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Original Article

The Impact of Green Economy Approaches on Marketing in The Sugar and Confectionery Industry: The Case of Konya Province

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ABSTRACT

This study examines the approach of the Turkish sugar and confectionery industry to green economy practices and their relationship with marketing strategies. Covering enterprises operating in Konya province, the study analyzes attitudes towards environmentally friendly technologies and sustainability-based transformations. The sector has an important place in the Turkish food industry and is more closely associated with green economy principles in line with increasing environmental pressures. Within the scope of the research, a survey was conducted with 51 enterprises selected by proportional sampling method from a population of 107 enterprises. The questionnaire form includes the structural characteristics of the enterprises, their attitudes towards green economy practices and the factors affecting these practices. Data were collected using Likert scale and evaluated by factor and regression analyses. The findings show that the sector has a significant sensitivity towards waste management and recycling, but there is room for improvement in supply chain sustainability. It was also found that green production practices have positive effects on marketing strategies. In this context, the study provides strategic findings that can contribute to Turkey's green economy goals.

Key words: Green Economy, Marketing Strategies, Sugar and Sugary Products Industry, Sustainability.

Şeker ve Şekerleme Endüstrisinde Yeşil Ekonomi Yaklaşımlarının Pazarlamaya Etkisi: Konya İli Örneği

Öz

Bu araştırma, Türkiye'deki şeker ve şekerli mamuller sanayisinin yeşil ekonomi uygulamalarına yaklaşımını ve bu uygulamaların pazarlama stratejileriyle ilişkisini incelemektedir. Konya ilinde faaliyet gösteren işletmeleri kapsayan çalışmada, çevre dostu teknolojilere ve sürdürülebilirlik temelli dönüşümlere yönelik tutumlar analiz edilmiştir. Sektör, Türkiye gıda sanayisi içinde önemli bir yere sahiptir ve artan çevresel baskılar doğrultusunda yeşil ekonomi ilkeleriyle daha yakından ilişkilendirilmektedir. Araştırma kapsamında, 107 işletmelik evrenden oransal örnekleme yöntemiyle seçilen 51 işletmeyle anket çalışması gerçekleştirilmiştir. Anket formu; işletmelerin yapısal özelliklerini, yeşil ekonomi uygulamalarına yönelik tutumlarını ve bu uygulamaları etkileyen faktörleri içermektedir. Veriler, Likert ölçeği kullanılarak toplanmış; faktör ve regresyon analizleriyle değerlendirilmiştir. Bulgular, sektörün atık yönetimi ve geri dönüşüm konularında belirgin bir duyarlılığa sahip olduğunu, ancak tedarik zinciri sürdürülebilirliğinde gelişime açık alanlar bulunduğunu göstermektedir. Ayrıca çevreci üretim uygulamalarının pazarlama stratejileri üzerinde pozitif etkiler yarattığı saptanmıştır. Bu bağlamda çalışma, Türkiye'nin yeşil ekonomi hedeflerine katkı sağlayabilecek stratejik bulgular sunmaktadır.

Anahtar kelimeler: Yeşil Ekonomi, Pazarlama Stratejileri, Şeker ve Şekerli Mamuller Sanayi, Sürdürülebilirlik.

INTRODUCTION

Sugar beet production, which is of strategic importance worldwide, plays a critical role in the food industry sector in Turkey. The sugar and sugary products industry continues to be a leading sector in development with the added value it creates (Erdoğan, 2017). When the historical development of sugar is examined, it is seen that it started with sugar cane in India in the 4th century BC and spread to different geographies over time. Today, sugar is obtained from both sugar cane and sugar beet, and although the structure of sugar produced from both sources is sucrose, small differences are observed in their crystal structures (Elgün, 2013; Topak, 2007; Demirel and Akdeniz, 2019).

