PRZEGLĄD PSYCHOLOGICZNY, 2021, TOM 64, Nr 2, 139–157
DOI: 10.31648/pp.7842

What can psychology contribute to business? Consumer research accompanying the launch of a new product on the market

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ABSTRACT

Aim
The article presents the role of psychology in carrying out consumer research accompanying the creation of an innovative product – a chocolate cream based on oleogel (palm oil substitute).

Method
The studies were carried out by an international consortium within the EIT Food (Horizon 2020 funding) and covered four stages: (1) A segmentation study used to explore the needs of consumers and identify target groups for the new product (in Poland, N = 891 and in Spain, N = 908); (2) Ethnographic research to gain greater insight into consumer motives and barriers (21 in-depth interviews (IDIs) in the homes of respondents); (3) Qualitative research testing the communication concepts of the new product relating to health vs ecological benefits (12 focus group interviews – FGIs); (4) A product taste test to identify the best taste variant to place on the market (N = 1,052 consumers, 314 of which were children aged 6–12 years).

Conclusions
The conducted project is an example of cooperation between the science with business worlds, where the role of scientists consisted of providing in-depth, psychological knowledge about consumers and their needs and behaviours, along with the eating nutritional behaviour motives and barriers.

Keywords: consumer psychology, marketing surveys, segmentation, communication test, product test.

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1. INTRODUCTION

At present, more and more is being said about science being brought closer to practice both in the context of the changes in the education system – for it to be more focused on practice, as well as in the scope of research carried out by scientists – to concentrate more on solving specific problems in business or society and not be limited to basic research. This direction of changes is typical not just for Poland but constitutes a general global trend where science is expected to support business and the social environment as much as possible, pointing out new solutions that should essentially be better thanks to the combination of scientific knowledge and market needs.

The cooperation between science and business is not always easy as every one of these milieus (science and business) speaks a different language, has disparate priorities, and strives to attain varying goals and objectives. Research concerning the cooperation between science and business reveals that the greatest problem in such a partnership is too extensive focus on theory and the lack of understanding the business aims and objectives by scientists, consisting of finding a specific solution and not, for instance, on the development of a theory (WEI, 2016).

Despite the differences in approach to solving the challenges of the modern world, science can still give a lot to business – provided that a certain shift takes place both on the part of science and of business. Firstly, the extensive experience of scientists and their lengthy research expertise in a given scope may help to introduce better and more innovative solutions than if it they were done by the business milieu alone. Based on this assumption, a body to strengthen Europe's innovation potential was established by the European Union in 2008 – the European Institute for Innovation & Technology (EIT) (www.eit.europa.eu). EIT is an independent European Union body and, at the same time, an integral part of "Horizon Europe" (formerly "Horizon 2020"). It is aimed at supporting implementation projects in various areas, created in cooperation with science and business, also inter alia climate (EIT Climate) and nutrition (EIT Food). It should, however, be emphasised that in EIT projects it is not only about supporting business but also about creating new measures serving society and improving quality of life through a cooperation that is based on the partnership between science and business.

The Faculty of Psychology, University of Warsaw (UW), has been involved in various innovation, communication, and educational projects within EIT FOOD since 2016. The executed educational projects included EIT FOOD School Network aimed at creating educational tools for nurseries and primary schools promoting nutritional awareness and nutritional involvement among the youngest of children[2]. Another project was See&Eat, which focused on educational actions instilling in children a readiness to try vegetables that were usually unliked

[2] The website of the EIT FOOD School Network project: https://www.eitfood.eu/projects/the-eit-food-school-network-integrating-solutions-to-improve-eating-habits-and-reduce-food-wastage-2020;

and often unknown by them[3]. Yet another project served to create educational tools promoting nutritional awareness among adolescents and building greater involvement in nutrition – attaching greater importance to what one eats, to the origins of food, and the food production methods (WeValueFood)[4].

