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SAFETY MANAGEMENT FOR PRODUCTS AND PACKAGING

The paper outlines the general requirements of the health management system in the production of packaging for food products by PN EN 15593:2010. It also presents the survey results carried out among customers regarding their demand for product packaging and testing the level of knowledge of quality management systems and hygiene in production and packaging for food products.

1. Introduction

Safe manufacturing of packaging designed for particular products, including food, along with the creation of particular standards in the production process. For everything to be in line with the needs and expectations of the market customers, where at the same time safety is preserved during consumption and use, requires much planning, carrying out and supervising actions that aim at the increase of the added value. The consumers demand as to packaging is not limited to the cosmetic visual aspects, they go far beyond these expectations. The potential buyer on the market is increasingly more conscious of the purchase-related decisions they make and of the risk these decisions bring along. The progress of civilization, the necessity to follow the EU directives as well as the social pressures mobilize economic entities, including packaging producers, to implement and follow the pro-quality policy.

The producers of food and food packaging are particularly responsible for the provision of adequate level of the safety of their products for human health, as in this case the customer enters a direct interaction with the end result of a process planned earlier. Obtaining and ensuring the guarantee that both the product and its packaging are health-safe is of crucial meaning for the potential customer to choose the product. Next to the price, it is one of the dominant factors in customer's decisions and as such it determines the brand building process and the reputation of the company. The role of the packaging and its particular

meaning is dependent on what it is destined for and on its contents. Packaging provides natural protection to the products and make it possible for the product to be usable for longer. The highest requirements concerning the manufacturing of packaging belong to the food and pharmaceutical industries, as they are responsible for securing the health of their customers. Food industry companies are increasingly more willing to implement the well-known quality management standards for their needs. These include a range of ISO standards, including PN EN ISO 9001:2009 – *quality management systems-requirements*, that constitutes the base and the starting point for process-oriented thinking and acting and PN EN 15593:2010 – *hygiene management in the production of packaging for food products*. The process of ensuring the safety of consumers in the process of packaging, delivery and storage of food products needs to be preceded by a thorough threat analysis, in order to prevent or eliminate the possible results of contamination of food products.

2. PN-EN 15593:2010

The PN-EN 15593:2010 standard *Packaging-hygiene management in packaging for food products*, precisely defines the requirements that are to be fulfilled in order to minimize the risk of various threats concerning the contact of the product with food packaging. It also plays the role of the management supporting tool in packaging manufacturing processes. The PN-EN 15593:2010 standard may be implemented and used by companies providing components and services in production of packaging and other food-related products. After the implementation of PN-EN 15593:2010, the organization is obliged to undertake a range of activities crucial for “the safety of consumers and the packaging production process”. It is required to:

- plan, design, implement, use, maintain and update the system of threat analysis and risk assessment, which would guarantee that the production of food packaging is compliant with hygiene standards;
- guarantee compliance with declared policy;
- support food manufacturers in the collection of necessary documents that prove compliance with the requirements related to food and food packaging;
- demonstrate compliance with hygiene requirements agreed with the customer;
- be ready to demonstrate this compliance to other interesting parties;
- systematically monitor individual workstations for possible dangers;
- demonstrate the effectiveness of the system;
- aim at registration or certification of the implemented food packaging hygiene management system by the external entity¹.

¹ PN-EN 15593:2010 *Opakowania, Zarządzanie higieną w produkcji opakowań do produktów spożywczych. Wymagania [Packaging, Hygiene Management in the manufacture of packaging for food products. Requirements]* p. 5.

The PN-EN 15593:2010 standard specifies threat as “*chemical or biological pollutant or condition of the product, which can have detrimental effects on health or the incompatibility of the product with hygiene standards*”, while a packaging is “*the final physical outcome of each type of manufacturing process in the packaging industry*”². Threat and risk analysis are foundations on which the PN-EN 15593:2010 is based. Companies that facilitate their functioning with this economically proven standard should verify the threats that might occur at each stage of the manufacturing process. This requires involvement of the adequately trained personnel, able to measure the risk and its consequences for the manufacturing process. The PN-EN 15593:2010 standard divides threat analysis and risk assessment onto particular stages, aiming to minimize and eliminate threats in implemented processes that influence the safety of food packaging. The organizations are obliged, inter alia, to develop a process flow diagram, identify and record all threats for all manufacturing processes, carry out the risk level assessment for each threat, including probability and frequency of its occurrence and process improvement in the event of unacceptable risk level. For the realization of these operations, one needs to implement control and measurement processes necessary for the elimination of identified threats. The organization should carry out a comprehensive threat analysis and risk assessment for its operations, until it is equipped with the materials necessary for delivery of the finished products, in order to assess the efficiency of the PN-EN 15593:2010 standard application.

