

AN INVESTIGATION OF THE CAUSALITY RELATIONSHIP BETWEEN DOMESTIC AND FOREIGN SALES REVENUES AND ADVERTISING AND PROMOTIONAL EXPENSES: TODA YAMAMOTO CAUSALITY ANALYSIS

YURT İÇİ VE YURTDIŞI SATIŞ GELİRLERİ İLE REKLAM VE TANITIM GİDERLERİ
ARASINDAKİ NEDENSELLİK İLİŞKİSİNİN İNCELENMESİ:
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ABSTRACT

This study tries to determine the relationship between domestic and foreign sales and advertising and promotion expenses in terms of causality. In this direction, the research is carried out for one of the leading brands of the white goods sector, which continues its sales activities in the country and abroad. Within the framework of panel data analysis, data on the advertising and promotion expenses and sales of the brand between 2007 and 2020 were used. To the panel analysis result, it was determined that the series were cointegrated. According to the results of the analysis performed by the Toda-Yamamoto causality test, it was found that there was a two-way causality between advertising and promotion expenditures and foreign sales, and a one-way causality relationship between domestic sales and advertising and promotion expenditures.

Keywords: Panel Data, Causality Analysis, Toda Yamamoto, Advertising Promotion Expenses, Domestic and Foreign Sales Revenue

ÖZET

Bu çalışma, reklam, tanıtım ve promosyon giderleri ile yurt içi ve yurt dışı satışlar arasındaki ilişkiyi nedensellik açısından incelenmektedir. Bu doğrultuda araştırma, yurt içinde ve yurt dışında satış faaliyetlerini sürdüren beyaz eşya sektörünün öncü markalarından biri özelinde yapılmaktadır. Panel veri analizi çerçevesinde 2007-2020 yılları arasında markanın reklam, tanıtım ve promosyon giderleri ile satışlarına ait veriler kullanılmıştır. Panel veri analizlerine göre, seriler eşbütünlük olarak belirlenmiştir. Toda- Yamamoto nedensellik testi ile yapılan analiz sonuçlarına göre reklam, tanıtım ve promosyon harcamaları ile yurtdışı satışlar arasında çift yönlü, yurtiçi satışlar arasında tek yönlü nedensellik ilişkisi olduğu belirlenmiştir.

Anahtar Kelimeler: Panel Verileri, Nedensellik Analizi, Toda Yamamoto, Reklam Promosyon Giderleri, Yurtiçi ve Yurtdışı Satış Gelirleri.

INTRODUCTION

Businesses aim to ensure their continuity in the market in the face of ever-changing and increasingly difficult competition conditions with globalization and technology. While trying to maximize their profits, they also try to manage their business functions and the costs incurred correctly to fulfill these functions in order to increase profits (Yazıcı, 2012, p.30).

Sales, marketing and distribution expenses, research and development expenses and general management expenses associated with the main activities of the enterprise have an important place in the operating budgeting (Sevilengül, 2009, p.689). Advertising and promotion expenses, which are a general expense element for marketing and sales activities, are the most visible and least understood marketing expenses. Businesses expect that advertising expenditures contribute to their financial performance by allocating a large part of their resources to advertising (Graham and Frankenberger, 2000, s.149). In some cases, businesses do not fully realize the return of this expense to companies and especially in the most difficult times of the markets, they see it as a share that should be reduced.

The advertising budget of a business is usually included in the sales budget or marketing budget. The money spent on advertising, which is part of sales and marketing activities, is also seen as an investment in developing the business (Inc., 2020).

The marketing function has a key role for meeting consumer expectations, identifying attractive opportunities and evaluating the potential of the business to take advantage that develop around the business strategy. The overlap of the marketing strategies to be developed with the business strategies and the orientation of the marketing mix gives a general view of what the business will do in a particular market. The preparation, execution and success of the advertising campaigns, which are an integral part of the marketing strategy, depend on the selection and cooperation of a good advertising agency (Öçer and Keskin, 1998, p.236).

In the new era, marketers now have to consider the short and long-term financial implications while making suggestions such as "let's advertise on TV, newspaper advertisements are good, advertisements on the internet are very cheap or let's reduce sales team costs". For example, cutting advertising expenses may increase operating profit margin by lowering operating expenses in the short term, but in the long term, the sales and growth of the company will decrease and due to the falling growth, the profitability of the company will decrease. Financial evaluation of marketing decisions gains importance in terms of increasing the decision efficiency of directors and the prestige of marketing (Tuncel, 2013).

