Article

Green Core Competencies, Green Process Innovation, and Firm Performance: The Moderating Role of Sustainability Consciousness, a Mixed Method Study on Golf Hotels

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Abstract: Sustainability of biological, social, and economic systems is crucial for protecting our common future and preserving the balance between nature and humans. Environmental concerns should be adopted by all units of society and sustainability awareness should be adapted to all processes through optimum technologies both in daily life and in business management. The basic objective of this article is to determine the effects of green core competencies, green process innovation, and firm performance variables on each other and to examine the moderating role of sustainability consciousness on these effects. A survey and semi-structured interview forms were preferred as data collection methods. In the analysis of the survey data, AMOS was adopted to test the hypothetical model and the Hayes Process macro was employed to determine the moderating effect. The data of interview forms were analyzed with the bag of words model. The research results show that green core competencies positively affect green process innovation and green process innovation positively affects firm performance. In addition, the moderating effect of the attitudinal and behavioral dimensions of sustainability awareness on the impact of green process innovation on firm performance is supported, while the moderating effect of the sustainability knowingness dimension is not supported.

Keywords: green core competencies; green process innovation; firm performance; sustainability consciousness

1. Introduction

Competence refers to a firm's capacity to effectively utilize resources and organizational procedures to achieve the intended outcome. Learning from skills accumulated over a long period of time is a core competence. Since core competencies are difficult for competitors to replicate, they need to be managed and utilized to gain competitive advantage [1]. A business's core competency and how it develops over time are crucial to innovation and exporting, which guarantee the business's long-term existence and sustained growth [2]. Marczewska et al. (2020) [3] stated that green core competences are considered crucial for firms' green innovation. Both green product innovation and green process innovation involve the utilization and modification of these green core competencies [4]. The theoretical

basis of green core competence claims that possessing green core competence is essential for achieving green innovation performance, which in turn contributes to overall firm performance [5]. Khan et al. (2023) [6] indicate that green core competence has a positive impact on green organizational image, specifically in terms of environmental performance and green innovation practices. Furthermore, green core competence plays a moderating role in the connection between green intellectual capital and green organizational image [7]. In this context, it is usual to consider core competencies as important values that increase the performance, efficiency, and competitiveness of an organization.

Utilizing diverse technologies in green process innovation allows companies to strive towards the objective of diminishing pollution and effectively managing waste, water, and raw resources to enhance production efficiency [8]. It is also argued that manufacturing industries that adopt green process innovation can gain early action advantages and develop a green image [9]. The increasing negative effects of people on the environment make it necessary to use sustainable methods as much as possible in processes related to the use of business resources and the fulfillment of business activities, and at this point, to turn to green innovation practices as opposed to classical innovation.

Recently, there has been an increasing awareness of social and environmental issues in society, which in turn encourages firms to review their responsibilities [10]. Due to the increased awareness, more and more companies are now integrating sustainability into their strategy and operations [11]. The concept of environmental consciousness, as explored in numerous studies, primarily encompasses the awareness of environmental issues, including the focus on, attitudes towards, and thoughts about environmental problems, and is manifested as the consciousness of preventing and mitigating environmental pollution and damage resulting from human activities [12]. Building the sustainable consciousness of individuals is recognized as the key to guaranteeing a sustainable future [13].

A sustainability drive might encompass programs that prioritize the use of innovative manufacturing technology, the development of new, environmentally friendly products, or the incorporation of eco-friendly practices into the supply chain [14]. Sustainability consciousness, in the sense of using existing resources consciously and as much as necessary, is important in terms of protecting scarce resources, saving business resources, and as a result, protecting the environment. The concept of sustainability consciousness refers to more than just knowingness about sustainability, as it integrates the environmental, economic, and social dimensions of sustainable development and combines psychological constructs related to knowingness, attitudes, and behaviors towards these issues [15].

In order to evaluate the proposed research model in line with the stated research objectives, two distinct research methods were employed, i.e., survey and interview. The survey method was chosen due to its ability to gather a substantial quantity of original data from a large number of participants. The semi-structured interview format was employed as an additional qualitative data collection approach. The objectivity, reliability, and validity of the research were ensured by the simultaneous evaluation of qualitative and quantitative data.

2. Literature Review and Hypothesis Development

2.1. Theoretical Framework

Core competence, which is among the key variables of the research topic, is considered consistent with the foundation of the resource-based view (RBV), where competitive advantage involves a collection of resources originating from internal organizations [16]. In terms of another key variable, the resource-based view has recently focused its attention to the correlation between green process innovation and financial performance, which is another important factor [9]. Overall, green innovation can serve as a useful asset for businesses to gain competitive edge and promote sustainable development. Green innovation has the capacity to address the conflict between the use of current resources and their conservation for the future, and there is a perceived lack of research that examines in depth the current framework and future potential of green innovation research as a

reliable source [17]. The resource-based view (RBV) argues that businesses possess diverse resources and capabilities, which serve as the foundation for their growth and competitive advantage. For this reason, the strategy literature has in recent years placed great emphasis on understanding how firms create, maintain, and develop these capabilities [18]. The resource-based view addresses the complexity of organizing a business by emphasizing the importance of investing significant effort in developing, maintaining, and effectively utilizing the resources and capabilities that are essential for the firm's success [19].

Liu et al. (2022) [20] examined the impact of green process innovation, green innovation strategy, and green action innovation on sustainable performance, using the theoretical framework of a resource-based view. They also explored the moderating effects of green product innovation and employees' green behavior. The study by Luan et al. (2023) [21] explored the significance of green innovation as a strategic resource and investigated the correlation between an organization's green innovation strategy and its green innovation performance. That study was similarly grounded in the resource-based view. Zhang et al. (2018) [22] conducted a study that investigated the impact of organizational learning and environmental proactivity on the development of dynamic capabilities for green innovation. That study was based on a holistic resource-based view, which was supported by stakeholder and contingency mechanisms. Liu et al. (2022) [20], constructed an intermediate model between green intellectual capital, green supply chain integration, and green innovation, based on a natural resource-based perspective and a knowledge-based perspective, and analyzed the effects of green absorptive capacity and relational learning capacity as moderators. Adam et al. (2022) [23] examined the use of a resource-based view in ensuring business sustainability among female microenterprise entrepreneurs.

In this regard, the correlations among the variables can be interpreted within the structure of the resource-based view and the way a study is constructed can be based on this view. When studies on sustainability consciousness are evaluated, the fact that the evaluations made on the basis of individual studies are generally realized at the point of evaluating the relationships and effects among variables such as environment, environmental sensitivity, green practices, and firm performance makes it meaningful to examine the moderating role of this variable in the effect of green process innovation on firm performance.

The tourism sector was chosen for the examination of all these relationships because tourism is a sector that can cause various negative impacts in the long term in terms of environmental pollution, degradation of destinations, and biodiversity in addition to the benefits it offers in many areas [24]. The environmental impacts of hotels serving in the field of accommodation, which is one of the most important dynamics of tourism, are quite complex and diverse [25]. Therefore, green innovation for hotel businesses is defined as an innovation that minimizes the environmental impact of tourism activities or optimizes the use of tourism resources [26]. Green innovation in the tourism sector refers to reducing environmental damage, protecting nature, using natural resources more efficiently and reducing waste in line with increasing technology and sustainable development goals [27].

In particular, hotels consume large amounts of fuel, energy, water, and other non-renewable resources in the products and services they offer to customers. Therefore, they cannot escape their environmental and social responsibilities. Accordingly, many hotels have to take an active role by becoming a 'green hotel' or an 'eco-friendly hotel' in order to survive in the competitive hotel market and meet the expectations of their customers [28]. Recently, the increasing awareness of consumers on environmental issues and the reflection of this awareness in their purchasing habits have forced businesses to integrate green practices into their business processes.

In this context, hotels are paying more attention to maintaining a balance between environmental resource utilization, ethical and social concerns, and profitability [28]. In changing competitive conditions, hotels have become increasingly interested in green practices that make the industry more competitive. Here, it is especially important to provide a positive impact on destination image [28,29]. Therefore, it is important for hotels

to invest more in building green core competencies to encourage green innovation and create competitive advantage [4], because green core competencies enable hotels to discover their strengths and unlock their potential for environmental sustainability [29].

Table 1 summarizes some of the related studies in the literature conducted on a similar axis.

Table 1. Summary Table.

