Adv. Math. Fin. App., 2025, **10**(4), P. 416-430

Advances in Mathematical Finance & Applications
www.amfa.iau-arak.ac.ir
Print ISSN: 2538-5569
Online ISSN: 2645-4610
Doi: 10.71716/amfa.2025.51196578

Original Research

Impact of Green Social Capital on Financial Performance with Emphasis on Green Innovation and Green Competitive Advantage

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ARTICLE INFO

Article history:
Received 2025-01-15
Accepted 2025-04-25

Keywords:
Green Social Capital(GSC)
Financial Performance(FP)
Green Innovation(GI)
Green Competitive Advantage (GCA)

ABSTRACT

One of the main concerns that have been emphasized in recent decades is environment. This research aims to investigate impact of green social capital on financial performance with an emphasis on green innovation and green competitive advantage. The research method is based on the objective, applied, and in terms of the implementation method, it is a descriptive survey. The statistical population includes the employees and managers of small and medium-sized manufacturing businesses of Tehran in Iran, and a sample of 277 people was selected using the available sampling method and Cochran formula. To collect the data of the research, a questionnaire tool was used and after confirming the validity and reliability, it was distributed among the sample size in summer 2024. Structural equation modeling and Smart PLS software were used to test the research hypotheses. The results indicate that green social capital, green innovation and green competitive advantage have a positive and significant impact on financial performance. Also by the use of Sobel's test, it was determined green innovation and green competitive advantage play a mediating role in the impact of green social capital on financial performance. These findings may provide policy-makers with crucial information for better environment performance and financial development, which helps address the conflict between stakeholders and companies, may be applicable in Iran and other countries as well.

1 Introduction

Environmental challenges such as global warming, pollution, loss of biodiversity, natural resource depletion, ozone layer depletion, deforestation, and waste disposal have become globally recognised problems [33, 17]. Business and human activities are central to the debate on global environmental challenges [34]. Nowadays, there is immense pressure on business to practice sustainability and environmental orientation. The pressure has come from government environmental rules and regulations,

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international environmental agreements, industry environmental management practices, and consumer pro-environmental behavior [15, 44, 10]. Social capital is the resources and help obtained formally and informally in social relations through relationships and interactions with social networks, as manifested in social networks, interpersonal networks, and interpersonal trust. It serves as an alternative mechanism for social information sharing and resource allocation [40]. According to its theoretical underpinnings, social capital is similar to financial, physical, and human capital but takes the shape of interpersonal relationships [20]. In the modern day, the social capital of business players in the community is yet another component that might influence the long-term viability of a company. Social capital, defined as "the degree to which individuals and groups care about and actively contribute to the quality of life in their community," is an essential idea for fostering community development [13]. Green social capital is one of the components of the green intellectual capital concept; it includes informal contacts, constructive discussions, knowledge sharing among employees, and mutual collaboration on environmental projects [9]. Competitive advantage is identified by the differentiated position of the organization compared to competitors gained through resource exploitation. To enhance the achievement of sustainable development, green competitive advantage is defined as a critical factor to consider. An organization will have a green competitive advantage when it implements a unique strategy that competitors cannot currently or potentially achieve or that they could generate similar benefits. Therefore, the organization's green competitive advantage will give it a relative position in an industry. An organization can also gain a green competitive advantage when it creates unique products that are accepted and appreciated by customers and cannot be imitated by competitors [24]. Green innovation performance, epitomizing a firm's proficiency in creating and introducing eco-friendly products, has emerged as a pivotal factor in the competitive arena [36]. As global consciousness about environmental sustainability heightens and consumer preferences increasingly tilt toward green solutions, the ability of firms to innovate sustainably is not only an operational necessity but also a strategic imperative [26]. By innovating and offering green products, companies meet these evolving consumer demands and effectively distinguish themselves from competitors, securing a competitive advantage. Furthermore, green innovation ensures compliance with increasingly stringent environmental regulations. It positions firms as proactive market leaders, favorably influencing their regulatory landscape while avoiding penalties and the negative publicity associated with non-compliance [5]. Financial performance measures how well a company's strategy and operations are carried out and it may fully capture the impact of cost management, asset management, funding allocation, and the make-up of shareholders' equity return rate [39]. As the economic environment changes rapidly, financial performance remains a crucial aspect of planning and development for the financial sector. In the modern global economy, the use of traditional techniques that only involve financial criteria in the evaluation of financial performance has been associated with problems and has made the need to pay attention to non-financial criteria even more noticeable. Paying attention only to financial criteria in order to promote and improve financial performance is absolutely not enough. In this competitive age where businesses are facing the risk of collapse at any moment, only companies and organizations succeed in survival, growth and development that, along with financial indicators, pay attention to non-financial variables and criteria that directly affect financial performance [31]. Due to many cases such as revenues and resources, the system of management, government system, macro goals and different policies of the government, it is necessary to present a suitable Policy regarding the conditions of Iran [28]. In this sense, green social capital can be seen as an important

