient utilization of financial resources during investment and development (Liao et al., 2021). For sustainable competitive advantage, financial resources of the organization are very important tangible resources, because having access to resources, an organization can do the daily transaction, financial undertakes (Biosca et al., 2020) and FRs are the best sources for opportunities recognition and to enhance organizational performance (Beliaeva et al., 2020). Besides the organizational growth of financial resources, it also supports enhancing environmental performance (Haque and Ntim, 2018). In previous studies, several researchers explain that access to financial resources significantly contributes to solving the environmental issue of society (Anwar and Li, 2021; Khan et al., 2021). Moreover, the organization having access to resources can help to build dynamic capabilities according to the market demand to enhance organizational growth and also solve the environmental issues (Simsek and Ozturk, 2021). Therefore, the current statement recalls the RBV theory that having a bundle of resources (tangible and intangible) can sustain competitive advantage and enhance organizational growth and environmental performance (Barney, 1991). Hence, based on the previous literature, the current study concluded that financial resources can enhance the economic growth and environmental performance of the organization. So, we propose the following hypothesis;

H<sub>1a</sub>: Financial resources have a positive and significant impact on financial performance.

 $H_{2b}$ : Financial resources have a positive and significant impact on the environmental performance.

# 2.2. Financial resources and green innovation

The results of the previous literature suggest that access to resources (tangible and intangible) are our core source to modify the organizational structure according to the market demand and market uncertainty (Ali et al., 2020). Additionally, finding explain that organizational green resources can help to solve society's environmental problems through implementing green technologies (Khan et al., 2021). According to the market demand and environmental pollution, organizational tangible resources trying to solve the issue through adopting green technologies (Lăzăroiu et al., 2020) while intangible resources through making green strategies (Mansoor et al., 2021). Furthermore, an organization having finance is an opportunity for the organization to sustain a competitive advantage to modify the existing product through different green strategies (Pratono et al., 2019). Green innovation is not just the definition that to modify the existing product's formula to green products (Pastakia, 1998), but it also covers the strategic decisions of the management who care their employees and society (Banerjee, 2001). Moreover, an organization having intellectual strategic decision-makers, then it can also have different strategies for green products and services. Hence, based on the previous literature, the current study posit that financial resources can enhance the green product innovation of the organization.

H<sub>3</sub>: Financial resources have a positive and significant impact on green innovation.

# 2.3. Green innovation and firm performance

Even though many studies highlight the relationship between organizational sustainable strategies impact on profitability, growth, and environment, their finding is not clear, positive, negative, U-shape or insignificant (Li et al., 2020; Pinelli and Maiolini, 2017). Generally, these contradictory results of the previous studies regarding sustainable practices on organization profitability and environment, argue that green practices improve environmental performance. Additionally, several researchers reveal that green practices, differentiated their product from a competitor can enhance organizational financial and environmental performance. Most of the recent literature suggests that organizational green innovation ability can significantly improve financial performance (Khan et al., 2021). While Zhang and Wang (2014) demonstrate that green practices can help the organization to reduce the negative effect of high operational costs on the profitability and environment. Additionally, Golicic and Smith (2013) conducted a 20 years meta-analysis, their finding reveals that green initiatives or differentiate their product or services can fulfill the organizational objective and also care the external lifestyle of the society. Similarly, Sellitto et al. (2019) conducted an empirical study, and their results show that green strategic decisions and green initiatives can help to improve management efficiency and organize internal processes which enhance sustainable competitive advantage and financial performance. In addition, these results are also in line with several studies conducted in a different organizational context, which shows that there is a positive relationship between green organizational practices, financial and environmental performance of the firm (Ramanathan, 2018; Roscoe et al., 2019). Hence, based on the previous literature, we posit that organizational green practices have a positive and significant impact on financial and environmental performance.

H<sub>4a</sub>: Green innovation has a positive and significant impact on financial performance.

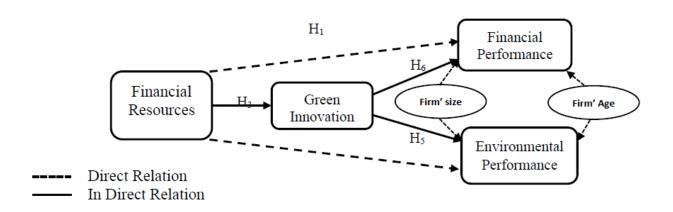
H<sub>4b</sub>: Green innovation has a positive and significant impact on environmental performance.