Ref.	Subject of Research	Sample	Findings	Methodology
[30]	It is argued that a company's competitiveness derives from its core competencies and products, so companies should focus on building and nurturing core competencies.	Case studies	It was argued that a company's competitiveness derives from its core competencies and products, so companies should focus on building and nurturing core competencies.	The definition and framework of core competencies was built using case studies and current examples.
[31]	Application of the core competency model in the development of innovative cuisine.	Experts from restaurants, hotels, bakeries, associations, and universities in Taiwan	The DNP (Delphi and ANP) results identified 31 core competencies for innovative cuisine development (ICD) across seven dimensions: innovative product, culture, management, service, aesthetics, creativity, and technology competencies.	A mixed methodology was applied, using 20 in-depth interviews with 16 participants, followed by Delphi and finally ANP.
[32]	Proactive environmental strategies in the tourism industry within the framework of the resource-based view (RBV) and resource dependency theory (RDT): eco-innovation, green competitive advantage, and green core competence.	Employees of eco-friendly hotels in Taiwan	Implementing proactive environmental strategies has a beneficial influence on eco-innovation, which in turn has a direct impact on green core competence. Green core competence has a direct impact on green competitive advantage. Nevertheless, the impact of eco-innovation on green competitive advantage is not substantial.	In the research applied to 366 hotel employees, factor analysis was used and structural equation modeling was used to test the causal relationship.
[4]	Green core competence, green absorptive capacity, and green innovation performance.	Green hotel and restaurant employees in China	The tourism industry's ability to absorb green practices and innovate is enhanced by green core competence. Green absorptive capacity mediates the relationship between green core competence and green innovation.	In the survey of 294 people, PLS-SEM technique was used.
[33]	The question of whether golf tourists are willing to pay more to play on environmentally sustainable golf courses, and to forego some of their traditional golfing preferences, in order to enhance the sustainability of these golf courses and their general environmental practices, is one that merits further investigation.	Golfers in the Garden Route region of South Africa	The findings indicated that the concept of "green" golf is misrepresented and misunderstood in South Africa. Respondents associated "green" with an expensive lifestyle that is only accessible to a select few. It is important for golf tourists to understand that "green" golf tourism can lead to a sustainable and responsible lifestyle.	A simple random sampling approach was used to survey 277 participants. Microsoft Excel and STATISTICA were used for data analysis.

Table 1. *Cont.*

Ref.	Subject of Research	Sample	Findings	Methodology
[6]	Green intellectual capital under the influence of a green innovative climate to enhance green organizational image.	Entrepreneurial SMEs from China	Green intellectual capital, measured in terms of green human capital, relational capital, and structural capital, has a positive impact on green core competence and has a positive impact on green organizational image.	PLS-SEM was used to analyze 451 entrepreneurial SMEs.

This study, on the other hand, aims to provide some scientific contributions that are different from those of the studies summarized in Table 1. This study's primary goal was to investigate the connections among green core competences, green process innovation, and firm performance elements. From this perspective, it aimed to reveal how sustainability awareness affects these effects. In addition, the fact that this study was carried out on golf hotels, which are frequently criticized for causing environmental damage, aims to fill the gap in the literature due to the lack of studies that examine all these relationships together in golf hotels.

In addition, when studies on golf hotels were searched in the literature, studies on golf tourism rather than golf hotels were encountered. It was found that studies have been carried out on content analysis on golf tourism and sustainability [34]; golf tourism and security perceptions [35]; green golf tourism from the golfer's perspective [33]; contributions of tourism to destination sustainability and golf tourism in Scotland [36]; how sportive characteristics and behaviors affect destination choice for golf tourists [37]; development perspectives of golf tourism in Croatia [38]; environmental and economic tools to support sustainable golf tourism [39]; golf tourism destination management [40]; golf tourism destinations and factors affecting golfers' intention to revisit golf courses [41]; whether destination images increase intention to revisit and recommend [42]; golf tourism as an emerging form of niche tourism in India [43]; golf as a new form of sustainable tourism or a violation of traditional rural holidays [44]; development of golf tourism in Chiang Mai [45]; surveys of the current situation and countermeasures in an investigation of golf tourism in Yunnan Province [46]; and perceptions of Cyprus as a sustainable golf destination: the motivational and attitudinal orientations of golf tourists [47]. In the light of this information, the fact that no studies have been found that together examine the effects and relationships between green core competencies, green process innovation, and sustainability consciousness variables gives this study a unique quality.

Furthermore, to enhance the dependability of this research, a mixed method approach incorporating both quantitative and qualitative analysis was employed, namely via assessing interviews conducted with select managers. Through the simultaneous study of the literature and the research objectives, hypotheses were formulated and the research model was constructed. Accordingly, the research resulted in recommendations for managers, practitioners, and researchers in the related field with the help of the data obtained.

2.1.1. The Relationship between Green Core Competencies and Green Process Innovation

Green core competences encompass a wide range of skills and abilities that enable the provision of efficient green products and services. These talents involve innovation, adapting the sourcing model and adopting steps that protect the environment [4]. Green core competencies enhance traditional competencies by incorporating environmental protection, efficient practices, and sustainable ideas. Organizational sustainability relies on the development of green core competencies [48].

Green process innovation has emerged as a proactive environmental management approach mostly within the manufacturing processes of businesses [49]. Green process innovation refers to a concept that embraces the entire business, going beyond merely

the production process. It includes managerial and operational techniques that aim to reduce environmental emissions, enhance resource and energy efficiency, and decrease reliance on fossil fuels [5]. Chen (2008) [50] states that green core competence is a crucial component for green innovation. Developing green core competencies involves fostering green innovation, which requires firms to possess both the awareness and competence to create environmentally friendly products and processes. The evolution of green core competencies encompasses environmental factors throughout all phases, ranging from product conception to distribution. The growth of environmentally sustainable skills can undoubtedly stimulate the creation of eco-friendly advancements in products [4]. Businesses obtain a competitive edge in developing green technologies and cultivating environmentally friendly reputations by investing in the development of green core competencies [51]. Hence, green core competencies are crucial in driving green innovation and establishing a positive green image [52].

Based on the information given above, it can be seen that the green core competencies of an enterprise are an element that contributes to green innovation processes. In addition, when the relevant literature is examined, it is seen that studies on green core competencies mostly focus on culture, environmental performance, and organizational performance, as well as on the impact of green core competencies on creating a green image. However, when the relevant literature was examined, the fact that there was no study specifically on tourism and especially on golf hotels was deemed to be important in terms of filling the gap in the literature and revealing the reasons for the differences between sectors. According on the facts presented in the literature, the study puts forward the following hypothesis:

Hypothesis 1. *Green core competencies have a positive effect on green process innovation.*

2.1.2. The Link between Green Process Innovation and Business Performance

Several studies in the literature [9,49,53–55] have indicated that green process innovation significantly impacts the financial and economic performance of businesses. Ma et al. (2017) [56] discuss the benefits of green process innovation for business performance in the long and short term. Accordingly, short-term benefits can be listed as advantages directly related to the financial performance of the firm, such as increased market success and share and reduced product cost. Conversely, long-term gain is thought to support the organization's ability to survive and maintain its competitiveness. Green process innovation enhances the financial success of enterprises in terms of increasing production efficiency, gaining cost advantage, increasing market share, gaining competitive advantage, and helping organizations develop new market opportunities [57–59]. Green process innovation enhances competitiveness by optimizing manufacturing processes and maximizing resource consumption, leading to cost reduction and increased operational efficiency [60]. In addition, some studies [55,57,61,62] have found that green initiatives have a positive effect on organizations' economic, environmental, and social performance, thereby promoting sustainability. Moreover, it has been discovered that green process innovation has a lasting impact on the environmental reputation of companies [56,63,64].

