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The Effect of Resource-based Eco-innovation as a Competitive Strength on Business Performance: An Application in Antalya Industrial Enterprises

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Abstract

The development of business performance with resource-based eco-innovation [ecological innovation] is considered as a critical success factor not only to achieve sustainable eco-competitiveness but also to reduce the degradation of natural resources, improve basic living conditions and seize environmentally friendly opportunities. However, it means that the business not only reduces its dependence on scarce natural resources but also creates conditions that will increase its profitability, customer loyalty, brand value, corporate reputation, in short, sustainable competitiveness. In this context, a study was conducted by interviewing a total of 220 business managers in industrial enterprises operating in Antalya province to measure the impact of eco-process innovation, eco-organizational innovation and eco-product innovation on business performance. In this study, it was aimed to determine the impact of eco-innovation on business performance in the context of resource-based theory and thus to shed light on future studies. As a result of empirical study analyses, it was confirmed that resource-based eco-innovation has a significant impact on business performance

INTRODUCTION

From the early stages of human and society development, all human activities have developed in the environment and used environmental resources. For a long time, the balance between the impact of human actions on the environment and its ability to maintain its natural characteristics has been maintained. However, the intensification of development, the emergence of new sectors, products, by-products, pollutants, the enormous increase in transportation, the need for resources demand and many other reasons have led to the deterioration of the environment beyond repair. Since natural resources, that is, materials and energy that are accessible in the natural environment and not transformed by human activities, are subject to depletion, managing them sustainably has become one of the “grand challenges” of our world.Therefore, global environmental problems that require urgent solutions also increase public awareness of the impact of commercial activities on the natural environment.Human society must evolve, and future generations have the same rights as past and future generations to a clean environment and access to natural resources. This conclusion is the starting point for rethinking the entire process of producing goods and providing services in society (Albu, 2017).

In this context, the study examines the results of empirical analysis conducted to investigate the relationship and impact between eco-innovation and performance in Antalya industrial enterprises based on resource-based theory. In the conclusion section, the analysis and findings are presented and evaluated together, and opinions and suggestions are presented based on these findings.

In Antalya, one of the most important centers of the world and Turkish tourism sector, it is an inevitable necessity to have industrial investments that will support the tourism sector. The aim of the region is to choose industrial types that will not cause environmental pollution by taking into account the needs of the province, which is a natural wonder with its thousands of years of history, open-air museum, natural beauties, sea and sun, to gather industrial investments together, produce low-cost industrial plots with all

kinds of infrastructure, allocate them, control them during construction and operation stages and ensure their development.When the financial and logistic advantages provided by the Antalya Organized Industrial Zone and the natural advantages of the city are combined, a very important and low-cost investment environment is formed for investors.

LITERATURE REVIEW

Ecological Concerns, Sustainability and Eco-Capitalism

There are diametrically opposed approaches in the literature on how to deal with global ecological degradation. We encounter two fundamentally different understandings of economic growth and "development." One is the widely hegemonic perspective of neoclassical economic theory, which advocates growth as a remedy for environmental problems. The other is the zero-sum perspective of world system theory, which instead argues that growth involves shifting ecological problems to the environmental sectors of the world economy. Both are capital not of a committed ideal but of social engineering (Bookchin, 2023, p. 27).

In the face of the growing dimension of ecological problems after 1970, the idea of preserving the ecological balance intervention in the ecological area has begun with the tools of the economy. The origin of ecological problems has been explained through the concepts of the economic area such as private property rights, the lack of price and market for ecosystem services, and externalities. A solution has been proposed to prevent excessive use if the price of ecological assets is determined and their markets are established. For this purpose, ecosystem services have been classified in order to establish ecosystem markets, various pricing methods have been developed and made exchangeable, and thus nature has been commodified and described as a kind of "capital". In the emergence of all these methods and concepts, new approaches of economy and/or marketing have played a role under various labels (such as environmental economy, green marketing, ecological economy, ecological development, circular economy, ecological marketing).

