

Effect of Packing Cost on The Sales Price and Contribution Margin

Ambalaj Maliyetinin Satış Fiyatı ve Katkı Payına Etkisi

Gülşah ATAĞAN¹, Süleyman YÜKÇÜ²

ABSTRACT

The basic characteristic of packing is to protect the product from external factors while the product is delivering to consumers. However, recently packing has become an indispensable aspect of marketing. Because, packing is considered as a silent dealer which directly reaches consumers. Packing is one of the most important factor of product sales. Consumers assess a product with its packing and make up a purchasing decision accordingly. In addition to its protective function, packing also performs functions such as selling and communication.

Recently, firms have begun attaching great importance on packing investments. A high-quality and attractive packing means expenditure. A firm can increase its sales as much as it creates difference with its packing. Therefore, it is required to take a risk of increasing the packing costs for increasing sales. Increasing packing cost is an important factor of prices. In this study, the relation between the packing cost and price has been researched by making regression analysis.

Keywords: Packing, packing cost, cost-price relation, regression analysis

ÖZET

Ambalajın temel özelliği, içerisine konulan ürünün tüketiciye ulaştırılmasında ürünü dış etkenlerden korumaktır. Ancak son yıllarda ambalaj, pazarlamanın vazgeçilmez bir unsuru haline gelmiştir. Çünkü ambalaj direkt olarak tüketiciye ulaşan sessiz satıcı olarak algılanmaya başlanmıştır. Ambalaj ürünün satışındaki en önemli etkenlerden birisidir. Tüketici ürünü ambalajıyla birlikte değerlendirmekte ve satın alma kararını buna göre vermektedir. Ambalaj koruma fonksiyona ek olarak, satış ve iletişim gibi fonksiyonları da gerçekleştirmektedir.

İşletmeler son yıllarda ambalaj yatırımlarına çok önem vermeye başlamışlardır. Kaliteli ve dikkat çekici bir ambalaj demek maliyet demektir. İşletme ambalajıyla fark yaratabildiği sürece satışı arttırılabilmektedir. Bu nedenle satışı arttırmak için ambalaj maliyetlerinin de artmasını göze almak gerekmektedir. Artan ambalaj maliyetleri fiyat üzerinde de etkili bir unsurdur. Çalışmada regresyon analizi yapılarak ambalaj maliyeti ve fiyat arasındaki ilişki araştırılmıştır.

Anahtar Kelimeler: Ambalaj, ambalaj maliyeti, maliyet-fiyat ilişkisi, regresyon analizi

1. INTRODUCTION

In marketing literature, packing is an indispensable part of product and brand. Packing is mostly considered as a part of process of purchasing and consuming, while it is not directly related with the components of a product but it is extremely important for the basic function of it.

Packing is a very important issue in local and international business life. In an extreme competition environment, manufacturing firms try improving the quality and package design of the products.

Commercial success of a product can be considered, if a package provides contribution to the sales of a product. In other words, commercial success of a product is based on whether its package

can sell it or not. A well-designed package should provide that the consumer purchases that product again, stops that product among other products and thinks he/she gets his/her money's worth. Naturally, neither a good package with a bad product nor a quality product with a bad package can increase sales. However, when same products are compared, packing plays a distinctive role by creating difference among other products.

Sales function of packing also brings up the sales price issue. Consumers are willing to pay higher prices for a package designed differently and creating difference. In this case, a firm can determine a higher sales price by bearing higher packing costs and position its products better in the eyes of its consumers through its packing.

¹ Res. Ass. Phd., Dokuz Eylül University, Faculty of Economics and Administrative Sciences, Department of Business Administration, gulsah.ugurluel@deu.edu.tr

² Prof., Dokuz Eylül University, Faculty of Economics and Administrative Sciences, Department of Business Administration, suleyman.yukcu@deu.edu.tr

2. LITERATURE REVIEW

2.1. Packing Concept

Packing is materials protect the product against external factors from the place of production to the end-consumer while promoting the product. (Gokalp,2007:80)

Packing should provide protection, presentation and promotion of the product economically and environmentally-sensitive throughout the life cycle of it. The packing of a product should comply with its characteristics. Products with various characteristics require various packing and handling conditions. For instance, food materials, chemicals, fluid and hazardous materials and etc. require different practices. (Bo Rundh, 2009).