Since the early years of the Republic, the sugar factories established in Turkey have both met domestic market needs and created an industrial branch with export potential. The number of factories that started operations in Alpullu and Uşak in 1926 reached 33 over time, with annual sugar production reaching approximately 1.6 million tons. Today, however, the food industry is evaluated not only in terms of production capacity, but also in terms of sustainability-based transformation; environmental pollution, climate change, and global crises are leading sectors to new searches.

In this process, the concepts of “green economy” and “green technology” have come to the forefront, and the concept of environmentally friendly production and sustainable living has started to be adopted, especially in the food sector. The green economy has taken its place in the literature as a holistic growth model that aims to reduce interest rate risk, increase social welfare, and ensure social equality (Güneş, Keskin and Kıymaz, 2014). Various studies have analyzed the aspects of this model in terms of reducing environmental risks and strengthening social justice (Akyazı and Korkmaz, 2024). The main starting point of the green economy is that it offers a solution to the unconscious consumption of natural resources, environmental pollution, and excessive production-consumption imbalance. The food sector is also directly affected by this transformation.

Although green practices are becoming widespread in Turkey, the desired level has not yet been reached. For example, Renings (2000) and OECD (2011) emphasize that green technologies are effective in solving environmental problems and support the goal of leaving a clean environment. Since the agricultural sector provides the main input for the food industry, the integration of these two sectors in the context of the green economy is important. Although green technologies are used in food processing processes, if raw material supply does not comply with the same principles, the sustainability chain remains incomplete (Erdoğan, 2017).

Public support and international cooperation play a decisive role in the transition to a green economy. Green investments and incentives for organized industrial zones in Turkey contribute to sustainability. The Turkey Organized Industrial Zones Project is one of these examples (Esenlikci, 2023). In line with the increasing global population and sustainability requirements, green economy practices are no longer a choice but a necessity for sectors (Nalinci, 2023).

The green economy model offers multidimensional outputs such as economic growth, employment growth, and social equality, not just environmental sensitivity. Targets such as reducing carbon emissions, using clean energy, and protecting biodiversity are also within the scope of this model. In this context, the sugar and sugary products industry also aims to make social and environmental contributions by developing sustainable production models (Doğan, 2022; Ağcakaya and Kaya, 2022).

In this study, the approaches of sugar and confectionery industry enterprises operating in Konya province towards the green economy and the relationship between these approaches and marketing strategies were evaluated. The aim of the research is not only to analyze the environmental sensitivity of the enterprises but also to reveal how this sensitivity is reflected in their economic performance, market expansion strategies, and competitiveness. In this framework, we focused on the following basic question:

- What are the perspectives of the enterprises producing sugar and sugary products in Konya province industry towards green economy practices?

As a result of the interviews conducted to answer this question, the following specific objectives were achieved:

- The perspectives of confectionery enterprises in Konya towards green economy practices were analyzed.
- Factors encouraging or hindering the practices were identified.
- The relationships between marketing areas and green economy sensitivity were evaluated.

MATERIALS AND METHODS

The main material of this study consists of primary data obtained through interviews with the managers of sugar and confectionery industry enterprises operating in Konya province. According to the NACE Rev.2

classification system adopted by the Union of Chambers and Commodity Exchanges of Turkey (TOBB), this sector is categorized under the food manufacturing industry. Specifically, sugar manufacturing is classified under Code 1081 – Manufacture of sugar, and confectionery production is classified under Code 1082 – Manufacture of cocoa, chocolate, and sugar confectionery (Özaydın and Çelik, 2022).

The population of the research consists of a total of 107 sugar and sugar-sweetened products enterprises operating in Konya province, which are included in TOBB records. Considering the current situation of these enterprises, the number of enterprises to collect data was calculated by the proportional sampling method. The sample size was determined by the proportional sampling formula proposed by Newbold (1995); since the level of green economy attitudes in the universe is unknown, the assumption of $p=0.5$ was made to maximize the sample size. As a result of the calculations made with a 95% confidence level ($Z=1.96$) and a 10% margin of error, the number of enterprises to be interviewed was determined as 51.