internal factor that can help firms achieve better financial performance as they pursue green process innovation. In the past, the success of an organization was mainly measured by achieving profitability and gaining market share; however, today, in addition to financial indicators, the level of attention to environmental issues is also considered to measure performance. In today's competitive and turbulent world, companies must respect and comply with environmental laws, and this compliance with environmental issues brings them a great competitive advantage. This special attention to the environment has caused many companies to turn to green production. The new theory in the field of financial management states that the main function of managers is to increase the value of the company and that managers must continuously improve their financial performance; therefore, evaluating the financial performance of companies is one of the most important and fundamental issues worthy of attention by investors and managers. One of the important challenges that companies and organizations have faced for many years is the conflict between improving financial performance and preserving environmental issues. Many researchers believe that paying attention to the demands of stakeholders and the environment is a factor in achieving superior financial performance; while some other financial experts state that the costs paid for sustainable performance reduce the profitability of companies. However, it has been proven in current studies around the world that paying attention to the environment improves the financial performance of an organization and increases the value of the company. In recent years, our country has faced various environmental problems, including air pollution, climate change, industrial waste, decreasing water reserves, increasing greenhouse gases, and ultimately the destruction of the ecosystem. It is clear that if this trend continues, the lives of future generations will also be in trouble; therefore, all companies and production and service organizations must base their mission on green management in addition to financial issues. This study makes a significant contribution to the pool of literature examining the impact of green social capital on financial performance with an emphasis on green innovation and green competitive advantage as the existing literature on this topic is very limited. In particular, the relationship between green management and its dimensions on environment performance has been explored in depth from theoretical and empirical perspectives but there are few studies focusing on green social capital on financial performance in Iran. We aim to fill this gap by investigating impact of green social capital on financial performance with an emphasis on green innovation and green competitive advantage in small and medium-sized manufacturing businesses of Tehran in summer 2024. In today's competitive era, small and medium-sized enterprises are the lifeblood of countries' economies, and many believe that the impact that small and medium-sized enterprises have on economic growth, as well as on the environment, is so great that they must be managed and guided to achieve sustainable development goals, so the main question of this research defines as: What is the impact of green social capital on financial performance with the mediating role of green innovation and green competitive advantage?

2 Literature Review and Hypotheses Development

2.1 Green Social Capital

The concept of social capital was initially proposed by the renowned French sociologist Bourdieu in the 1980s. Bourdieu [4] considered social capital as an amalgamation of actual or potential resources that are more or less institutionalized. The mutual understanding and recognition within a social network are closely related, in other words, tied to group membership. It supports each of its members from a collective ownership perspective [4, 42]. From a functional viewpoint, Coleman defines social

capital as “the social institutional resources owned by individuals. It’s not a single entity, but is composed of various entities with two common characteristics: they are all parts of the social structure, facilitating certain activities of individuals within that structure. Like other forms of capital (human capital, physical capital), social capital is productive, making it possible to attain certain ends that, in its absence, wouldn’t be achievable" [38]. As said before, green social capital includes informal contacts, constructive discussions, knowledge sharing among employees, and mutual collaboration on environmental projects. High green social capital can also help firms lower the costs associated with collaboration, as well as excessive managerial costs [9, 30] because this can facilitate trust, honesty, and integrity among employees [29].