When the information above is evaluated, it is seen that green process innovation contributes positively to business performance. Examination of the relevant literature reveals that the effects of green process innovation on business performance have been examined especially in relation to financial performance. However, it was found that the studies have mostly focused on small and medium-sized enterprises (SMEs) in different sectors. Within the studies conducted in relation to tourism, green process innovation has mostly been associated with the concepts of green human resources, sustainability performance, and green hotels. For this reason, it is thought that a study on the impact of green process innovation on business performance in tourism, which is one of the important fields in the service sector, and especially in golf hotels, will fill the gap in the literature and obtain valuable findings. Given the above facts, a hypothesis was formulated:

Hypothesis 2. *Green process innovation has a positive effect on business performance.*

2.1.3. The Role of Green Process Innovation and Sustainability Consciousness in Business Performance

It is crucial for both individuals and organizations to comprehend the environmental consequences of their actions, as well as the social and economic dynamics in which they function, and take measures to mitigate these effects [65]. Sustainability Consciousness is a comprehensive and multifaceted notion that includes an understanding of sustainability as well as attitudes and actions that are connected to the environment, society, and the economy [66]. Sustainability consciousness is addressed by Michalos et al. (2012) [67] in three dimensions: knowingness, attitude, and behavior. In this context, sustainability knowingness refers to the theoretical awareness of sustainability, while sustainability attitude includes emotional, intellectual, and behavioral components. Meanwhile, sustainability behavior refers to actions that support sustainable development [68]. Consciousness at the individual and industrial levels is necessary to overcome the challenges posed by the environment, climate, and depletion of natural resources and to ensure economic development and environmental protection [57]. Increasing the knowingness and awareness of employees on sustainability and creating consciousness in this direction is important in terms of encouraging them to implement sustainability practices. Previous research has established that sustainability consciousness and climate change awareness significantly impact sustainable activities [57,65,69–71] Furthermore, the level of individuals' environmental consciousness and their awareness of environmental issues significantly influence the growth of green process innovation and productivity, leading them to prioritize environmental concerns. Businesses' awareness of environmental problems contributes to planning their products and processes in a more environmentally friendly way and developing green technologies and practices [57]. Therefore, sustainability consciousness may fulfill a moderating function in terms of providing benefits to business performance.

In the literature review, it was seen that the moderating role of different variables such as green image, business strategies, employee commitment, and green culture have been examined in studies examining the relationship between process innovation and firm performance. However, there was found no study in the literature on the moderating role of sustainability awareness in the effects of green process innovation on firm performance, which is the subject of this study. For this reason, this study aims to contribute to the literature by filling this gap with the findings obtained. Given the current knowledge, the subsequent hypotheses were formulated:

Hypothesis 3. *Sustainability consciousness has a moderating role in the effect of green process innovation on firm performance.*

Hypothesis 3a. *Sustainability knowingness has a moderating role in the effect of green process innovation on firm performance.*

Hypothesis 3b. *Sustainability attitude has a moderating role in the effect of green process innovation on firm performance.*

Hypothesis 3c. *Sustainability behavior has a moderating role in the effect of green process innovation on firm performance.*

The theoretical research framework created in alignment with the research purpose, as depicted in Figure 1.
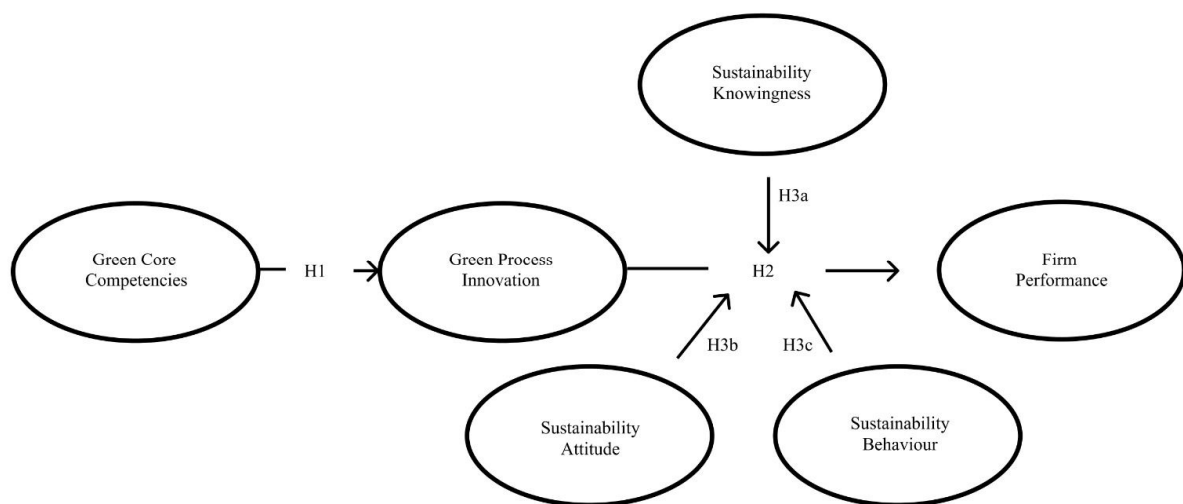
Figure 1. Hypothetical research model.

3. Methodology

3.1. Research Instrument

The objective of this study was to quantify the impact of environmentally sustainable core competences on the development of environmentally sustainable process innovation, as well as the impact of such innovation on the overall performance of organizations. Furthermore, the extent to which sustainability consciousness influences this relationship was also assessed. To evaluate the hypothetical research model produced in line with the research objectives, we chose to use the survey technique from among the quantitative research methods and interviews from the available qualitative research methods. The reason why the survey technique was the preferred method used to collect data in this research is that surveys have a high ability to collect a large quantity of original primary data through reaching a wide audience. This study employed a semi-structured interview format as the approach for collecting qualitative data. The research's objectivity, reliability, and validity were enhanced through the simultaneous evaluation of qualitative and quantitative data.

The variables in the study model, which were assessed via a survey, were developed based on an examination of the literature. Each variable was addressed with a varying number of questions and evaluated using a 5-point Likert scale. Semi-structured interview forms were prepared in parallel and included questions similar to those in the survey. In addition, the questions on the semi-structured interview form were evaluated by three field experts with PhD degrees and corrected in accordance with the opinions of the experts. As a result of these arrangements, the questions in the semi-structured interview form are presented below:

- What are the characteristics of your firm's green core competencies?
- What are the activities carried out within the scope of green process innovation in your firm?
- How would you evaluate the sustainability consciousness (knowingness, attitude, and behavior dimensions) of your firm's employees?
- How would you evaluate your firm's performance within the scope of all these?

In the survey, the volunteer participants were first asked demographic questions. For the green core competencies scale, Chen's (2008) [50] study was utilized and the scale consisted of 5 items. Meanwhile, the green process innovation scale consisted of 5 elements and was derived from the research carried out by Chen et al. (2006) [72]. Both scales have been widely used in many studies. The sustainability consciousness scale is a 27-item scale consisting of 3 dimensions (sustainability knowingness, sustainability attitude, and sustainability behavior) with 9 items each, and was taken from Gericke et al. (2019) [73]. Finally, a short 3-item scale from Özgül's (2020) [74] study was applied to measure firm

performance. The study questionnaire exclusively utilized English as the primary language for all scales. A pilot study was conducted with 41 people to determine whether the materials raised any possible language and comprehension problems and it was found that there were no problems. In addition, all scales had Cronbach's alpha values greater than 0.70.

3.2. Research Area, Sampling, and Data Collection

This article explores the effects of green core competencies, green process innovation, and sustainability consciousness on business performance in golf hotels and courses, which have been criticized by climate activists in recent years, especially due to high water consumption. The research was conducted in golf hotels and golf courses operating in the Belek tourism region of Antalya's Serik district. The primary reason for choosing Belek region was that it is the heart of golf tourism in Türkiye. Since the majority of the golf courses in Antalya are located in the Belek tourism region, the research population consisted of the employees of golf hotels and golf courses in this region. With its favorable climatic conditions, an average annual temperature of 19 degrees Celsius and 300 sunny days, Belek welcomes golf players to a total of 15 golf courses for 12 months of the year [75].