Several characteristics of a product change the formation of a package. For example;

- Fragility,
- Durability,
- Sensitivity to humidity,
- Sensitivity to temperature,
- Reaction to chemicals,
- Shelf life,
- Monetary value.

It is possible to preserve the quality of a product until it is delivered to the consumer only by a quality packing. For the consumers, products are not only purchased for their functional characteristics, they also reflect symbolic meanings. Therefore, packing plays a very important role for purchasing behavior and creating brand awareness.

2.2. Functions of Packing

Packing has several basic functions as well as safe transfer of the productions through the distribution chain.

- Protective Function: The task of protecting the products from light, damp, air and etc. conditions until it is delivered to the end-consumer is performed by the packing. The contents of a package is very important while fulfilling its protective function. For instance, raw material, recycling and environmental sensitivity of the package and etc. If, pure quality raw materials are used for packages, this can cause a side effect on the prices due to its influence on the expenses of the firm. (Lockamy, 1995)

Some products can harm consumers in case of misuse due to their characteristics. For instance, some cleaning materials should be kept away from children. Therefore, they have a special opening system. However, several firms avoid special packing applications due to high costs.

- Sales Function: Packing has an important effect on purchasing decision of consumer. Especially, packing has great impact on unplanned purchases. The consumers are firstly attracted to packages and therefore packing is one of the most important issues of sales. That's why, packing is called as "the silent dealer". (Ampuero, Vila, 2006) Consumers can decide to buy a product which they do not consider buying or do not know anything about only by considering information provided by its package.

Packing plays a very influential role in remembering and repurchasing a particular product.

On the other hand, some packages are designed in accordance with luxurious consumer requirements. Firm aims to impress consumers by this way and these packages are considered statute symbols of firms. Packages of perfumes, cosmetics, knickknacks, watches and jewelries can be given as examples.

- Communication Function: Packing reflects positive or negative ideas to consumers. Packing promotes the brand and product to consumers. Relation between the product and consumer is based on instruction characteristic of its package. (Ayar, 2008)

- Convenience Function: Convenience function of packing is another aspect influences purchasing choice of consumers. Although, the characteristics of a package such as, opening, closing, storing, handling and etc. are considered as small details, they are extremely important for consumers.

For decreasing costs, some firms do not pay sufficient attention on package design and do not understand the importance of packages for consumers. However, consumers may prefer a convenient product even if it is expensive. Packing has direct impact on sales.

Simply, packing should not impede consumers. For instance, a liquid oil package to be used for a long term should be handled conveniently and the consumer should able to pour the product without splashing it. (Rundh, 2009)

2.3. The Technical Characteristics of Packing

The technical characteristics of packages vary in

accordance with the products they contain. Materials with various characteristics are used in packing. (Adapted from Ince, 2010).

Table 1: Packing Types and Fields of Use

Material Types	Way of Use
Paper and Cardboard	Cardboard boxes Fiber boxes Fiber barrels Bags and cases Tubes and spirals
Metal	Aluminum foils and labels Metal boxes Barrels, kegs Covers Press tubes Cages Metal stripes, columns and bands
Glass	Bottles Jars Syringes Glass containers Bulbs
Plastic (including cellulose and rubber)	Bags and sacks Boxes and kegs Buffers and filling materials Films, layers and plates Molded bottles Heat-treated trays, containers and bubble wraps
Wood (including plywood)	Boxes Cages Baskets Pallets and containers Wood wool
Textile	Bailing materials Bags and sacks

Various kinds of packages are required for products with different characteristics. Protection method varies in accordance with the product characteristics. For instance; very sensitive products should be kept distant from the packing wall. Therefore, shock-absorbers are required for minimizing vibration. Products with chemical reaction possibility should be also put in such kind of special packages.

There are several reasons for preferring packages with different kinds and materials. These can be listed as below. (Ince, 2010)

- Paper and Cardboard: It is among the ones among the first rank because, it is cheap and easy to process paper.

- Metal: Tin and aluminum are used for manufacturing metal packages. The most common field where tin is used is canning. Use of aluminum boxes have been gradually increasing because they are easy to use, weigh light, do not need any paint, suitable for heating and disposable.