At this stage, global environmental institutions, for social and economic reform, both closely follow neoliberal guidelines and conceptualize environmental pollution as a problem of inefficiency and market failure by using the language of business while working within the limits of cost effectiveness and administrative efficiency. Jameson explains this situation as the closure of all the gaps that emerged with the globalization of capitalism. According to Jameson, this situation is the emergence of a concrete "World Market" perspective (Jameson, 2009). The crisis and the policy guidelines that will solve it not only create new goods, markets and new demands, but also encourage all these elements, in production and transportation methods, industrial organization, consumer goods, in short, the forces that produce innovation that Joseph Schumpeter once described as "the basic drive that sets and moves the capitalist engine." The following fact underlies this incentive: "No rational owner of monetary capital would go to all the trouble and suffering that comes with organizing the production of commodities and surplus value unless he had more money at the end of the valuation process than he had at the

beginning. It all depends on where the most profit lies. But this search for profit is subject to the first condition: “The exploitation of today’s profit opportunities should not destroy tomorrow’s opportunities (Baran and Sweezy, 2023). In short, the driving force is the individual profit motive” (Harvey D, 2024).

The increasing involvement of companies in resource ownership and the provision of “eco-system services” in recent years, and the simultaneous deployment of markets and market agents as environmental governance mechanisms at many scales, seem to confirm these signs. It seems that while the global business world aims to change the competitiveness landscape with new business models and eco- development strategies, it also leads companies to reconsider the concepts of value and profitability that drive their business models.

Competitiveness and Eco-Innovation

After a 235-year evolution from Adam Smith to the present day, the concept of competitiveness/ competitiveness and competitive power has been evaluated by many economists (Bleotu, 2012, pp. 53–82).

The neoclassical approach has expanded the concept of competitiveness with the idea of economic growth. Accordingly, an economic sector, country or business activity is considered competitive when it can maintain or improve its capacity to sustain economic growth in an international environment. The driving force behind the growth rate of an economy is the increase in productivity, which can be explained as better use of available factors and resources. According to this understanding, a more competitive economy is one that can grow faster in the medium and long term. More recently, it has been expanded to include a country's ability to increase its standard of living. According to Tyson's definition, competitiveness is expressed as "the ability of citizens to produce goods and services that meet international competition while enjoying a standard of living that is both rising and sustainable" (Tyson, 2024). Similarly, Porter and Rivkin argued that “companies operating within the locality are able to compete successfully in the global economy by supporting high and rising standards of living for citizens” (Porter and Rivkin, 2024).

Therefore, competitiveness is nowadays considered as a dynamic concept that can provide better quality of life based on adaptation and technological innovation. In the last few years, the definition of competitiveness has also been divided into business, sectoral and national perspectives. At the enterprise level, competitiveness, according to Dechezlepretre and Sato, is “competitive if a business can produce better or cheaper products or services than its local or international competitors”. In the long run, competitiveness will increase profit performance and provide sufficient economic returns to its owners. At the sector level, competitiveness is defined as “how attractive different countries are for a particular industry”. At the country level, competitiveness is determined using a range of factors ranging from economic variables to socio-environmental variables. Standard of living, local pollution, health, employment and stability are some of the variables used to measure the element of attractiveness at the country level (Dechezlepretre and Sato, 2014).

Proponents of different approaches to this issue are classified into three main groups (see Table 1):

Table 1
Eco-Development and the Nature of Technology: Three Different Approaches

	Technological Approach	Eco-Innovation Approach
Status quo (Status quo)	Instrumentalism	Market-Driven Innovation
Reform (Reform)	Instrumentalism	Ecological modernization, efficiency, clean technologies transfer to developing countries
Transformation	Essentialism (Substantivism)	New values, different power structures, appropriate technologies

Source

Pansera, 2012, p. 134.

Table 1 shows the first group, the “status quo” mainstream, which claims that ecological transformation is a technological problem to be solved through free market dynamics within the existing economic system; a second group, which advocates a “reform process” of the existing economic system, including social and environmental ideas; this group includes the main environmental organizations and the majority of academics in academia interested in sustainability; and finally a third group, which promotes a radical transformation of the existing economic system as well as political and social institutions. These perspectives address a wide range of concerns and offer a variety of solutions, as follows: The status quo and reform groups, each with varying intensities, adopt an internal instrumentalist approach, advocating the design and deployment of environmentally friendly technologies that can challenge the limits imposed by the existing socio-technical environment and minimize the impact of human activity on the ecosystem (Pansera, 2012).

The term “eco-innovation” was born within this theoretical framework and stems from the positivist belief in technology as a universal solution to human problems. This belief examines innovative development as a development that involves continuous research and the use of new methods that contribute to environmental sustainability and the potential realization areas of businesses in changing environmental conditions. It is associated with the modification of the existing in favor of the environment and the creation of new markets.