Sampling Formula:

$$n = \frac{N * p(1 - p)}{(N - 1) * \sigma_x^2 + p(1 - p)}$$

In the formula;

n : Sample volume,

N : Total number of people in the sampling frame,

p : Number of enterprises with a high level of green economy implementation (based on a 50% assumption),

σ_x^2 : Variance of the proportion (table value 1.96 with 95% confidence interval and 10% margin of error to reach the maximum sample volume).

The questionnaire form, prepared as a data collection tool, consists of questions to measure the socio-demographic characteristics, marketing structures, and green economy perspectives of the operators. Socio-demographic and marketing data were evaluated by frequency and percentage analysis and presented in tables.

Data on socio-demographic characteristics and marketing structures of the research were analyzed by calculating frequencies and percentages and presented in tables. In order to measure the perspectives of enterprises towards green economy practices, a scale was developed in line with the studies conducted by Güneş et al. (2014), Doğan (2022), Nalinci (2023), Ağcakaya (2022), and Esenlikci (2023). The questions in the questionnaire form were Likert scale questions (5: Strongly Agree, 4: Agree, 3: Undecided, 2: Disagree, 1: Strongly Disagree) (Tezbaşaran, 2017). Validity and reliability analyses were conducted on this scale applied to measure green economy perspectives, and confirmatory factor analyses were conducted. Confirmatory factor analysis (CFA) is an analysis method that is frequently used in the development of measurement models and provides significant convenience. This method is a process of creating latent variables (factors) based on observed variables through a previously created model. It is generally used in scale development and validity analysis or aims to verify a predetermined structure (Yaşlıoğlu, 2017).

A multiple linear regression model was used to determine the effect of business managers' perspectives on the green economy on the marketing areas of businesses. One of the methods used to estimate the effect of the dependent variable on the independent explanatory variables is the linear regression model. If the independent variable is made with one variable, simple linear regression is used, and if there is more than one variable, a multiple regression model is used. In order to test the appropriateness and significance of the variables obtained in regression analysis, the t-test value and the determination coefficient are used, depending on the correlation coefficient. The “t” test shows the interaction between dependent and independent variables, and the coefficient of determination shows the strength of this interaction. The coefficient of determination is found by squaring the correlation coefficient (R^2) (Gujarati, 2009). Within the scope of the study, while the marketing areas of the enterprises (Regional, National, and International) will be the dependent variable, the factors obtained from the business managers' perspectives on the green economy will constitute the independent variables. In this way, the green economy perspectives that are effective in the marketing area of the enterprises will be determined.

RESULTS AND DISCUSSION

In this section, the data obtained from the field study conducted with sugar and confectionery industry enterprises operating in Konya province are analyzed. The findings are presented under four subheadings: socio-

demographic characteristics of enterprises, marketing areas, perspectives on green economy, and the effect of marketing areas on green economy attitudes. The data are interpreted with frequency and percentage distributions, and the presentation of the analyses is supported by tables and explanatory texts.

The majority of the managers of the enterprises in the sugar confectionery sector participating in the research are men. When the distribution according to enterprise scale is analyzed, it is seen that the rate of female managers is very low in small and medium-sized enterprises (SMEs), and there are no female managers in large enterprises. Overall, 92.15% of managers are male and only 7.84% are female. This shows that a gender-based imbalance prevails in the sector and that women's representation remains at very low levels. Indeed, a similar situation coincides with studies indicating that women's employment in the food industry is generally limited to lower levels (FAO, 2019; EIGE, 2021; Acar and Ergen, 2021). It is stated that women entrepreneurs are located in service or retail sectors rather than production industries (Arslan and Acar, 2021).

The average age of the participants differs according to the scale of the enterprises. While the average age is 48.17 in micro enterprises, it is 39.76 in medium-sized enterprises and 52 in large-scale enterprises. This distribution reveals that the management of the sector is largely carried out by young and middle-aged individuals.