The PN-EN 15593:2010 standard divides contaminants that may appear in a company that manufactures food packaging, into:

- physical contamination (small chips of materials, dust, glass and brittle materials);
- chemicals (lubricants);
- biological contamination (insects).

Also, a set of guidelines has been outlined to support an organization in ensuring the health safety of the product during the realization of the processes. After the implementation of the PN-EN 15593:2010 standard, the organization is obliged to undertake a range of actions aiming to prevent the possible threats to the quality of the packaging, and their safety of use for food products. The entire infrastructure as well as particular workstations have to be systematically monitored for possible threats.

3. The results of empirical research

Similarly to two years back (2012), this year’s research has been conducted on the sample of fifty persons varying in age. The place for this research was

² Ibid, p. 6.

again one of the shopping malls in the Lodz region. The research method was that of a survey, for the interviewer to obtain information by collecting the variants of responses chosen by the respondents from a specially prepared questionnaire.

The aim of the research was to identify the general level of awareness among the respondents regarding food safety and packaging hygiene-related issues, including confirmation or denial of knowledge of quality management systems, hygiene management systems in food packaging production, good hygiene practice and good manufacturing practice. Besides, the research was to show whether the respondents are ready to bear higher cost to receive highest quality packaging and products.

The study was a base for a comparative analysis to the identical study from the year 2012, thus enabling the verification of views and knowledge the respondents have on broadly understood issues of food safety and quality as well as food packaging hygiene.

1. Do you ever read food labels?

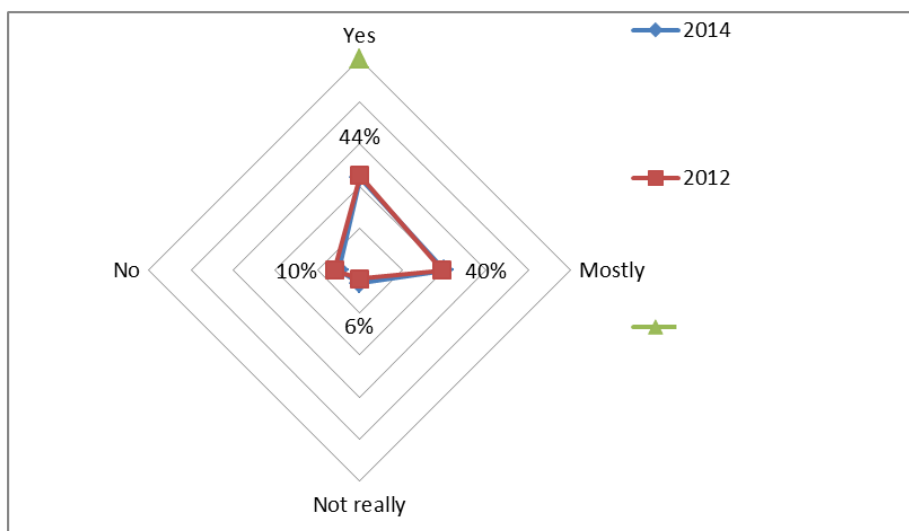


Fig. 1. Percentage of respondents reading food labels while shopping

Source: own work.

The highest percentage of the respondents, as much as 44%, confirmed they read labels placed on food products; a little less, for 40% claimed they mostly do. Only 10% of the respondents do not read food labels at all, and 6% claim they rarely do it. The results achieved are almost identical to the ones from

2012. Small differences in percentage testify to unchanged approach of the respondents towards reading labels on food products.