In this context, competitiveness is defined from a multidimensional perspective. This is because, competitiveness is not only about costs and profitability, but also includes how countries, sectors and businesses manage their socio-economic and environmental resources to achieve greater prosperity in both the short and long term (Esty and Sharnovitz, 2013). At the business level, impacts on the environment and the use of natural resources can affect the level of development and well-being of the

population. For these reasons, multiple interactions between different economic levels and different socio-economic and environmental dimensions should be taken into account in planning sustainable competitiveness approaches. A broader definition of competitiveness can be defined using the concept of “sustainable competitiveness”. This definition is based on the idea that competitiveness today must be achieved without compromising the competitiveness of tomorrow (Andreoni and Miola, 2016, pp. 2–16). It includes elements of high- quality growth, resource management, social equity, human development and welfare. In this context, the concepts of social and environmental sustainability are linked to the concepts of competitiveness. According to the definition of Corrigan et al., sustainable competitiveness, social sustainability and environmental sustainability are defined below: (Corrigan, et al., 2014, p. 55)

Sustainable competitiveness is defined as the set of institutions, policies and factors that make a nation productive in the long term while ensuring social and environmental sustainability.

Social sustainability is defined as institutions, policies and factors that enable all members of society to experience the best possible health, participation and security, maximising their potential to contribute to and benefit from the economic well-being of the country in which they live.

Environmental sustainability is defined as institutions, policies and factors that ensure the efficient management of resources to ensure well-being for current and future generations.

In the last 20 years, studies on this subject have increased considerably. In particular, special attention is paid to the investigation of the relationships between (a) business and environment (b) environment and productivity and costs

(c) eco-innovation and business performance. According to the studies conducted on this subject, it is stated that after the initial transition period of the businesses, the long-term effects are very little. Other analyses suggest that environmental regulations may affect the profits of a particular industry, but if they are associated with effective policy instruments, they may also increase overall national competition (Berman and Bui, 2021, pp. 265–295).

Resource-Based Eco-Innovation

In light of the above, traditional inferences about eco-innovation are gathered around two schools of thought: the social deterministic school and the individualistic school: On the one hand, the social deterministic school argues that eco-innovations are the result of a combination of influences such as external social factors, demographic changes, economic influences and cultural changes (according to this school, innovations occur when the conditions are ‘right’), while the individualistic school argues that eco-innovations are the result of unique individual talents and that such innovators are born. According to this idea, the theory of individuality is closely associated with important roles related to chance and more than that. After the 1980s, knowledge about “what drives” eco-innovation tends to be divided around two schools of thought: (Trott, 2017, p. 21) Market-based view and resource-based view.

These two theories are currently being studied in the strategy literature to explain why some firms perform superiorly and are consequently associated with higher value. Table 2 shows the perspectives of the two theories.

Table 2
Comparison of Market and Resource Based View

Criteria	Market Based View	Source Based View
Conjecture on sources	Mobility and homogeneity	Inactivity and heterogeneity
Strategic Approach	Compliance with market rules	Changing the rules of the market
Source of competitive power	A business's position in the market power	The strength of a firm's strategic resource
Operation focus	Temporary superior performance	Sustainable superior performance

Source

Cho and Linderman, 2020, p. 4.

The market-based view is based on industrial economics and evaluates this issue within the scope of external market orientation (Tirole, 2014). This perspective, called the market orientation of the firm, typically treats privileged final product market positions as a basis for above-normal future returns and thus emphasizes higher current firm value. According to this view, ecological value sources for the firm are embedded in the competitive situation that characterizes external product markets. The competitive advantage of the firm is evaluated as the positioning activity against its existing competitors in terms of the characteristics of the sector (Papatya, 2013, p. 45).

Against the backdrop of standard economic theory, Porter's view has received a skeptical and critical response from many economists.The first central criticism of the Porter hypothesis, which focuses on the rationality of firms, is that it implies that firms may systematically overlook opportunities to improve and enhance their own outcomes, which is difficult to reconcile with the neoclassical view of the firm as a rational profit-maximizing entity. In short, if ecological innovation were to increase profits, firms would be willing to act in this direction on their own without any government incentives. In more policy-oriented criticism, the Porter hypothesis claims that the government can make decisions without compensation or cost, which contradicts the widespread economic belief that there is “no free lunch.” In other words, in a world without perfect rational profit-maximizing firms, perfect markets, perfect information and coordination problems, the idea that risk-free firms would benefit from any externally imposed obligation, such as a new or tougher environmental policy, is a conceptually unsupportable inference. Therefore, since it would be difficult to contradict this statement, theoretical inferences in favor of the Porter hypothesis are based on the existence of either incomplete rationality or some market imperfections (Andre, 2024, pp. 4–5).