When the distribution according to education level was examined, it was determined that 42.55% of the managers were primary school graduates, 34.04% were high school graduates, 6.38% were associate degree graduates, 12.76% were bachelor's degree graduates, and 4.25% were master's degree graduates. It was observed that, especially in large-scale enterprises, there were managers with bachelor's and master's degrees, whereas in micro and small-scale enterprises, the basic education level was predominant. This situation shows that the education level tends to increase as the scale of the enterprise increases.

Table 1. Socio-Demographic Characteristics of Sugar and Sugary Products Industry Business Managers

Characteristic	0–9 Employees	10–49 Employees	50–249 Employees	250+ Employees	Total (%)
Gender					
Male (%)	91.66	88.23	100.00	100.00	92.15
Female (%)	8.34	11.76	-	-	7.84
Average Age	48.17	39.76	50.5	52.00	-
Education Level					
Primary School (%)	58.33	23.52	33.33	-	42.55
High School (%)	20.83	47.05	16.66	50.00	34.04
Associate Degree (%)	-	11.76	16.66	-	6.38
Bachelor's Degree (%)	4.16	11.76	33.33	25.00	12.76
Master's Degree (%)	-	5.88	-	25.00	4.25

When we look at the fields of activity of the sugar and sugary products industry enterprises participating in the research, it is seen that most enterprises operate in more than one market (Table 2). 31.37% of the enterprises operate in local, national, and international markets at the same time. This is followed by enterprises operating only in local and national, with 15.68%, national and international, with 15.68%, and local and international, with 11.76%. The rate of enterprises operating only in the local market is 11.76%, the rate of enterprises operating only in the national market is 9.80%, and the rate of enterprises operating only in the international market is 3.92%.

This distribution shows that most of the enterprises in the sugary products sector are not limited to a single market, especially medium and large-sized enterprises operate in multiple markets and tend to wider markets. It is stated that enterprises with a wide marketing area are in a more strategic position in terms of gaining competitive advantage, product differentiation, and branding in foreign markets (Demir and Kılıç, 2022; Güngör and Atesoglu, 2020).

When we look at the employment data, the average personnel is calculated as 5.75 in micro-scale enterprises, 23.47 in small-scale enterprises, 89.33 in medium-scale enterprises, and 305.25 in large-scale enterprises. These data show that especially large-scale enterprises are more advantageous in implementing strategies that require human resources, such as green transformation, foreign trade, and multi-channel marketing (Uçar and Küçük, 2020; Demirtaş, 2023).

Table 2. Fields of Activity of Sugar and Sugary Products Industry Enterprises

Operational Area	0 – 9	%	10–49	%	50–249	%	250 +	%	Total	%
Local	5	83.33	1	16.67	–	–	–	–	6	11.76
National	4	80.00	1	20.00	–	–	–	–	5	9.80
International	2	100.00	–	–	–	–	–	–	2	3.92
Local+National	4	50.00	4	50.00	–	–	–	–	8	15.68
Local+International	3	50.00	3	50.00	–	–	–	–	6	11.76
National+International	3	37.50	3	37.50	2	25.00	–	–	8	15.68
All Market Segments	3	18.75	5	31.25	4	25.00	4	25.00	16	31.37
Total	24	47.06	17	33.33	6	11.76	4	7.84	51	100.00
Number of Employees	–	5.75	–	23.47	–	89.33	–	305.25	–	–

The level of knowledge and attitudes of the enterprises operating in the sugar and sugar-sweetened products sector regarding green economy practices were evaluated by means of explanatory factor analysis (EFA). This analysis revealed which areas the enterprises focus on more by grouping their green economy perspectives approaches.