The aim of this study is to determine if there is a causality relationship between the advertising expenses, which play a key role in determining the marketing strategy in line with the production and consumption targets of the enterprise, and the sales, that directly affect the achievement of the sustainable profit target of the enterprise. For this purpose, the causality relationship between foreign and domestic sales and advertising and promotion expenses of the determined sample unit was tested with Toda Yamamoto analysis. Although there are many studies in the literature dealing with advertising expenses and its effect on sales, there is no study examining whether there is a causality relationship between these variables. This study, which is unique in this respect, is thought to be important in terms of exports as it examines the relationship with foreign sales.

1. CONCEPTUAL FRAMEWORK

Marketing is the basic business function that provides product and service satisfaction by foreseeing the customer needs of the enterprise and creates customers for the enterprise as a set of activities that try to reach the targets by directing the flow of needs from the producer to the customer. (Perreault et al., 2013, p.6).

The American Marketing Association (2021) defines marketing as an activity; It consists of a set of institutions and processes for developing, presenting, communicating and exchanging recommendations that represent value for customers, buyers, stakeholders and society as a whole. Marketing is characterized as an output-generating function (Simpson and Koper, 1997, p.377) and serves the purpose of generating income. In addition, the financial resources required for the execution of the marketing function can provide the necessary opportunity to present more effective value proposals and increase the degree of success (Öztürk and Dülgeroğlu, 2016, p.138). Business and marketing managers pay attention and importance to advertising, which is one of the important functions of modern marketing (Çabuk and Çabuk, 1995, p.16).

Today, no matter how qualified a product is produced, it does not make sense anymore. First of all, it is important to inform the consumer about the existence of the produced good, then to adopt it and to persuade

the product to buy it. In this area, advertising gains importance as an effective promotion tool for businesses (Koçoğlu and Haşiloğlu, 2008, p.41).

Advertising, which is the most important promotion tool, is used to introduce new products to the market, to increase the purchasing, to create loyalty, to provide information about the company or the product, to maintain the demand level, to reach a wider audience, to correct false and negative impressions, and to educate and inform consumers (Mucuk, 2001, p.209).

Businesses that want to sell in a market that is close to a perfectly competitive environment, now realize that only production is insufficient. In addition to quality and price, they understand the importance of delivering information about the qualities of their products to customers with an effective marketing and advertising. Because advertising has functions such as informing, reminding, persuading, adding value and helping other functions of the organization (Tek, 1999, pp. 725-728).

It creates economic benefits in terms of increasing sales opportunities to advertising businesses and facilitating economic purchases for consumers. Advertising is a communicative initiative that benefits to both the advertiser and the consumer. It is natural that the company expects to benefit from advertisements, which are a commercial action whose cost is covered by the advertiser. For this reason, it is a natural and inevitable result that the advertisement has a sales function (Türkmen, 1996, p.42).

The effect of advertising on sales is significant. In the sales and advertising relationship, which is a two-way process, sales increase advertising and increase in sales causes an increase in income. The increase in sales revenues causes more advertising expenditures and it becomes important for businesses to use their advertising budgets efficiently, and to adjust the relationship between advertising expenditures and sales revenue in the most appropriate way (Koçoğlu and Haşiloğlu, 2008, p.43).

In the market, in order to gain new customers and hold on existing customers, it is suggested that the advertising expenditures made by businesses should be seen as an intangible company-based investment capital (Geyikçi and Mucan, 2016, p.70).

It can be said that the effect of advertising has been examined with at least two comprehensive approaches. The first one focuses on diagnosing each ad's fine-tuned marketing metrics (for example brand awareness, preference, customer satisfaction, loyalty). The second focuses on the evaluation of other marketing metrics (for example market share, sales, profitability, return on investment and firm value) (Mc Alister et al., 2016, p.207).

Kotler and Armstrong (2016, p.486) also stated that advertising results are regularly evaluated in two ways. These ways are the communication effect, the sales and profitability effect. According to the authors, businesses are very good at measuring the communication effect of advertising and advertising campaigns, but they are more difficult to measure the effects on sales and profitability. One of the ways to evaluate the impact of advertising on sales and profitability is to compare past sales and profitability with past advertising expenditures. In this study, this measurement method will be done using panel data analysis.

While marketing activities, carried out with advertising, are performing traditional purposes such as changing customer attitude and increasing sales or market share, also increasing the firm and brand value. Here, it can be said that advertising is an intangible asset that indirectly increases the market value of the business and can bring profit to its investors. Advertising expenditures are not only direct towards the future performance of the company, but also give a positive signal to investors (Altın, 2010, p. 60; Geyikçi and Mucan, 2016, p.71).