- Wood: Wood packages are preferred because they can be used more than once and they are cheap. Wood packages as environmental friendly packages have been drawing quite attention recently, since environmental problems have been considered important.

- Glass bottles and jars: Usually, delicate food products are put in glass jars. It is not possible to change them with other packing materials. Glass bottles and jars are preferred because it is possible to use them for storing other products by washing them.

- Plastic Packages: They are used extensively in packing because they are light, suitable for coloring and labeling and they are cheap.

2.4. Influence of Packing on Purchasing Behavior of Consumers

Recently, manufacturers and customers have various expectations from packing such as delivering products to consumers, increasing sales and post-usage phases. Packing should have characteristics for

facilitating storing, keeping and usage of products. Therefore, the phases of a product to be presented to the market from its activities in the sales channels, exhibition at the sales points and how it is stored and consumed by the consumers should be taken into consideration. (Aydar, 2010)

Today, while buying a product, consumers directly come up against packing rather than salespersons because of supermarkets and hypermarkets which are gradually increasing in number. Therefore, packing has great influence on purchasing behavior of consumers.

Packing has direct contribution to sales through that characteristic. Information on a packing enables consumers compare different products. Packing gives good visual image to products and ensures that product is distinguished from competitors' products through different presentation techniques and methods.

Packing is the last point of manufacturers for convincing consumers before consumers make the purchasing decision. An efficient packing should have some particular characteristics. It is possible to list them as in the following. (Wells et al.2007, Rundh,2009)

- Physical Characteristics
- Protecting product quality,
- Product improvement characteristics
- Product information
- Usage efficiency,
- Mechanical characteristics,
- Storing characteristics,
- Transportation specifications,
- Compatibility for trading,
- Recycling specifications.

Packing has four basic characteristics in accordance with "the View Model" used firstly by Mr. Dik Warren Twedt. (Yildiz, 2010)

1. Visibility: It is a characteristic of packing which attracts the attention of consumers at the sales point. For instance; packages with creative and eccentric design and shiny colors.

2. Information: This is the information on the packages. For instance; benefits of the product, its contents, directions and etc.

3. Emotional Appeal: It is the effort of package for creating appeal on consumers. For instance;

creating happiness, elegancy and etc. emotions on consumers.

4. Workability: Packing covers very different workability issues. For instance; protection, storing, keeping, convenience and etc.

From an administrative point of view, issues such as form, design and optimum size of a package vary in accordance with the place where the firm desires to position its product. In this case, certainly, parking has strategic importance for marketing karma and positioning. (Ampuero, Vila, 2006)

Consumers see and react the structure, brand, colors, words, graphical style and form. Therefore, packing investments have been gradually increasing and packing budgeting becomes more and more important for firms. (Meyers and Lubnier, 2004)

2.5. Effect of Packing Costs on Products

Although, packing is an issue affecting sales, it also has an cost-increasing effect. The place of packing cost in total cost is very changeable. Characteristics of the product are also an important factor on that cost.

Any product or good can be sold without packing. Unpacked products are cost-advantageous than the packed ones. Because, they cost low. Unpack products are called as "bulk". Bulk oil, bulk cement, bulk olives, bulk wheat, bulk bait and etc. However, goods or products acquire qualification by packing. Packing costs can be divided into two groups for costing studies.

2.5.1. Returnable Packages

Such packages are delivered to consumers with the products. Particular amount of deposit for the package is collected from consumers as well as the product price. After, consumer empties that package, returns it to the seller and consumer is reimbursed his/her deposit. Large industrial containers, bottles of alcoholic and non-alcoholic beverages are among them.

In this practice, it is important how the cost of that package material affects the cost of the manufactured and/or sold product.

When, this packing is purchased, it will be required to activate it as an "Other Tangible Asset" and allocate depreciation for them throughout their life cycle. In the meantime, the deposit collection and refund activities will be continued as products are sold and packages are returned.

While, allocating the cost of packing and reflecting on the product manufactured by allocating depreciation; the factory overhead account becomes debtor while the accumulated depreciation account becomes the debtee.

2.5.2. Nonreturnable Packages

Nonreturnable packages are delivered to consumers with the products. They are not taken back. Packing cost is inside the sales price of the product and no additional packing price or deposit is collected.