# 2.4. Mediating effect of green innovation

The results of the previous literature show that organizations having tandem approaches (environmental and financial) are very essential for profitability and also care for the environment (Gupta and Barua, 2018). For the successful tandem approach, the organization can't achieve the objective (Hu et al., 2020). Access to finance is an important driver to enhance the ratio of organizational profitability, but it has a positive impact on environmental pollution (Sellitto et al., 2019). Hence, organizational financial resources are not a sufficient predictor to explain the high environmental positive performance (Roscoe et al., 2019). The desire to adopt green initiatives and innovativeness mostly depends on the financial resources to bring green strategic decisions and green technologies (Cao and Chen, 2019). In addition, financial resources can encourage the policymakers to implement the green initiative and differentiate the product quality and design from the competitors, green innovation is also a sustainable competitive advantage (Khan et al., 2021). For the implementation of the green innovation policy, organizations are needed access to financial resources (Lin et al., 2019). Organizations with a lack of financial resources cannot adopt green technologies and innovation (Clohessy and Acton, 2019). Hence, access to financial resources will lead the organization towards the adoption of green initiatives and technologies to get high profitability and environmental performance. In the previous studies, several researchers suggested that access to financial resources are the significant factor for the implementation of green practices (Li et al., 2020; Sellitto et al., 2019), while green practices can sustain competitive advantage to enhance the financial and environmental performance (Pratono et al., 2019). Hence, based on the previous literature, we posit that financial resources can enhance the financial and environmental performance of the organization through green innovation practices.

H<sub>5a</sub>: Green innovation fully mediates the relationship between financial resources and financial performance.

H<sub>5b</sub>: Green innovation fully mediates the relationship between financial resources and environmental performance.



**Figure 1.** Conceptual framework.

# 3. Methodology

The current study conducted a deductive approach to test resource-based view theory to sustain the main objective. To do so, the data is collected from SMEs operating in the manufacturing sector of Pakistan, the current study targeted three main cities namely Lahore, Islamabad, and Peshawar of Pakistan, the cities selected based on major SMEs head offices located in these cities. There is no single definition globally of small enterprises, it varies from country to country (Khan et al., 2021). In Pakistan, SMEs are defined as, those firms that have 20 to 250 employees, and having Rs.800 million annual sales. The list of SMEs was taken from each chamber of commerce of the city. In the current study, we used random sampling techniques, because we have a list of all SMEs registered with Small Medium-Sized Enterprises Development Authority (SMEDA). For data collection, we conducted an online survey on google. Form due to the Covid-19 pandemic situation, so most big cities are still suffering from the lockdown issue, so an online survey was the easiest way.

Hence, we distrusted total 1200 questionnaires through emails addresses of the top management, because top management are the decision-makers and they know regarding the future planning. Out of these, we collect back 317 questionnaires, 23 questionnaires were excluded due to missing values and not filling correctly. Finally, 294 questionnaires were chosen for final analysis. Additionally, the description of the respondents who participated in the survey is explained in Table 1.

**Table 1.** Profile of the firms.

Description	Frequency	Percentage	
Industry			
Sport & Goods	96	32.7	
Furniture	140	47.6	
Surgical Instruments	58	19.7	
Firm' size			
20–50 employees	108	36.7	
51–100	22	07.5	
101–150	73	24.8	
151–200	57	19.4	
201–250	34	11.6	
Firm's age			
10 years and less	104	35.4	
11–20 years	82	27.9	
21 and above years	108	36.7	
Educational Status			
Intermediate and below	35	11.9	
Bachelor	98	33.3	
Master	142	48.3	
PhD etc.	19	6.5	
Total	294	100	

#### 3.1. Measurement variables

In the current study, there are a total of four main constructs namely financial resources as (independent variable), financial and environmental performance (dependent variable), and green innovation as mediators. The financial resources are abstracted as the organizational financial capability or strength that should be used for product and services operating activities, we measured financial resources through 6 items adopted from (Li et al., 2020). Green innovation conceptualized as the organizational green initiatives and innovativeness who modify the traditional technologies with green technologies, we measured green innovation through 7 items adopted from (Chen et al., 2006). Additionally, sustainable performance was measured through multi-dimensional (financial and environmental) performance. The FP is explaining the organizational annual sale, and growth, it is measured through 6 items adopted from the previous literature Anwar (2018). And we measured the EP through five items adapted from Melnyk et al. (2003) and Daily et al. (2007). All the variables are measured through the 5 Likert scales (1 = strongly agree to 5 = strongly disagree) except the FP.

Likewise, in the current study, we used the firm's size and age are used as control variables to reduce the spuriousness in the results of the drawing framework (Shirokova et al., 2016).

## 4. Data analysis and results

In data analysis, researcher estimate the respondent's profile, data screening, checked data validity and reliability by SPSS, for final hypotheses, the researcher estimates it by Smart PLS SEM.

## 4.1. Descriptive statistics

The descriptive statistics are provided of the current study in Table 2. Which explains the respondent data mean, standard deviation, and normality. Hence, we found that mean and standard deviation values of all main variables are under the acceptance threshold, and for checking the data normality, we used skewness and kurtosis, which shows that all skewness and kurtosis values are under the threshold  $\pm$  (George, 2011).

	Mean	Std. Deviation	Skewness		Kurtosis	
M_FR	3.5516	0.46977	-0.476	0.136	0.067	0.272
M_GI	3.6545	0.33952	-1.237	0.136	4.420	0.272
M_EP	3.6938	0.54141	-0.667	0.136	4.239	0.272
M_FP	3.6677	0.50043	-0.956	0.136	2.197	0.272
Valid N (listwise)	294					

**Table 2.** Descriptive statistics.

# 4.2. Common method bias

In the current study, we collected that data from a single source of manufacturing firms of Pakistan, so there are a lot of biasness chances. Hence, to identify this biasness, we analyze Hamon's single-factor method to identifies the biasness. According to Podsakoff et al. (2012), suggested that Harmon's single-factor method shows that specific percentage variance extracted of a single factor should be less

Green Finance

than 50%. Hence, in the current study, findings suggest that the absence of common method variance of Harmon's single factor test as the single factor explaining 26.61% of the total variance.