Many academic studies reveal that advertising increases sales. According to Sharma and Sharma (2009), advertising expenditures were among the most important factors determining the sales income by increasing the popularity of the product or service. While answering the question of how much advertising expenditure should be made, it was underlined that it depended largely on the nature and size of the industries. When advertising expenses increased, it increased sales performance, and when sales increased, profit also increased (Zia and Shahzad, 2015). Lee et al. (1996), determined that there was a causality relationship in both directions between advertising expenditures and sales, and that the variables were cointegrated. Leach and Reekei (1996), applied Granger causality test in their study and found that advertising expenditures caused changes in sales, but sales didn't cause advertising expenditure at the same time. In some studies about the financial effects of marketing and advertising expenditures; Qureshi (2007), examined the relationship between market value and the advertising expenditures of businesses in the period between 1998-2003, and the results of the research revealed significant relationships between market value and advertising expenditures. According to

the results, it was found that transferring capital to advertising expenditures was appropriate for businesses. Hirschey and Weygandt (1985) stated in their studies that both research and development and advertising expenditures had scientific effects on the market value of the enterprise in the long term and therefore these expenditures could be seen as a kind of intangible capital investment. In a study by Lambin (1976) on the effect of advertising on sales, it was found that brand ads have a significant positive effect on the increase of the existing sales and market share of the brand. Altun (2010) determined that the market value of the company increases as long as the advertising expenditures are used effectively. There was a significant positive relationship between the market value of the company and the advertising expenditure of the company. Geyikçi and Mucan (2016) confirmed that advertising expenditures should be viewed as an intangible investment tool rather than an expense element. They found that advertisement expenses had a high level of impact on net sales and profits. Hüseyini et al. (2016), tried to examine the relationship between advertising and promotional expenditures and foreign sales in the food sector, they found that the series were co-integrated and that advertising and marketing expenditures had a positive and significant effect on foreign sales in the long term.

2. METHODOLOGY and ECONOMETRIC METHOD

In the study, sales indicators and advertising and promotion expenses were used as a data set. The research was examined covers the period of 2007-2020. Arçelik A.Ş., the leader of the white goods industry, was determined as the sample unit of the study. Arçelik A.Ş., today, has 30,000 employees around the World. In more than 130 countries Arçelik offers products and services. It has 18 manufacturing facilities in Turkey, Russia, Romania, South Africa, China, Thailand, Pakistan and 7 other countries, 33 marketing and sales offices and 11 brands (Arçelik, Beko, Altus, Blomberg, Elektrabregenz Arctic, Grundig, Flavel, Leisure, Defyand Dawlance) in 31 countries (Arçelik, 2021). Arçelik A.Ş. which ranks fifth in the rankings among the Turkey's most valuable brands in 2020 (Branding Türkiye, 2021), ranks second in the sector among the first thousand brands in exports in 2019 (Türkiye İhracatçılar Meclisi, 2020). The company's advertising and promotion expenses (APE), foreign sales (FS) and domestic sales (DS) data were obtained from the investor relations section of the brand's website (http://www.arcelikas.com/sayfa/154/Donemsel_Raporlar). The reason why the data was taken on an annual basis was that APE was included in the year-end tables as a separate item since 2007.

Descriptive statistics such as mean, standard error, maximum and minimum values of the variables and the data on the assumption of normality are included in Table 1.

Table 1. Descriptive Statistics

	RTPG	YDS	YIS
Mean	486499.1	10232864	6231085.
Median	381699.0	8024418.	5043999.
Maximum	1084326.	26769945	14102538
Minimum	163863.0	3517057.	3384501.
Std. Dev.	317563.5	7329596.	3103413.
Skewness	0.870337	1.065.219	1.291.656
Kurtosis	2.420.499	2.997.017	3.913.516
Jarque-Bera	1.963.365	2.647.618	4.379.672
Probability	0.374680	0.266120	0.111935

To reveal the causality relationship between APE, DS and FS, Toda-Yamamoto (1995) test was applied in the empirical application part. Series were included in the model by making a logarithmic transformation. The hypotheses tested in the study are as follows;

H₁: There is causality between advertising and promotion expenses and domestic sales.

H₂: There is causality between domestic sales and advertising and promotion expenses.

H₃: There is a causality between advertising and promotion expenses and foreign sales.

H₄: There is a causality between overseas sales and advertising and promotion expenses.

