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## Innovative Approaches to the Management of Commercial and Economic Activities of Environmental Enterprise - “Spicy Pack”

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### Abstract:

The comparison of eco-friendliness of paper packaging materials from wood and alternative raw materials (straw, fallen leaves, etc.) with polyethylene packaging was made. The analysis was conducted according to the following criteria: consumption of raw materials, electricity, rubbish formation, and price of selling products. Advantages and drawbacks of each raw material type were characterized. It has been mentioned that polymers make a considerable and increasing part in

manufacturing packaging materials. The prospects of producing paper bags from leaves and their sales prices were analyzed. The terms of degradation of packages made from different materials were analyzed. The conclusion has been made that paper from fallen leaves is not cheap, but it is important considering its environmental safety.

SWOT analysis of "Spicy pack" enterprise's activity was analyzed (it will be engaged in manufacturing spicy packages for food products from innovative raw materials). The expediency of making spicy packages for food products was substantiated. In particular, "Spicy pack" logo consisting of only eco-paper (made from fallen leaves) and spices was suggested. Such packaging will help prolong 4 times food products' suitability.

Such spices as cloves, rosemary, oregano, curcuma, and sage having antiseptic properties will be added to packages and napkins. These products will be reused for two-three weeks, then spices vanish, and the paper can be processed.

**Keywords:** paper packaging material from fallen leaves; polyethylene packaging materials; Spicy pack; ecology; consumer advantages.

**JEL Classification:** Q23; Q32; Q57.

## Introduction

The whole world has long been actively fighting environmental pollution with plastic bags. Polymers are considerable and increasing components in the production of packaging materials. Their using has a negative impact on the environment. It is connected with the fact that these materials are mainly produced from non-renewable raw materials such as oil and gases (Gorb 2018). The reserves of these raw materials are being noticeably depleted, so the need arises to use packaging, which would be made from naturally renewable sources of raw materials: trees, plants, etc. Besides, an important factor influencing environmental deterioration is a slow rate of polymeric materials waste assimilation during production and after using (Assessment 2020).

The threat is not polymer tare itself, but its uncontrolled spreading. Its cheapness contributes to the fact that each product in shops can be packed in a separate package, which is immediately thrown away at home. And as a result of absence of separate rubbish collection, these packages are taken to domestic waste landfill. Paper bags are alternative to polyethylene bags (Yasnolob 2018). One of the problems is that people are not ready to switch over to paper packaging. It is very difficult to give up comfort, convenience and reliability of plastic bags (Gasanova 2018).

## 1. Research Background

A significant number of studies is devoted to the issues of producing paper and polyethylene packaging by such experts and scientists as: Gasanova A. E., Kidik M. I. (Gasanova, 2018) – studied consumer advantages of plastic and paper bags; Kashpurovych H. O., Stelmakhovych H. D. (Kashpurovych, 2017) – analyzed environmental aspects of using packaging and goods; Syrokhman I.V., Zavhorodnia V. M. (Syrokhman, 2003) – conducted commodity research of packaging materials; Frechka V. (Frechka, 2008) – the inventor of technology of manufacturing paper from fallen leaves, and others. The scholars investigated the state and possibilities of the raw materials base used by commercial enterprises for food packaging, but the necessity of applying the latest innovative technologies for manufacturing paper packaging products is insufficiently substantiated in the papers.

Purpose of the article is to identify consumer preferences and analyze the prospects of replacing plastic bags with paper ones; to conduct the comparative characteristic of producing packaging from polyethylene and paper; to justify the expediency of making spicy packaging for food products.

## 2. Methodology

The system of general scientific and special research methods became the theoretical and methodological study basis, namely: while determining the expediency of producing paper from alternative raw materials (fallen leaves, straw, etc.), the comparison method was used, as a method of cognition, consisting in comparing objects that are homogeneous in essential signs, peculiar for such consideration, by which their qualitative and quantitative properties are manifested; dialectical method of scientific cognition – to analyze environmental situation connected with throwing away packages; analysis and synthesis – to clear up essential characteristics during establishing the similarity of paper production from different raw materials according to determined signs; semantic methods – to specify notion and category apparatus; composition method – to determine the expediency of manufacturing "Spicy pack"; methods of economic and statistical analysis – to define price policy concerning the packaging; functional analysis – to determine functional relations. Generalization method was used to formulate conclusions.