2.2 Green Competitive Advantage

Chen and Chang define green competitive advantage as a situation under which a firm occupies some positions about environmental management that are hard for competitors to copy. Green competitive advantage is a condition under which firms gain sustainable benefits from successful environmental strategies [8] and they define green competitive advantage as the strategic adoption of environmental management approaches and the implementation of green technologies by firms to acquire an edge over their competitors. The incorporation of environmentally friendly concepts into a company’s competitive advantage is likely to greatly improve the company’s environmental performance. Organizations often employ green efforts in today’s competitive market to establish themselves as environmentally sustainable [6]. Green competitive advantage also describes as a situation in which a firm occupies certain positions regarding environmental protection that rivals find difficult to imitate [3].

2.3 Green Innovation

Green innovation has received sustained attention in global innovation studies over the past few decades as it focuses on managing conflicts between environmental protection and economic growth, which can pose challenges to complex business management [19]. In other words, one of the problems in realizing green development is coordinating economic benefits and environmental values. Green innovation can solve this problem. Green innovation refers to green technological innovation involving energy conservation [25]. The fundamental component of innovation is the pursuit and effective application of new information throughout the whole production and operating process to generate efficiency benefits [37]. Compared with traditional technological innovation, green innovation contains the attributes of technological innovation, prioritizes environmental and resource protection [21]. Green product and green process innovations are the two main categories into which green innovation is typically divided [32].

2.4 Financial Performance

One of the human capitals, which plays an important role in turning the company's resources into income and creating wealth for shareholders, are the managers of commercial companies [12]. Financial resilience of companies refers to their ability to absorb economic shocks and challenges and return to normal performance [35]. As defined before, financial performance measures how well a company’s strategy and operations are carried out and it may fully capture the impact of cost management, asset management, funding allocation, and the make-up of shareholders’ equity return rate [39]. It refers to

the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives have been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. It gives true reflection of return on investment, return on assets, value added, etc. [23]. Financial performance include return on assets, return on equity, profit to revenue ratio, cash flow from operations, profit, return on investment, revenue growth, market share gained, productivity, effectiveness (i.e., sales growth and range of product or service growth), and efficiency (i.e., productivity and profitability growth). The other measure of firm performance include price per share [2]. In this section, a summary of previous researches is discussed. Din *et al.,* [11] surveyed the influence of green HRM, innovation, and competitive advantage on environmental performance in the manufacturing industry. Data from 278 employees in the manufacturing industry of Heilongjiang Province were collected through a questionnaire and Smart PLS-4 structural equation modeling technique was used and revealed that all three factors significantly influenced environmental performance: green HRM, innovation, and competitive advantage. Xie *et al.,* [41] investigated the impact of green process innovation and financial performance with the role of green social capital and customers' tacit green needs. Based on data from 221 Chinese manufacturing firms collected via the survey method, results found that green process innovation has a U-shaped impact on firms' financial performance and U-shaped relationship is moderated by green social capital and green needs' tacit. Naeem *et al.,* [27] investigated whether the environmental, social, and governance (ESG) performances of corporations from environmentally sensitive industries affect their financial performance. Moreover, the study determines how the impact of ESG performance on the corporate financial performance of environmentally sensitive corporations differs between developed and emerging countries. Findings indicate that overall ESG performance of environmentally sensitive corporations has a significantly positive relationship with the return on equity and Tobin's Q of the corporations. Moreover, findings indicate that the impacts of the ESG performance of environmentally sensitive corporations on the financial performance are stronger in developed countries than emerging countries. This study contributes to the literature by adding a better understanding of the ESG–financial performance relationship, especially for the environmentally sensitive industries from both developed and emerging countries. Fatoki [14] investigated the impact of environmental orientation and green competitive advantage of Hospitality Firms in South Africa with mediating effect of green innovation. A quantitative research method and square structural equation modeling to test the hypotheses was used. The findings showed that environmental orientation and green competitive advantage are significantly positively related. The indirect effect of green innovation is significant. Theoretically, the study developed a model that linked green innovation to environmental orientation. The researchers presented evidence in this study that shows that production costs do not decrease as income decreases. This phenomenon is called cost stickiness and indirectly affects tax evasion [45]. Several researchers have examined the relationship between ownership structure and stock liquidity of companies listed on the Tehran Stock Exchange. The effects of ownership structure were analyzed in two dimensions: ownership type and ownership concentration. The findings of their study indicated an inverse relationship between the level of institutional ownership, managerial ownership, and ownership concentration with liquidity. Moreover, a direct relationship was identified between the level of corporate ownership and liquidity[46]. Using the Huang and Salmon model, researchers examined the impact of herding behavior of institutional investors on the stock returns of companies listed on the Tehran Stock Exchange, and their research results showed that there is