2. Do you consider food ingredients while shopping?

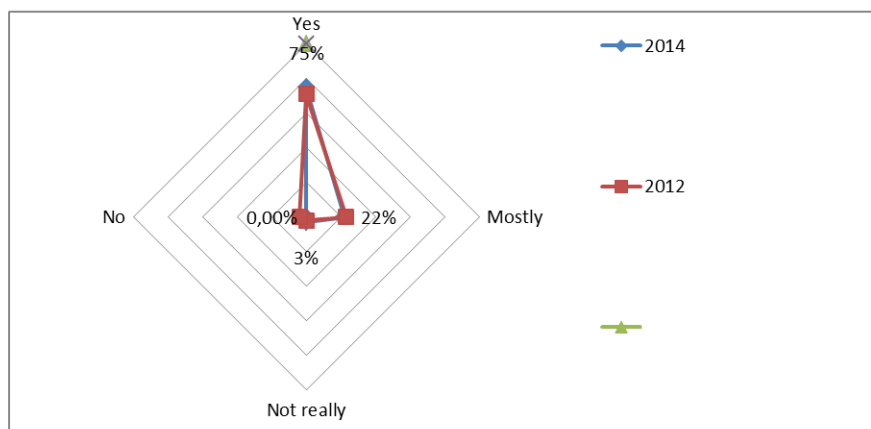


Fig. 2. The importance of food ingredients in respondents purchase decisions
Source: own work.

The highest percentage of respondents taking part in the research (75%) have declared their shopping is determined by the ingredients of food products. 22% usually thinks of it. Only 3% of the respondents does not consider the ingredients of food products as important while shopping. Surprisingly, none of the interviewed persons would confirm they don't do it at all. In 2012, 4% of respondents would not pay attention to ingredients while buying food.

3. Do you pay attention to the quality of the packaging?

The highest percentage of surveyed respondents, almost 90%, declare they pay attention to the quality of the packaging, 5% mostly do. Almost the same rate of respondents, 3%, does not pay attention to the quality of the packaging or rarely does it. As compared to the results obtained in 2012 the rate of persons paying attention to the quality of the packaging has significantly risen, from 78% to 89%. In turn, a visible decline has been noted in the rate of respondents declaring they usually pay attention to the quality of the packaging, from 16% in 2012 to 5% in 2014.

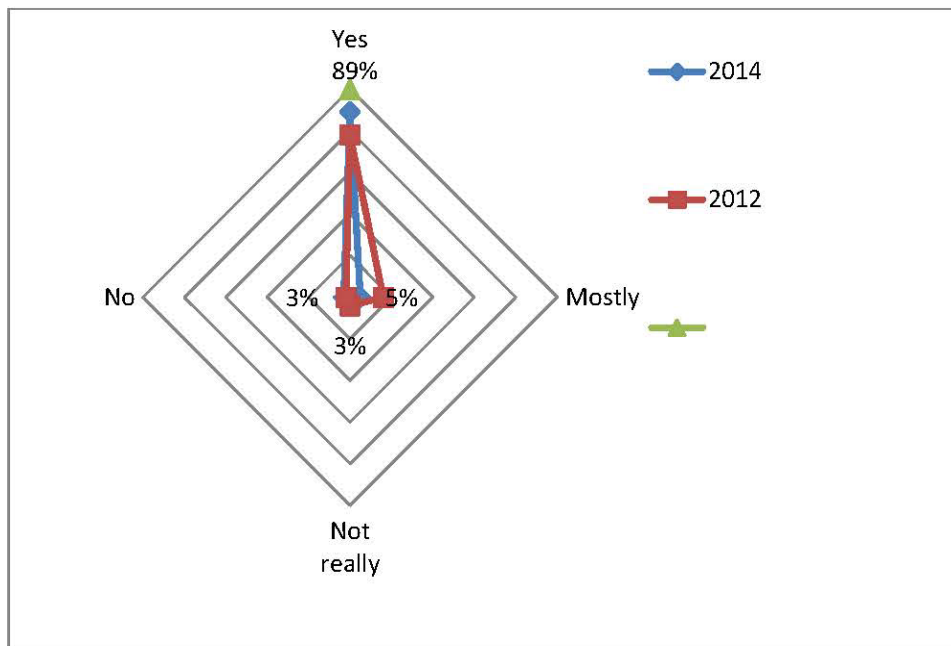


Fig. 3. Orientation of respondents on the quality of packaging

Source: own work.

4. Do you pay attention to the hygiene of food products packaging?

Nearly half of the respondents (48%) declared they paid attention to the hygiene of packaging for food products, 26% usually do, much fewer for 15% do not really pay attention to it and 11% of the respondents do not pay attention to the hygiene of packaging for food products at all. As compared to the 2012 study, the number of respondents declaring they pay attention to the hygiene of packaging for food products has risen only by 2%.