### 3. Results and Discussion

The topic of environmental consciousness and responsible consumption is becoming very popular.

In the European Union, there are instructions, which identify disposable plastic products as the most polluting. In 2021, the ban on selling any disposable plastic table-wear will be put in action. This means that it will no longer be possible to buy plastic plates, tableware, sticks for mixing sugar, drinking tubes, cotton swabs, bags, balloon sticks and some food containers in the European Union. Also by 2029, Europe plans to collect 90% of used plastic bottles for recycling. Since 2019, shops in the EU have been banned from distributing plastic bags free, so many consumers have switched over to paper and reusable bags (Strength 2017).

The purpose of packaging is to attract person's attention and at the same time make him (her) trust in what is inside. Packaging is everything that is not a commodity. The role of each component is very important. To get acquainted with product and help to quickly make a decision to buy it is the task performed by packaging, simultaneously hiding and demonstrating the product (Yasnolob 2019).

Packing materials play an important role in forming the assortment of goods, their image, provision, and preservation in the process of promotion. The market dictates gradual development of industry and agriculture in the direction of producing high-quality goods in reliable packaging. Modern effective and attractive packaging has been transformed into active market tool. Consumers react quickly to package functions, in particular its convenience in using, attractive design, shape, color, and information available on the package (Syrokhman 2003). Packaging facilitates rapid assimilation of new markets by well-known products and provides visual cognition through design, color, logo, and so on. In recent years, there has been observed intensive development of the market of packaging materials, packaging technologies, as well as tare and packaging. Following the development of machinery and technology for obtaining packing materials, the functions of packaging are expanding. In addition to creating inert barrier between products and the environment, packaging is more actively being transformed into manufacturing operation. With its help it is possible to regulate the temperature of heating food products in microwave ovens, form the optimal gaseous environment inside the package, and change product composition (Assessment 2019). The degradation period of polyethylene is 200 years (Table 1).

Table 1. Degradation period of packages from different material

Substances	Degradation time
Paper	3-4 weeks
Natural fabrics	3 months
Cans	400-500 years
Plastic	200-1 million years

Source: (Kashpurovych 2017)

Composted packages are rational. They are made of organic material – plant, animal, microbiological, or other. Such packages are subjected to aerobic biodegradation to carbon dioxide, water, mineral salts and biomass as a result of microorganisms' biological activity in oxygen-rich environment, and to anaerobic biodegradation to carbon dioxide, methane, mineral salts and biomass in the environment with limited access to oxygen.

But all packages have different properties and elimination period. In order to prolong 4 times food products' suitability, reduce the amount of food waste (which at present, according to the UN estimations, accounts for about a quarter of the world food supplies), improve the environmental condition and support the trend of responsible consumption, we offer:

- to make paper according to innovative technologies;
- to manufacture spicy packaging for food products, which will consist only of eco-paper and spices and will help prolong 4 times products' suitability.

SWOT-analysis enables to formulate and specify the purposes and tasks of "Spicy pack" enterprise (it will be engaged in producing spicy packages from innovative raw materials) and determine business strategy (Table 2).

Some experts point out that ten times more material is necessary for making one standard paper bag than for the same plastic one. Thus, more resources are consumed and a so-called "carbon trace" appears, or carbon emissions into the atmosphere as a result of product manufacturing (Syrokhman 2003).

If all packages are made of raw pulp, this will create a significant load on forests. Therefore, the mission of scientists is to find a solution to make products not from wood pulp but using alternative materials. The characteristics of ecological safety of different package types are presented in Table 3.