a relationship between these two variables. Other findings of this study showed that the relationship between herding behavior and stock returns is greater in larger companies than in smaller companies, and also in companies with higher financial leverage; it is greater than in companies with lower financial leverage [47].

2.5 Hypotheses Development

In light of the growing social demand for clean environmental conditions, green management such as green social capital, green innovation and green competitive advantage have become crucial aspects for firms to increase their financial performance.

Green social capital is one of the components of the green intellectual capital concept that can create knowledge utilization and sharing, which enhance a firm's ability to sustain its competitive advantage [43, 18]. In this sense, green social capital can be seen as an important internal factor that helps firms achieve better financial performance as they pursue green innovation [7]. At the same time, green social capital also helps workers learn to share a common vision of the business [1], including the firm's environmental commitment, which is a crucial factor in the success of firms' environmental practices [16]. Also, based on existing literature, we suggest that green innovation can influence firms' financial performance, but that the degree of success will depend on their level of green innovation. Since customers are increasingly interested in demanding that the products they buy and use be environmentally friendly, green management that links social responsibility and is green social capital and green innovation oriented can be a major competitive advantage for an enterprise. Based on theoretical foundations and background of the research, the following conceptual model in Fig.1 is presented as a research model.

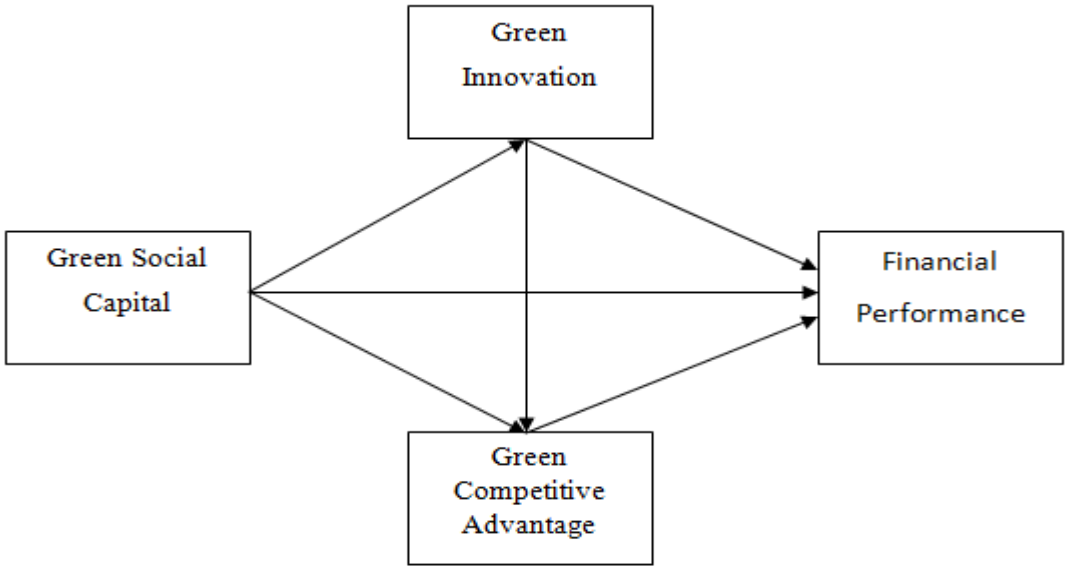

Fig.1: Conceptual Framework of Research

H1: Green innovation plays a mediating role in the impact of green social capital on financial performance.
H2: Green competitive advantage plays a mediating role in the impact of green social capital on financial performance.
H3: Green social capital has a significant impact on financial performance.
H4: Green social capital has a significant impact on green innovation.
H5: Green social capital has a significant impact on green competitive advantage.
H6: Green innovation has a significant impact on financial performance.
H7: Green competitive advantage has a significant impact on financial performance.
H8: Green innovation has a significant impact on green competitive advantage.

3 Methodology