Undoubtedly, the value of an ecological market orientation is indisputably important for companies today. Current practice states that success begins with careful market research, investigating customer needs and developing different ecological products or services for a well-defined segment. Several excellent companies, such as Nestle, Procter & Gamble and Unilever (van Dijk and Cantarell, 2010, pp. 1–53; Schuiling, 2000), effectively use this market-based approach (Kumar, et al., 2000, p. 130). Of course, what is important here is the ability of companies to recognize opportunities in the market.

In this context, “resource-based eco-innovation” includes eco-processes that support the transformation of knowledge into new knowledge, structures, technologies and eco-products, goods and services, eco-organizational innovation elements (or resources) and the cyclicality of organizational capabilities. Achieving any goal in the organizational change process (e.g. achieving eco-competitiveness) assumes that the level of adaptation to the external environment increases, employees' behavior changes and eco-organizational transformation capabilities develop (Sirotkina et al., 2018, p. 32). This situation can also be expressed as the transformation of the enterprise's mechanism of integration with nature. Indeed, strategic theories suggest that organizations that adopt an ecological innovation (e.g. ecological capabilities, resources, technologies or knowledge about the innovation) will later create a unique mechanism that protects profit margins and thus enables the organization to achieve great benefits (Teece et al., 2017). In this respect, it is important to understand the details of resource-based eco-innovation concepts in order to reveal these benefits. According to the studies completed so far, the types of innovation that should be included when measuring resource-based eco-innovation are eco-organizational innovation, eco-process innovation and eco-product innovation.

Eco-Organizational Innovation

Eco-organizational innovations are innovations focused on the sustainability of the system. Sustainability of the system is defined as the ability to preserve important parameters that function in a certain value sphere. This is also the need to integrate a more far-sighted approach to organizational ecological responsibility into the basic model of eco- business strategy.

Unsustainability in the system increases, and some order parameters reach a certain threshold value corresponding to the bifurcation point. In this case, the organization's adaptation to external environmental conditions and, consequently, to developing eco-paradigms depends on the activation of managerial functions. It is based on the idea of developing managerial functions and, in the conditions of a dynamic external environment, the necessity of the enterprise to adapt to eco-development, eco-change and other external changes - that is, to carry out the policy of managing changes in the organization (Tabachnikova, 2018, pp. 39–69). This is the way the enterprise views its eco-orientations as part of the way the organization conducts its business, “beyond” the general business practices and procedures.

In this context, eco-organizational innovation capabilities are related to how the company differentiates its value proposition from other companies through the production costs, pricing and design of the eco-products or services it offers to the market, how it integrates its value chain with the value chains of

other companies and how it defines its competitive strategy (Rasmussen, 2017). The quality of management is very important here because the success of eco- organizational innovations is determined by the ability to manage the skills of acquiring, combining and using valuable resources in a way that provides a superior value proposition to customers (Beltramello et al., 2013).

Directing a business that leads to faster development can create superior real value for stakeholders (Elkington, 2020). All of these are defined as among the basic strategic functions of managers (Teece, 2009, p.48).

In the process of organizational change, achieving any goal (e.g. achieving eco-competitiveness) assumes that the level of adaptation to the external environment increases, employees' behavior changes, and eco-organizational transformation capabilities develop (Sirotkina et al., 2018, p. 32). This situation can also be expressed as the transformation of the mechanism of the business that integrates with nature. Indeed, in strategic theories, it is suggested that organizations that adopt an innovation (e.g. skills, resources, technologies, or knowledge about the innovation) will later create a unique mechanism that protects profit margins and thus enables the organization to achieve great benefits (Teece et al. 2017).

Eco-Process Innovation

The key aspect of process innovation represents a revolutionary change in perspective: it means turning the organization upside down, or at least on its side (Davenport, 2013, pp. 5–10). To achieve this in a way that is fit for the future, a business’s profitability scaling must take into account all the negative (and positive) externalities and impacts created in the process (Elkington, 2020, p. 61).

Recent studies have shown that most polluting industries focus on processes rather than products in the context of eco-innovation, because regulatory and consumer pressures are more focused on the process rather than the product (Kivima and Kautto, 2010).

In this context, the development of eco-process innovation capabilities is more top-down and requires strong direction from top management. Since the structures of large enterprises do not reflect their cross- functional processes, only those in positions that ignore multiple functions can see eco-innovation opportunities. A clerk in the shipping department is unlikely to consider radically redesigning the entire order management process in an environmentally friendly manner. On the other hand, implementers of eco-process innovation will need to strive to ensure commitment and eco-commitment at all levels of the organization, as workers and lower/ middle managers are likely to resist proposing major changes. Encouraging participation in eco-process design activities can certainly facilitate this.