Table 2. Matrix of SWOT-analysis of "Spicy pack" enterprise activity

Indicator	Opportunities 1. Lack of competition 2. The raising of ecological consumption culture and environmental consciousness among consumers 3. Support from the Government and legislation	Threats 1. Unstable political and economic situation 2. Variability of consumer needs
Strengths of the enterprise 1. Innovative, unique product 2. Not complicated production cycle 3. Environmentally friendly and organic product 4. Opportunity for employment of socially disadvantaged groups	1. Creating a unique innovative product, which satisfies public interest in environmental issues 2. Profitable and universal assortment of products due to simple production infrastructure 3. Employment of socially disadvantaged groups	1. Providing stable high-quality products 2. Promotion of new brand and maintaining recognition
Weaknesses of enterprise 1. Complicated system of sales organization 2. Not regulated system of stimulating buyers 3. High level of risk of innovative product manufacturing	1. Increasing sales volumes through active promotion and advertising of the product 2. Additional stimulation and motivation of buyers, development of their ecological consciousness 3. Entry into new market with the innovative product	1. Searching for investors in the national and foreign capital markets

Source: composed by the authors

Table 3. Ecological safety characteristics of different package types

Indicator	Package		
	polyethylene	paper	
		of wood	from fallen leaves, straw fiber, lawn grass, sugar cane
Consumption of raw materials	5.4% of the extracted oil is used for manufacturing all types of polymers, and only 3.6% of this amount – for producing all polymer packaging	28% of annual wood consumption is used for manufacturing packing materials, including paper bags	Is in testing mode
Electricity consumption	Only 18% of energy required to produce a paper bag is used in for manufacturing a plastic bag	Energy consumption at producing paper tare makes about 20% of world energy consumption	Energy consumption at producing paper containers makes about 80% of energy required for manufacturing paper-bags from wood
Rubbish formation	Makes up 80% of rubbish	Makes up 20% of rubbish	Makes up 5% of rubbish
Price, €	0.5	1.0	1.5

Source: supplemented by the authors according to the data (Gasanova, 2018).

But, mostly, people choose more reliable polyethylene, which is cheaper than its competitive material. It was the lower price, which became the decisive argument for the choice. Most people do not want to use paper bags, but there is a part of the society that is not indifferent to the environmental problem of littering with plastic bags. Organizations and enterprises, implementing various environmental measures, are included here. Some shops have already started introducing environmental programs, one of the main directions of which is using safe packaging, which involves a gradual transition from plastic bags to paper ones. Therefore, bakery products, confectionery and sausages, cheeses, tea, and coffee are packed only in paper bags in these shops. Thus, introducing paper tare can arouse interest to using safe packaging made from natural raw materials (Yasnolob 2018).

Paper made exclusively from fallen leaves is not cheap, but it is important for environmental issues.

1.7 kg of leaves is required to extract pure cellulose. 1 ton of pulp is obtained from 1.681 tons of leaves, which gives 20 thousand sheets of A4 paper. 20 thousand sheets are 40 packages of 50 sheets in each, which



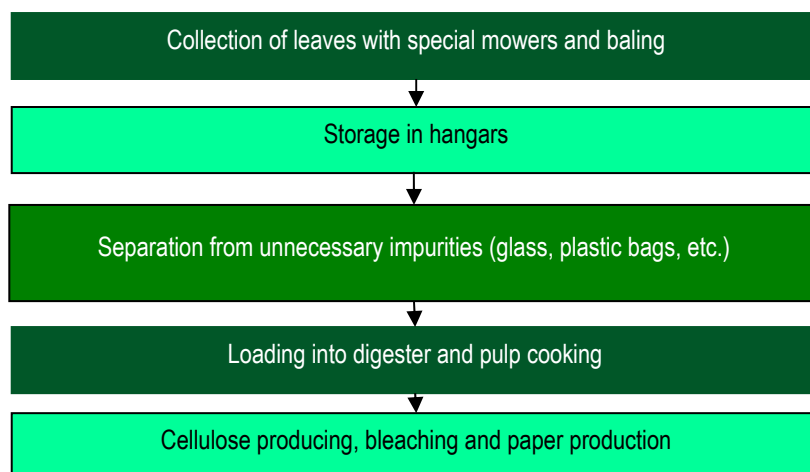
are usually sold in shops. More raw materials are needed for making paper from leaves than from trees, but a ton of fallen leaves will save on the average 10 trees from felling. Although it is impossible to refuse wood completely, it is an additional technology to the existing method. The equipment, which will be used, is almost identical to the equipment for wood processing.