Nonreturnable packages should be considered in two groups. Low-cost packages and high-cost packages:

• Low-Cost Packages

Low-cost packages are cheap packages which are usually manufactured from paper and nylon. For instance; legume packages.

Because, any legume is put in simple and cheap packing such as nylon and paper, cost of packing material should be reflected on the manufactured product.

When the packing material is purchased, it is monitored in the stock account and when it is used, the cost of it is reflected on the cost of manufactured product through the factory overhead account. The cost of packing is so low or causes minimum difference between the products that it may not be required to consider packing cost as the first direct article or material cost.

• High-Cost Packages

Packing of some products are high-cost. Even, they are so high-cost that sometimes the cost of these packages may be higher than the products they pack. For instance, packing of potable water, long life milk and fruit juices and etc. As the same, packing cost of luxurious alcoholic drinks, perfumes and cosmetic products with brand value, wine and various oils can be more valuable than the cost of these products. Packing costs of these products can be very high for some products while can be very low for some.

For instance; alcoholic drinks or perfumes can be sold in simple plastic, tin or glass packages, same products can also be sold in stoneware, decorative glass, metal and antique-looking packages. Shortly, while it is possible to sell the same product in packages worth 1 TRY, it can also be sold in packages worth 100 TRY.

Therefore, packing cost can directly affect the sales price and profitability of that product. Because of that, it is advantageous to follow such kind of packing costs through the raw material and material costs account rather than factory overhead account. Thus, each packing cost will affect the cost of its product.

Sometimes, it is seen that some implementers do not accept to follow packing costs through the raw material and material costs account (such as raw materials and etc.). However, it is the only way out to consider the packing material costs as the raw material and material costs in order to reflect the costs of a valuable packing material and various packing materials correctly on the costs of the products. Such kind of materials should not be taken into consideration as factory overhead. Because, they have direct and excessive influence on the product costs.

2.6. Packing and Environmental Pollution Returnable Packing Practice

The relation of packing with the environment is very close. A recyclable packing is closely related with economical usage of natural sources. The first condition of leaving a healthy world to our children is to recycle packages.

Many people gather in several social organizations (concerts, festivals, meetings and etc.). They consume packed goods. After a while, when the organization field is empty, only the debris of packing materials are left behind. Nylon, glass, plastic bottles and cardboard boxes.

In some western countries, after such organizations, packing materials also leave the field as well as people. No packing wastes are left behind. The reason is not the cultured people or people with higher education. The reason is the system established for recycling of packages. It is the deposit system.

The ones who purchases packed water, beer, wine, non-alcoholic drinks and etc. also pays approximately 25 cents of deposit. When, the empty package is returned, 25 cents are refunded. The people who do not want to lose 25 cents, do not throw those packages in the festival or concert field, they go to the closest recycle bin station and take their 25 cents back. 25 cents is an income approximately corresponds to 62 Turkish cents. The person who does not care 62 cents loss for throwing empty beer bottles or anything, causes environmental pollution.

But, even if, this person throws that bottle, there are several recycling volunteers who want to collect and return these bottles for recycling.

In some countries, the lower parts of trees and bushes on riverbeds are full of package wastes. The coasts of seas and lakes which are closed to any current are same. Only way to avoid that package pollution is returnable package practice. In some countries, such pollution is not seen. Even, winds cannot carry any package wastes to waters. Because, there is not any package waste for wind to carry because of the deposit system.

If, there is not a deposit system, glass packages are not sent to recycling and they are left broken. When, someone steps on that, severe health problems arise. Famous USA tennis player Mrs. Serena Williams have been kept away from tennis for a long time, just because she had stepped on a glass package waste.

2.7. Relationship Between The Package Cost and Price

Many firms develop their package designs for improving both their competitiveness and product quality. Some firms are quite conservative and overprotective about their package designs. And this situation causes high material and transportation costs. Package designers are looking for different ways to design packages for providing minimum cost and high profitability while protecting the product from environmental impacts. Packing costs can be decreased by redesigning the product and the logistic system. For instance; transporting more products at once decreases the loading-unloading and transportation expenses. At the design phase, product designers do not always consider how the product will be transported. Actually, a small design change decreases the packing costs and protects the product more.