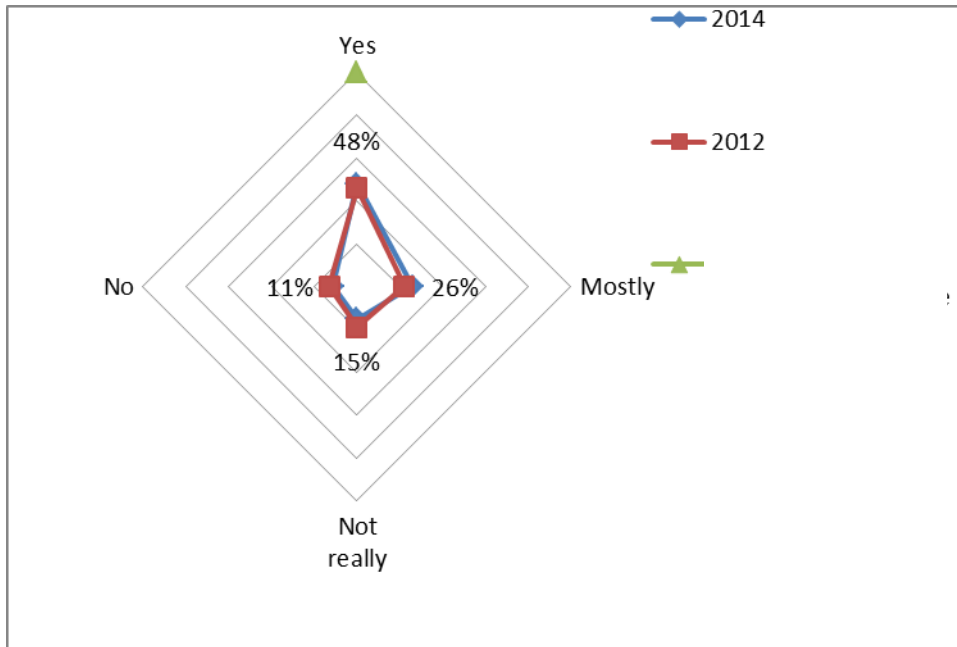


Fig. 4. Orientation of respondents on the hygiene of food products packaging

Source: own work.

5. Do you know what requirements are included in the HACCP system?

Over a half of the respondents, as much as 52%, do not know the requirements of the HACCP system, 21% declared to know them more or less, while 14% does not really know it. Only 13% declared to know the requirements of the HACCP system. Compared with studies of the 2012, the rate of persons declaring the lack of knowledge of the HACCP system has increased significantly from 34% in 2012 to 52% in 2014.

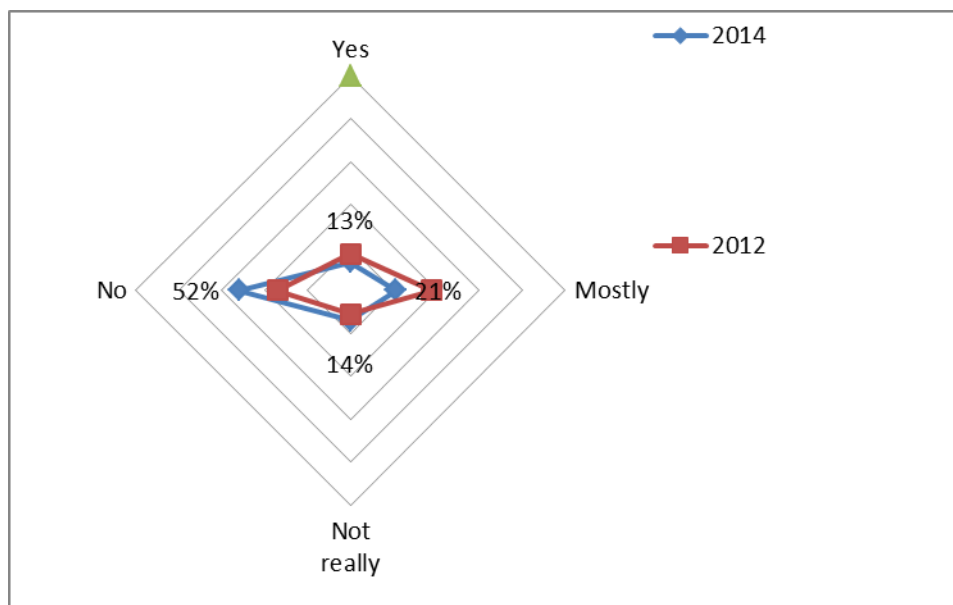


Fig. 5. Orientation of respondents on requirements of HACCP system

Source: own work.

