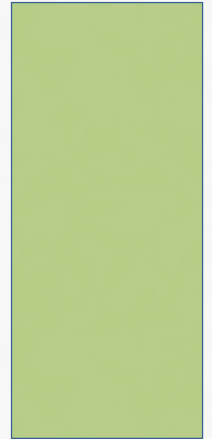




FINAL CONSUMERS ATTITUDES TO ACTIVE AND INTELLIGENT PACKAGING IN SLOVAKIA

JÁN PAROBK, MARTINA KALAMÁROVÁ,
ERIKA LOUČANOVÁ



INTRODUCTION

- Packaging functions are improving in order to increase shelf life of products, monitor the product and enhance consumer consciousness of utilisation.
- The consequence of innovative approach is creation of packaging with interactive functions:

Active  **Intelligent**

- **Consumer attitudes ???**
(Depend on region, cultural differences, age, income etc...)
- Lack of understanding the functions and benefits...

MATERIAL AND METHODS

- **The primary goal:** to identify awareness and perception of the concept of intelligent and active packaging.
- A survey consisted of questions divided into 3 parts as follows:
 - I – demographic information on the respondents,
 - II – perception of the packaging and its impact on consumer buying behavior,
 - III – perception and attitudes to intelligent and active packaging.

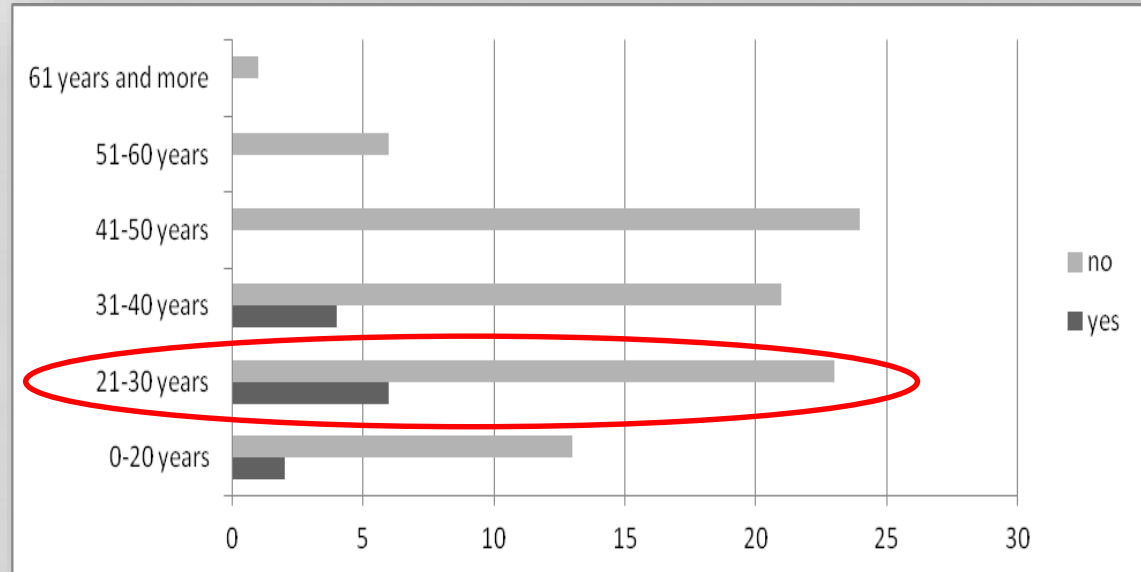
MATERIAL AND METHODS

- The results were analysed by using frequency and contingency analysis. (Chi-Square test of Independence was used)
- The statistical dependency has been examined between:
 - **recognition** of the concept of intelligent and active packaging by respondents and educational attainment of respondents,
 - **the willingness of the respondents to pay more** for active and intelligent packaging and **sex** of the respondents,
 - **the willingness of the respondents to pay more** for active and intelligent packaging and their **net monthly income**.

RESULTS

AWARENESS OF INTELLIGENT AND ACTIVE PACKAGING

- **The awareness of innovative forms of packaging in Slovakia is very low.**
- Lack of knowledge and not knowing the concept of intelligent and active packaging was manifested in **all age categories.**
- Most respondents that met such packaged products are in age 21-30 years. On the contrary, the lowest awareness of that kind of packaging is among older respondents in the age of 41 years and more.
- The dependence between the recognition of the concept of intelligent and active packaging by respondents and educational attainment of respondents has not been confirmed.



