THAMMASAT REVIEW
PRINT ISSN: 0859-5747 ONLINE ISSN: 2630-0303
Volume 27 No 1 (January-June) 2024 [Page 77-108]

Organisational Greening Process and SMEs' Performance in the Textile Industry: Evidence from Pakistan

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Received 20 December 2023; Received in revised form 10 May 2024
Accepted 14 May 2024; Available online 10 June 2024

Abstract

This study aims to investigate the influence of organizational green culture (OGC), green innovation (GI), and green finance (GF) on the performance (FP) of small and medium-sized enterprises (SMEs) in Pakistan's textile industry. The research adopts a quantitative and cross-sectional research method, collecting primary data through structured questionnaires completed by managers and senior employees of SMEs in the textile industry in the Punjab province of Pakistan. The study employs Stakeholder Resource-Based View Theory to gain a better understanding of the impacts of organizational green culture, green innovation, green finance, and SMEs' performance. Statistical tests, including demographic analysis, descriptive statistics, and correlation analysis, are performed using SPSS. A sample of 230 firms is analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal a positive impact of organizational green culture, green innovation, and green finance on SMEs performance in the textile industry. Managers gain insight into the potential benefits of adopting organizational green culture, green finance, and green innovation. This study is supported by four main literature strands and stakeholder theory and has significant implications for both academics and policymakers.

Keywords

Organizational Green Culture, Green Innovation, Green Finance, SMEs' Performance, Textile Industry

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Introduction

The textile industry, while vital to global commerce and economic development, is notorious for its significant contribution to environmental pollution. The production processes involved in textile manufacturing, particularly in countries like Pakistan where the industry holds a prominent position, are notorious for their adverse environmental impact. These processes, which include spinning, weaving, dyeing, printing, and finishing, utilize vast amounts of resources such as water, energy, and chemicals, while simultaneously emitting pollutants into the air, water, and soil. It has been demonstrated that the second-most polluting sector is the fabrication of textiles, which accounts for 8–10 percent of emissions of greenhouse gases and 20 percent of industrial effluent pollution (APTMA, 2022).

According to a report in Asia, Pakistan is the eighth largest textile products exporter, fourth largest producer and third largest consumer of cotton in Asia (BOI, 2020). The textile industry provides employment to 40 percent of the labor force. There are almost 423 textile firms in Pakistan. According to the Board of Investment (BOI) report, the demand in the world for textile apparel increased to 1.2 trillion dollars in 2018. Pakistan has great potential to earn money from foreign markets by exporting textile products. As compared to the west, Pakistan can make textile products at a low price, and it also has opportunities for outsourcing production. Many famous brands like Puma, Adidas, Levis and Nike operate in Pakistan and work with Pakistani local mills. In Pakistan, after the introduction of green initiative guidelines by the State Bank of Pakistan (SBP), the government allocated forty billion rupees for green programs (Gupta, 2018). This step was taken to promote green development and to resolve environmental issues (Mumtaz & Smith, 2019), and correspondingly eco-friendly projects have increased (Gupta, 2018). Particularly, 5 percent of the textile firms in Pakistan listed on the Pakistan Stock Exchange are motivated to pay attention to environment for sustainable performance.

SMEs play a crucial role in Pakistan's economy, contributing significantly to the GDP, yet many face performance-related issues. According to the Small and Medium Enterprise Development Authority (SMEDA), there are almost 5.2 million SMEs working in Pakistan, contributing almost 40 percent to gross domestic product (GDP) in the country. The textile industry has the potential to improve its current contribution to the economy of Pakistan (Shah & Syed 2018). Currently, medium enterprises' (MEs) contribution to the economy of Pakistan is meager and SMEs fail to perform to their potential. More than 80 of MEs face failure and unable to generate employment in Pakistan (Hassan et al. 2018).

In order to be sustainable in the long run, some textile SMEs have adopted green practices including the incorporation of a green organizational culture, initiating clean and eco-friendly production processes, and investing in green projects while trying to enhance their performance and competitiveness in the market. Organizational green culture (OGC)

can be generated from awareness and the incorporation of employees in all levels (Wang 2019). SMEs can cultivate a workforce that is committed to minimizing environmental impact and maximizing resource efficiency. By doing this, SMEs can enhance employee engagement and morale as well as foster innovation and creativity to improve environmental performance.

Green innovation (GI) reshapes operational processes to reduce energy consumption, minimize waste, and mitigate environmental impact (Dangelico & Pujari, 2010; Lin et al., 2014; Woo et al., 2014). Adopting clean and green processes in textile manufacturing activities can generate benefits as well as reduce the cost of operation for SMEs. By implementing resource-efficient technologies, such as water recycling systems, energy-efficient machinery, and eco-friendly production methods, SMEs can lower production costs and minimize waste generation. At the same time, cleaner production practices can enhance product quality and brand reputation, leading to increased customer satisfaction and loyalty, as the result of an improvement in SMEs' performance (FP) (Aboelmaged & Hashem, 2019; Singh et al., 2020). Green innovation can also build an eco-friendly image of the corporation (Dangelico et al., 2017; El-Kassar & Singh, 2019). The relationship between GI and FP has attracted researchers' attention, but understanding of the association is still not definitive and needs further research (Trumpp & Guenther, 2017).