6. Do you know what requirements are included in the PN-EN ISO 9001:2009 standard?

The highest rate of respondents (43%) declared they do not really know the requirements of the PN-EN ISO 9001:2009 standard, while 36% would rather say they do. Only 20% confirmed the knowledge of that standard. Only 1% has absolutely no knowledge of this standard. Compared to the 2012 results, the rate of persons not really knowing the requirements of the PN EN ISO 9001:2009 standard has fallen from 48% in 2012 to 43% in 2014; the rate of respondents who rather know it has turned from 31% IN 2012 TO 36% IN 2014. The remaining rates have remained on a similar level.

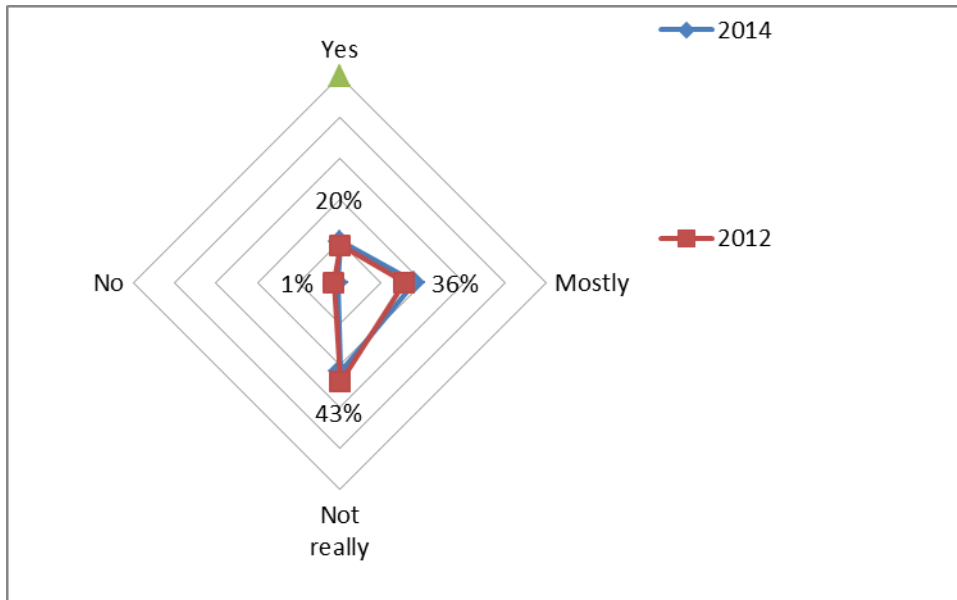


Fig. 6. Orientation of respondents on requirements of PN-EN ISO 9001:2009

Source: own work.

7. Do you know what requirements a company has to meet on the implementation of GMP?

70% of interviewees declared they would rather not know what conditions the company must meet on the implementation of GMP, 20% do not know them at all, 8% mostly know these requirements. Only 2% of respondents confirmed they knew what requirements need to be met by the company once GMP is implemented. The collected results show that GMP still remains an issue difficult to identify for the respondents, not allowing for a more detailed characteristics. The results obtained are close to the ones from 2012; in both cases, 2% of persons surveyed confirmed they knew the business requirements posed after the implementation of the GMP.