# 4.3. Confirmatory factor analysis

In the current study, we used a measurement model to analyze the internal consistency of the main constructs items through confirmatory factor analysis (CFA). The measurement model explains the main constructs items reliability and validity, in measurement model, mostly evaluating the item's composite reliability (CR), outer loading and, average variance extracted (AVE), the main construct outer loading is under the threshold means greater than 0.50 in case of average variance extracted (AVE) of construct greater than 0.50 (Hair et al., 2017). Hence, our study supporting the recommended threshold for outer loading of each construct, there are several items of financial resources that are less than 0.50, but the AVE value is greater than 0.50, so it is acceptable as per (Hair et al., 2017). Additionally, composite reliability and AVE of each construct are also supporting the recommendation of previous researchers, (see Table 3 for more details).

**Table 3.** Validity and reliability.

Constructs	Items	Loading	AVE	CR	
Financial Resources	Items	Loading	0.580	0.886	
rinanciai Resources	ED 1	0.922	0.380	0.880	
	FR1	0.833			
	FR2	0.698			
	FR3	0.332			
	FR4	0.77			
	FR5	0.897			
	FR6	0.889			
Green Innovation			0.510	0.878	
	GI1	0.636			
	GI2	0.573			
	GI3	0.697			
	GI4	0.722			
	GI5	0.736			
	GI6	0.794			
	GI7	0.811			
Financial Performance	ce		0.602	0.899	
	FP1	0.812			
	FP2	0.656			
	FP3	0.632			
	FP4	0.867			
	FP5	0.886			
	FP6	0.765			

Continued on next page

Constructs	Items	Loading	AVE	CR	
Environmental Performance			0.722	0.928	
	EP1	0.863			
	EP2	0.865			
	EP3	0.819			
	EP4	0.812			
	EP5	0.886			

## 4.4. Discriminant validity

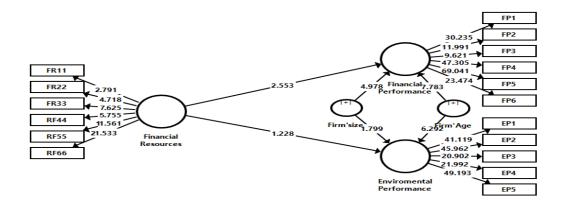
For evaluating discriminant validity, several tests have been recommended by researchers such as (1) Fornell-Larcker criterion, (2) Heterotrait-monotrait ratio (HTMT) (Hair et al., 2021), these are the most recommended test through PLS. Nowadays researchers recommending the HTMT test for evaluating discriminant validity. If the HTMT value is above 0.90, so it means there is a lack of discriminant validity, and thus the value of 0.85 is recommended to ensure that the construct is distinct (Hair et al., 2021). Hence, the HTMT values of all main constructs of the study are less than 0.80, see Table 4 for more details.

Constructs 2 3 4 **Environmental Performance** (0.904)Financial Performance 0.273 (0.866)Financial Resource 0.192 0.105 (0.826)Green Innovation 0.790 0.314 0.502 (0.781)

**Table 4.** Heterotrait-monotrait ratio (HTMT).

## 4.5. Structured equation model 1

For testing the final hypothesis, we choose Smart PLS 3, because it is very validated and easy for running a complex model. Hence, the current finding shows that there is a positive and significant relationship between financial resources and the FP of the organization ( $\beta$  = 0.054, p < 0.05), and their impact on the EP is ( $\beta$  = 0.271, p < 0.05) see Figure 2, and Table 5 shows full details of hypothesis. It shows that financial resources could not directly improve the EP of the organization.



**Figure 2.** Structured equation model.

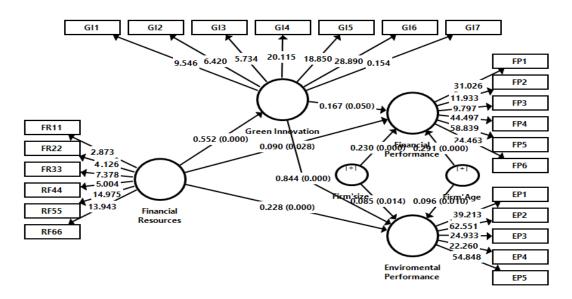
**Table 5.** Hypothesis testing.