Furthermore, investing in green projects, such as renewable energy installations, waste management systems, and carbon emission, offer various benefits to SMEs. By allocating resources towards environmentally responsible projects that align with their business objectives, SMEs can differentiate themselves in the market, attract socially conscious investors and customers, and create new opportunities for growth and expansion. Green finance (GF) plays a vital role in corporate green consciousness and strategies. In the twenty-first century, green finance has assumed importance not only in firms, but also in the environmental sciences. Consequently, it is likely to be beneficial to both developed and developing countries to focus on green financing as worldwide green financing is the green foundation that will be worth 40 trillion dollars from 2012 to 2030 (Mohd & Kaushal, 2018). As environmental issues are increasing globally, it is imperative that the financial sector responds positively to the environment through GF (Goel, 2016). According to Zhang et al. (2019), GF is a powerful financial instrument that can stabilize the economy of any country. GF involves making investments in eco-friendly projects and products. Recently, many studies have been conducted on GF worldwide, but limited research is available on the impact of GF on the performance of small and medium-sized enterprises (SMEs), particularly in textile companies which produce a lot of pollution. Unlike previous research that analyses these frameworks separately, this study combines them to examine how internal resources and stakeholder influences contribute to SME performance. It highlights the significance of

green practices, prompted by stakeholder pressures, in addressing environmental, social and economic challenges to improve business sustainability and performance.

The research question guiding this study is: How do synergies between various dimensions of green practices (culture, innovation, finance) contribute to improved performance outcomes for SMEs in the Pakistani textile industry? Therefore, the objectives of this study are threefold. Firstly, the study aims to investigate the relationship between green culture within SMEs and their performance in the textile sector of Pakistan. Secondly, the study seeks to explore how green innovation practices impact the financial performance of SMEs in this industry. Thirdly, the study aims to examine the role of green finance in enhancing the SMEs' performance within the Pakistani textile sector. Through empirical testing and validation, this study contributes to theoretical advancements in the fields of environmental management, sustainable entrepreneurship, and small business performance, particularly within the context of a developing country.

Literature Review and Hypothesis Development

Stakeholder Resource Based View (SRBV)

This study investigates the nexus between green organizational culture, green innovation, green finance and the performance of small and medium-sized enterprises (SMEs) using the stakeholder resource-based view (SRBV). The SRBV is a combination of stakeholder theory (Freeman, 2010) and the resourced-based view (RBV)(Barney, 1991, 2001). According to this theory, both the tangible and intangible assets of the firm are critical for the firm's survival. Our study is different from past studies as we investigate how internal and external resources influence the performance of SMEs by stressing the importance of the organisation going green.

Organizational Green Culture and SMEs' performance

In today's globalised world, going green is becoming more important as organisations recognise that it can increase the firm's profitability. Martelo-Landroguez, Albort-Morant et al. (2018) argue that this involves utilisation of innovative high technology, strong development of organisational culture and practices which are sustainable. All these are meant to enhance the performance of firms. Zhao et al. (2018) and Küçükoğlu & Pınar (2016), further stress that this utilisation occurs due to increased market expectations for socially responsible firms. Chen, Lin et al., 2020 demonstrated that firms that reduce water and material pollution obtain higher financial performance.

In addition, Norton et al. (2015) and Mohezara et al. (2016) argue that a green culture within organisations can help the company to be competitive and productive. The reason is due to the fact that green organisational culture helps generate innovation and high

performance (Chang, 2015; Howard-Grenville, Bertels et al., 2014). Marshall et al. (2015). Simultaneously, Wang (2019) argues that a green organisational culture helps develop goods which are environmentally friendly and also corporate strategies which are long-lasting (Leonidou et al., 2015; Latan et al., 2018). Furthermore, the company's leadership is also paramount in directing the organisation to go green which ultimately result in higher financial performance (De Marchi, 2012). As a result, organisations which go green do not just aim for better financial performance but also to exercise their social responsibility towards the environment (Harris & Crane, 2002; Falope et al., 2019). Furthermore, green marketing is also gradually becoming significant because it can assist firms to differentiate themselves from their competitors as well as contribute to economic growth (Leonidou et al., 2013; Gupta, 2018).

Additionally, external stakeholder pressure also helps shape the green practices of firms as well as improve their abilities to satisfy the expectations of the external stakeholders (Singh, Del Giudice et al., 2020). The company's policies and practices also play an important role in fostering the firm's commitment to green practices in order to ensure that the social values of the firm are being seen as socially responsible. This can increase the firm's reputation and long-term success. Considering the previous discussion, we develop the following hypothesis:

> ***H1:*** *Organizational green culture has a significant positive impact on SMEs' performance.*

Green Innovation and SMEs Performance

Green innovation helps develop technologies which can increase environmental efficiency in the manufacturing process. This involves technologies that manage waste properly, lowers pollution such as CO2, improve energy efficiency, and other improvements (Eiadat et al., 2008; Song & Yu, 2018; Dangelico & Pontrandolfo, 2015).

Furthermore, green innovation results in less usage of toxic materials which reduces harm to the environment as well as achieving less wastage and conservation of resources (Lin et al., 2014). Moreover, green innovation also helps enhance the competitiveness of firms as well as increase their reputation. As a result, these firms are able to hire better quality staff, be more socially responsible as well as be able to increase sales through the sales of new environmentally-friendly products as well as penetrate new markets which prefer such products (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Singh et al., 2020; Roespinoedji et al., 2019; Fernando et al., 2019; Khurshid & Darzi, 2016; Lin et al., 2014). The benefits of green innovation ultimately lead to the bettering of firms' financial performance. Considering the previous discussion, we develop the following hypothesis:

H2: *Green innovation has a significant positive impact on SMEs' performance.*

Green Finance and SMEs' performance

Basically, green financing is important in financing environmentally friendly projects and building a green economy (Arkhipova, 2017; Wang & Zhi, 2016; Wu & Liew, 2023). Specifically, green loans can assist firms to embrace sustainability from the environmental perspective which helps support global growth in the economy (Mohd & Kaushal, 2018).