	CHI -Square	P - Value
the relationship between education and the recognition of the concept	1,086	0,581

RESULTS

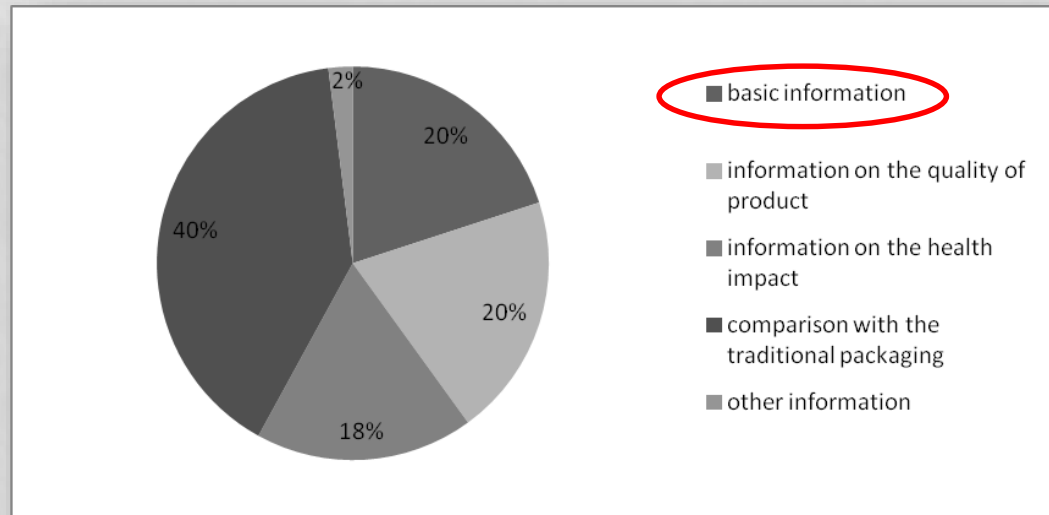
INTEREST IN DIFFERENT ADDITIONAL INFORMATION ON INTELLIGENT AND ACTIVE PACKAGING

low consumer awareness



interested in the very innovative features

- Most of the respondents are interested in information on:
 - comparison the innovative forms of packaging to the traditional one
 - the benefits of intelligent and active packaging.



- We consider this as a positive finding, as respondents do not manifest purely negative approach.
- Respondents are interested and open to new information on intelligent and active packaging and we assume that after an understanding of the concept to subsequent use of intelligent and active packaging.

RESULTS

WILLINGNESS TO PAY MORE FOR ACTIVE OR INTELLIGENT PACKAGING

- **Willingness to pay – proven significant dependance according to CHI - Square test.**

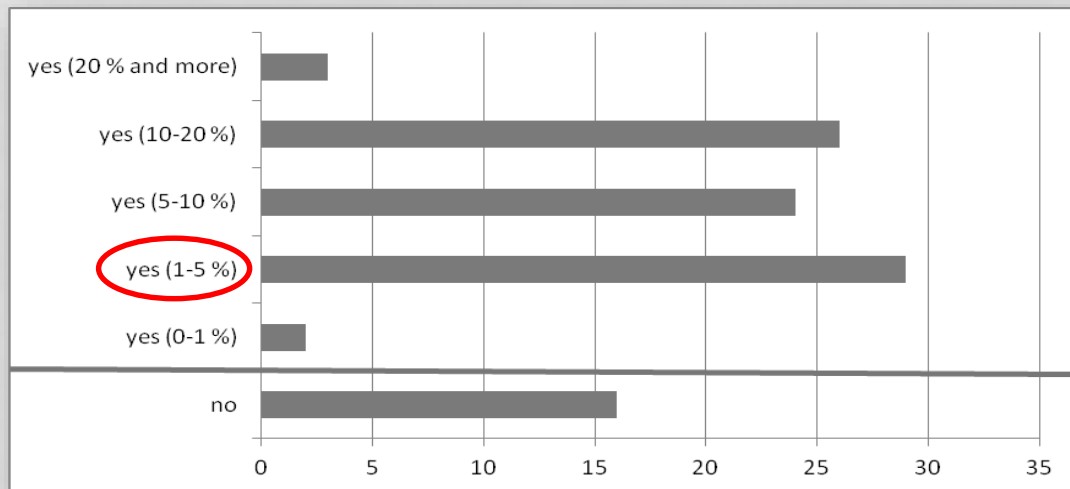
- **Net monthly income**

Respondents with low income are less willing to welcome this new type of packaging

- **Sex**

Men are more willing to pay more for products in active or intelligent packaging

- The majority of respondents would accept a potential increase in the price. The most acceptable price increase is up to 5%.