An example of an innovative project is the GLAD project (GLAD – Green Last Mile Delivery[5]), within which an e-commerce food delivery strategy was developed (striving towards the most sustainable supplies in the sense of exerting the least negative impact on the environment) and then adapted to consumer needs (factoring in the economic realities and consumer willingness to use different kinds of solutions). The end effect was meant to be the creation of a website which, thanks to the use of appropriate algorithms, would optimise the delivery mode of ordered food on its last stage, when it reaches the consumer ("last mile"). New solutions were meant to take into account the ecological footprint, the costs of maintaining the system, the available capacity, data on traffic and, of course, consumer preferences. On the business side, the largest Belgian food supermarket chain Colruyt (future user of the platform) was involved and – on science site – three universities: British – University of Cambridge responsible for modelling and optimisation of the "last mile" strategy, factoring in the economic and ecological indicators as well as the geographical supplies; Israeli Technion responsible for the optimisation of the supply chain management strategy; and the University of Warsaw responsible for consumer research (Faculty of Psychology) and for the development of the last mile supply algorithm (Faculty of Mathematics, Informatics and Mechanics – MIM).

Another scientific and business example of an innovative project with significant importance to society was executed in 2020, namely, the ONCOFOOD project, the aim of which was to design and develop new nutritional solutions directed at oncology patients (Tueros et al., 2020). Cancer patients have special nutritional requirements which are different from healthy people and this not only pertains to the nutritional values but also to the different taste profiles of the foods. As a result of the therapies that cancer patients undergo, they often complain of smell and taste changes, which lead to a loss of appetite and, in turn, severe malnutrition. The nutritional innovations developed within the project were not only meant to supplement micro and macronutrients in the diet but also to promote eating pleasure in order to prevent malnutrition among patients. One of the innovative technological solutions tested within the project involved the use of a 3D printer to produce meals for patients who are experiencing difficulties in swallowing food because of their treatment. Products based on blended food containing vital ingredients, which resembled traditional food in appearance

prepared educational materials: http://psych.uw.edu.pl/eit-food/the-eit-food-school-network/programy-edukacji-zywieniowej/.

[3] Project website: See&Eat https://www.eitfood.eu/projects/see-eat-communicating-the-benefits-of-visual-familiarity-as-a-strategy-for-introducing-healthy-foods-into-childrens-diets-2020.

[4] Project website: www.wevaluefood.eu.

[5] Project website: https://www.eitfood.eu/projects/glad-green-last-mile-delivery-a-more-sustainable-way-for-food-home-delivery-tailored-to-consumer-needs.

(e.g., chicken thighs, fish, and carrots) were created using a 3D printer and, because they were blended, were easier to swallow. The project was carried out within an international consortium of five institutions comprising a Spanish food innovation research institute (AZTI), two higher education institutions responsible for patient research (University of Warsaw and University of Reading), as well as two commercial companies: NaturalMachines (Spain), and Maspex (Poland), which were to market the jointly developed product innovations in the future. The studies carried out with the involvement of patients suffering from cancer as well as their families, and physicians and nurses supporting these patients allowed a range of food innovations, that focused on helping patients cope with the smell and taste changes and difficulties in swallowing experienced by them, to be developed.

There is a growing opinion that innovative projects aimed at finding new food product solutions should factor in the consumer's perspective and even that such projects should be consumer centric. That is why understanding the needs and barriers to new products of consumers, as well as the emotions and attitudes underpinning their behaviour is so important for the success of new business solutions. New solutions should be tested with consumers so that the products that are developed best meet their needs. In the aforementioned projects, the role of experts from the Faculty of Psychology UW, specialists in the field of consumer psychology and marketing research, consisted of providing complex and enhanced knowledge about the consumer stemming from both studies designed specifically for a given project as well as broader knowledge, not only from the field of consumer psychology but also other areas of psychology. One of the research projects carried out by the Faculty of Psychology, University of Warsaw, under a grant executed by EIT Food in 2019 concerning placing an oleogel-based chocolate cream spread on the market – a new alternative to palm oil (OLEOGEL Project) will be discussed in more detail hereinbelow. The particular stages of the project will be described in terms of their goals and objectives and the information provided, without going into detail on the research methodology.