Hypothesis	Direct Effect (p)	Indirect Effect (p)	Total Effect (p)
Main Effect			
Financial Resources - Environmental Performance	0.27 (0.06)	0.47 (0.00)	0.24 (0.09)
Financial Resources → Financial Performance	0.05 (0.00)	0.10 (0.00)	0.03 (0.00)
Financial Resources - Green Innovation	0.55 (0.00)	-	0.55 (0.00)
Green Innovation → Financial Performance	0.84 (0.00)	-	0.84 (0.00)
Green Innovation → Environmental Performance	0.16 0.05)	-	0.17 (0.00)
Control Effect			
Firm' Age - Environmental Performance	0.31 (0.00)	-	0.10 (0.00)
Firm' Age Financial Performance	0.33 (0.00)	-	0.29 (0.00)
Firm' size - Environmental Performance	0.10 (0.07)	-	0.09 (0.00)
Firm' size → Financial Performance	0.23 (0.00)		0.23 (0.00)

Note: FR, Financial Resources, GI, Green Innovation, FP, Financial Performance, EP, Environmental Performance.

## 4.6. Structured model 2 Mediation role of green innovation

In structured model 2, we analyze mediation analysis of green innovation between financial resources and firm (financial and environmental) performance. The insights show that an organization having easily access to financial resources, in results can improve the financial and environmental performance through the green innovation capability. Hence, the results indicate that organizational financial resources can improve FP through green innovation capability ( $\beta$  = 0.271, p < 0.05), while financial resources of the organization also help to improve the EP through green innovation ability ( $\beta$  = 0.271, p < 0.05). Furthermore, financial resources can bring a 12% improvement in productivity (financial performance) through green innovation, while 63% change brings in the EP of the organization through green innovation see figure 3 and table 5 explain the direct and indirect effect of each hypothesis.



**Figure 3.** Mediation structured equation model.

## 5. Discussion

The main objective of the current study was to investigate the financial resources impact on the sustainable performance (financial and environmental), and that mechanism explain by green innovation of manufacturing firms in the context of RBV. The current study evaluated the importance of financial resources, green innovation and performance (financial and environmental) of SMEs and to extend the nature of knowledge in the context of RBV. In previous literature, a lot of researcher highlighted the importance of financial resources on firm performance, but most of these studies has been conducted in developed economies (Aranda-Usón et al., 2019; Ruggiero and Cupertino, 2018), while a rare literature available in the context of SMEs of emerging economies. Furthermore, considering the importance of RBV, majority of previous studies have been conducted to investigate the financial resources impact on organizational performance (Khan et al. 2019b; Memon et al. 2020), but rare literature is available who highlighted green finance impact on the environmental performance. Therefore, our study trying to endorse the recent studies who mentioned the significance of RBV in the context of environmental activities (Betts et al., 2018; Sobaih et al., 2020). Additionally, this study tried to extend the knowledge of financial resources and green innovation in financial and environmental context in the context of RBV and reveals that tangible resources and green innovation are the main predictor to financial and environmental performance of manufacturing SMEs in Pakistan.

The over results of the study show that the financial resources of the organization are significantly enhancing the firm productivity, growth, and take care of the environment. Our results are in line with previous studies (Khan et al., 2021) that access of financial resources enhance the organizational growth, and also significantly contribute to environmental practices (Friedline and Chen, 2021). But our results inverse the Friedline and Chen (2021), which shows that financial resources have no impact on environmental performance. So, our results support Permatasari and Zona (2021) who reveal that excess compensation from the organization has no impact on the organizational environment. In addition, Khan et al. (2021) suggested that organizational managers are needed to adopt policies that help to enhance the financial resources because financial resources contribute to the firm growth and environmental performance. Moreover, our results are similar to Khan et al. (2019), who scrutinized those financial resources are the backbone of the organization, excess resources can defend the organization in the high uncertainty market. Additionally, it is also suggested that organizations having an excess of financial resources can sustain competitive advantage as compared to those who have fewer financial resources.

Our result also suggests that the green initiatives steps of the organization can sustain a competitive advantage from those who are adapting traditional strategic procedures which support the proposed hypothesis. Hence, our results are like the previous studies (Hong et al., 2020; Singh et al., 2020), who suggest that organizational green innovative policies significantly contribute to the financial and environmental performance of the organization in emerging economies. While an organization can adopt green practices based on their excess financial resources, which help to sustain the tandem approach (Khattak et al., 2012; Yong et al., 2020). In addition, our results are in line with Lin et al. (2019) and Khan (2019), who suggest that SMEs in emerging economies preferring to tangible resources for adaption to green practices and initiatives.

In addition, our finding reveals that green innovation fully mediates the relationship between financial resources and organizational financial and environmental performance, which supports our proposed hypothesis. Green initiatives are very important to enhance the environmental performance of the organization (Alkahtani et al., 2020; Chen et al., 2021). Access to financial resources can increase the chances to adopt green practices to improve organizational financial and environmental performance. Therefore, our results are in line with Memon et al. (2020), who suggested that green initiatives can play a significant role to utilize financial resources and enhance organizational financial and environmental performance.