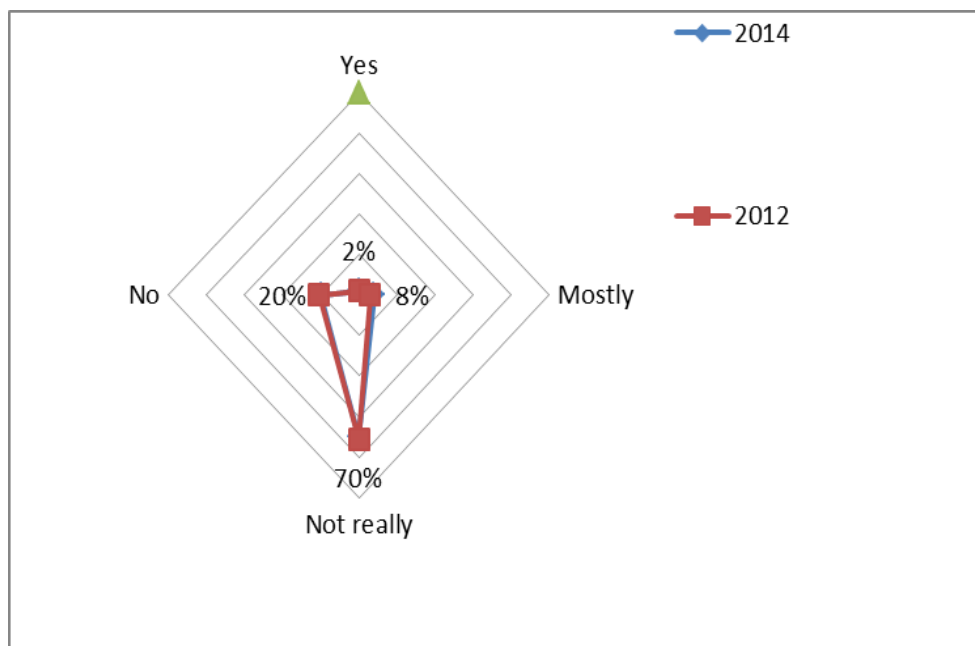


Fig. 7. Orientation of respondents on requirements of GMP

Source: own work.

8. Do you know the necessary conditions a company has to fulfill on the implementation of GHP?

The obtained survey results have shown that as compared to 2012, the level of knowledge concerning the requirements the company needs to meet on the implementation of the Good Hygiene Practice. The largest number of respondents (88% of the surveyed) do not really know which requirements have to be met, 6% rather know them, 4% do not know these requirements and only 2% declared to know them.

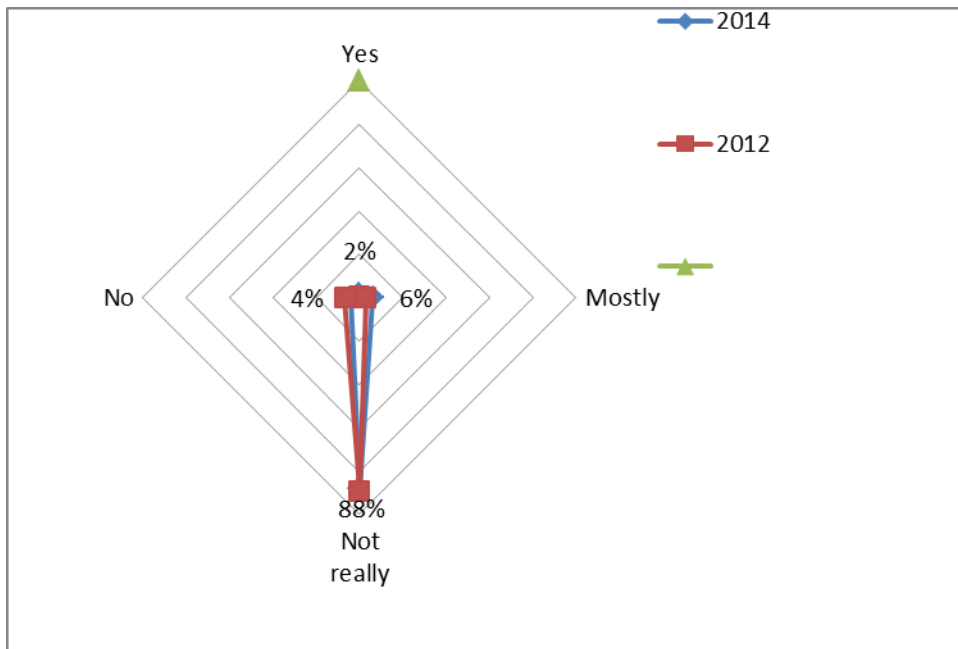


Fig. 8. Declared knowledge of GHP among respondents

Source: own work.

9. Do you know the obligations included in the PN-EN 15593:2010 standard?

Most, for as much as 45% of the respondents, declared they do not really know the requirements of the PN-EN 15593:2010 standard, 40% did not know them at all. Only 9% of the respondents confirmed they rather knew them and 6% they definitely knew them. The results obtained are nearly identical to those obtained in 2012.