Green finance also helps firms to achieve their ecological objectives as well as improve their financial performance particularly among SMEs (Zakari & Khan, 2022; Akter et al., 2018). Furthermore, green financing also helps improve brand image and employee welfare (Malsha et al., 2020; Raihan, 2019). In order to implement green financing, financial institutions such as commercial banks play a critical role by providing appropriate interest rates to firms particularly SMEs (Dikau & Volz, 2021; Rehman et al., 2021). As a conclusion, green finance is paramount for firms to achieve sustainable development (Wang et al., 2019; Onyango, 2016). Considering the previous discussion, we develop the following hypothesis:

H3: *Green finance has a significant positive impact on SMEs' performance*.

Population Research Methodology

Population and Sampling

The study focuses on Small and Medium-sized Enterprises (SMEs) within the textile industry in the Punjab province, which boasts a substantial number of textile businesses in Pakistan. With over half of Pakistan's total population, Punjab stands as the most populous province and is renowned for its industrialization, particularly in manufacturing sectors such as textiles. According to the Ministry of Textile Industry, Pakistan, there are around 27,250 small and medium-sized textile enterprises (SMEs) in Pakistan (SMEDA , 2016). Based on this ‘population’ number, this study follows the methodology of Krejcie & Morgan (1970) which suggests a sample size of 279 to represent the population. For data collection, a convenient sampling approach was utilized to select a representative sample. This method was chosen to facilitate the examination of proposed relationships and to ensure the reliability and generalizability of the study's findings (Treiblmaier & Filzmoser, 2010). The sample size was determined to be 300, reflecting the requirements of the research objectives. Ultimately, 230 completed questionnaires were gathered which achieve a robust response rate of 76.7 percent, meeting the minimum criteria suggested by Murphy (2003) for ensuring the validity of survey results.

Data Collection Method and Instrument

This study employed a structured questionnaire to gather primary data, with researchers conducting on-site visits to collect responses and also utilizing email to reach target respondents. This dual approach aimed to ensure a comprehensive evaluation of performance, addressing potential bias associated with quasi-equity and providing a clearer understanding of participants' subjective assessments. For instance, the impact of board decisions on green investments is reflected in the return on assets (ROA) (Buallay et al., 2017). The questionnaire, consisting of both closed and open-ended questions, employed a self-determined response format to capture participants' perceptions of business performance. These perceptions were categorized on an ordinal scale, ranging from making some loss to making no profit, gaining some profit, and achieving significant profit. As a result, the study collected data for all firms across various variables.

This study follows the method done by Kijkasiwat et.al. (2021) to prevent sampling bias. SME owners, managers and senior employees were approached to complete the questionnaire. Specifically focusing on the textile industry, owners, managers and senior employees were chosen for their presumed ability to elucidate the firm's policies on green culture, green innovation, green finance, and performance. Pilot studies were conducted using distinct samples from each group to assess the uniform understanding of the questions within each group. Respondents were restricted from editing the questionnaire or altering their statements to maintain the integrity of the data collection process. There were some similarities among business owners, managers, and senior employees in terms of their understanding and knowledge of managing business. Firstly, all three groups typically have substantial experience within the organization or industry, equipping them with valuable insights across different facets of business management, particularly concerning the adoption of environmentally sustainable practices, often referred to as 'green' initiatives. Secondly, the three groups are familiar with the day-to-day operations of the organization, including its processes, systems, and challenges, which contributes to their understanding of how to manage the business effectively. Third, each group is likely to have exposure to strategic planning and goal-setting exercises, enabling them to grasp the broader objectives and direction of the business. For the purpose of data triangulation, we randomly surveyed both owners and managers or/and senior employees, within the same company to assess if their responses align in the same direction.

The study recognized possible issues with the Common Method Bias which can lead to erroneous conclusions and misinterpretations of the relationships between variables. To mitigate this bias, this study uses various strategies to avoid this problem following the approach of Jordan &Troth (2019). Before collecting the data, a statement was written to clarify clearly the purpose of the survey, and manage the expectations of respondents. It

was ensured that respondents could understand the benefits of providing their opinions in answering the survey. These steps aimed to reduce acquiescence bias and the transient mood state which can be influenced by immediate circumstances, events, interactions, or environmental factors. The respondents were divided into two primary groups: owners and managers/senior employees. Each group was given similar questionnaires tailored to their roles and perspectives. They were queried about the impact of adopting various green concepts on the firm's performance, and asked to assess whether these initiatives lead to increases or decreases. Additionally, they were questioned about their responsibilities and the specific practical activities they are required to adhere to for these green initiatives. This approach ensures a comprehensive understanding of both the managerial and operational aspects related to the adoption of green practices. A practical method suggested by Kock (2015), was further employed in the current investigation to uncover common method bias using variance inflation factors (VIF) generated by a comprehensive collinearity test. A VIF greater than 5 or 10 is often considered indicative of multicollinearity issues (Allam et al., 2020; Purwanto, 2021). A VIF below 5 show that the model does not face multicollinearity issues (Purwanto, 2021). From the model, common method bias was not an issue.