	CHI -Square	P - Value
the relationship between monthly income and willingness to pay	22,380	0,002

CONCLUSION

- **The success of any innovation**, so well intelligent and active packaging, definitely depends on customers understanding, awareness and recognition of the future benefits of the innovation.
- The results confirm:
 - there is lack of knowledge of active and intelligent packaging concept **in all age categories** - most consumers (88 %) are unaware of these terms and issue. The lowest awareness of that kind of packaging is among older respondents in the age of 41 years and more.
 - willingness to pay more varies depending on net monthly income but men, in general, are more willing to pay more for products in active or intelligent packaging; no evident patterns emerged with regard to education levels.
 - despite low consumer awareness of the concept of intelligent and active packaging, respondents are very interested in the innovative features of the packaging and their use on the other side, **91 % of respondents would welcome intelligent and active packaging in Slovakia.**
- There still remains space to examine the other factors as well as a comparison of **consumer perception in different countries.**



TECHNICKÁ UNIVERZITA VO ZVOLENE



drevársky kongres



DREVÁRSKA FAKULTA

Global Scientific Conference

MANAGEMENT AND ECONOMICS IN MANUFACTURING

5th – 6th October 2017
Zvolen, Slovakia

PROCEEDINGS OF SCIENTIFIC PAPERS



ISBN 978-80-228-2993-9

CONSUMER PERCEPTION OF ACTIVE AND INTELLIGENT PACKAGING IN SLOVAKIA

Martina Kalamárová*, Ján Parobek* and Erika Loučanová*

Technical University in Zvolen, Faculty of Wood Sciences and Technology, T. G. Masaryka 24, Zvolen 900 53, Slovakia

ABSTRACT

From the global point of view, the development of new packaging materials with additional active and intelligent features represents the great potential of the market to optimise the supply chain, protect sensitive products effectively and increase shelf life and enhance consumer consciousness of utilisation. The consequence of innovative approach is a creation of packaging with interactive functions. There are actually two different types of packaging – intelligent and active. The innovations focus on the expansion of functions in order to meet current consumer demands as well as increased safety concerns. On the other side, consumers have low information about new developments. The paper deals with the analyses of consumers' perception and attitudes to intelligent and active packaging in Slovakia. The survey results identified low consumer awareness of the concept of intelligent and active packaging on one side, but respondents are very interested in the innovative features of the packaging and their use on the other side.

© 2017 The Authors.

Peer-review under responsibility of the Organizing Committee of GSCMEM 2017.

Key words: innovation, intelligent and active packaging, consumer attitudes.

1. INTRODUCTION

In recent decades, according to a global advancement, continuous progress, new technologies and innovation the packaging technologies are also changing. Packaging functions are improving in order to increase the shelf life of products, monitor the product and enhance consumer consciousness of utilisation. The consequence of innovative approach is the creation of packaging with interactive functions. The continued quest for innovation in food and beverage packaging is mostly driven by consumer needs and demands influenced by changing global trends, such as increased life expectancy (Lord, 2008, In Brody et al., 2008). Traditional food packages are passive barriers designed to delay the adverse effects of the environment on the food product (Brody et al., 2008). On the other hand, innovative smart packaging systems can generate an enhanced product by utilizing non-traditional packaging functions to provide safer, more nutritious or appealing food products, while being environmentally friendly. In addition, smart packaging technologies can be further optimised by the incorporation of nanotechnology, which can be utilised actively or intelligently, to enhance or extend package function (O' Callaghan & Kerry, 2016). The food industry also has been tremendously changing from passive packaging to innovative packaging to cope with global trends, technological advancements, and consumer preferences (Mialia et al., 2016, Dainelli et al., 2008). Adoption of suitable packaging technologies by the food industry can be useful to extend the shelf life, improve quality, safety, and provide information about the product (Biji et al., 2015). Besides, innovation systems will improve the quality of consumer life, the product's quality and consequently decrease the number of retailer and consumer complaints (Dobrucka & Cierpiszewski, 2014).

Active packaging is an innovative packaging system in which the product, package and the environment interact in a positive way (Miltz et al. 1995) to extend the product shelf life and/or to ensure its microbial safety while maintaining the quality of the packed food (Ahvenainen, 2003). It contains incorporate components into the packaging material that deliberately alters the condition of the package by releasing or absorbing substances into or from the packaged food or environment (Floros et al, 1997) to either enhance sensorial properties, maintain quality, or to extend the shelf life of the packaged product (O' Callaghan & Kerry, 2016).

* Corresponding author. Tel.: +421 455 206 446, E-mail address: martina.kalamarova@tuzvo.sk

THANK YOU FOR YOUR ATTENTION

**If you have any further question do not hesitate to
contact us**

Assoc. Prof. Ing. Ján Parobek, PhD.

parobek@tuzvo.sk

Martina Kalamárová, PhD.

martina.kalamarova@tuzvo.sk

Erika Loučanová, PhD.

loucanova@tuzvo.sk

www.tuzvo.sk

Department of Marketing, Trade and World Forestry

Faculty of Wood Sciences and Technology

Technical University in Zvolen

T.G. Masaryka 24, 960 53 Zvolen, Slovak Republic