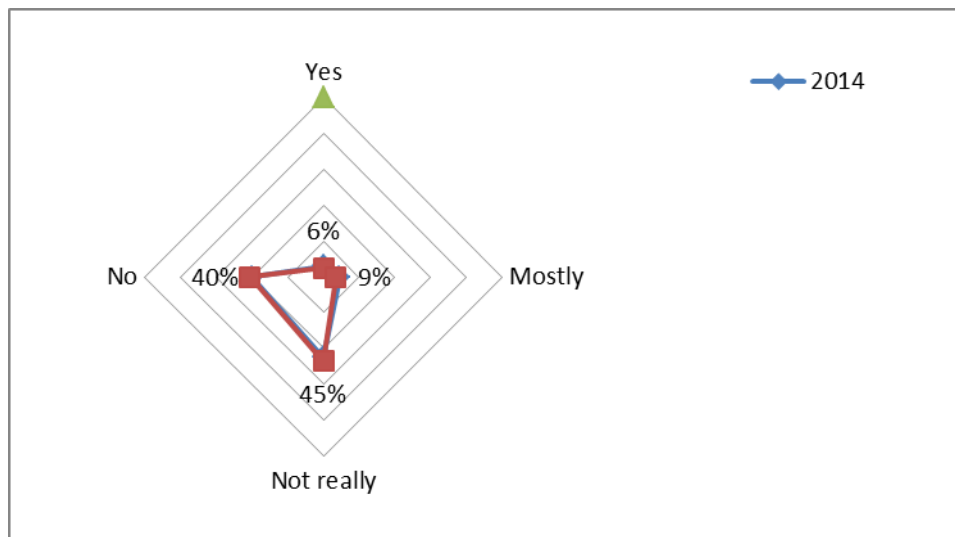


Fig. 9. Orientation of respondents on obligations PN-EN 15593:2010
Source: own work.

10. Are you willing to pay more for a product with a quality certificate?

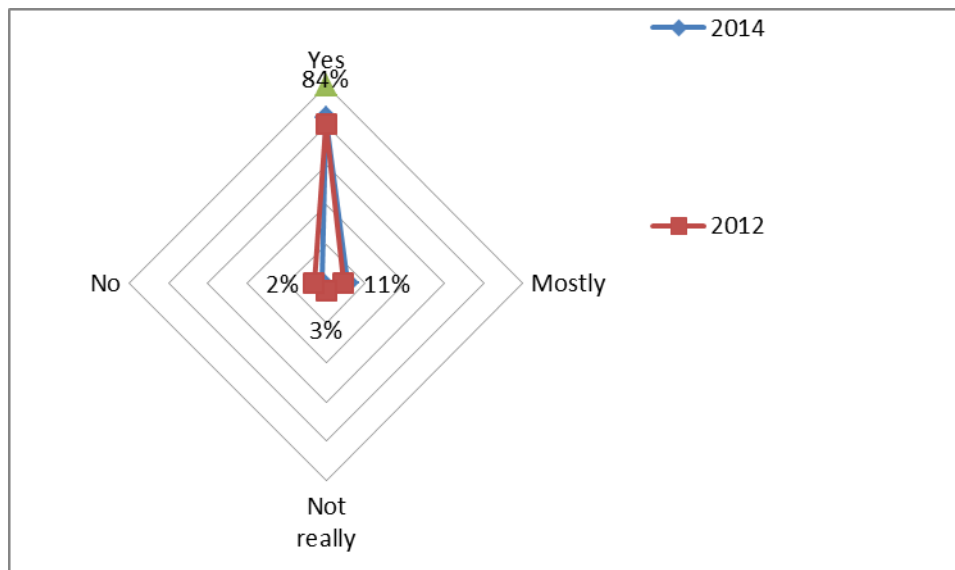


Fig. 10. Repayment for a product with a quality certificate
Source: own work.

The largest number of respondents, for as many as 84% declared they were ready to bear higher costs for a product with a quality certificate. 11% would rather do. Only 3% of the surveyed would not really want to bear extra costs for a certified product, while 2% do not want to bear them at all. The results obtained show a slight increase in the rate of persons willing to pay more for a product with a quality certificate, from 81% in 2012 to 84% in 2014.