To ensure the inclusion of the specific demographic group targeted by the survey method in the research, it was established that a minimum sample size of 384 was required, with a confidence level of 95% [76]. The data were gathered in December 2023 utilizing a combination of digital and face-to-face methods. The convenience sampling technique was employed, involving a team of five interviewers. Given the elevated likelihood of common technique bias in social science research, information such as "All information collected during the research will be kept confidential" and "Participation is voluntary" was given to the respondents on the first page of each questionnaire form and this was expected to increase the response rate [77]. As a result, 460 questionnaires collected on the specified dates constituted the basis for the analysis. Figure 2 shows the quantitative analysis flowchart.
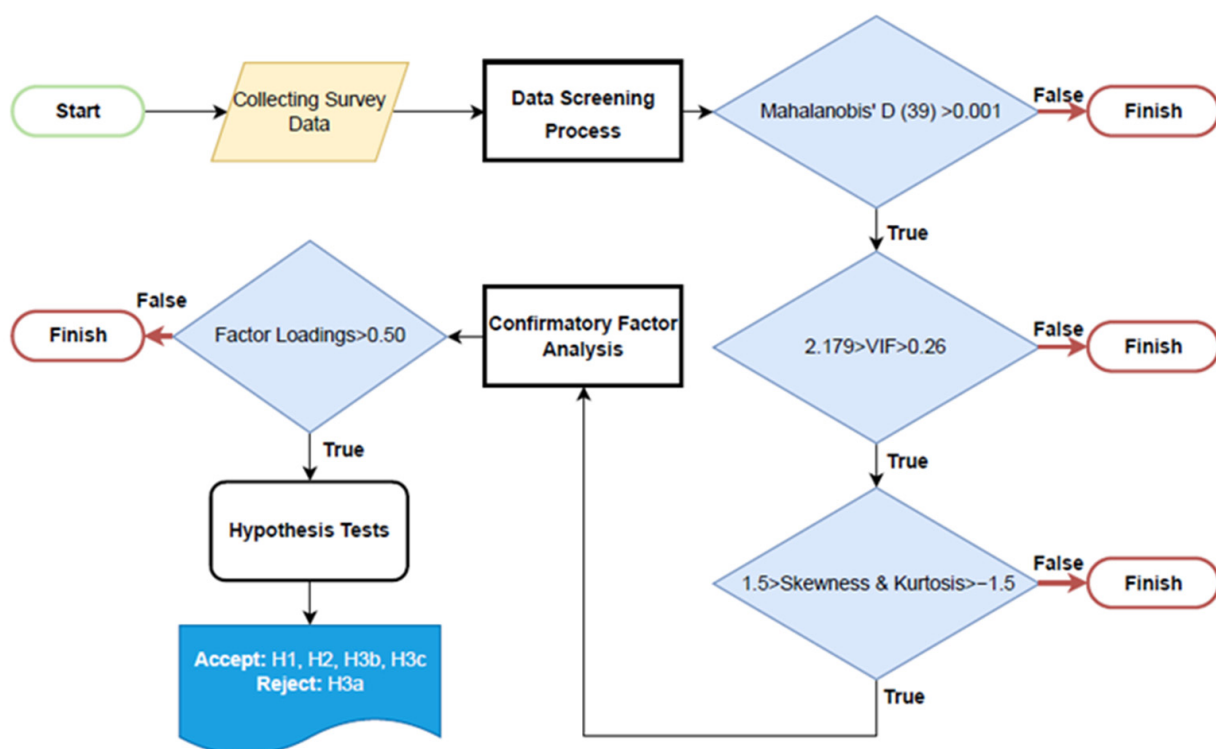

Figure 2. Quantitative method flowchart.

Purposive sampling was used in the qualitative data collection process of this research. The purposive sampling method was used to select participants who had personal experiences that were relevant to the purpose of the research [78]. Interviews were conducted with 10 tourism sector managers selected via this method, using a semi-structured interview form. The interviews lasted an average of 15 min. In order to transfer the interviews to the computer environment simultaneously during the interview, audio recordings to be used in this research were made using the Python programming Sounddevice and Soundfile libraries and the recorded sound was printed to the soundrecord.csv data file. Simultaneously, the interviews were converted into digital text documents, making data collection faster and easier. Figure 3 shows the qualitative analysis flowchart.
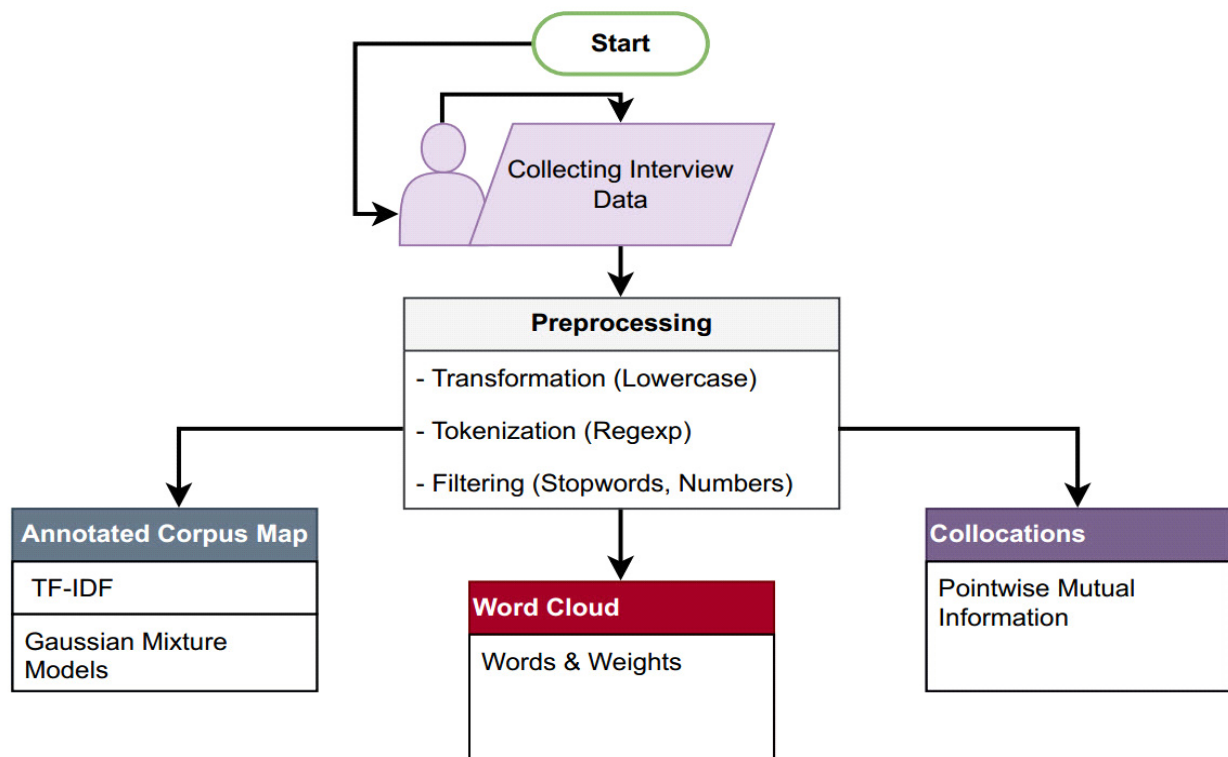
Figure 3. Qualitative method flowchart.

3.3. Data Analysis

Evaluation of Survey Data with Structural Equation Modeling

The data obtained through the survey technique were numbered sequentially and transferred to the SPSS 23 package program. Before the evaluation of structural equation modeling, some data screening process criteria were applied. Firstly, Mahalanobis distance was calculated in order to identify and remove deviant values from the analysis. Following the review, 18 questionnaires were eliminated from the analysis due to the presence of abnormal values. The study proceeded with the remaining 442 questionnaires (Mahalanobis' D (39) > 0.001). As an additional factor, the presence of multicollinearity was assessed. It was found that the minimum tolerance value was 0.27 and the maximum VIF value was 2.178. These results indicate that there was no multicollinearity problem [79]. Finally, the kurtosis and skewness values of the obtained data were examined and it was decided that the data showed a normal distribution since these values were in the range of −1.5 and +1.5 [80].

AMOS was utilized to test the hypothetical model constructed using 442 questionnaires, based on the acquired findings. Simultaneously, Process macro [81] (model 1) was selected to ascertain the moderating effect.

4. Findings

4.1. Sample Charasteristics

In total, 67.2% of the participants among the 442 participants were males and 32.8% were females. It was determined that 30.3% of the employees participating in the research were between the ages of 36–45. When the education status was analyzed, it was found that 41.4% of the participants had an undergraduate degree. When the length of work in the sector was analyzed, it was found that 41.9% of the respondents had 16 years' or more experience in the sector. In addition, it was determined that half of the employees had been working in their current enterprise for less than 5 years. Moreover, 66.7% of the employees had received tourism education. Finally, the income status of the participants was analyzed and it was determined that 32.8% of them had an income between TRY 15,000 and 25,000 (approximately USD 500–850).