Table 1 Definition of constructs

Constructs	Items	Description of Items
SMEs' Performance (FP)	FP1	An increase in profitability
	FP2	An increase in sales
	FP3	An increase in return on assets (ROA)
	FP4	An increase in return on equity (ROE)
	FP5	An increase in market share
	FP6	Extent to which firm get operational and cost efficiency
	FP7	An increase in productivity
	FP8	An increase in return on sales (ROS)
	FP9	An increase in return on investment (ROI)
Organization Green Culture (OGC)	OGC1	Responsibility to provide information to all employees about social sustainability
	OGC2	The effort to social sustainability as a major goal
	OGC3	The social sustainability relating to policy statement
	OGC4	The social sustainability relating to high priority activity
	OGC5	The social sustainability relating to central corporate value
	OGC6	The social sustainability relating to corporate image
	OGC7	The sustainability relating to firm responsibility

Table 1 Definition of constructs (continued)

Constructs	Items	Description of Items
Green Innovation (GI)	GI1	The extent of effort firm shows to recycle, reuse, and remanufacture materials
	GI2	The extent of effort firm shows to redesign production and operation processes to improve environmental efficiency
	GI3	The extent of effort firm shows the improvement to meet new environmental criteria
	GI4	The extent of effort firm to use less or non-polluting/toxic materials
	GI5	The extent of effort firm to use materials that are easy to recycle, reuses, and decompose
	GI6	The extent of effort firm to end-of-life products and recycling
Green Finance (GF)	GF1	Invest in less polluted products.
	GF2	Invest in less contaminate products.
	GF3	Invest in less toxic materials
	GF4	Invest in green energy production
	GF5	Invest in energy saving processes
	GF6	Issue green bonds as a financial capital
	GF7	Get financial support from financial institutes for projects relating to sustainable use of natural resources and land

Construct Measurement

The performance variable, considered the dependent variable in this study, is gauged through various indicators such as enhanced profitability, increased sales, expanded market share, heightened productivity, operational and cost efficiency of the firm, and metrics including return on assets (ROA), return on equity (ROE), return on sales (ROS), and return on investment (ROI). To measure the constructs of the study, the scale is adopted from previous researchers. The measurements scale of constructs consisted of closed-ended questions scored on a 5-point Likert scale, with 1 being strongly agree and 5 being strongly disagree. SMEs' performance, includes nine elements adopted from Schulz et al. (2010).

There are seven items in the independent variable named Organizational Green Culture (OGC) which were adopted from Fraj-Andrés et al (2009). By adopting questions from Chen & Liu (2020) and Aboelmaged & Hashem (2019), there are six items representing Green Innovation (GI). The construct namely Green Finance (GF) consists of seven items adopted from Nwobu et al. (2017); Akter et al. (2018); Raihan (2019); Zheng, Siddik et al. (2021). The study's dependent variable, SMEs' Performance (FP) of SMEs, has nine items

for which the questions have been adopted from Sweeney, (2009). The study uses a five-point Likert scale to measure the items of each construct included in the instrument where 1 stands for strongly disagree, and 5 stands for strongly agree. The definition of constructs is demonstrated in Table 1.

The reliability values of Cronbach's Alpha lie in the 0.70-0.90 range, and is therefore considered to be good for reliability and generalizability of results (Hair et al. 1998). Furthermore, correlations among individual items of the scale were examined to ensure that none exceeded 0.9, a precautionary measure aimed at mitigating issues related to multicollinearity (Poelman et. al., 2018). Content validity guarantees that the measurements are appropriate and accurate for the item to be measured (Sekaran & Bougie 2016). To obtain professional judgment, three specialists were consulted regarding the instrument's content validity. This study relies on the Likert scale; therefore, Cronbach's Alpha is utilized here which is the most reasonable test for testing the unwavering quality of measures. The Cronbach's Alpha reliability of OGC is 0.85, GI is 0.89, and GF is 0.90. The reliability of the dependent variable, SMEs' performance is 0.88. The results are given in Table 2.

Table 2 Summary of variables and reliability

Variable	Reliability	Scale	Items
SMEs' Performance (FP)	0.77	(Schulz et al. 2010)	9
Organizational Green Culture (OGC)	0.96	(Fraj-Andrés et al. 2009)	7
Green Innovation (GI)	0.86	(Aboelmaged & Hashem 2019, Chen & Liu 2020)	6
Green Finance (GF)	0.83	(Nwobu et al. 2017, Akter et al. 2018, Zheng et al. 2021)	7

Data Analysis Tools and Techniques

Skewness and kurtosis are also checked for data normality. The measurement model and structural model were also performed. The researchers have applied a measurement model to verify the validity of the instrument used in the study. In this research, partial least square structural equation modeling PLS-SEM was applied to investigate recommended associations of the research variables. PLS-SEM does not require a large sample size and works efficiently on complex models and has no assumptions about data distribution (Hair et al. 2016; Sarstedt et al. 2020). Prior research suggests that a sample size of 100 to 200 is usually a good starting point in carrying out path modeling (Hoyle, 1995). A sample size of 300 was used to meet the requirements of the research; of these 230

completed questionnaires were collected, which is well above the required size. Based on the overall number of model parameters, this presents a sufficient number of observations (Sarstedt et al., 2021).