This research is applied based on the purpose and descriptive survey in terms of the method of doing the work. Small and medium-sized enterprises are known as the backbone of the economy of many countries. However, small and medium-sized companies typically have fewer resources at their disposal and face their own challenges. Also, in recent years, the role of these businesses and small and medium-sized companies in the country's economy, as well as their destructive effects on the surrounding environment, has become such that green management measures should be implemented as much as possible in these institutions; so the statistical population of the present study is small and medium-sized businesses in Tehran, numbering 991 companies, and the sample size according to the Cochran formula is 277 which means senior and middle managers using the available sampling method were selected to answer the questionnaire. The questionnaire containing 18 items was used to collect data, and its indicators were scored using a 5-point Likert scale.
In this questionnaire, green social capital and green innovation include 5 items and green competitive advantage and financial performance include 4 items which the resource of each questionnaire is introduced in table1. Validity has been confirmed by experts and professors who are members of the university faculty and it was confirmed by applying correction comments and Cronbach's alpha was used to measure reliability.

Table 1: Result of Cronbach's alpha, CR & AVE

Variable	Resource	Number of Items	Cronbach's alpha	CR	AVE
Green social capital	Delgado-Verde et al., 2014	5	0.896	0.923	0.707
Green innovation	Mendes, 2012	5	0.927	0.945	0.775
Green competitive advantage	Lin & Chen, 2017	4	0.933	0.952	0.832
Financial performance	Chan et al., 2016	4	0.910	0.937	0.789

Source: Research results

According to table (1), Cronbach's alpha for all variables is more than 0.7, so the reliability of questionnaire is confirmed. Also, according to table (1), composite reliability (CR) and average variance extracted (AVE) are confirmed.

4 Findings

SPSS software was used to analyze the data in the descriptive statistics section and based on the results, 63.2% of the sample are male and 36.8% are female. In terms of education, 25.3% have a bachelor's degree and 74.7% have a master's or doctoral degree. Also, 27.1% of the sample have between one and ten years of experience, 57.4% have between ten and twenty years of experience, and 15.5% of the sample have twenty years or more of work experience.

In this research, structural equation modeling with SmartPLS software is used to survey the research hypothesis. Using T-Value outputs in diagram (2), hypotheses are examined. The way of judgment is that if the significant of T-Value is greater than 1.96 or smaller than -1.96, the hypothesis is accepted.