The development of eco-process innovation capabilities depends on the skills of employees and other eco-processes used.

The organization's ability to produce successful eco-products and to be successful in general depends on the efficient use of these talents and resources, and more importantly, on the re-evaluation of these

talents and resources as a whole and their application in the form of new cross-coordinations (Wang and Ahmed, 2024, p. 306). Thus, the company can achieve superior performance with different resource bundles than its competitors by creating an environment of causal uncertainty that is difficult to imitate and also hides complex processes:

Eco-Product Innovation

Eco-product innovation is part of the established mechanism that sets in motion processes within a structured system and directs it towards its envisioned and concretized goals (Trott, 2017). It is based on a new principle that challenges traditional understanding; it is part of an ongoing invention program where the integrity and progress encompassing a series of eco-processes and methods are combined over time.

Eco-product innovation develops through the leverage effect of distinctive eco-capabilities developed through various sources including managerial support, organizational activities, eco-infrastructure, eco-technologies, etc. (Hard and Dowell, 2011). As can be understood from here, eco-product innovation capabilities, including eco-production, eco- packaging, eco-distribution and eco-positioning capabilities, are directly related to the organization's capacity to internalize capabilities. Internalization capacity means that a company can create a by-product of its R&D investment. A company can directly participate in production and develop a specific eco-product

It can better recognize and use new information about its market. This will increase the capacity to position itself as an organization that acts in a way that takes into account the long-term effects of its business activities on the natural environment and does not try to externalize the costs of these activities to other stakeholders or the environment itself (Jones 2016, p. 328).

METHOD

Research Model and Hypotheses

Research model and hypotheses created based on the theoretical framework Eco-organizational innovation, 6 basic research hypotheses were created in 4 dimensions: eco-process innovation, eco-product innovation and business performance.

H_1:Eco-organizational innovation positively affects Eco-process innovation.

H_2:Eco-organizational innovation positively affects Eco-product innovation.

H_3: Eco-process innovation positively influences Eco-product innovation.

H_4:Eco- process innovation positively affects business performance.

H_5:Eco- organizational innovation positively affects business performance.

H_6:Eco- product innovation positively affects business performance.

Universe and Sample

The purpose of this study is to measure the impact of eco-innovation on business performance.

A study was conducted by interviewing 220 business managers in total in industrial enterprises operating in the province. The main body of the research was carried out for industrial enterprises operating in the city center of Antalya. It should not be ignored that this study was carried out under various constraints. The most important constraints are; lack of time, physical and economic resources.

The main mass of the study consists of industrial enterprises operating in the city center of Antalya. For this purpose, industrial enterprises in the city center of Antalya were determined based on the list obtained from the Ministry of Trade and Industry. The total number of industrial enterprises determined is 338. The following calculation method was used to determine the necessary sample quorum from the main mass:

$$n = \frac{N \times P \times Q \times Z_{\alpha}^{2}}{(N-1) \times H^{2} + P \times Q Z_{\alpha}^{2}}$$

$$n = \frac{338 \times 0.5 \times 0.5 \times (1.96)^{2}}{(338-1) \times (0.05)^{2} + 0.5 \times 0.5 \times (1.96)^{2}}$$

When the values are substituted into the formula, the required sample quorum is n = 180.051 (Newbold, 2008). However, considering that there may be response errors and incomplete surveys, 220 businesses were interviewed and the study was conducted. As can be seen, the study was conducted with a sample above the quorum. The study was conducted between April 2021 and May 2021. The convenience sampling method was chosen in the study. The research received ethical compliance approval with the decision of Burdur Mehmet Akif Ersoy University Ethics Commission 2021/176 Research Approval No., 2021/40 Meeting No. and dated 07.04.2021.

Data Collection

Scales used in the study; The sub-dimensions constituting the eco-innovation dimension; eco-organizational innovation was measured with 6 questions, eco-process innovation was measured with 4 questions and eco-product innovation was measured with 7 questions, a total of 17 questions. The eco-innovation scale was created by utilizing the study of Cheng et al. (2014). The business performance scale was measured with 5 questions. These questions consist of sales, profitability, market share, return on investments and return on assets. The business performance scale was created based on the studies conducted by Im and Workman (2004) and Cheng et al., (2014). A 5-point Likert-type scale was used to measure the questions in the research as (1 = strongly disagree, 2 = agree, 3 = undecided, 4 = agree, 5 = strongly agree).