Table 3. Attitudes of Sugar and Confectionery Industry Managers Towards Green Economy Approaches

Factors	Scale Items		Factor Loadings	Mean	Variance Explained (%)
Waste Management and Recycling	We ensure the recycling of waste generated during production.	1	0.887	2.47	18.263
	We have long-term plans aligned with the zero-waste target.	2	0.823	2.08	
	We ensure the disposal of hazardous waste without harming the environment.	3	0.797	2.06	
	We use packaging materials with high recycling rates.	4	0.725	2.43	
	We develop new methods for the reuse or transformation of waste.	5	0.705	2.98	
	We use recyclable or eco-friendly raw materials in our products.	6	0.475	3.51	
Production Processes and Resource Management	We gain a competitive advantage through green practices.	7	0.817	2	15.511
	Green economy practices reduce our operational costs.	8	0.805	2.37	
	Environmental sensitivity increases our brand value.	9	0.741	3.63	
	We take measures to reduce carbon emissions in our production processes.	10	0.542	3.51	
Corporate Governance and Social Responsibility	We organize training programs to increase our employees' environmental awareness.	11	0.832	2.24	15.497
	We carry out social responsibility projects to raise public environmental awareness.	12	0.806	2.67	
	We benefit from government incentives for environmentally friendly practices.	13	0.635	2.12	
	We have a corporate culture that supports green economy practices.	14	0.598	2.18	
	Environmentally friendly production practices increase customer satisfaction.	15	0.529	2.27	
Environmental Benefits and Firm Performance	Environmental sustainability holds an important place in our corporate strategy.	16	0.778	1.98	13.626
	We make continuous investments to increase energy efficiency.	17	0.720	1.98	
	We implement innovative methods to reduce water consumption.	18	0.645	1.88	
	We use technologies that provide energy savings in production processes.	19	0.563	1.82	
Material and Supply Chain Management	We consider sustainability criteria when selecting suppliers.	20	0.762	1.78	10.102
	We prioritize working with green-certified suppliers.	21	0.750	1.65	
Cumulative Variance Explained					72.999
Kaiser-Meyer-Olkin (KMO) Sampling Adequacy					0.642
Bartlett's Test of Sphericity:					Chi-Square
					df
					p-value

As a result of the analysis, a total of 21 statements were grouped under five factors, and this quintet structure explained 72.999% of the total variance (Table 3). The Kaiser-Meyer-Olkin (KMO) sampling adequacy

coefficient, which was applied to test the suitability of the data before factor analysis, was found to be 0.642; this value indicates that the sample is sufficient for the analysis. In addition, Bartlett's Test of Sphericity was significant (Chi-Square=803,424; sd=210; $p<0.001$), which indicates that there is a significant relationship between the variables and factor analysis is appropriate.

The highest factor loadings were observed in the statements “We recycle the wastes generated during production” (load=0.887) and “We ensure that hazardous wastes are disposed of without harming the environment” (load=0.797). This shows that the sector's most intensive practice in environmentally sensitive production is in the field of waste management.

Considering the mean values, the statements “We use environmentally friendly raw materials in our products” and “We take measures to reduce carbon emissions in our production processes” have relatively high means of 3.51. On the other hand, some statements, such as “We care about working with green-certified suppliers,” have a low mean value of 1.65. This shows that some green practices are still not widespread across the sector.

In this section, the effects of marketing areas of enterprises on their perspectives on the green economy were analyzed with a multiple linear regression model (Table 4). While marketing areas were taken as the dependent variable, the independent variables were the responses of enterprises to five factors related to green economy practices.

According to the results of the analysis, the overall significance of the model was achieved ($F=5.501$; $p<0.01$). The Durbin-Watson coefficient of 1.761 indicates that there is no dependence problem. According to the regression results, only two of the green economy factors of marketing areas were found to be statistically significant: Waste Management and Recycling ($p=0.000$): It is the variable with the strongest and most significant effect ($\beta=0.529$). This shows that businesses emphasize environmentally friendly waste management practices in their marketing strategies and that this area is decisive in achieving competitiveness. Materials and Supply Chain Management ($p=0.014$): It shows a negative and significant effect ($\beta=-0.302$). This suggests that sustainable procurement practices have not yet made a positive contribution to marketing processes or that businesses have not yet achieved sufficient integration in this area. The other three factors (Production Processes and Resource Management, Corporate Governance and Social Responsibility, Environmental Benefits and Firm Performance) did not show a significant effect on the marketing area ($p>0.05$). These findings reveal that waste management is the most direct contributor to marketing success among environmental practices. These findings are consistent with studies in the literature which emphasize the strategic importance of waste management in green marketing. For instance, Youn and Kim (2022) highlight that recycling-oriented practices not only reduce operational costs but also enhance customer loyalty and environmental brand value. Similarly, Martínez (2015) suggests that eco-conscious strategies such as zero-waste initiatives can lead to long-term trust-based customer relationships, ultimately supporting competitive positioning.