Empirical Results

Demographics

Demographic results (given in Table 3) show 12.6 percent of respondents are in the age group of 18 to 28, 61.3 percent are in the age group of 29 to 38, 22.6 percent are in the 39 to 48 age group, and the rest (3.5 percent) are in the age group of 49 and above. 10.4 percent of the respondents had 00-05 years' experience, 49.1 percent of the respondents have 6 to 10-years' experience, 28.7 percent of the respondents had 11 to 15-years and 11.7 percent of the respondents had experience of more than 16 years The majority of the respondents have completed a bachelor's degree (59.1 percent). Education data for the rest are 2.6 percent are primary school graduates, 27.8 percent high school graduates, and 10.4 percent have a master's degree. The descriptive statistics of the firms indicate that the majority of the studied firms in the textile industry were small in size, accounting for 57.39 percent, while the remaining 42.60 percent were categorized as medium-sized. In terms of the number of employees, the majority of the firms were classified as small in size. Among the total SMEs in the textile industry, the predominant type of firm was the garment/stitching enterprise, comprising 3.69 percent, while the least represented type was the weaving enterprise, accounting for 9.60 percent, with ginning falling in between.

Table 3 Demographic details

Demographics	Frequency	Percentage
Gender		
Male	224	97.4
Female	6	2.6
Age		
18 to 28	29	12.6
29 to 38	141	61.3
39 to 48	52	22.6
49 to Above	8	3.5
Experience		
00 to 05	24	10.4
06 to 10	113	49.1
11 to 15	66	28.7
16 to Above	27	11.7

Table 3 Demographic details (continued)

Demographics	Frequency	Percentage
Qualification		
Primary school	6	2.6
High school	64	27.8
Bachelor's degree	136	59.1
Master's degree	24	10.4
Firm Size		
Small	132	57.39
Medium	98	42.60
Number of Employees		
10-35	132	57.39
36-99	98	42.60
Type of Textile Business		
Ginning	25	10.86
Spinning	67	29.13
Weaving	22	9.60
Dyeing and finishing	27	11.73
Garments stitching	89	38.69
Total	230	100.0

Descriptive Statistics

Normality analysis was performed, and values were checked. Descriptive analysis of predictor variables and outcome variables was performed. Correlation results show the relation between the variables. Correlation value of OGC and FP is 0.779; GI and SP are 0.802; and GF and FP is 0.824. All the correlation results show a good correlation between variables of the study. Correlation results (Table 4) also show that there is no issue of multicollinearity.

Table 4 Correlations Analysis

Pearson Correlation	Mean	SD	SP	OGC	GI	GF	CSR
FP	3.98	0.57	0.88				
OGC	3.95	0.67	.779**	0.85			
GI	3.98	0.71	.802**	.864**	0.89		
GF	3.97	0.72	.824**	.857**	.895**	0.90	

Note: Correlation is significant at the 0.01 level (2-tailed)

Abbreviations: SD, standard deviation; FP, SMEs' performance; OGC, organizational green culture; GI, green innovation; GF, green finance

Measurement Model

Factor loading, Cronbach alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) of all variables were calculated and presented. Factor loadings greater than or equal to 0.50 were considered valid (Fornell & Larcker, 1981).With respective loadings of 0.885 and 0.848, OG1 and OGC4 are the most important. SMEs may communicate and provide training to their employees regarding social sustainability. This should be a high-priority activity in the company to get better outcomes. The factor loading of GI1 and GI3 is 0.881 and 0.871, which have a more significant contribution than others. Findings suggest that SMEs may begin to prioritize the "three Rs" of recycling, reusing, and remanufacturing. SMEs need to redesign and improve their methods for eco-friendly products and services. GF1 and GF7 are important factors in Green Finance due to their 0.853 and 0.851 loadings. SMEs may prioritize strategies and resources that provide them with a competitive edge. SMEs must make investments in cost-cutting procedures and technologies.

To assess multicollinearity issues, VIF values are used to examine collinearity problems. The Variance Inflation Factor (VIF) should be less than 5 to avoid collinearity problems. In the dataset presented in Table 5 of GF (Green Finance), VIF values range from 2.23 to 2.76. For GI (Green Innovation), the VIF values range from 1.90 to 3.10, while for OGC (Organizational Green Culture), they range from 1.57 to 3.38. The VIF for the dependent variable FP (SMEs' performance) ranges from 1.53 to 2.65. These results indicate that all VIF values are less than 5, suggesting that there is no collinearity problem in the dataset.

CR value is also greater than 0.70 which provides better reliability of all variables (Netemeyer et al. 2003). It is clear from our analysis that the AVE value (Fornell & Larcker, 1981) confirmed the convergent validity in all the constructs. Table 5 presents the results for the convergent validity of all constructs of the study. All the parameters show the desired model fitness as suggested by McAulay et al (2006) shown in Table 5. The researcher has

used the HTMT ratio as the most recent criterion to investigate discriminant validity (Henseler et al. 2015). A score greater than 0.85 implies perfect similarity among variables. The results given in Table 6 revealed an acceptable value of Heterotrait-Monotrait ratio (HTMT) less than 0.85 proving that all the constructs are discriminant and thus showing the discriminant validity of the constructs (Kline, 2011). Figure 1 also shows the value of R2 is 0.780 which means that 78.0 percent change in SMEs' performance is accounted for by OGC, GI and GF.

In this research, firm age is utilized as a control variable, and a multi-group analysis is conducted, categorizing firms into two groups: young firms, operating for less than 5 years, and old firms, operating for more than 5 years. Scholars have identified noteworthy aspects concerning firm age and performance. Older firms, having accumulated knowledge and expertise over the years, are better equipped to navigate the intricacies of green innovation effectively. Such established companies derive greater benefits from both inventive green innovations and utility-model innovations with ecological advantages compared to their newer counterparts (Yin et al., 2022). They may possess the resources to invest in sustainable practices and technologies.