4.2. Confirmatory Factor Analysis for the Structural Model

Based on the research findings, confirmatory factor analysis, which is the initial step in path analysis, was utilized. In this context, the first values to be evaluated were factor loadings. Hair et al. (2005) [82] argue that a statement should have a minimum factor loading of 0.50 in order to be included in a latent variable. In line with this information, the factor loadings of each statement were calculated and a total of seven statements, including one statement about green process innovation, two statements about sustainability attitude, and four statements about sustainability behavior, were excluded from the analysis due to their values being less than 0.50. The statements excluded from the analysis are given in Table 2.

Table 2. Statements with Low Factor Loadings.

Dimension/Statements	Factor Loadings
Green Process Innovation (GPI)	
GPI-4	0.466
Sustainability Attitudes (SA)	
S-SA-1	0.384
S-SA-2	0.186
Sustainability Behavior (SB)	
S-SB-2	0.366
S-SB-5	0.213
S-SB-8	0.424
S-SB-9	0.182

In the second evaluation, the factor loadings of the remaining 32 statements were determined as minimum 0.616 and maximum 0.927. The computed t-values for the statements were determined to be statistically significant at the $p \leq 0.001$ threshold. The second set of criteria to be evaluated within the scope of the confirmatory factor analysis were the goodness-of-fit values of the model [83]. When the data were examined, it was found that the goodness-of-fit values were at an acceptable level (χ^2/df = 3.631, NFI = 0.892, RFI = 0.864, IFI = 0.898, TLI = 0.899, RMSEA = 0.077, CFI = 0.901).

Within the scope of reliability, the Cronbach alpha (CA) coefficients of each construct were calculated and the minimum was determined as 0.808. This result indicates that the reliability criterion of each dimension was met [80]. In addition, construct reliability (CR) coefficients were determined at a minimum of 0.835 for each construct. Finally, average variance extracted (AVE) values were found to be above the minimum value of 0.50 recommended in the literature [79]. Based on the obtained results, it was concluded

that the data collected for the six-factor construct provided support for the structural model. (See Table 3).

Table 3. Results of Structural Model Confirmatory Factor Analysis.

Factors/Items	Standard Loading	t-Value	R^2	CR	AVE	CA
Green Core Competence (GCC)				0.850	0.536	0.858
GCC-1	0.706	15.91 *	0.49			
GCC-2	0.622	13.56 *	0.38			
GCC-3	0.620	13.50 *	0.38			
GCC-4	0.849	20.10 *	0.72			
GCC-5	0.831		0.69			
Green Process Innovation (GPI)				0.835	0.632	0.829
GPI-1	0.846		0.71			
GPI-2	0.873	20.05 *	0.77			
GPI-3	0.648	14.27 *	0.41			
Firm Performance (FP)				0.913	0.780	0.912
FP-1	0.924		0.85			
FP-2	0.927	30.51 *	0.86			
FP-3	0.792	22.50 *	0.62			
Sustainability Knowingness (SK)				0.941	0.641	0.947
SC-SK-1	0.798	18.92 *	0.63			
SC-SK-2	0.792	18.73 *	0.62			
SC-SK-3	0.796	18.84 *	0.63			
SC-SK-4	0.802	19.05 *	0.64			
SC-SK-5	0.739	17.08 *	0.54			
SC-SK-6	0.836	20.14 *	0.69			
SC-SK-7	0.808	19.22 *	0.65			
SC-SK-8	0.830	24.55 *	0.68			
SC-SK-9	0.802		0.64			
Sustainability Attitude (SA)				0.899	0.562	0.898
SC-SA-3	0.616		0.38			
SC-SA-4	0.789	17.31 *	0.62			
SC-SA-5	0.835	13.95 *	0.69			
SC-SA-6	0.695	12.37 *	0.48			
SC-SA-7	0.729	12.87 *	0.53			
SC-SA-8	0.833	13.94 *	0.69			
SC-SA-9	0.729	12.82 *	0.53			
Sustainability Behavior (SB)				0.839	0.512	0.808
SC-SB-1	0.677		0.46			
SC-SB-3	0.660	12.33 *	0.43			
SC-SB-4	0.756	13.72 *	0.56			
SC-SB-6	0.765	12.46 *	0.60			
SC-SB-7	0.714	12.14 *	0.37			

* $p < 0.001$.

The analysis of the model's discriminant validity is presented in Table 4. Based on the table data, it was found that the AVE value of each construct exceeded all the values in the corresponding row of the square root. Based on these results, it was determined that the construct demonstrated discriminant validity [84].

Table 4. Discriminant Validity Results.

Factor	1	2	3	4	5	6
1. GCC	0.732 [a]					
2. GPI	0.561	0.794 [a]				
3. FP	0.584	0.446	0.883 [a]			
4. SC-SK	0.284	0.400	0.333	0.800 [a]		
5. SC-SA	0.380	0.429	0.344	0.727	0.749 [a]	
6. SC-SB	0.376	0.439	0.444	0.600	0.621	0.715 [a]

[a] Square root of the AVE.

4.3. Hypothesis Tests

Following the positive results of the confirmatory factor analysis, the research proceeded to the second stage, path analysis, as suggested by Anderson and Gerbing (1988) [83]. The first values to be examined in the path analysis were goodness-of-fit values [82]. In this context, it is possible to say that the goodness-of-fit values obtained were parallel to the values obtained from the confirmatory factor analysis (χ^2/df = 3.750, NFI = 0.947, RFI = 0.929, IFI = 0.960, TLI = 0.946, RMSEA = 0.079, CFI = 0.960).

The standard beta (β) coefficients in the structural model indicate the magnitude of the effect of one variable on another variable. Kline (2011) [85] claimed that beta coefficients can vary in positive and negative directions and classified beta coefficients below 0.10 as small effects, beta coefficients above 0.50 as high-level effects, and beta coefficients between those two values as medium-level effects. In this context, the interpretation of effect sizes was based on the effect size classification proposed by Kline (2011) [85]. When the hypothesis results were evaluated, it was found that green core competencies positively and strongly increased green process innovation (β = 0.72, t = 13.501, $p < 0.001$). Similarly, green process innovation was found to increase employees' perceptions of firm performance (β = 0.55, t = 10.851, $p < 0.001$). In the light of these results, H1 and H2 were accepted.

In order to analyze the regulatory effect, the Process v3.5 plug-in developed by Andrew F. Hayes for the SPSS program was used. The reason why this method was preferred is that the program, which has a simple interface, calculates a confidence interval within its own algorithm and this value interval is determined by the program. In this respect, the program provides convenience to researchers in terms of explainability and use [86]. The presence or absence of such moderating effects was calculated according to the confidence intervals obtained with the bootstrap method (5000 people).

A regression model was constructed to ascertain the outcomes of the moderating effect hypothesis, and the findings are displayed in Table 5. The data in the table indicate that there was no significant relationship between awareness of sustainability and the impact of green process innovation on employees' assessment of business performance. Based on the obtained result, H3a is rejected ($p > 0.05$). However, it was discovered that sustainability attitude plays a key role in mitigating the impact of green process innovation on employees' impression of firm performance. (β = 0.13, 95% CI [0.011, 0.267], $p < 0.05$). When the details of the moderating effect of sustainability attitude were analyzed, the effect of green process innovation on firm performance perception was found to be weaker for employees with low sustainability attitudes (β = 0.32, 95% CI [0.229, 0.426]), while the effect is stronger for employees with high sustainability attitudes (β = 0.43, 95% CI [0.329, 0.526]).

					Firm Performance		
					β	Confidence Interval	
H3a						Min.	Max.
GPI (X)					0.42N.S.	−0.398	1.244
SK (W)					0.33N.S.	−0.201	0.879
X.W (Interaction)					0.01N.S.	−0.184	0.154
R^2					0.22		
					Firm Performance		
					β	Confidence Interval	
H3b						Min.	Max.
GPI (X)					0.26 **	0.332	0.870
SA (W)					0.29 **	0.157	0.738
X.W (Interaction)					0.13 **	0.011	0.267
R^2					0.46		
Sustainability Attitudes	β	S.E.	t	LLCI	ULCI		
Low:	0.32 *	0.05	6.55	0.229	0.426		
Middle:	0.42 *	0.04	8.53	0.324	0.525		
High:	0.43 *	0.04	8.55	0.329	0.526		
					Firm Performance		
					β	Confidence Interval	
H3c						Min.	Max.
Green Process Innovation (X)					0.29 **	0.319	0.912
Sustainability Behavior (W)					0.11 **	0.400	0.535
X.W (Interaction)					0.13 **	0.008	0.266
R^2					0.50		
Sustainability Behavior	β	S.E.	t	LLCI	ULCI		
Low:	0.23 *	0.05	4.01	0.121	0.355		
Middle:	0.31 *	0.04	7.19	0.231	0.406		
High:	**0.37 ***	**0.05**	**7.10**	**0.269**	**0.475**		

* $p < 0.001$, ** $p < 0.05$, N.S.: No significant.