11. Are you ready to pay more for a food product packed according to the PN-EN 15593:2010 standard?

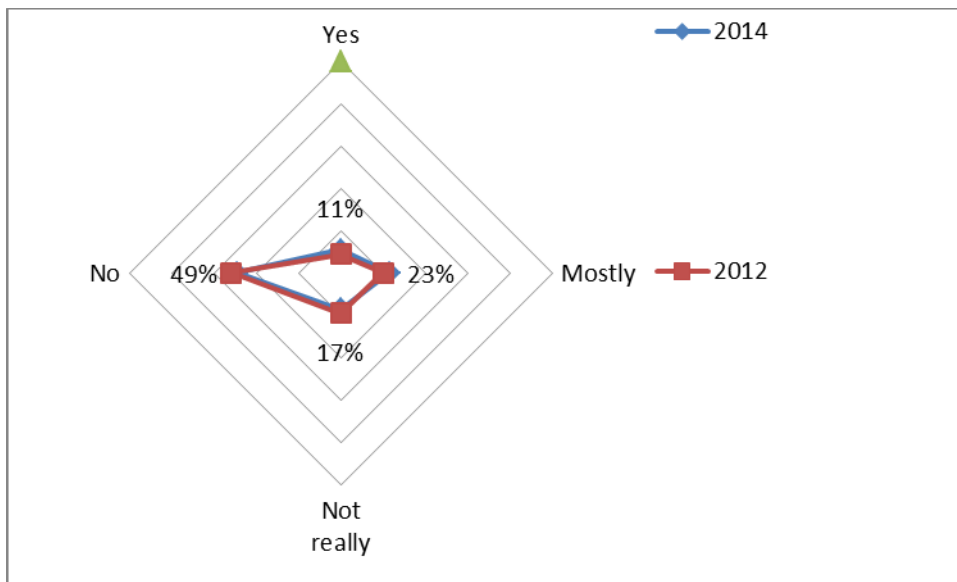


Fig. 11. Repayment for a food product packed according PN-EN 15593:2010

Source: own work.

Nearly a half of the respondents (49%) declared they did not want to bear higher costs for a food product packed in line with the PN EN 15593:2010 standard; 23% is quite willing to bear such costs, 17% would rather not, and the lowest number, for only 11% confirmed they would pay more for the product and for the packaging. The results obtained are close to those from 2012.

4. Summary

Nowadays, the packaging manufacturers have an array of tools at their disposal to support efficient and effective management, including the ISO standards

which form a set of guidelines the realization of which will make it possible to implement planned operations in the company while preserving the rules of safety, hygiene and environmental protection, as well as obtaining high-quality products for the food and packaging sector. The growing demands of the consumers market in food industry mobilizes organizations which specialize in manufacturing of packaging for food industry to systematically keep track of the needs, trends and customer expectations and ensure the timely satisfaction of this demand. Preserving safety precautions in the manufacturing process, i.e. performing thorough threat analysis and risk assessment is an absolute must with these kinds of packaging. The quality of the packaging needs to guarantee the preservation of the natural values of a given food product, not lowering its value. The broadly understood quality management systems are an effective response to the needs of the twenty-first century consumer who is becoming more and more aware of the risks and thereby performs in-depth analysis during the acquisition of food products.

References

- [1] PN-EN 15593:2010 Opakowania, Zarządzanie higieną w produkcji opakowań do produktów spożywczych. Wymagania [Packaging, Hygiene Management in the manufacture of packaging for food products. Requirements].
- [2] **Lewandowski J., Walaszczyk A., Jalmużna I.** (ed. by): *Product and packaging, Tendencies for development In manufacturing*, Lodz University of Technology, A Series of Monographs, Lodz 2012.

ZARZĄDZANIE BEZPIECZEŃSTWEM PRODUKTÓW I OPAKOWAŃ

W artykule przedstawiono ogólne wymagania systemu zarządzania bezpieczeństwem w produkcji opakowań do produktów spożywczych - PN EN 15593: 2010. Przedstawiono również wyniki badań przeprowadzonych wśród klientów dotyczących ich zapotrzebowania na opakowania produktów i poziomu wiedzy na temat systemów zarządzania jakością w produkcji i pakowaniu produktów spożywczych.

THE SURVEY QUESTIONNAIRE:

1. Do you ever read food labels?

Yes/usually/rarely/no

2. Do you consider food ingredients while shopping?

Yes/usually/rarely/no

3. Do you pay attention to the quality of the packaging?

Yes/usually/rarely/no

5. Do you pay attention to the hygiene of food products packaging?

Yes/usually/rarely/no

6. Do you know what requirements are included in the HACCP system?

Yes/mostly/hardly/no

7. Do you know what requirements are included in the PN-EN ISO 9001:2009 standard?

Yes/mostly/hardly/no

8. Do you know what requirements a company has to meet on the implementation of GMP?

Yes/mostly/hardly/no

9. Do you know the necessary conditions a company has to fulfill on the implementation of GHP?

Yes/mostly/hardly/no

10. Do you know the obligations included in the PN-EN 15593:2010 standard?

Yes/mostly/hardly/no

11. Are you willing to pay more for a product with a quality certificate?

Yes/probably/maybe/no

12. Are you ready to pay more for a food product packed according to the PN-EN 15593:2010 standard?

Yes/probably/maybe/no