While young small firms must develop innovation capabilities to adopt advanced technology before prioritizing environmental sustainability, they often exhibit a greater willingness to embrace risks and incorporate eco-friendly practices into their business models (Sáez-Martínez et al., 2016). Younger firms perceive green innovation as a strategic advantage to differentiate themselves in the market. Conversely, older firms, having heavily invested in existing technologies and processes, may find it challenging to allocate resources for green innovation (Vasilescu et al., 2023). Firms with fewer existing commitments, such as younger ones, might find it easier to allocate resources to sustainable practices.

Older firms may face stakeholder pressure to adopt sustainable practices to maintain or enhance their reputation (Ahinful et al., 2022). On the other hand, younger firms view green innovation as an opportunity to establish a positive environmental image from the outset. This study follows the recommendation of De Battisti & Siletti (2019) and Cheah et al. (2023) by testing results with and without control variables, demonstrating that the outcomes remain consistent. Consequently, the analysis without control variables is presented in Figure 1.

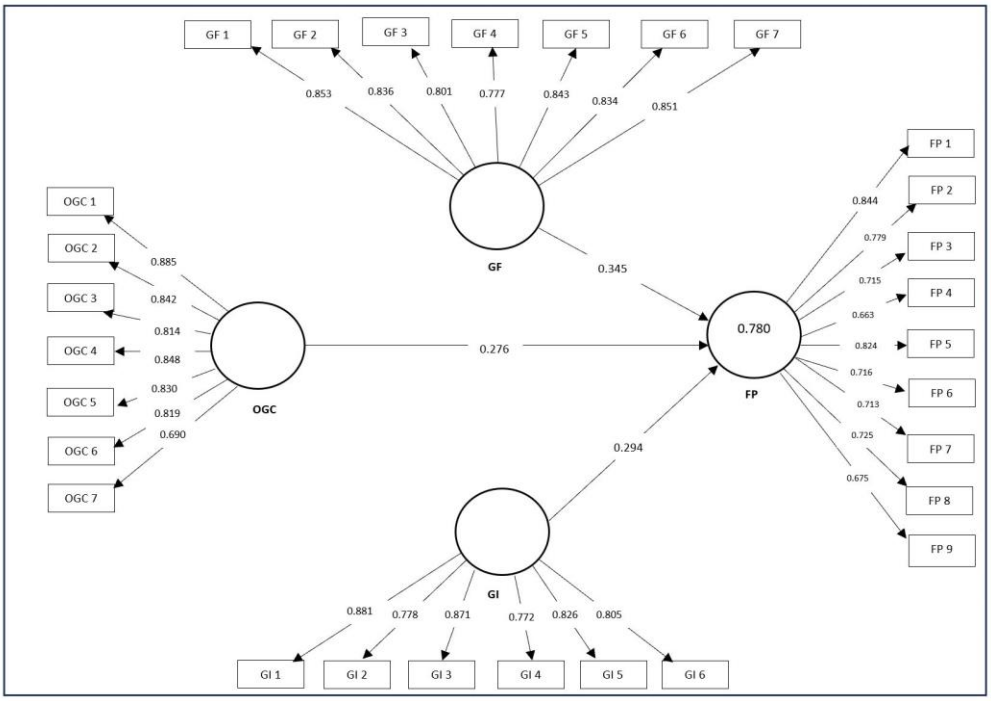

Figure 1 Measurement model

Source: Authors, 2024

Table 5 Reliability and Validity Analysis

Construct	Item	Loadings	VIF	alpha	rho-A	CR	AVE
Green Finance (GF)	GF1	0.853	2.76	0.924	0.926	0.939	0.686
	GF2	0.836	2.73				
	GF3	0.801	2.25				
	GF4	0.777	2.32				
	GF5	0.843	2.60				
	GF6	0.834	2.53				
	GF7	0.851	2.74				
Green Innovation (GI)	GI1	0.881	3.10	0.904	0.908	0.926	0.678
	GI2	0.778	1.91				
	GI3	0.871	2.98				
	GI4	0.772	1.90				
	GI5	0.826	2.27				
	GI6	0.805	2.07				

Table 5 Reliability and Validity Analysis (continued)

Construct	Item	Loadings	VIF	alpha	rho-A	CR	AVE
Organizational Green Culture (OGC)	OGC1	0.885	3.38	0.918	0.923	0.935	0.673
	OGC2	0.842	2.73				
	OGC3	0.814	2.41				
	OGC4	0.848	2.69				
	OGC5	0.83	2.58				
	OGC6	0.819	2.36				
	OGC7	0.69	1.57				
SMEs' Performance (FP)	FP1	0.844	2.65	0.897	0.904	0.916	0.550
	FP2	0.779	2.09				
	FP3	0.715	1.70				
	FP4	0.663	1.53				
	FP5	0.824	2.47				
	FP6	0.716	1.69				
	FP7	0.713	1.74				
	FP8	0.725	1.76				
	FP9	0.675	1.57				

Notes: AVE = ∑λi2 / n, Standard Estimate of Item (λ≥0.50)

Abbreviations :CR, composite reliability; AVE, average variance extracted.

Table 6 Discriminant Validity (HTMT)

	GF	GI	OGC	FP
GF				
GI	0.832			
OGC	0.814	0.821		
FP	0.817	0.792	0.826	

Notes: Abbreviations: GF, green finance; GI, green innovation; OGC, organizational green culture; FP, SMEs' performance

Table 7 shows the direct effects and indicates that organizational green culture, green innovation and green finance positively and significantly affect SMEs' performance. The result demonstrates a favorable relationship between organizational green culture and SMEs' performance.