This study's findings demonstrate that sustainability behavior has a key role in modulating the association between green process innovation and business success ($\beta = 0.13$, 95% CI [0.008, 0.266], $p < 0.05$). When the details of the moderating effect were examined, the effect was found to be weaker for employees with low sustainability behavior ($\beta = 0.23$, 95% CI [0.121, 0.355]), while the effect was stronger for employees with high sustainability behavior ($\beta = 0.37$, 95% CI [0.269, 0.475]). Based on the results, H3b and H3c are accepted. Coefficients for the structural model are presented in Figure 4.

Figure 4. Structural model coefficients. * *p* < 0.001; ** *p* < 0.05; N.S., not significant.

5. Text Mining Analysis of Interview Data

In the study, word clouds and hierarchical clustering, which are data mining methods, were used to reveal the focus of the answers obtained from the interview questions.

In this part of the research, preprocessing was first carried out on the digitized interview text data. In this process, in order to extract meaningful information from the corpus, the text was first converted to lower case with the text transformation process and the accents in the text were removed. Afterwards, the tokenization method was applied, in which the text was divided into smaller components (word, sentence, bigram). Using this method, the text was divided into words by omitting punctuation marks, according to Regexp. With filtering, non-informative textual elements in the English language, such as punctuation marks and tokens, were filtered out and excluded from the scope analysis.

In the next stage, the word cloud technique was used to extract the keywords most frequently used by the participants in the interviews, and the important words were visualized as a cloud. As can be seen in Figure 5, the words more frequently used in the interview are presented closer to the center and bolder within the cloud.

Figure 5. Word cloud after preprocessing.

According to Figure 5, the most frequently used word in the interviews was "sustainability". This shows that the participants attached great importance to sustainability. The second most frequently used word was "company", indicating that the interviews largely focused on companies and their sustainability practices. The words "environmental", "green", and "practices" were also frequently used, indicating that respondents emphasized green and environmental practices. The frequency of the word "golf" perhaps reflects discussions around the protection of green spaces and the management of sustainable golf courses. As a result, the figure shows that the respondents focused on sustainability, green practices, environmental sensitivity, and waste management and thought that these issues had a significant effect on company performance. This result supports the primary objective of the research, which is to comprehend the impact of green core competences and green process innovation on the success of companies.

An annotated corpus map was used to visualize the interviews in two dimensions, with key lexicons [87]. The clusters shown in Figure 6 and the keywords belonging to each cluster were extracted using the TF-IDF method. In the process of making these inferences, the number of clusters was determined as five with Gaussian mixture models to define the clusters. In order to enrich the words with keyword annotations and place them in the vector space of the document, the document map was calculated with t-SNE and annotations were added.
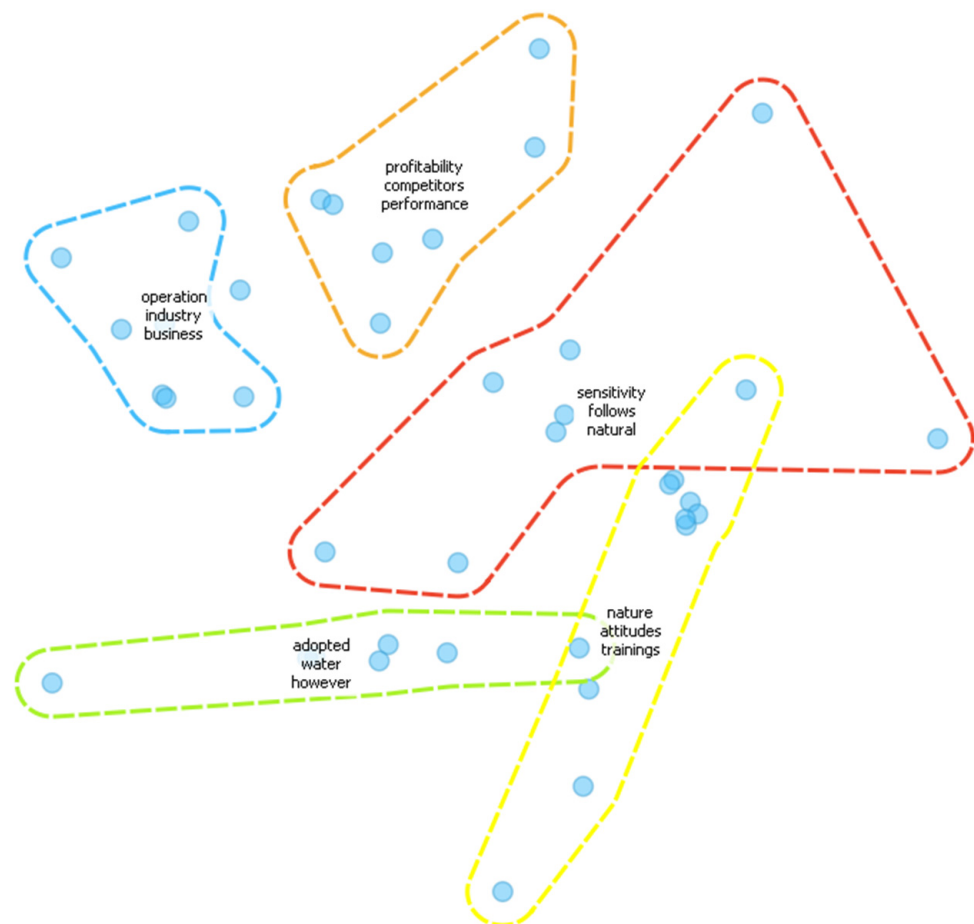

Figure 6. Annotated corpus map.

In this study, documents including comments were embedded using Multilingual SBERT, a sentence-based transformer model that works in more than 50 languages. A vector representation of each embedded document was created. In order to characterize the documents with related words, the vector representations were placed in the vector space using t-SNE and made two-dimensional. Then, in order to find similar document groups,

the annotated corpus map was obtained using the Gaussian mixture model; the map is presented in Figure 6. In the figure, documents with similar placements are represented by single blue dots. It can be seen that the documents with similar meanings appear closer to each other. As can be seen in the map, similar comments are divided into five different clusters and these clusters are labelled with keywords. Some documents (blue dot representations) have been included in more than one cluster due to their similarities to both clusters. Thus, the annotated corpus map was created to visualize the comment data acquired in this study investigating the effects of green core competencies and green process innovation on firm performance. This visualization allows us to understand these concepts and follow the progress in this field. Therefore, this study can help us better understand the relationship between green process innovation and firm performance. This can help firms to achieve their sustainability goals.

The five clusters indicated in the visual diagram are:

1. **Blue cluster:** containing the words "operation", "industry", and "business", this cluster refers to the operational aspects of businesses in industries;
2. **Orange cluster:** containing the words "profitability", "competitors", and "performance", this cluster focuses on business performance metrics and the competitive landscape;
3. **Red cluster:** containing the words "sensitivity", "follows", and "natural", this cluster indicates sensitivity to nature or environmental awareness;
4. **Green cluster:** containing the words "adopted", "water", and "however", this cluster implies adaptations or innovations related to water;
5. **Yellow cluster:** containing the words "nature", "attitudes", and "training", this cluster refers to training programs that shape attitudes about nature or environmental protection.

These clusters help us understand the effects of green process innovation on firm performance and the moderating role of sustainability consciousness on these effects. Each cluster represents a specific theme or topic and the combination of these themes constitutes the overall effect of green core competencies and green process innovation on firm performance. These effects emphasize the importance of green innovation for a sustainable future.

In addition, as seen in the image, the red cluster and the yellow cluster are intertwined. This shows that these two clusters are related to each other. Sensitivity, following, nature, attitudes, and training are interrelated concepts for companies. As a result of this analysis, it can be stated that the green core competencies of firms change depending on following green innovative processes, the attitudes and sensitivities of firms and employees on this issue, and the training received and provided on this issue.