Findings

In analyzing the obtained data, frequency analysis was performed using the SPSS 21.0 statistical package program.

Demographic Characteristics

The demographic characteristics of the respondents participating in the study are shown in Table 3.

Table 3
Demographic Characteristics

Demographic Characteristics		**F**	**%**
Gender	Woman	64	29.1
	Male	156	70.9
Age	18–24	8	3.6
	25–34	70	31.8
	35–44	77	35.0
	45–54	37	16.8
	55–64	8	3.6
	65 and over	20	9.1
Education	High school	38	17.3
Demographic Characteristics		F	%
Working Hours	Less than 1 year	1	0.5
	1–5	100	45.5
	6–10	56	25.5
	11–20	46	20.9
	21–30	15	6.8
	31–40	2	0.9
Position at Work	Business Owner/Partner	3	1.4
	Senior Manager	43	19.5
	Mid-Level Manager	174	79.1
Department of Employment	Production	63	28.6
	Accounting	41	18.6
	Employee	7	3.2
	Sales Marketing	89	40.5
	Other (HRM, Quality, Product development, (such as export etc.)	20	9.1

When the demographic characteristics of the survey participants are examined, 70.9% are male and 29.1% are female. The age status of the participants is as follows; 3.6% is 18–24, 31.8% is 25–34, 35% is 35–44, 16.8% is

45–54, 3.6% is 55–64 and 9.1% is 65 and over. When their educational background is examined; 17.3% are high school graduates, 5.5% have college, 63.2% have university degree, 12.7% have master's degree and 1.4% have doctorate degree.

When looking at the length of service; it was found that 0.5% had worked for less than 1 year, 45.5% for 1–5 years, 25.5% for 6–10 years, 20.9% for 11–20 years, 6.8% for 21–30 years and 0.9% for 31 years and over. When looking at the positions of the participants at their workplaces; it was found that 1.4% were business owners/partners, 19.5% were senior managers and 79.1% were mid-level managers. When looking at the departments in which the participants worked, it was seen that 28.6% worked in production, 18.6% in accounting, 3.2% in personnel, 40.5% in sales and marketing and 9.1% in other units (such as HRM, Quality, Product Development, Export etc.).

Common Method Deviation Problem Analysis

If dependent and independent variables are requested from the respondents simultaneously in the same questionnaire, common method bias may occur. In this study, since eco-innovation and business performance scales were evaluated simultaneously by the same respondents, there is a possibility of common method bias (Podsakoff et al., 2003). In order to eliminate this possibility, Harma's single factor test, which is a common method, was performed. In this method, all variables were collected under a single dimension and it was determined that the explained variance was 17.084% (KMO: 0.794, Bartlett's Test: 1029.156, df: 213, $p < 0.000$). According to these results, it was seen that it was below the 50% value suggested by Podsakoff and Organ in their study and there was no common method bias in the study (Podsakoff and Organ, 2016).

Analysis of Data in order to test the research model created in the theoretical framework, hypotheses were tested with the help of the Smart PLS 3.0 program and the verification of the model was tested with the structural equation model test. Necessary validity and reliability analyzes were made before moving on to hypothesis testing.

Validity and Reliability

In order to test the research model created in the theoretical framework, hypotheses were tested with the help of the SmartPLS 3.0 program and the verification of the model was tested with the structural equation model test. Before moving on to hypothesis testing, the necessary validity and reliability analyses were performed. An individual evaluation of the variables was made to start the validity and reliability analyses of the created model.

Table 4
Validity and Reliability Results

Measurements	Loads	VIF	Alpha	CR	AVE
Eco-Process Innovation			, 872	0.912	, 723
ESY1: Our business has implemented production processes to protect against contaminants. frequently updates in an innovative way.	, 866	2,041			
ESY2: Our business produces to meet environmental law standards. frequently updates its processes in an innovative way.	, 893	1,784			
ESY3: Our business frequently innovates in production processes to save energy. uses technologies.	, 842	1,569			
ESY4: Our business uses energy saving technology in its production processes. frequently updates its equipment in an innovative way	, 797	2,018			
Eco-Product Innovation			, 934	0.946	, 716
ESY 1: Our business often uses new features to simplify product packaging. attaches importance to developing new eco-products through technologies	, 841	2,663			
ESY 2: Our business often uses new technologies to simplify the structure. attaches importance to developing new eco-products through	, 849	2,671			
ESY 3:Our business usually recycles its components easily. attaches importance to developing new eco-products through technologies	, 818	1,990			
ESY 4: Our business usually uses new materials to separate them easily. attaches importance to developing new eco-products through technologies	, 826	2,931			
ESY 5:Our business is generally new to using natural materials. attaches importance to developing new eco-products through technologies	, 861	1,974			