2.1. ADF (Augmented Dickey-Fuller) and PP (Phillips Perron) Unit Root Tests

There is no pre-test before the Toda-Yamamoto test is applied, but in order to obtain the maximum degree of integration, the unit root tests should be applied. For this, ADF and PP tests were applied in the study. According analysis results, it was found that the variables are stationary for the 2nd difference. *lnAPE*, *lnDS* and *lnFS* are determined as the difference stationary variables $I(2)$. The test statistics of the series were found to be lower than the critical values at the 0.01, 0.05 and 0.10 significance levels suggested by MacKinnon (1996). ADF and PP test results supported each other (Table 2).

Table 2. Unit Root Test Results

Level	ADF	PP
LnAPE	0.059176	0.684717
LnDS	2.829954	6.214453
LnFS	1.263852	3.326328
2nd Difference	ADF	PP
LnAPE	-6.820.577	-1.065.719
LnDS	-3.832.873	-4.242.771
LnFS	-4.787.586	-8.685.768

* MacKinnon (1996) one-sided p values

The cointegration relation between the series that are stationary in differences, was examined with Engle-Granger cointegration test and the results are given in Table 3.

Table 3. Cointegration Test Results

	t-Statistic	Probability
Model 1 Augmented Dickey-Fuller test statistic	-3.925894	0.0126
Model 2 Augmented Dickey-Fuller test statistic	-5.837512	0.0009

Since the probability value less than 0.05 in the cointegration test, the null hypothesis "there is no cointegration relationship between the series" was rejected. This showed that the series were cointegrated.

2.2. Determining Lag Length Criteria

The Toda-Yamamoto test is based on the Vector Autoregulation (VAR) model. There is no pre-test condition before the Toda-Yamamoto test is applied but the stagnation levels of the series are important in the establishment of the VAR model. Another important factor is the length of the lag criteria. In this study, the widely preferred Akaike information criterion (AIC) (Akaike, 1974) was used in determining the optimum lag length. In the first model (the relationship between APE and DS), the lag length criteria was determined as 3 (Table 4) and also in the second model (the relationship between APE and FS) the lag length criteria was determined as 3, too (Table 5).

Table 4. Lag Length for Model 1

Lag	LogL	LR	FPE	AIC	SC	HQ
0	2.655019	NA	0.003046	-0.119094	-0.046750	-0.164698
1	28.81407	38.04952*	5.57e-05*	-4.148012	-3.930978*	-4.284821
2	29.26869	0.495958	0.000119	-3.503399	-3.141676	-3.731415
3	36.82719	5.497091	8.58e-05	-4.150399*	-3.643987	-4.469621*

* Lag order selected by criterion.

Table 5. Lag Length for Model 2

Lag	LogL	LR	FPE	AIC	SC	HQ
0	3.491024	NA	0.002617	-0.271095	-0.198751	-0.316698
1	26.01522	32.76246*	9.27e-05*	-3.639130	-3.422097*	-3.775940
2	28.07788	2.250181	0.000148	-3.286888	-2.925165	-3.514903
3	34.19832	4.451225	0.000138	-3.672421*	-3.166009	-3.991643*

* Lag order selected by criterion.

2.3. Toda-Yamamoto Causality Analysis

While establishing the VAR model, which is used to reveal the interactions of mutually related variables, the optimal lag length (k) and the maximum stationarity degree (d_{max}) of the series are determined. After determining the values, the "k + d_{max} " dimension VAR model is set up. The bivariate VAR model estimated by Toda-Yamamoto is defined as follows;

$$Y_t = \varpi + \sum_{i=1}^k \alpha_{1i} X_{t-i} + \sum_{i=1}^k \beta_{1i} Y_{t-i} + \sum_{j=m+1}^{d_{max}} \delta_{1j} X_{t-j} + \sum_{j=m+1}^{d_{max}} \theta_{1j} Y_{t-j} + \varepsilon_{1t}$$

$$X_t = \vartheta + \sum_{i=1}^k \alpha_{2i} X_{t-i} + \sum_{i=1}^k \beta_{2i} Y_{t-i} + \sum_{j=m+1}^{d_{max}} \delta_{2j} X_{t-j} + \sum_{j=m+1}^{d_{max}} \theta_{2j} Y_{t-j} + \varepsilon_{2t}$$

The error terms ε_{1t} and ε_{2t} are assumed to have zero mean and constant covariance matrix. The existence of causality between variables is tested using the modified WALD test statistic by means of hypotheses $H_0 : \alpha_{1i} = 0$ and $H_0 : \alpha_{2i} = 0$, and the hypotheses are rejected if the calculated test statistic χ^2 is greater than the table value (Yenilmez and Erdem, 2018, p.13). The VAR model is set up with $k + d_{max} = 3 + 2 = 5$ lags length criteria.