The yellow cluster is related to the green cluster. It can be seen that adoption, water, nature, attitudes, and training are interrelated concepts. Water is a part of nature. In order for nature and these concepts, which are part of nature, to be adopted by companies, it can be suggested that the green core competencies of firms can be positively affected by providing training from the lowest to the highest levels of employees of the firms.

Furthermore, the corpus map obtained as a result of this study emerged as a useful tool for visualizing the key concepts and themes of the interviews with the participants.

The PMI (pointwise mutual information) measure was used to find the collocations and relationships of related words in the interview recordings [88]. The optimum value of the frequency threshold of binary (bigrams) and ternary (trigrams) relations was set as 5 and n-grams with frequencies lower than the threshold were removed.

Table 6 presents the various binary relations (bigrams) and their scores. The scores were calculated using the PMI measure. Scores were calculated as the probability of a given binary occurring together divided by the probability of the components of the binary occurring separately. The higher the score, the more likely the two words were to occur together.

Table 6. Bigrams' Collocation.

	Collocation	Score
1	influence attitudes	7.778
2	market share	6.904
3	market focus	6.904
4	niche market	6.904
5	in-house training	6.778
6	share profitability	6.641
7	golf courses	6.276
8	green capabilities	5.871
9	golf hotels	5.598
10	golf hotel	5.276
11	company performance	4.788
12	sustainability awareness	4.649
13	environmental sensitivity	4.592

1. **Influence Attitudes (7.778):** this result shows that influencing the attitudes of the respondents is an important issue. This may suggest that green competencies and process innovation have a significant effect on employees' attitudes;
2. **Market Share (6.904) and Market Focus (6.904):** These bigrams indicate that market share and focusing market are important. It is arguable that green process innovation can increase a firm's market share and that market focus can affect green innovation efforts;
3. **Golf Courses (6276), Golf Hotels (5598), Golf Hotel (5276), Niche Market (6904):** these bigrams show that golf courses and golf hotels are part of the study. Their presence also indicates a niche market as the study was conducted only in golf hotels;
4. **Green Capabilities (5.871):** this result shows that green capabilities are important. These capabilities can be critical for a firm to achieve its sustainability goals;
5. **Company Performance (4.788), Share Profitability (6.641):** these scores indicate that company performance and profitability are important issues. It can be assumed that green competencies and process innovation can affect the overall performance and the profitability of the firm;
6. **Sustainability Awareness (4.649), In-house Training (6.778) and Environmental Sensitivity (4.592):** these bigrams indicate that sustainability awareness and environmental sensitivity are important both organizationally and personally. Accordingly, they can be considered as critical factors in the development of green process innovation and green competencies.

6. Implications, Limitations and Future Research

The primary objective of this study was to assess and examine the influence of green core competences, green process innovation, and firm performance indicators, taking into account the moderating effect of sustainability consciousness. In this research, both qualitative and quantitative data collection methods were used as multimodal data collection methods. After the data were obtained, the survey data were analyzed with structural equations and the interview data were analyzed with text mining methods. Using these two different data collection methods and two different data analysis methods, the validity and reliability of the study were increased. This research differs in this aspect from other studies in the literature related to the topic, revealing its originality. In addition, there are debates in the literature on the validity and reliability of data collection methods that use questionnaires alone. Some researchers have stated that the questionnaire method alone is far from objective and contains bias. In this study, more than one method was used together to increase the objectivity of the research and reduce bias.

6.1. Theoretical Implications

The findings obtained with the help of the analyzes carried out in the research were evaluated and results that will make important contributions to the literature were determined; these were "determination of the moderating role of sustainability attitude in the effect of green process innovation on firm performance" (H3b) and also "determination of the moderating role of sustainability behavior in the effect of green process innovation on firm performance" (H3c). In the light of this information, it can be said that high levels of the sustainability attitude and sustainability behavior dimensions of sustainability consciousness are very important for hotel businesses to carry out green process innovation practices effectively and to increase firm performance. Accordingly, increasing the levels of sustainability attitude and behavior in employees will increase the impact of green process innovation on firm performance. Additionally, it should be noted that when management selects sustainability as a focal point or fundamental principle, the company has the ability to establish a robust and value-driven culture [11]. A firm that prioritizes green intellectual capital will gain the ability to adapt to environmental changes and make effective use of its resources. This will lead to a stronger competitive edge, allowing the company to succeed in the face of economic obstacles and ultimately become a sustainable enterprise [11].

This study also determined that the measurement model's parameters of all variables, including green core competencies, green process innovation, sustainability consciousness, and business performance, were suitable. These data indicate that all the scales are valid tools.

The study is expected to make significant contributions to the literature examining sustainability consciousness and its impact on green core competencies, as well as the effect of green process innovation on firm performance. Although there are studies in the literature that aim to analyze the effects of firms' environmental consciousness and green intellectual capital on competitive advantage and financial performance [10], that examine the effect of ethical environmental consciousness on environmental management performance [89], and that examine firms' sensitivity to sustainability and environmental sensitivity in the context of green consumption practices [90], as far as can be determined, there has been a lack of research or investigation that examines the moderating role of employee sustainability consciousness within a model that includes other variables subject to our research. It is believed that the structural model tested in this context will contribute valuable insights to the existing body of literature. In addition to these features, an additional contribution to the existing body of knowledge is the assessment of the impact of green core skills on green process innovation, as well as the assessment of the impact of green process innovation on firm performance.

6.2. Practical Implication

Core competence is a stable capability in organizational development, while organizational flexibility is a more adaptable capability [91]. Given the stringent environmental regulations and growing consumer demand for eco-conscious products, businesses should not avoid their responsibilities. Instead, they should view these environmental trends as an opportunity to develop their expertise in sustainable practices and to create innovative and environmentally friendly products. This will also help them establish a positive reputation for being environmentally responsible [50]. Core competence in the context of green hotels refers to a hotel's ability to effectively confront and overcome challenges in comparison to its competitors. This core competence is derived from the hotel's competitive advantage, as well as the sustainability and scalability of this advantage. It plays a crucial role in helping green hotels develop their corporate strategy, expand their core business, and progress towards collectivization. The green hotel's core capability is comprised of four dimensions: green products, human resource management, brand marketing, and organizational culture [92]. At this point, it can be said that the potential of hotel businesses to link their organization-specific capabilities with the needs and expectations of the market they address should be used correctly to provide a source of competitive advantage.

Green innovation refers to the integration of green products and process innovation. In the process of adopting technological advances and sustainable processes, it includes various areas such as reducing energy consumption, toxic emissions, waste disposal, increasing efficiency, and the financial benefits of superior project allocation [93]. Businesses aim to use energy and raw materials more efficiently by implementing green process innovation [94]. The positive effect of green process innovation practices on firm performance is evident from the study results. In order to increase the quality of the said effect, the efforts of hotel business managers to raise the consciousness of hotel employees on issues such as minimizing damage to the environment, reuse/recycling of waste, reducing the use of unnecessary inputs, etc., will increase the quality of green process innovation practices and, accordingly, firm performance.

Ongoing environmental problems and the increasing difficulty of achieving sustainable development require a reassessment of an individual's sustainable knowingness, attitudes and behaviors [95]. The moderating role of the attitudinal and behavioral dimensions of sustainability consciousness on the effects of green process innovation on firm performance is understood from the results of the study. At the point of increasing the effect of the role in question, it can be stated that it is also important to provide necessary informative training to employees on issues such as sustainable business, sustainable waste management, sustainable tourism, and sustainable marketing, and to invest in programs such as events, training, etc., carried out to raise awareness of these issues.

6.3. Limitations and Future Research

Although this study utilized a combination of quantitative and qualitative data obtained through both survey and interview, it is useful to mention some limitations. One of these limitations is the risk of the survey technique not being objective due to the time constraints of the participants and the large number of items in the scale. Research using the survey technique may therefore be subjective and the results of the analysis may be negatively affected. In order to mitigate this risk and increase the objectivity of the study with qualitative data, the interviews were conducted in the participants' work environments.

Meanwhile, this study was limited to determining the effects of green core competencies, green process innovation, and firm performance variables on each other and examining the moderating role of sustainability consciousness on these effects. The research sample in the study was limited to the employees of golf hotels operating in the Belek tourism region of Antalya. Despite its high representativeness, in future research, the scope of the study can be expanded by including all golf hotels and courses in Türkiye. In fact, comparative and more comprehensive studies should be conducted in different countries and regions where different businesses are included as a sample. Furthermore, in future research, obtaining interview forms online from chatbots and analyzing emotions using text mining methods will increase the objectivity of the research.