Table 7 Path coefficients

Direct effect	Coefficient	S. D	T value	P values	Decision
GF -> FP	0.345	0.071	4.867	0.000	Accepted
GI -> FP	0.294	0.083	3.542	0.000	Accepted
OGC -> FP	0.276	0.059	4.647	0.000	Accepted

Notes: Abbreviations :GF, green finance; GI, green innovation; OGC, organizational green culture; FP, SMEs' performance

Structural Model and Hypotheses Testing

In the structural model analysis presented by Figure 2, green finance emerges as the most influential factor on SMEs' performance (with a path coefficient of 0.294 and t-statistics of 3.542), followed closely by organizational green culture (with a path coefficient of 0.276 and t-statistics of 4.4647). The positive statistical effect suggests that higher levels of green finance correspond to enhanced SMEs' performance. Similarly, elevated levels of green innovation and organizational green culture are associated with increased SMEs' performance. These results provide support for hypotheses 1, 2, and 3. The empirical findings reveal an R-square of 0.780, indicating that the three dimensions (finance, innovation, and corporate culture) focusing on environmental aspects collectively explain 78.0 percent of the variance in SMEs' performance. The R-square of 0.75 is considered substantial (Hair et al. 2019). The criteria aid in evaluating the structural model, encompassing metrics such as the coefficient of determination (R square), cross-validity of redundancy (Q square), and the path coefficients. The study gauges the model's predictive accuracy by examining the Q square. A smaller variance between predicted and observed values indicates a higher Q square. Upon conducting blindfolding, the study finds that the Q square for specific endogenous constructs is greater than zero, indicating the path model's precision in prediction (Sarstedt et al. 2014).

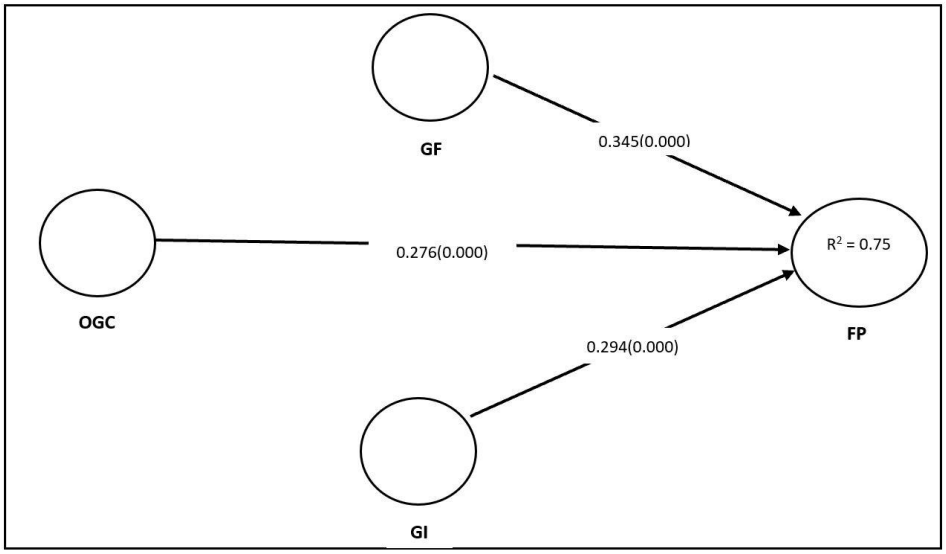

Figure 2 Structural model
Source: Authors, 2024

Discussion

The influence of organizational green culture (OGC) on positive outcomes for firms, as supported by previous researchers (Chang, 2015; Roespinoedji et al., 2019; Roscoe et al., 2019; Wang, 2019; Hao et al, 2023), is consistent with the results of H1. OGC refers to the intangible nature of an organization's culture, wherein employees actively engage in environmentally friendly actions beyond pursuing profits, thereby cultivating a green culture (Roscoe, Subramanian et al., 2019). This inclusive participation and sense of ownership not only occurs within the organization but also extends to the broader ecosystem, leading to improved environmental performance (Ong et al, 2019).

OGC encompasses both environmental and social aspects, integrating politics, science, and aesthetics to promote ecological development and sustainable economic growth (Galpin et al., 2015). OGC entails producing, consuming, and disposing of eco-friendly products while fostering a culture oriented towards sustainability and greening practices. By adopting OGC, organizations can achieve long-term competitive advantages and productivity benefits, positively influencing market behavior and increasing profits (Martelo-Landroguez et al., 2018). Furthermore, The adoption of green technologies could impact employees' environmental behavior positively after the implementation of environmentally sustainable practices (Hossain et al., 2024).