Tarnek suggest that a protective packing and planned transportation plan can decrease the loss and damage up to 75%. New packing technologies provide competitive advantages in the markets. Packing technology has begun creating competitive advantage also in the logistic process. Packing costs, technological developments and environmental effects show that packing decisions are an extremely strategic issue for firms. (Lockamy III, 1995)

The packing costs vary in accordance with the type, production process and technical applications of packing material. In some cases, it is required to increase the packing costs for increasing sales. Especially, quality and specifications of the packages to be used in storing and transportation are intended for preventing any damage on products. Insufficient packing can increase costs much more, because it will cause damages and losses.

Packing is an important factor on price, because it will increase the total cost of a product. There may be different target markets for the same product and this means consumers with different characteristics. This diversity creates a different package and different packing cost for each market. Therefore, the cost differences arise from the different packages from the same product. This influences the price.

The firms bear different costs for different packages of the same product and determine a different price for each product. Based on the effect of packing on consumers, consumers accept paying more money. When, packing is used properly and efficiently, it creates an increasing impact on sales. Price is one of the most effective issues of a purchasing decision. Price is used as an instrument by the firms for creating product image. Firms can adjust the price through a certain number of changes to be made on packing. It is possible to list these changes as below: . (Boone, Kutz, 1998, Kocamanlar, 2008)

1. Decreasing the product amount without changing its package.
2. Increasing the price by enlarging the package.
3. Increasing the price by making the package smaller.
4. Decreasing the price by enlarging the package.
5. Decreasing the product amount by enlarging its package.
6. Lowering the package, amount and the price.
7. Changing only the package without making any changes on the product.

In a research, it is observed that some firms can increase their sales by making changes on packages. These sales increases can be seen below.

Table 2: Effect of Package Renewal on Sales (adapted from Firat, 2005).

The Name of the Company	Brand	Date of the Change	Effect of Package Change on Sales
BANVIT	Banvit Jumbo Sausage	2004	44% increase in the sales
DANONE	Danone Natural Yogurt	2003	30% increase in 2 months
DANONE	Danette	2003	2,5 times increase in the first months
DİMES	Dimes Fruit Juice	2003	100% increase in sales in a year
EVYAP	Arko Men Care Products	2003	Market share of the firm has increased from 33% to 44%.
FİLİZ	Filiz Macaroni	2003	13% increase in sales in a year.
FRİTOLAY	Cheetos	2002	117% increase in the sales
PINAR	Pinar Doyum Sausage	2004	40% tonnage based increase in sales.
PINAR	Pinar Light White Cheese	2004	47% increase in sales in 2 months.
TİBET GIDA	Kenton	2004	20% increase in the sales turnover of the firm in a year.

3. RESEARCH ON THE RELATIONSHIP OF SALES PRICE, PACKING COST AND OTHER COST ISSUES

3.1. Purpose of the Research

Today, the importance of packing as the fifth (P) and the silent dealer of marketing has been gradually increasing. In this case, firms should be more careful about packing. However, a high-quality and attractive package is an important cost item for a firm. Packing cost is very inconsistent and the characteristics of the product are also effective on that cost. Certainly, there are several factors for determining the sales price of a product, but one of the most important item is packing. If, it is considered that firms determine the sales price as a value to meet the costs, the sales price can vary in accordance with the packing cost. Packing cost affecting the sales price also has an impact on the contribution margin. The contribution of a price with increased sales price increases that much. Consequently, packing cost affects both the sales price and the contribution margin. In this study, it has been tried to determine the impacts of packing cost on the sales price and the contribution margin.

3.2. Precondition of The Research

The sales price information of all product of a firm is required in order to do such a research. This information is the information which can be acquired easily. Also, the cost accounting data of each product such as packing costs, raw material costs, direct labor costs, factory overhead and total production costs and etc. are required. Acquiring such data on products base is based on establishing and operating a good cost accounting system in that firm. Healthy and correct information can only be acquired through such a research.

3.3. Analysis Method of The Research

The costs and sales price data of an olive oil firm have been analyzed by SPSS 14.00 statistical data analysis packaged software. Correlation analysis for measuring relations between variables and the regression analysis for determining the direct and indirect effect between the total sales value (dependent variable), contribution margin (dependent variable), packing cost (independent variable), total factory overhead (independent variable), direct material cost (independent variable) and direct labor cost (independent variable) have been performed.