Table 4. Results of Regression Analysis Between Marketing Fields and Green Economy Factors

Variables	B	Standard Error	Beta Coefficient	t	Sig.
Constant	2.196	.101		21.652	.000
Waste Management and Recycling	.462	.102	.529	4.508	.000
Production Processes and Resource Management	-.026	.102	-.030	-.252	.802
Corporate Governance and Social Responsibility	-.061	.102	-.070	-.600	.552
Environmental Benefits and Firm Performance	.040	.102	.046	.395	.695
Material and Supply Chain Management	-.263	.102	-.302	-2.570	.014
Durbin-Watson: 1,761 R2: 0,379 df: 5 p<0,01 F: 5,501					

CONCLUSION

In this study, the approaches of sugar and confectionery industry enterprises operating in Konya province towards green economy practices and the effects of these approaches on marketing strategies were examined in detail. The results of the research revealed that the sector has improved in certain areas towards sustainability principles, but there is still limited progress in some areas.

Factor analysis findings show that green economy practices are evaluated by enterprises in five main dimensions: Waste management and recycling, production processes and resource management, corporate governance and social responsibility, environmental benefits and firm performance, and materials and supply chain management. Among these dimensions, waste management practices stand out as the strongest area in terms of both awareness and operational implementation. The recycling of waste generated during production,

zero waste targets, and the use of recyclable materials in packaging materials show that enterprises are aware of environmental responsibility in this area.

On the other hand, the low scores observed in the material and supply chain management factor indicate that enterprises do not make adequate plans for sustainable procurement, and that this issue remains in the background in business policies. The low average value in the statement “We care about working with green certified suppliers” indicates that there are serious gaps in the integration of the supply chain into environmentally friendly practices.

According to the results obtained from the regression analysis, only two dimensions show a significant effect in the relationship between marketing areas and green economy factors. Waste management and recycling are identified as the most important factors that positively affect marketing areas. This finding indicates that environmentally friendly production and waste management strategies contribute to the stronger positioning of enterprises in the market. Materials and supply chain management were the only factors that negatively affected marketing processes. This indicates that deficiencies in this area constitute an obstacle for businesses in terms of market expansion or sustainable branding.

In light of the research results, the following recommendations are presented:

- Waste management practices should be supported, and successful examples should be disseminated in the sector. Technical consultancy and financial incentives should be developed especially for small and medium-sized enterprises.

- Supply chain sustainability should be made a priority policy area for the sector. The accessibility of green certification processes should be increased, and companies should be guided in this regard.

- Government support should be diversified not only for production technologies, but also for organizational sustainability and corporate capacity building.

- Increasing female entrepreneurship and executive representation should be encouraged for social sustainability in the sector. Sectoral support mechanisms should be established in this area where female employment is low.

- Training and awareness programs should be expanded to increase the level of knowledge of business owners on the green economy. In particular, the effects of environmental impacts on firm performance should be explained with concrete data.

In conclusion, there is a need to develop multifaceted, inclusive, and sustainable policies for the sugar and sugar-sweetened products industry to contribute to the environmental transformation process. The findings obtained in the case of Konya province clearly show that this transformation should not only be limited to the environment, but also be a holistic structure that affects marketing, management, and competitive strategies.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

Author Contributions

Gürhan ÖZAYDIN: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; software; writing—original draft; writing—review and editing.

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