7. Conclusions and Discussion

The findings indicate that possessing green core skills has a beneficial impact on the development of green process innovation. The development of green core competencies is also related to innovation absorption. Therefore, organizations need to have innovative awareness and capability to develop green products and processes. This is only possible with the presence of green core competencies within the organization. Developing green core competencies involves considering environmental aspects in all processes from design to distribution. Within the organization, green core competencies play an important role in green innovation and the creation of a green image. In this context, an increase in the level green core competencies has an increasing effect on green process innovation practices. When these results are evaluated in terms of the results of the studies in the literature, it can be said that they are in line with the results of previous researchers. These include Qu et al. (2022) [4] who concluded that green core competence positively and significantly affects green innovation performance, Al Halbusi et al. (2023) [5] who revealed that green core

competence had a positive effect on the green innovation performance of the enterprises included in their research, which then had a significant effect on firms' performance in the form of competitive advantage, Nuryanto et al. (2020) [16] who stated that core competence plays a role in improving the examined dimensions of the green competitive advantage variable and thus has managerial implications that can be used to increase the growth and profitability of the business, Chen (2008) [50], whose empirical results showed that firms' green core competencies have positive effects on green product innovation performance, green process innovation performance, and green image, and Bintara et al. (2023) [96] who demonstrated that high environmental consciousness through the practice of green innovation leads to improved performance, better competitive advantage, and the development of sustainable businesses. The data on the scores obtained from the bigrams collocation table obtained from the qualitative interview data (green capabilities, company performance) also show that green capabilities are important and support the quantitative analysis data. The data provide guidance that these competencies can be critical for a firm to achieve its sustainability goals and that green capabilities and process innovation can affect the overall performance of the firm. These results are in line with other studies in the literature [4,50,52]. Therefore, green core capabilities are important in terms of affecting the environmental performance of organizations by contributing to the development of less environmentally sensitive products and processes.

Another important result from the model is the positive effect of green process innovation on firm performance. Accordingly, a high level of green process innovation implementation increases firm performance. When these results are evaluated in terms of the results of the studies in the literature, it can be said that they are in line with the results of previous studies. These include the works of Ma et al. (2017) [56], in which it was stated that green process innovation has a positive effect on firm image and can further increase the long-term benefit that firm image plays as a mediator, Cahyaningtyas et al. (2022) [97], which concluded that green organizational social responsibility affects green innovation (green process innovation and green product innovation) and green process innovation and green product innovation affect the firm's value, Bıçakcıoğlu et al. (2019) [98], in which green business strategy is reported to have a strong and positive relationship with export financial performance, Lukitaruna and Sedianingsih (2018) [8], which proved that green product innovation had a negative but non-significant effect on company performance, while green process innovation had a positive and significant effect on company performance, Tang et al. (2018) [53], in which it was reported that both green products and green process innovation have a positive main effect on firm performance, while managerial concern has a positive moderating effect on the relationship between green process innovation and firm performance, and Maziriri and Maramura (2022) [99], providing evidence that green product innovation and green process innovation contribute to the enhancement of sustainable competitive advantage and firm success.

The analysis of qualitative data showed that the words "employees", "waste", "performance", and "sensitivity" were prominent in the interviews. These results are important in terms of showing that employees' environmental sensitivity and the effect of waste management on the hotel's performance are discussed. In addition, the data obtained from the bigrams collocation table (market share and focus, company performance) give an idea that green process innovation can increase a golf hotel's market share and market focus can affect green innovation efforts. This result is in line with other studies in the literature [9,49,53,55,64]. Although most of the studies in the literature obtained results indicating that green process innovation especially affects the financial performance of businesses, some studies [55,57,61,62] state that it affects the environmental and social performance of businesses and is therefore important. Green process innovation requires firms to improve all their processes from operational to managerial levels [100]. In particular, the threat of depletion of natural resources and consumers' awareness of this issue have revealed the importance of studies on green process innovation. The results obtained from the studies show that green process innovation is important because it provides

various advantages to the economic, social, and environmental performance of businesses in the short, medium, and long term. From this perspective, green process innovation provides various advantages in terms of efficiency, competitive advantage, increasing market share, and creating new market opportunities. In the long run, these advantages support the creation of a green image for the organization. An enhanced environmental reputation for companies can impact consumers' buying choices and boost the demand for eco-friendly products. Hence, a company's investment in cultivating its environmentally friendly reputation might lead to increased financial profits [59].

For this reason, it can be said that it is important for businesses to act by considering their green initiatives in their innovation processes.

The third hypothesis of the study related to the moderating impact of sustainability consciousness on the relationship between green process innovation and firm performance (H$_3$). In this study, sustainability consciousness is considered in three dimensions: knowingness, attitude, and behavior. The results obtained in this context indicate that, unlike previous studies, the attitudinal and behavioral dimensions of sustainability consciousness have a moderating effect between the variables in question. Apart from these, no effect was found in the analysis conducted to measure the moderating role of the sustainability knowingness dimension on the effects of green process innovation on firm performance. Accordingly, it is concluded that sustainability knowingness dimension is not an important dimension of the effect of green process innovation on firm performance.

Although there is no study in the literature that tests the moderating role of sustainability consciousness dimensions among the relevant variables, as far as can be determined, in the context of the relationship between different variables and sustainability consciousness and environmental awareness variables, some relevant works hve been published. These include the study by Ahmed et al. (1998) [101] in which businesses were divided into two groups, environmentally conscious and non-environmental businesses, in order to investigate the relationship between environmental strategy and company performance; it was seen that environmentally conscious businesses reported better performance scores and also tended to incorporate various performance improvement strategies and techniques into their operations. Firda et al. (2021) [102] investigated the impact of a sustainability learning program on the development of students' sustainability consciousness. Their findings highlighted the importance of employing learning strategies that offer ample opportunities for students to learn about sustainability issues and cultivate pro-sustainability attitudes and behaviors. Guiao and Lacap (2022) [103] stated that the level of consciousness of individuals about protecting natural resources and keeping the environment intact leads to the possibility of consumers purchasing ecologically harmless goods and services. In various studies conducted in recent years, it has been determined that sustainability awareness plays an important role in sustainability practices [57,65,70,71]. However, in many studies encountered during the literature review, consciousness/awareness of sustainability has been evaluated according to a single dimension. This study, on the other hand, differs from other studies in that it deals with sustainability consciousness in three dimensions: knowingness, attitude, and behavior.

No other study has been identified that considers sustainability attitude as a dimension of sustainability consciousness and measures its moderating influence between the relevant variables in this specific setting, to the best of our knowledge. Similarly, no other study measuring the moderating role of sustainability consciousness and sustainability behavior between the related variables has been found, as far as can be determined. In this context, the results of the study differ from those of other studies.

Indeed, the evaluated results of the qualitative data in this study (annotated corpus map) help us to understand the effects of green process innovation on firm performance and the moderating role of sustainability consciousness on these effects. As a result of this analysis, it can be said that the green core competencies of firms vary depending on following green innovative processes, the attitudes and sensitivities of firms and employees regarding this issue, and the training received and provided on this issue. The data obtained

from the bigrams collocation table having been evaluated, it can be stated that green competencies and process innovation have a significant effect on employees' attitudes.

In addition, in relation to the qualitative analysis section, it can be stated that the word cloud technique, which was applied to illustrate the words most frequently used by the participants in the interviews, refers to the importance of the values obtained as a result of structural equation analysis at certain points. In parallel with the hypotheses determined and tested, the fact that sustainability attitude and sustainability behavior have a moderating role, as well as the fact that the most frequently used word identified via the use of the word cloud technique was "sustainability", once again highlights the sensitivity of the participants to sustainability.

Similarly, in line with the hypotheses identified and tested, the facts that green core competencies have positive effects on green process innovation and green process innovation has positive effects on firm performance, as well as the fact that "environmental", "green", "practices", "employees", "waste", "performance", and "sensitivity" were among the words most frequently used identified as a result of the use of the word cloud technique, indicate that respondents attach importance to green practices and practices that do not ignore environmental awareness, and that the effect of green practices on hotel performance in the context of sustainable waste management and environmental protection is another important issue to be taken into consideration.

In addition, the fact that there is no other study in the literature that investigates the relationship between the variables included in this study with both quantitative and qualitative analysis makes this study different from the others.

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