# 5.1. Theoretical and practical implications

The main objective of the current study is to examine the mediating role of green innovation in the relationship between financial resources and sustainable performance (financial and environmental) supported by resource-based view theory. The current study tried to extend the knowledge of RBV through the importance of financial resources in green initiatives and sustainable performance (financial and environmental) of manufacturing firms. In previous studies, a lot of research has been conducted on organizational financial resources in large companies of developed economies context (Kweh et al., 2019; Sriviboon and Jermsittiparsert, 2019), but a very rare literature has been highlighted the importance of financial resources on small size populations in developing economies. Moreover, a lot of research has been examining the impact of financial resources on the organizational financial outcome, considering RBV. While rare literature is available to use tandem approach (financial and environmental) in light through green initiative of the organization. Therefore, the current study trying to extend the knowledge of literature through mediating the role of green innovation in the relationship between financial resources and organizational financial and environmental performance of the manufacturing sector of emerging economies, supported by resource-based view theory.

The current also comes up with several practical implications for top management, practitioners, and policymakers of SMEs operating in developing economies. Our research confirms that green practices are a significant contributor to the financial and environmental performance of the organization. In the current era, environmental pollution has been increasing, so governmental institutions are needed to pressurize the organization's top management to implement green practice and innovativeness. For the adaption of green practices or initiatives, SMEs are needed adequate financial resources for the adoption of green initiatives, So, our insights suggest recommendations to the government that provide funds through fund rising agencies or other private agencies to motivate them to easily adopt green practices.

# 5.2. Limitation and future suggestions

This study has several limitations without having a significant contribution to the organization and society. First, a small sample size and to collect the data from specific cities are not well representative of the whole population (Guerrero-Villegas et al., 2018), and their also high chances of common method bias. But our insights are in line with several previous studies conducted in emerging economies. Additionally, it is also arguable that we collected the data from a single person representative of the whole organization may cause the unreality reflection of the firms (Monteiro et al., 2017).

The future researcher can conduct a comparative study on the relationship between emerging and developed economies. The researcher tried to investigate green innovation as mediating role in the relationship between financial resources and organization financial and environmental performance, so future researchers are advised that to follow these limitations to unleash a valid picture. Additionally,

other psychological, and pressure factors can be considered if they want to encourage green practices towards high performance.

#### 6. Conclusions

The current study examines practically and theoretically the relationship between financial resources impact on the tandem approach of organization (financial and environmental) performance, additionally, the relationship is mediating through green innovation underpinning it through the resource-based view theory. Total 1200 manufacturing firms took part in the data collected, and we received back 294 respondents with a 24.5% response rate. A structured equation model was used to test the proposed hypothesis and using Smart PLS 3. Before testing the final hypothesis, first, we analyze confirmatory factor analysis to check the data validity and reliability. Hence, our results show that financial resources have a positive and strong impact on organizational financial performance while having an insignificant impact on environmental performance. Furthermore, the full mediating role of green innovation in the relationship between financial resources and organizational financial and environmental performance of manufacturing firms of Pakistan. In line with the resource-based view theory, financial resources and green innovations are the main concerns and important resources of the organization to sustain competitive advantage. Our insights recommending several suggestions to the government bodies that provide financial resources to the SMEs, because they have a lack of resources to adopt green practices.

#### **Conflict of interest**

The authors declare no conflicts of interest in this paper.

## References

- Ali S, Li G, Yang P, et al. (2020) Unpacking the importance of intangible skills in new product development and sustainable business performance; strategies for marketing managers. *PloS One* 15: e0238743. https://doi.org/10.1371/journal.pone.0238743
- Alkahtani A, Nordin N, Khan RU (2020) Does government support enhance the relation between networking structure and sustainable competitive performance among SMEs? *J Innovation Entrep* 9: 1–16. https://doi.org/10.1186/s13731-020-00127-3
- Anwar M, Li S (2021) Spurring competitiveness, financial and environmental performance of SMEs through government financial and non-financial support. *Environ Dev Sustainability* 23: 7860–7882. https://doi.org/10.1007/s10668-020-00951-3
- Aragón-Correa JA, Hurtado-Torres N, Sharma S, et al. (2008) Environmental strategy and performance in small firms: A resource-based perspective. *J Environ Manage* 86: 88–103. https://doi.org/10.1016/j.jenvman.2006.11.022
- Aranda-Usón A, Portillo-Tarragona P, Marín-Vinuesa LM, et al. (2019) Financial resources for the circular economy: A perspective from businesses. *Sustainability* 11: 888. https://doi.org/10.3390/su11030888