3.4. Contribution Margin Concept

The contribution margin concept is applied in that research. This concept is a notion which is frequently applied by firm for making their strategic decisions. It is important. However, the accounting departments of firms do not make time for "the contribution margin concept" because they struggle for "the tax concept". Contribution margin is the difference between the costs varying in accordance with the sales price. (Contribution Margin = Sales Price – Variable Costs) (Yukcu, 2007) It is desired to be high for all products. Contribution margin provides contribution for meeting fixed costs and generating incomes for firms. The contribution margin rate is calculated by (Contribution Margin Rate = Contribution Margin/Sales) formula.

3.5. Data Analysis and Evaluating the Analysis Results

The main hypotheses of the research are as (H₁) "Packing cost is the most important variable affecting sales price" and (H₂) "Packing cost is the most important variable affecting the contribution margin". The regression analysis performed in the frame of these hypotheses, the dependent variable supporting the hypotheses and the effects of the

independent variables affecting the dependent variable have been taken into consideration.

Correlation between the dependent variable and the independent variables are represented by R value. According to this, if this value is higher, it means there is a close relation between the dependent variable and the independent variables. R2 value which is also expressed as the determination factor shows how many percent of the variance (change) on the dependent variable is expressed by the independent variables. In H_1 hypotheses, R2 value of the model is a high value as 90%. In other words, 90% of the dependent variable of the model is described by the explanatory variables of the model. Although, there is a close relation between the packing cost and the sales price, the relation between the sales price and

raw material of the product is not so strong. In H' hypotheses, R2 value of the model is 87%. 87% of the dependent variable of the model is described by the explanatory variables of the model. There is a strong relation between the packing cost and contribution margin. As in H_1 hypothesis, the relation between the sales price and raw material of the product is not so strong. In H_2 hypothesis, no relation between the Direct Labor and Contribution Margin has been determined.

According to the analysis results, a particular rate of increase in the independent variables causes a particular rate of raise on the dependent variables of "the sales price" and "the contribution margin".

H_1 : Packing cost is the most important variable affecting the sales price.

Table 3: Relation Between The Packing Cost and Another Cost Factors.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	10,425	8,642		3,156	,000
Packing Cost	1,251	,075	,319	5,824	,000
Factory Overhaed	,005	,046	,122	3,229	,000
Direct Material	1,070	,081	,217	4,382	,000
Direct Labor	,086	,059	,118	3,863	,002

H_2 : Packing cost is the most important variable affecting the contribution margin.

Table 4: Relation Between The Contribution Margin and Another Cost Factors.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	,774	,250		3,120	,000
Packing Cost	,540	,080	,377	6,254	,000
Factory Overhaed	,108	,053	,117	1,728	,000
Direct Material	,420	,071	,261	4,334	,000

4. RESULT

Recently, packing has become a strong marketing instrument especially by development of the retail sector. Packing promotes the brand and product to consumers. The quality evaluation of a product is done according to its package. The consumers consider if a package is high quality, the product in it is also high quality. However, if a package symbolizes low-quality, the product does not have the sufficient quality. The final factor affecting the purchasing behavior of consumers is packing. Packing is the last change for the manufacturers to sell their products.

However, packing is a serious cost item for the manufacturers.

Because, packing is a factor affecting costs, it also causes price increase of the product. The manufacturers will bear the additional costs of packing. And if these costs can provide the desired advantages by reflecting on prices, it will not cause any problem. However, packing should fulfill all its functions for consumers willing to pay a high price.

Packing causes price increase, because it causes extra costs. Sometime, the investments on packing is more than the advertising activities, consequently,

packing is an important factor for the manufacturers to determine price.

The product with increased sales price also has impact on the total contribution margin. In this case, increasing packing cost causes increases both on the total sales value and the total contribution margin.

According to the results of the regression analysis applied in that study; it has been determined that there is a linear relation between the Sales Price and Contribution Margin dependent variables and the

Direct Labor, Direct Material, Factory Overhead and Packing Cost independent variables. It has been determined that the closest relation among the independent variables is between the packing cost.

The closeness of relation between the contribution margin and sales price shows how the packing cost is important for profitability. Attention to packing is very important for high price.

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