Following the introduction of the concept of sustainable development goals (SDG) from 2012, organizations worldwide have been reshaping their cultures to incorporate environmental factors, attitudes, and behaviors related to environmental issues, aiming to

enhance performance and meet stakeholder expectations (Küçükoğlu & Pınar, 2016). Organizational green culture serves as a driving force for corporate social responsibility activities (Pan et al., 2022), ultimately benefiting shareholders (Wu & Liew, 2024) and gaining funding support (Javeed et al., 2022). Moreover, the top management team's commitment to responsible environmental practices supports the sustainable growth of the firm, evident in the positive outcomes achieved by these organizations (Hossain et al., 2022b). The findings of H2 are supported by previous studies (Aboelmaged & Hashem, 2019; Soewarno, Tjahjadi et al., 2019), indicating the impact of green innovation on SMEs' performance through the reconfiguration of organizational resources (Aboelmaged & Hashem, 2019). Green innovation facilitates sustainable growth (Soewarno, Tjahjadi et al., 2019) and offers organizations a "first mover advantage" by providing a competitive edge, market opportunities, and a positive corporate image (Dangelico, Pujari et al., 2017). Green innovation has gained global attention as an environmental concern, with its potential to lower costs and provide a competitive advantage (Khaksar et al., 2016). It encompasses technological improvements, resource management, recycling, manufacturing eco-friendly goods, waste reduction, energy conservation, and other environmentally friendly practices that enhance sustainability. SMEs are actively working on innovative technologies and production methods that are more environmentally friendly, allowing them to optimize internal operations, increase productivity, and reduce manufacturing costs. Recognizing the critical role of green innovation in fulfilling stakeholder expectations and market requirements, managers can gain a competitive advantage and achieve sustainable growth (Soewarno et al., 2019; Lin et al., 2014).

The results also support H3, which aligns with previous studies (Zheng et al., 2021) emphasizing the strong effect of green finance on SMEs' performance. Various studies in the literature (Goel, 2016; Mumtaz & Smith, 2019; Zhang et al, 2019; Jiakui et al., 2023) have highlighted green finance as a powerful instrument in promoting the economy and improving performance. SMEs can invest in eco-friendly policies, technologies, and society, which offer long-term benefits and help them gain a competitive advantage over rivals by aligning objectives and financial goals with green practices across manufacturing

Contribution and Implications

Our study contributes to a resource-based view (RBV) by stressing the significance of environmental management to garner competitive advantage among firms consistent with Hart (1995). Additionally, our study can also be explained through the lens of institutional theory (DiMaggio & Powell, 1983) wherebv the organisational greening process is part of the firm's survival strategy as well as to obtain legitimacy in the public domain such as compliance with regulations and fulfilling societal expectations on sustainability. Moreover, the research findings of our study which demonstrates the nexus between green practices

and higher SMEs' performance also contributes to the stakeholder theory literature. Our study shows that managing relationships with stakeholders who are environmentally conscious can improve SMEs' performance which is consistent with the argument by Freeman (2010) that proper stakeholder relationship management can generate higher SMEs' performance.

Furthermore, our study also shows that green commitments of organisations can also serve as a form of risk management which can help improve compliance with regulations. This can help reduce the cost of non-compliance as well as environmental accident costs (Shrivastava, 1995). Basically, the findings of our study support the notion that green innovation enables firms to differentiate themselves from their competitors which are not going green. This can help boost the image of the company's brand and increase the sales revenue of the firm (Keller & Kotler, 2022). Moreover, with the positive influence of green finance on improved SMEs' performance, green financing should be considered as a significant financial strategy by the firm to achieve long term profitability (Porter & Linde, 1995). From the mechanism point of view, our study shows that green practices can enhance the organisational risk management which ultimately leads to better SMEs' performance, reduced costs of non-compliance of regulations and environmental accidents as well as increased access to capital (Eccles el al., 2014). Basically, our study shows that integrating sustainability into corporate strategies and processes will enhance SMEs' performance in the long run.

Conclusion and Recommendations

Generally, our findings show that the SMEs' performance is impacted by organisational green culture, green innovation as well as green financing. In addition, our research also shows that firms should embrace a corporate culture which is sustainable as well as invest in green technologies. Green technologies can benefit the firm through reduced costs of non-compliance as well as environmental accident costs (De Medeiros et al., 2014). Moreover, our study also shows that green innovation helps the firm to differentiate itself from its competitors which are not going green (Dangelico & Pontrandolfo, 2010). Furthermore, our study also shows the significance of green finance in encouraging firm investments in environmentally-friendly projects, which can yield long-term profits (Crals & Vereeck, 2005). Additionally, our study also encourages firms to integrate its green corporate strategies with the firm's overall organisational goals so that the benefits of going green can be maximised.

Despite the benefits of green corporate strategies, there are numerous barriers encountered by SMEs in implementing these strategies. Afolabi et al. (2023) argued that the limitation of SMEs in accessing capital create barriers for them to invest in green technologies. Furthermore, Purwandani & Michaud (2021) argued that SMEs lack the technical expertise and the know-how to effectively implement green corporate strategies.

Moreover, Baskaran et al. (2023) argue that SMEs also encounter difficulties in navigating the complicated external legal environment which may hinder their green commitments. Additionally, Simpson et al. (2024) argue that green products do not necessarily yield positive financial returns, hence, SMEs may fail to be successful with their green strategies. On top that, Yildrim et al. (2023) argue that the successful development of green technologies requires economies of scale which SMEs lack. This may hinder their green innovation strategies. Besides, Subramaniam & Suresh (2023) argue that implementing green practices is not easy. Employee resistance to the kinds of change required is bound to occur. Hence, this makes implementation of green strategies difficult particularly for smaller firms. Finally, Valdez-Juárez et al. (2018) argue that strategic supply chain coordination to implement green strategies and practices is not easy and this can hinder SMEs from going green. All these barriers need to be removed before SMEs can properly embrace green strategies in their businesses.

Despite all the barriers discussed above, this study tested the framework in the textile industry in Pakistan. Future research can extend this research to other industries as well by examining other geographical areas in Pakistan or other countries. Qualitative research can also be employed in future studies.

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