- Banerjee SB (2001) Managerial perceptions of corporate environmentalism: Interpretations from industry and strategic implications for organizations. *J Manage Stud* 38: 489–513. https://doi.org/10.1111/1467-6486.00246
- Barney J (1991) Firm resources and sustained competitive advantage. *J Manage* 17: 99–120. https://doi.org/10.1177/014920639101700108
- Barney JB (2001) Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *J Manage* 27: 643–650. https://doi.org/10.1177/014920630102700602
- Beliaeva T, Shirokova G, Wales W, et al. (2020) Benefiting from economic crisis? Strategic orientation effects, trade-offs, and configurations with resource availability on SME performance. *Int Entrep Manage J* 16: 165–194. https://doi.org/10.1007/s11365-018-0499-2
- Betts TK, Super JF, North J (2018) Exploring the influence of institutional pressures and production capability on the environmental practices-Environmental performance relationship in advanced and developing economies. *J Clean Prod* 187: 1082–1093. https://doi.org/10.1016/j.jclepro.2018.03.186
- Biosca O, McHugh N, Ibrahim F, et al. (2020) Walking a tightrope: using financial diaries to investigate day-to-day financial decisions and the social safety net of the financially excluded. *Ann Am Acad Pol Soc Sci* 689: 46–64. https://doi.org/10.1177/0002716220921154
- Cao H, Chen Z (2019) The driving effect of internal and external environment on green innovation strategy-The moderating role of top management's environmental awareness. *Nankai Bus Rev Int* 10: 342–361. https://doi.org/10.1108/NBRI-05-2018-0028
- Ch'ng PC, Cheah J, Amran A (2021) Eco-innovation practices and sustainable business performance: The moderating effect of market turbulence in the Malaysian technology industry. *J Clean Prod* 283: 124556. https://doi.org/10.1016/j.jclepro.2020.124556
- Chen S, Wang Y, Albitar K, et al. (2021) Does ownership concentration affect corporate environmental responsibility engagement? The mediating role of corporate leverage. *Borsa Istanb Rev* 21: 13–24. https://doi.org/10.1016/j.bir.2021.02.001
- Chen YS, Lai SB, Wen CT (2006) The influence of green innovation performance on corporate advantage in Taiwan. *J Bus Ethics* 67: 331–339. https://doi.org/10.1007/s10551-006-9025-5
- Clohessy T, Acton T (2019) Investigating the influence of organizational factors on blockchain adoption: An innovation theory perspective. *Ind Manage Data Syst* 119: 1457–1491. https://doi.org/10.1108/IMDS-08-2018-0365
- Daily BF, Bishop JW, Steiner R (2007) The mediating role of EMS teamwork as it pertains to HR factors and perceived environmental performance. *J Appl Bus Res* 23: 95–110. https://doi.org/10.19030/jabr.v23i1.1411
- Dias A, Rodrigues LL, Craig R, et al. (2018) Corporate social responsibility disclosure in small and medium-sized entities and large companies. *Soc Responsib J* 15: 137–154. https://doi.org/10.1108/SRJ-05-2017-0090
- Friedline T, Chen Z (2021) Families' financial stress & well-being: The importance of the economy and economic environments. *J Fam Econ Issues* 42: 34–51. https://doi.org/10.1007/s10834-020-09694-9
- George D (2011) SPSS for windows step by step: A simple study guide and reference, 17.0 update, 10/e. Pearson Education India. Available from: https://lib.ugent.be/catalog/rug01:001424067
- Gohoungodji P, N'Dri AB, Latulippe JM, et al. (2020) What is stopping the automotive industry from going green? A systematic review of barriers to green innovation in the automotive industry. *J Clean Prod* 277: 123524. https://doi.org/10.1016/j.jclepro.2020.123524

Green Finance

- Golicic SL, Smith CD (2013) A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *J Supply Chain Manage* 49: 78–95. https://doi.org/10.1111/jscm.12006
- Guerrero-Villegas J, Sierra-García L, Palacios-Florencio B (2018) The role of sustainable development and innovation on firm performance. *Corp Soc Responsib Environ Manage* 25: 1350–1362. https://doi.org/10.1002/csr.1644
- Gupta H, Barua MK (2018). A framework to overcome barriers to green innovation in SMEs using BWM and Fuzzy TOPSIS. *Sci Total Environ* 633: 122–139. https://doi.org/10.1016/j.scitotenv.2018.03.173
- Hair Jr JF, Hult GTM, Ringle CM, et al. (2021) A primer on partial least squares structural equation modeling (PLS-SEM). *SAGE*. https://doi.org/10.1007/978-3-030-80519-7
- Hair Jr JF, Sarstedt M, Ringle CM, et al. (2017) Advanced issues in partial least squares structural equation modeling. *SAGE*. https://doi.org/10.15358/9783800653614
- Haque F, Ntim CG (2018) Environmental policy, sustainable development, governance mechanisms and environmental performance. *Bus Strategy Environ* 27: 415–435. https://doi.org/10.1002/bse.2007
- Herrera Madueno J, Larran Jorge M, Lechuga Sancho MP, et al. (2016) Corporate social responsibility practices in Spanish small and medium businesses: Explanatory factors analysis. *Rev Contab* 19: 31–44. https://doi.org/10.1016/j.rcsar.2014.10.003
- Hong M, Drakeford B, Zhang K (2020) The impact of mandatory CSR disclosure on green innovation: evidence from China. *Green Financ* 2: 302–322. https://doi.org/10.3934/GF.2020017
- Hu Z, Wei Z, Ma X, et al. (2020) Multi-parameter deep-perception and many-objective autonomous-control of rolling schedule on high speed cold tandem mill. *ISA Trans* 102: 193–207. https://doi.org/10.1016/j.isatra.2020.02.024
- Huang SZ, Chau KY, Chien F, et al. (2020) The Impact of Startups' Dual Learning on Their Green Innovation Capability: The Effects of Business Executives' Environmental Awareness and Environmental Regulations. *Sustainability* 12: 6526. https://doi.org/10.3390/su12166526
- Khan NU, Anwar M, Li S, et al. (2021) Intellectual capital, financial resources, and green supply chain management as predictors of financial and environmental performance. *Environ Sci Pollut Res* 28: 19755–19767. https://doi.org/10.1007/s11356-020-12243-4
- Khan PA, Johl SK, Johl SK (2021) Does adoption of ISO 56002-2019 and green innovation reporting enhance the firm sustainable development goal performance? An emerging paradigm. *Bus Strategy Environ* 30: 1–15. https://doi.org/10.1002/bse.2779
- Khan RU (2019) Relationship of HR practices and career path: A perspective of accounting studies. *J Bus Rev* 7: 46-56. https://doi.org/10.53369/AERI1679
- Khan RU, Salamzadeh Y, Shah SZA, et al. (2021) Factors affecting women entrepreneurs' success: a study of small-and medium-sized enterprises in emerging market of Pakistan. *J Innov Entrep* 10: 1–21. https://doi.org/10.1186/s13731-021-00145-9
- Khan RU, Salamzadeh Y, Kawamorita H, et al. (2021) Entrepreneurial Orientation and Small and Medium-sized Enterprises' Performance; Does 'Access to Finance' Moderate the Relation in Emerging Economies? *Vision* 25: 88–102. https://doi.org/10.1177/0972262920954604
- Khan SZ, Yang Q, Waheed A (2019) Investment in intangible resources and capabilities spurs sustainable competitive advantage and firm performance. *Corp Soc Responsib Environ Manage* 26: 285–295. https://doi.org/10.1002/csr.1678