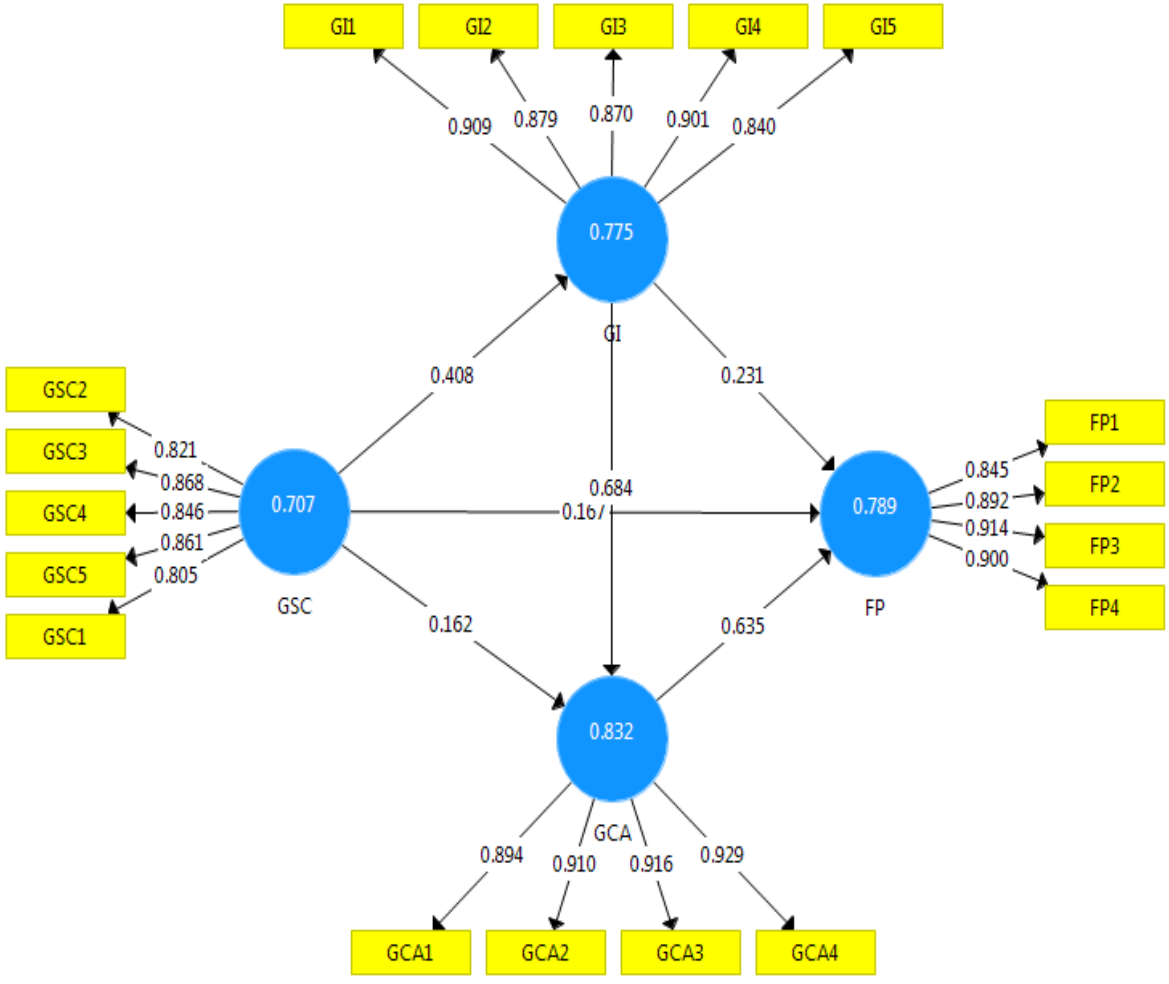

Diagram 1: The final structural model of the research with standard coefficients

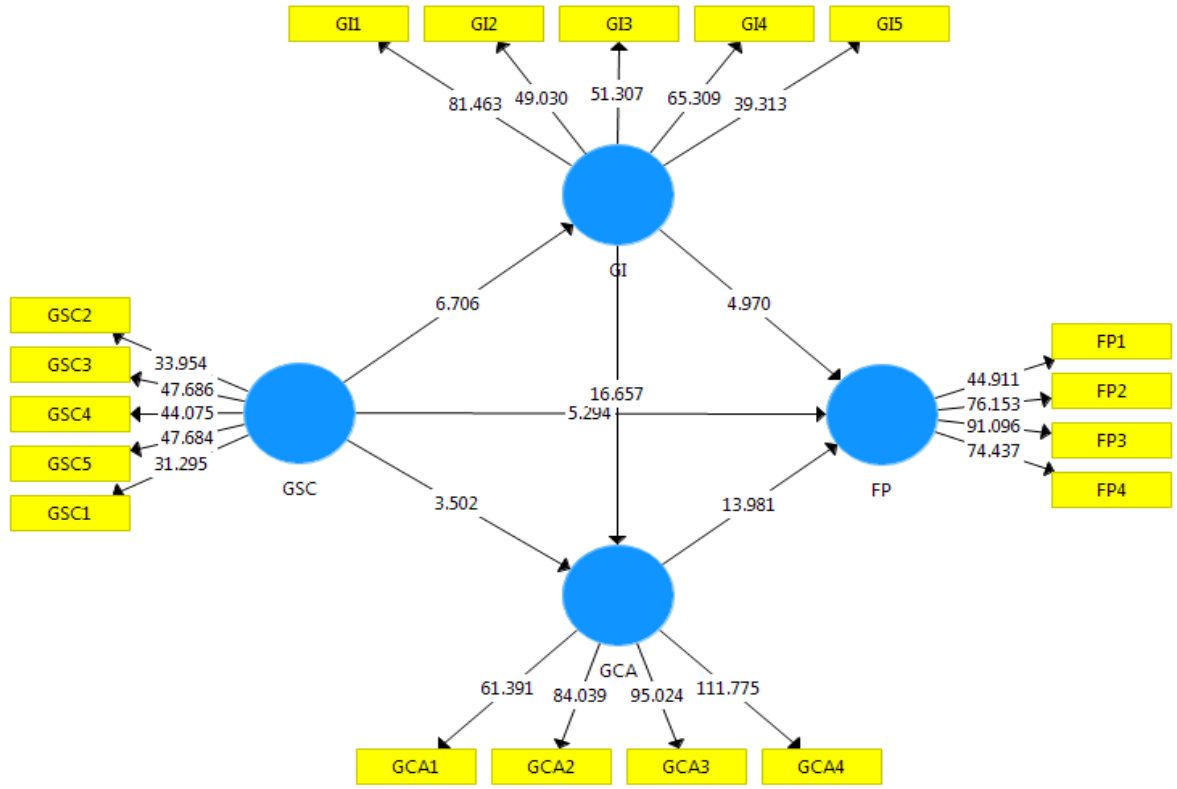

Diagram 2: The final structural model of the research with meaningful coefficients

According to diagram 2 and since the T-Value is equal to 5.294 and is more than 1.96, the third hypothesis of the research is accepted; meaning Green social capital has a significant impact on financial performance with a path coefficient of 0.167. Since the T-Value is equal to 6.706 and is more than 1.96, the fourth hypothesis of the research is accepted; meaning Green social capital has a significant impact on green innovation with a path coefficient of 0.408. Since the T-Value is equal to 3.502 and is more than 1.96, the fifth hypothesis of the research is accepted; meaning Green social capital has a significant impact on green competitive advantage with a path coefficient of 0.162. About hypothesis 6 and 7 we can say that because T-Value is equal to 4.970 and 13.981 and is more than 1.96, the sixth and seventh hypothesis of the research are accepted; meaning Green innovation and green competitive advantage have a significant impact on financial performance with a path coefficient of 0.231 and 0.637. At last, since the T-Value is equal to 16.657 and is more than 1.96, the eighth hypothesis of the research is accepted; meaning green innovation has a significant impact on green competitive advantage with a path coefficient of 0.684.

Table 2: Result of direct hypothesis

Hypothesis	Path Coefficient	T-Value	Result
Green social capital → Financial performance	0.167	5.294	accepted
Green social capital → Green innovation	0.408	6.706	accepted
Green social capital → Green competitive advantage	0.162	3.502	accepted
Green innovation → Financial performance	0.231	4.970	accepted
Green competitive advantage → Financial performance	0.635	13.981	accepted
Green innovation → Green competitive advantage	0.684	16.657	accepted

The Sobel test is used to test the indirect hypothesis that has a mediating variable. The way to examine the hypothesis with a mediator variable is that if the effect of the independent variable on the mediator and the effect of the mediator on the dependent becomes significant at the same time, the role of the mediator will be confirmed and the indirect effect will be confirmed; According to the research models in the standard and significance mode and the Sobel test statistic, we draw conclusions regarding the rejection or acceptance of the hypothesis.