Large-scale pulp and paper industry requires heavy machinery workers who cut down forests, load and transport wood to factories. V. Frechka, the inventor from Ukraine, proposes to simplify logistics in such a way that plants for producing paper from fallen leaves are located in the area where the largest amount of such raw materials is available during the year (Inventor 2018).

V. Frechka's idea is based on using fallen leaves from city parks. Forest leaves will not be used, so as not to upset eco-balance. The raw materials are collected 2-3 weeks after leaf-fall. During this time, some of chemical compounds containing in leaves go into the soil, and others vanish (Fallen Leaves 2017). The technology enables to turn leaves into solution. The part, which contains pulp, is used for paper production. Sodium hydroxide is neutralized in the other part as a result of fading, and dry residue can be used as fertilizer. Thus, pure fiber can be received, containing nothing but pulp. It is safe and hypoallergenic. It is possible to mold kraft paper from the pulp obtained after processing leaves (packaging and also for making bags, cardboard, corrugated containers) or for molded tare (for example, egg trays).

The stages of making paper from fallen leaves are shown in Figure 1.

Figure 1. Stages of producing packaging from fallen leaves



Source: composed by the authors

Collecting will take place with the help of special machines, which are similar to lawn mower in operation. They will hill up the leaf mass and granulate it. In this way, a kind of leaf bales will be obtained. The received raw materials will be transported to pulp-and-paper mill. They will be stored in hangars or in the open. If the raw materials will be kept in indoor premises, the production can last for a whole year, and during the fall laying-in will be held. At the plant, the raw materials will be loaded into a separation box to separate leaves from rubbish: glasses, polyethylene bags, etc. It is not necessary to wash, dry, and crush down the raw materials. Then the mass will be loaded into digester and subjected to pulp cooking. So, pure pulp will be obtained, which will be collected for bleaching. Paper will be made of it (Inventor 2017).

Single-ply paper packaging is made on Foudrinier mechanism. First, diluted with water to a liquid state and filtered off from rubbish, paper-making pulp is fed to a long moving screen for molding. During this process, water leaves the mass through holes, and fiber settles in an even layer. Then presses and rollers for squeezing out begin operating. They remove residual moisture. The final drying is carried out using a system of inside heating cylinders covered with fabric. Calender rollers smooth the obtained paper, forming the same thickness. The last stage is quilling the finished product into rolls or cutting it into sheets.

Despite convenient using of food products in vacuum packaging, it is better to avoid them. Food should be bought in its usual appearance. This primarily concerns meat products, cheeses, and fish. One should not risk his (her) and relatives' health and feed on correctly. Besides, enormous environmental pollution is being observed. However, plastic can make damage not only as rubbish, but also in cases of manufacturing technology violation.

According to the UN estimates, about a quarter of the world's food supply is lost every year because of microorganisms' activity. Most of the rest food is saved by far-seeing manufacturers owing to food additives and

conserving agents, which of course are not useful for health. But owing to rational packaging, products can remain fresh much longer (Eco-Friendly 2016)

We propose to create “Spicy pack” logo – a spicy package consisting of eco-paper only (made from fallen leaves) and spices and will help prolong 4 times food products’ suitability. Bags and napkins will contain spices such as cloves, oregano, rosemary, curcuma, and sage, having antiseptic properties. These products can be reused for two or three weeks, and then the spices vanish, and paper can be sent to recycling.

The assortment policy and sales volumes of “Spicy pack” are presented in Table 4.