- Khattak MS, Anwar M, Clauß T (2021) The Role of Entrepreneurial Finance in Corporate Social Responsibility and New Venture Performance in an Emerging Market. *J Entrep* 30: 336–366. https://doi.org/10.1177/09713557211025655
- Kraus S, Rehman SU, García FJS (2020) Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technol Forecast Soc Change* 160: 120262. https://doi.org/10.1016/j.techfore.2020.120262
- Kweh QL, Ting IWK, Hanh LTM, et al. (2019) Intellectual capital, governmental presence, and firm performance of publicly listed companies in Malaysia. *Int J Learn Intellect Cap* 16: 193–211. https://doi.org/10.1504/IJLIC.2019.098932
- Lăzăroiu G, Ionescu L, Uță C, et al. (2020) Environmentally responsible behavior and sustainability policy adoption in green public procurement. *Sustainability* 12: 2110. https://doi.org/10.3390/su12052110
- Li G, Luo Z, Anwar M, et al. (2020). Intellectual capital and the efficiency of SMEs in the transition economy China; Do financial resources strengthen the routes? *PloS One* 15: e0235462. https://doi.org/10.1371/journal.pone.0235462
- Li Z, Liao G, Albitar K (2020) Does corporate environmental responsibility engagement affect firm value? The mediating role of corporate innovation. *Bus Strategy Environ* 29: 1045–1055. https://doi.org/10.1002/bse.2416
- Liao G, Hou P, Shen X, et al. (2021) The impact of economic policy uncertainty on stock returns: The role of corporate environmental responsibility engagement. *Int J Financ Econ* 26: 4386–4392. https://doi.org/10.1002/ijfe.2020
- Lin WL, Cheah JH, Azali M, et al. (2019) 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: 974–988. https://doi.org/10.1016/j.jclepro.2019.04.214
- Mansoor A, Jahan S, Riaz M (2021) Does green intellectual capital spur corporate environmental performance through green workforce? *J Intellect Cap* 22: 823–839. https://doi.org/10.1108/JIC-06-2020-0181
- Melnyk SA, Sroufe RP, Calantone R (2003) Assessing the impact of environmental management systems on corporate and environmental performance. *J Oper Manage* 21: 329–351. https://doi.org/10.1016/S0272-6963(02)00109-2
- Memon A, Yong An Z, Memon MQ (2020) Does financial availability sustain financial, innovative, and environmental performance? Relation via opportunity recognition. *Corp Soc Responsib Environ Manage* 27: 562–575. https://doi.org/10.1002/csr.1820
- Monteiro AP, Soares AM, Rua OL (2017) Entrepreneurial orientation and export performance: the mediating effect of organizational resources and dynamic capabilities. *J Int Bus Entrep Dev* 10: 3–20. https://doi.org/10.1504/JIBED.2017.082749
- Nanath K, Pillai RR (2017) The influence of green is practices on competitive advantage: Mediation role of green innovation performance. *Inf Syst Manage* 34: 3–19. https://doi.org/10.1080/10580530.2017.1254436
- Pastakia A (1998) Grassroots ecopreneurs: change agents for a sustainable society. *J Organ Change Manage* 11: 157–173. https://doi.org/10.1108/09534819810212142
- Permatasari N, Zona MA (2021) The Effect of financial compensation and career development on employee retention with non-physical work environments as moderating variables. *Hum Resour Manage Stud* 1: 131–140. https://doi.org/10.24036/hrms.v1i2.14