Table 3: Result of indirect hypothesis

Indirect hypothesis	Sobel test statistic	Result
GSC ⟶ GI ⟶ FP	4.016	accepted
GSC ⟶ GCA ⟶ FP	3.417	accepted

Source: Research results

According to Table 3 and since the value of the Sobel test statistic is equal to 4.016 and 3.417, the indirect hypothesis of the research are confirmed; meaning green innovation and green competitive advantage play a complete and positive mediating role in the impact of green social capital on financial performance. The GOF index is used to evaluate the fitness value of the whole model by Eq.1. This test determines the overall quality of measurement and structural models. The higher the value of this index is, the higher the fit of the model, and the closer it is to zero, the lower the fit of the model. Three values of 0.01, 0.25 and 0.36 for GOF explain weak, medium and strong fit, respectively.

$$\text{Eq.1:GOF} = \sqrt{\overline{\text{Communalities}} \times \overline{R^2}} \quad (1)$$

Table 4: Result of GOF index

Variable	R-Square	AVE
Green social capital	-	0.707
Green innovation	0.166	0.775
Green competitive advantage	0.585	0.832
Financial performance	0.830	0.789
Average	0.527	0.775

Source: Research results

$$\text{GOF} = \sqrt{\overline{\text{Communalities}} \times \overline{R^2}} = \sqrt{0.775 \times 0.527} = 0.639$$

As can be seen, the value calculated for the GOF index is 0.639 and it shows the strong fit of the overall research model; therefore, it can be concluded that the presented model has a good fit and the collected data have been able to cover the designed model and confirm the model with high power.

5 Discussion and Conclusions

A growing number of scholars and researchers have been trying to find where the proper balance is between economic growth and environmental responsibility in firms. Firms with high green social capital are more likely to promote green knowledge sharing, leading to more green process innovations, which, in turn, enhance firms' financial performance. This research aims to investigate the impact of green social capital on financial performance with mediating role of green innovation and green competitive advantage in small and medium-sized manufacturing businesses of Tehran. To achieve this

goal, a questionnaire to collect data and the structural equation modeling approach was used and after examining the direct hypotheses of the research, it was determined that green social capital has a positive and significant impact on financial performance, green innovation and green competitive advantage with path coefficient of 0.167, 0.408 and 0.162. Also it was observed that green innovation and green competitive advantage have a positive and significant impact on financial performance with path coefficient of 0.231 and 0.635 and the impact of green innovation on green competitive advantage with a path coefficient of 0.684 was confirmed. According to the results obtained, it can be concluded that in today's era, when environmental concerns have become the concern of all stakeholders in society and the destructive effects of manufacturing and industrial businesses are increasingly threatening the ecosystem, small and medium-sized enterprises can achieve green competitive advantage and appropriate financial performance by using green social capital and green innovation. Paying attention to the environment on the one hand and applying green management on the other hand enables small and medium-sized enterprises to improve their profitability in addition to achieving social desirability and leading the country towards achieving sustainable development goals and economic growth. In addition, in the current research, Sobel's test was used to investigate indirect hypotheses and it was determined green innovation and green competitive advantage play a mediating role in the impact of green social capital on financial performance. The results of this research are aligned with Xie et al., (2022) and Fatoki (2021). Based on results and since green social capital improves green innovation and green competitive advantage and ultimately leads to better financial performance, it is suggested to provide a platform for employees to create their new green ideas to improve the business environment, and by emphasizing on green management and green innovation, which includes the creation of environmentally friendly products, earn competitive advantage, superior financial performance and more profitability. It is also suggested that companies create a department where environmental experts can present their ideas on producing eco-friendly products and services. Furthermore, it is suggested that SMEs invest in new technologies to prevent air, soil and water pollution and use new technologies to reduce the release of hazardous substances and waste produced. For future research, it is suggested to measure the impact of green social capital on financial performance with the mediating role of environmental performance and measure the impact of green innovation and green social capital on sustainable development goals. This research, like any other research, has limitations. It can be noted that the researchers intended that all small and medium-sized companies in Tehran respond to the questionnaires and that each questionnaire would represent one company. However, although the desired number of questionnaires was eventually collected, some companies did not cooperate in this regard.

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