Table 4. Assortment policy and sales volumes of “Spicy pack” products

Assortment of Products	Channels of selling	Piece price, UAH, €
Napkins	Retail chains, branded retail networks, shops, restaurants	0.5
Eco-bags	Retail chains, branded retail networks, shops	2.0

Source: composed by the authors

It is expedient to produce environmentally friendly packages with antioxidant properties. The main products required for manufacturing napkins and packages are presented in Table 5.

Table 5. Expenses for purchasing “Spicy pack” raw materials

Name	The required amount for producing 100 paper packages
Roll of eco-paper 170 m, density 80 g / m <sup>2</sup>	3 pcs.
Ground clove	2 kg
Oregano	2 kg
Curcuma	2 kg
Rosemary	2 kg
Sage	2 kg
Total	x

Source: composed by the authors

Scientists have proven that natural spices may completely replace artificial antioxidants. Therefore, “Spicy pack” will include such spices as cloves, oregano, rosemary, curcuma, and sage. These spices discharge large amounts of hydrogen and slow down protein oxidation process, preventing product spoilage. Manufacturing technology does not require a big production infrastructure, so it is easy to organize anywhere. Also, owing to almost complete automation of production, it is planned to employ socially vulnerable groups of population.

The planned profitability level will make 45%. Another method of assessing the project efficiency is to determine the recoupment period, which will be about 2.5 years.

Selling innovative antiseptic packages is possible in the following places:

- retail chains – a lot of products, which can potentially be packed or put in antiseptic packaging, are sold in large supermarkets. They are their own bakery products, vegetables, fruit, berries, as well as such food products as meat and fish, cheeses, which are laid out on counters and can be lined with “Spicy pack” napkins. Packages will also be sold for customers’ personal using in the same supermarkets;
- eco-shops are target audience for using eco-antiseptic packages;
- farmers –at the beginning of harvesting, it is necessary to take care of product freshness, so containers for harvesting, storing and transporting can be lined with spicy paper. As a result, the risk of mold, rot and bacteria is reduced;
- restaurants will be able to use “Spicy pack” antiseptic packaging both to store food and pack “takeaway” meals.

Depending on price dynamics and inflation level, retail prices will change. The method of calculating package prices based on retail margin is very common and popular for a number of reasons, the main of which is that sellers know more about expenses than about demand.

It should be mentioned that advertising is very closely connected with the process of establishing the image of “Spicy pack” enterprise. The purpose of advertising is to inform consumers about the appearance of a new unique product with antiseptic properties on the market, the formation of a positive opinion about eco-packages, as well as attracting as many buyers as possible. Therefore, advertising will be mainly informative.

The task of advertising campaign is to ensure the interest and demand of buyers from the first days of the "Spicy pack" enterprise's functioning. As the product is innovative, using the Google Ads service will be the best advertising option to launch advertising campaign, which will definitely attract buyers' attention. Ads will appear in Google Search, as well as on search partners' sites of similar products or services.

Advertising in social networks such as Facebook and Instagram will also be made, as this is here where our target audience spends the most of free time. Hidden advertising is another way, which is not available in the official set of social network marketing tools. But this option is offered by thematic communities and pages. In order to use this opportunity, it is necessary to agree on placing the publication with site administration.

"Spicy pack" products can be reused for two or three weeks, and then the spices vanish, and the paper can be sent for recycling. But even if it is thrown away in the wrong place, nothing bad will happen: eco-paper is certified as an organic product and it is quickly biodegradable.

## Conclusion

The conducted research allows to generalize the peculiarities of producing packages from various raw materials: paper is safer, than plastic bags; cutting down forests for manufacturing paper can be reduced by using innovative materials, such as fallen leaves; "organic" paper is more hygienic than waste-paper, and leaves become hypoallergenic fiber and fertilizer. According to technological data, it takes about 8 hours to make ready paper sheets.

It is expedient to start the production of eco-friendly paper from fallen leaves and manufacture "Spicy pack" packaging. Such packaging will include such spices as cloves, oregano, rosemary, curcuma, and sage, which will extend the life of food products and improve the world ecosystem.