Measurements	Loads	VIF	Alpha	CR	AVE
ESY 6: Our business attaches importance to developing new eco-products, usually through new technologies, to reduce the damage caused by waste as much as possible. Gives	, 826	2,668			
ESY 7: Our business generally uses new technologies to use as little energy as possible. attaches importance to developing new eco-products through technologies	, 897	2,874			
Eco-Organizational Innovation			, 916	0.934	, 704
EOY1: The management of our company usually shares eco-innovation information with employees. shares	, 829	2,749			
EOY2: Our business management generally focuses on eco-innovation with a high rate of R&D. is making an investment.	, 855	2,804			
EOY3: Our business management is generally managed by departments related to eco-innovation. shares experiences between	, 838	2,917			
EOY4: Our business management is generally informed about eco-innovation trends. balls	, 792	2,166			
EOY5: Our company's management is generally actively involved in eco-innovation activities. participates.	, 847	2,989			
EOY6:The management of our business is generally new to manage eco-innovation. uses management systems	0.870	2,901			
Business Performance			, 921	0.941	, 761
PERF1: Our sales revenues are better than our competitors.	, 887	2,087			
PERF2: Our profitability and revenues are better than our competitors.	, 843	2,385			
PERF3: Our market share percentage is better than our	, 855	2,587			

Measurements	Loads	VIF	Alpha	CR	AVE
competitors					
PERF4: Return on investment is better compared to our competitors	, 872	2,966			
PERF5: Better asset recycling compared to our competitors	, 873	2,842			

Alpha Coefficients for internal reliability are 0.70 and above in a confirmatory model.

It must have a value above. In addition, another criterion for convergent validity is that this value has a value of 0.70 or higher in composite reliability (Avkiran, 2018; Garson, 2016).

Item Loadings are also a reflective tool in evaluating the factor loadings of the variables in the model.

It has been revealed in the studies that the factor loadings for the model should be 0.70 and above (Garson, 2016; Hair et al., 2014).

To check convergent validity, the average variance values of each construct were examined. A decision needs to be made and the AVE value is required to be greater than 0.50 (Avkiran, 2018; Garson, 2016).

Whether it meets the condition suggested by Fornell and Lacker for testing discriminant validity. For this, the square root values of the AVE values must be higher than the correlation coefficients between the structures.

Variance inflation factor to check for multicollinearity

Factor-VIF) values were examined. The condition for this value to be less than 5 was sought. Studies have stated that the VIF value should be less than 5 (Avkiran, 2018; Garson, 2016; Hair et al., 2011). The results obtained are shown in Table 5.

It is seen that all conditions for validity and reliability are met. Discriminant validity was also tested in the study and the results are shown in Table 5.

Table 5
Correlation and Discriminant Validity Results

Variables	Eco-Organizational Innovation	Eco-Process Innovation	Eco-Product Innovation	Business Performance
Eco-Organizational Innovation	0.839			
Eco-Process Innovation	0.810	0.850		
Eco-Product Innovation	0.798	0.824	0.846	
Business Performance	0.811	0.793	0.754	0.872
Notes:Diagonals show the square root of the AVEs.				

As seen in Table 5, the results of the discriminant analysis met the condition suggested by Fornell and Larcker (2023) and discriminant validity was ensured.

It was also examined whether there was a multicollinearity problem. For this, the variance inflation factor (VIF) value was calculated for the internal model. The threshold values of the VIF values were required to be less than 5. The results obtained are shown in Table 6.

Table 6
VIF Values

Variables	Eco-Organizational Innovation	Eco-Process Innovation	Eco-Product Innovation	Business Performance
Eco-Organizational Innovation		1,000	3,200	2,456
Eco-Process Innovation			2,651	3,114
Eco-Product Innovation				2,745
Business Performance				

As seen in Table 6, it was seen that the VIF values were less than 5 and the condition of being less than 5 specified by Hair et al. was met and it was seen that there was no multicollinearity problem in the study (Hair et al., 2011).

Hypothesis Tests

After the reliability and validity analyses of the item variables were performed in the study, the second stage was the verification of the structural equation model and the testing of the hypotheses. The hypothesis test results are shown in Table 7. In addition, the coefficients of determination were also examined in the study.