- Pinelli M, Maiolini R (2017) Strategies for sustainable development: Organizational motivations, stakeholders' expectations and sustainability agendas. *Sust Dev* 25: 288–298. https://doi.org/10.1002/sd.1653
- Podsakoff PM, MacKenzie SB, Podsakoff NP (2012) Sources of method bias in social science research and recommendations on how to control it. *Annu Rev Psychol* 63: 539–569. https://doi.org/10.1146/annurev-psych-120710-100452
- Pratono AH, Darmasetiawan NK, Yudiarso A, et al. (2019) Achieving sustainable competitive advantage through green entrepreneurial orientation and market orientation: The role of interorganizational learning. *Bottom Line* 31(1): 2–15. https://doi.org/10.1108/BL-10-2018-0045
- Qi G, Jia Y, Zou H (2021) Is institutional pressure the mother of green innovation? Examining the moderating effect of absorptive capacity. *J Clean Prod* 278: 123957. https://doi.org/10.1016/j.jclepro.2020.123957
- Ramanathan R (2018) Understanding complexity: The curvilinear relationship between environmental performance and firm performance. *J Bus Ethics* 149: 383–393. https://doi.org/10.1007/s10551-016-3088-8
- Raza A, Farrukh M, Iqbal MK, et al. (2021) Corporate social responsibility and employees' voluntary pro-environmental behavior: The role of organizational pride and employee engagement. *Corp Soc Responsib Environ Manage* 28: 1104–1116. https://doi.org/10.1002/csr.2109
- Roscoe S, Subramanian N, Jabbour CJ, et al. (2019) Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development. *Bus Strategy Environ* 28: 737–749. https://doi.org/10.1002/bse.2277
- Ruggiero P, Cupertino S (2018) CSR strategic approach, financial resources and corporate social performance: The mediating effect of innovation. *Sustainability* 10: 3611. https://doi.org/10.3390/su10103611
- Saade R, Thoumy M, Sakr O (2019) Green supply chain management adoption in Lebanese manufacturing industries: an exploratory study. *Int J Logist Syst Manage* 32: 520–547. https://doi.org/10.1504/IJLSM.2019.098334
- Sahoo S, Vijayvargy L (2020) Green supply chain management practices and its impact on organizational performance: evidence from Indian manufacturers. *J Manuf Technol Manage* 32: 862–886. https://doi.org/10.1108/JMTM-04-2020-0173
- Santoro G, Ferraris A, Giacosa E, et al. (2018) How SMEs engage in open innovation: a survey. *J Knowl Econ* 9: 561–574. https://doi.org/10.1007/s13132-015-0350-8
- Sellitto MA, Hermann FF (2019) Influence of green practices on organizational competitiveness: a study of the electrical and electronics industry. *Eng Manage J* 31: 98–112. https://doi.org/10.1080/10429247.2018.1522220
- Sellitto MA, Hermann FF, Blezs Jr AE, et al. (2019) Describing and organizing green practices in the context of Green Supply Chain Management: Case studies. *Resour Conserv Recycl* 145: 1–10. https://doi.org/10.1016/j.resconrec.2019.02.013
- Shirokova G, Bogatyreva K, Beliaeva T, et al. (2016) Entrepreneurial orientation and firm performance in different environmental settings: contingency and configurational approaches. *J Small Bus Enterp Dev* 23: 703–727. https://doi.org/10.1108/JSBED-09-2015-0132
- Şimsek H, Ozturk G (2021) Evaluation of the relationship between environmental accounting and business performance: the case of Istanbul province. *Green Financ* 3: 46–58. https://doi.org/10.3934/GF.2021004

- Singh SK, Del Giudice M, Chierici R, et al. (2020) Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technol Forecast Soc Change* 150: 119762. https://doi.org/10.1016/j.techfore.2019.119762
- Sobaih AEE, Hasanein A, Elshaer I (2020) Influences of green human resources management on environmental performance in small lodging enterprises: The role of green innovation. *Sustainability* 12: 10371. https://doi.org/10.3390/su122410371
- Songling Y, Ishtiaq M, Anwar M, et al. (2018) The role of government support in sustainable competitive position and firm performance. *Sustainability* 10: 3495. https://doi.org/10.3390/su10103495
- Sriviboon C, Jermsittiparsert K (2019) Influence of Human Resource Practices on Thai Pharmaceutical Firm Performance with Moderating Role of Job Involvement. *Syst Rev Pharm* 10: 234–243. https://doi.org/10.5530/srp.2019.2.32
- Utomo MN, Rahayu S, Kaujan K, et al. (2020) Environmental performance, environmental disclosure, and firm value: empirical study of non-financial companies at Indonesia Stock Exchange. *Green Financ* 2: 100–113. https://doi.org/10.3934/GF.2020006
- Yong JY, Yusliza MY, Ramayah T, et al. (2020) Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Bus Strat Environ* 29: 212–228. https://doi.org/10.1002/bse.2359
- Zhang B, Wang Z (2014) Inter-firm collaborations on carbon emission reduction within industrial chains in China: practices, drivers and effects on firms' performances. *Energy Econ* 42: 115–131. https://doi.org/10.1016/j.eneco.2013.12.006



© 2022 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0)