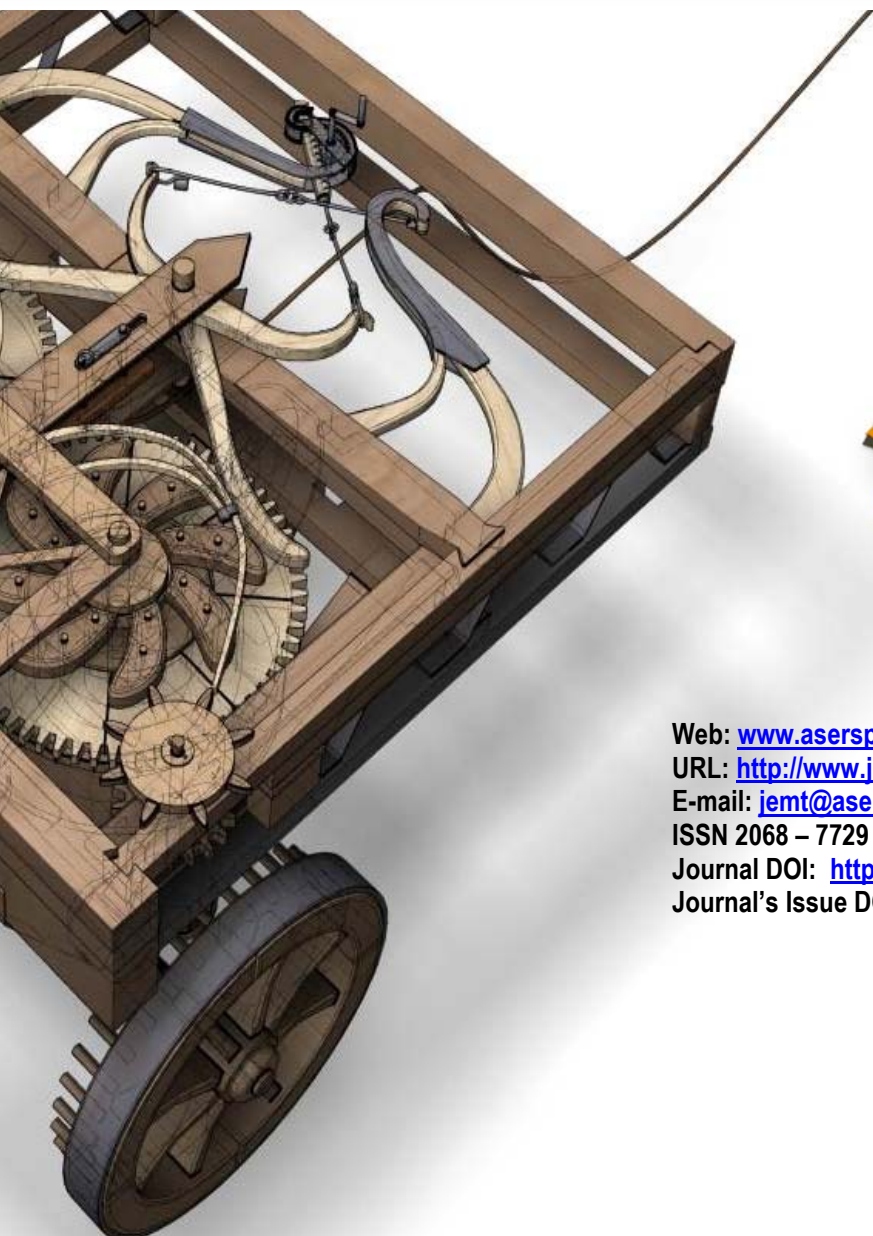
As a paper bag has low moisture and grease penetration, it should be improved by using different spraying and layering. The manufacturing and recycling of paper bags will be profitable and cost-efficient if Government authorities intervene in this process. One of the variants is to introduce environmental programs and reduce the tax on producing innovative environmentally friendly packaging material. It is important to spread the information concerning environmental friendliness of paper packages made from alternative materials to the public through familiarizing booklets or articles in magazines, newspapers and online resources, which is the material for further research.

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