Table 6.Toda-Yamamoto Causality Test Results

Model 1	Chi-Square	Probability	Result
APE→DS	26.70890	0.000	H0 Rejected
DS→APE	4.653241	0.1990	H0 Accepted
Model 2	Chi-Square	Probability	Result
APE→FS	14.64343	0.0021	H0 Rejected
FS→APE	11.29361	0.0102	H0 Rejected

In the first model where DS was the dependent variable, causality from APE to DS was examined. According to the results of the WALD test, H_0 : "There is no causality between APE and DS" hypothesis was rejected because the p value is less than 0.01. The H_1 hypothesis was accepted, and the existence of causality was revealed. In the second analysis that APE was the dependent variable, H_0 hypothesis (p > 0.05) was accepted and it was concluded that there was no causality relationship. H_2 hypothesis was not accepted.

In the second model, where FS was the dependent variable, causality from APE to FS was examined. H_0 : "There is no causality between APE and FS" hypothesis was rejected (p > 0.05). The H_3 hypothesis was accepted, and the existence of causality was revealed. In the analysis where APE was the dependent variable, the H_0 hypothesis (p < 0.05) was rejected and it was concluded that there was causality from FS to APE. H_4 hypothesis was also accepted.

3. CONCLUSION

Advertising expenses are one of the most important expenditure items of businesses. Considering the contribution of advertisements to business performance, the efficiency of the expenditures made in this direction is also important. Seeing the return of spending on advertisements on the axis of sales increases brand value as well as profitability.

As a marketing communication element that informs consumers about the product and the brand, advertisements offer various advantages in order to create brand awareness, which is one of the important elements of brand value. According to Shah et al. (2009, p.188), advertising and promotions can contribute to increasing brand value, providing new cash flows to the company, increasing consumer loyalty to brand value, ensuring the efficiency of the market and making the brand name more known.

The sales and advertising (ads)relationship is a two-way process. Ads cause increase in sales and increase in sales causes increase in income. The increase in sales revenues leads to higher advertisement spend. The important thing here is that businesses must use their advertising budgets efficiently and adjust the relationship between sales revenue and ads expenditures in the most accurate way(Koçoğlu and Haşiloğlu, 2008, p.43).

In this study, which tried to examine the effectiveness of advertising and promotion expenses in terms of causality, it was determined that there was a bi-directional causality between advertising and promotion expenses and foreign sales, and a unidirectional causality between domestic sales. This result is considered to be important for businesses that want to become a global brand.

Like the sample unit of the study, for many businesses which are operating in the global arena, export is a very important source of income. Exports have many positive effects on businesses and the country's economy. In this respect, foreign sales figures can be considered as an important indicator of profitability. The contribution of exports is gradually increasing in terms of gaining competitive advantage, taking advantage of economies of scale and making technological investments. At this point, determining the factors that will increase foreign sales brings efficiency at micro and macro level to the business. According to the results of the analysis made in the study, similar to Hüseyini et al. (2016), it was determined that there was a two-way causality between advertising and promotion expenses and foreign sales. It was determined that advertising and promotion expenses and foreign sales were cointegrated, that is, they act together. At this point, it can be said that an increase in advertising and marketing expenses positively affects foreign sales and APE is an important factor that will increase FS. Also FS is an important factor that will increase APE. For domestic sales, APE is an important factor that will increase DS.

This study investigated whether there is causality between APE and FS, and APE and DS. Results have been determined that advertising and promotional expenditures are the reason for sales generally. It has been determined that advertising expenditures are important especially in exports for the company examined in the study because a two-way causality was determined with FS. Also, it was underlined that advertising expenditures, which are the reason for the increase in domestic sales, should be seen as an investment.

This result reveals that companies should give importance to advertising and marketing from national to international level and should not consider these expenditures as unnecessary costs. It is recommended to be seen as an investment item that will increase brand awareness and also brand value. Nurcahya (2014), showed that the investments made in advertising increased the awareness level of the consumers towards the brand.

The results of this multidisciplinary study reveal the importance of advertising and promotional items in financial statements. And also it has been observed that advertising, which is the most important tool in raising brand awareness in terms of marketing activities, is not only a communication aspect, but has a positive effect on sales and therefore on profit. Therefore, it can be said that marketing activities especially advertisement and promotion can contribute to both consumer-based and financial-based brand value for businesses.

Although this study was carried out on data belonging to a single company and the period of 2007-2020, it is thought that the data obtained as a result of the analysis may be a guiding research for future studies. The study, which aims to bring a different perspective to both marketing studies and financial analysis, is recommended to evaluate advertising and promotional expenses and marketing expenses in general as a long-term investment rather than as a cost element.

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