Table 7
Hypothesis Test Results

Relationships	Hypotheses	β	t-value	Supported/Not Supported
Eco-Organizational Innovation→Eco-Process Innovation	H1	0.899	51,772	Supported
Eco-Organizational Innovation→Eco-Product Innovation	H2	0.392	3,811	Supported
Eco-Process Innovation→Eco-Product Innovation	H3	0.552	5,374	Supported
Eco-Process Innovation→Business Performance	H4	0.451	4,741	Supported
Eco-Organizational Innovation→Business Performance	H5	0.488	4,009	Supported
Eco-Product Innovation→Business Performance	H6	0.530	3,941	Supported

The results regarding the obtained hypotheses are as follows;

- The hypothesis that eco-organizational innovation positively affects eco-process innovation (β = 0.899, t = 51.772 p = 0.000) was found to have a positive effect on the H1supported the hypothesis.
- The hypothesis that eco-organizational innovation positively affects eco-product innovation (β = 0.392 t = 3.811 p = 0.000) was found to have a positive effect and therefore the H2supported the hypothesis.
- The hypothesis that eco-process innovation positively affects eco-product innovation (β = 0.552, t = 5.374, p = 0.000) was found to have a positive effect and therefore the H3supported the hypothesis.
- The hypothesis that eco-process innovation positively affects business performance (β = 0.451, t = 4.741, p = 0.000) was found to have a positive effect and therefore the H4supported the hypothesis.
- The hypothesis that eco-organizational innovation positively affects business performance (β = 0.488,

- t = 4.009, p = 0.000) was found to have a positive effect and therefore the H5supported the hypothesis.
- The hypothesis that eco-product innovation positively affects business performance (β = 0.530, t = 3.941, p = 0.000) was found to have a positive effect and therefore the H6supported the hypothesis.

In order to evaluate the structural equation model that emerged in the study, the coefficient of determination (R^2) was examined. In the study, the eco-process innovation R^2 value was obtained as 0.808, the eco-product innovation R^2 value as 0.847 and the business performance R^2 value as 0.765. The structural equation model obtained is shown in Fig. 2.

CONCLUSION AND DISCUSSION

Competitive strategies are the subject of theoretical and empirical studies in strategic marketing literature.

The relationships between resource-based eco-innovation, which has deep philosophical roots in its axis, and business performance have been theoretically revealed and these relationships have been empirically tested in the application part of the study. In the measurement analyses, data were obtained through interviews with 220 business managers of industrial enterprises operating in Antalya province. As a result of the analysis of the data, 22 variables in 4 dimensions were analyzed with an original research scale and the hypotheses were tested.

The most important added value of this study is the impact of resource-based eco-innovation on business performance.

will be about the ability to show its impact and to encourage businesses that will adopt resource-based eco-innovation practices and to present a roadmap. Likewise, according to the research conducted in industrial enterprises operating in Antalya province; resource-based eco-innovation (organizational innovation, process innovation and product innovation)

It was observed that there is a direct and positive effect on business performance. In addition, it was observed that organizational innovation has a positive effect on process innovation, and organizational innovation and process innovation have a positive effect on product innovation. As a result of the study, the structural equation model was verified by accepting the hypotheses for Antalya manufacturing enterprises.

Our review of theoretical research shows that resource-based eco-innovation is a relatively new paradigm in innovation studies and therefore the definition of resource-based eco-innovation is still evolving. However, some trends can be identified. For example, most current definitions of eco-innovation are based on environmental performance rather than environmental purpose. Existing

definitions also tend to be broad in the sense that they require that only environmentally benign (product, process, organizational) innovations be new at the firm level and not at the market, sector or economy level. Therefore, the issue of drivers and barriers to resource-based eco-innovation needs to be addressed with a certain sensitivity in terms of the level of analysis.

As a result, the views advocated in the study seem to be supported by the application study. This means that the internal dynamics of businesses still have an undeniable importance in order to achieve higher levels of resource-based eco-innovation efforts. The resource-based eco-innovation performance model and the definition, development and efficient use of eco-product, eco-process and eco-organizational innovation capabilities by utilizing the leverage effect will have a significant impact on the eco-innovation efforts of businesses, while at the same time increasing their sustainable performance and therefore competitiveness. On the other hand, channeling the innovative behavior of non-eco-innovative businesses to a more sustainable approach and increasing the number of eco-innovators will also pave the way for the creation of healthier, more successful business ecosystems that support the development of circular economies and social development, ensuring the circulation of value in society.

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