2. CASE STUDY – RESEARCH PROJECT ACCOMPANYING INTRODUCING A NEW PRODUCT (OLEOGEL) TO THE MARKET

The aim of the OLEOGEL project was to develop a product innovation consisting of creating a new fat substitute based on rapeseed oil (referred to as oleogel), which will be a replacement for palm oil in food products. The new fat was to contain less saturated fatty acids and correspond better to consumer expectations (i.a., in terms of lack of negative impact on the natural environment) and, at the same time, its parameters were to ensure that all the taste qualities of palm oil-based products are retained. The first developed product using the new fat, which was to be the first to be produced, was chocolate cream bread spread. Consumer research was an important element of the project for which a team of researchers from the Faculty of Psychology at the University of Warsaw was

responsible: (1) Consumer expectations in terms of eating and particularly bread spread products, including chocolate cream spreads and the approach to different kinds of fat, and (2) Reactions to the new product (taste qualities) and various forms of communication relating thereto (referring to health vs ecology). Four studies were carried out within the project, the first of which was done in Poland and in Spain, whereas the remaining three studies were conducted only in Poland for financial and strategic reasons.

The project was executed by an international consortium of four institutions comprising, apart from the University of Warsaw, the German research institute – Fraunhofer Institut, responsible for developing the innovative technology for the new fat (oleogel), and two commercial companies: a Spanish company producing olive oil – Acesur, in charge of the production of the new oil, and a Polish food concern – Maspex, tasked with creating an innovative oleogel-based chocolate cream recipe and placing the joint product innovation on the market.

Palm oil is widely used in food production mainly because of its physical and chemical properties, including its neutral taste and wide availability. It is essentially a fat that is most widely used in mass production across the world (Hansen et al., 2015). However, since the 1990s, this component is increasingly widely criticised for three principal reasons relating to health, the environment and society (Capecchi et al., 2019). The risk to health results mainly from its high saturated fatty acid content, which leads to a higher level of cholesterol, elevated blood pressure, and increased risk of atherosclerosis. The environmental consequences of palm oil use result from the fact that, in order to increase the mass production of palm oil, plantations have to be established that require the felling of tropical rainforests, which in turn leads to the drying of the soil and increases greenhouse gas emissions (Agus et al., 2013; Ruysschaert & Salles, 2014). Tropical rainforest deforestation in Indonesia and Malaysia (two of the largest palm oil producers) has also had a huge negative affect, threatening local animal species, mainly orangutans (Fitzherbert et al., 2008; Nellemann et al., 2007). The last, social threat concerns the persons employed on plantations: poor working conditions, forced labour, child labour, and land use conflicts (McCarthy et al., 2012).

In the context of the data presented above, its seems that the development of a good palm oil substitute is important not only to the food industry or the natural environment but is also in line with the EU strategy consisting of improving the availability of sustainable food products ("better products at an affordable price") and empowering consumers to make more responsible purchase decisions. However, finding a fat that would successfully replace palm oil is a major challenge, above all because all the known fats either possess worse properties than palm oil – a consistency that is unsuitable for many food products, have a specific taste of their own that affects the taste profile of the final product – or their acquisition is too expensive for them to be introduced into mass production. The creation of an innovative technology allowing fats that are neutral in flavour and have a suitable consistency (oleogels) to be produced gave hope of finding a good solution to this problem. Thus, the objective of the whole project was to firstly create the technology to produce an oleogel-based chocolate cream spread

and, secondly, develop a communication strategy for such a product. The scientists from the University of Warsaw were tasked with providing information sourced from consumer research on the relevant stages of the product creation process enabling an answer to be found to the question of who should be the target group for the new product, how should such a product be communicated to most effectively encourage consumers to buy it, in other words, which benefits and advantages should be referred to in communication: health or environmental arguments, and which flavour version should be chosen for the product to be launched on the market.

The research project comprised four study stages with different methodologies:

- Stage 1– Quantitative segmentation of consumers and exploring consumer needs – a survey on representative samples;
- Stage 2 – Qualitative deepening of segmentation – qualitative ethnographic study carried out in the homes of respondents;
- Stage 3 – Communication research – qualitative research, focus group interviews;
- Stage 4 – Product test (referred to as the blind test) – experimental study.

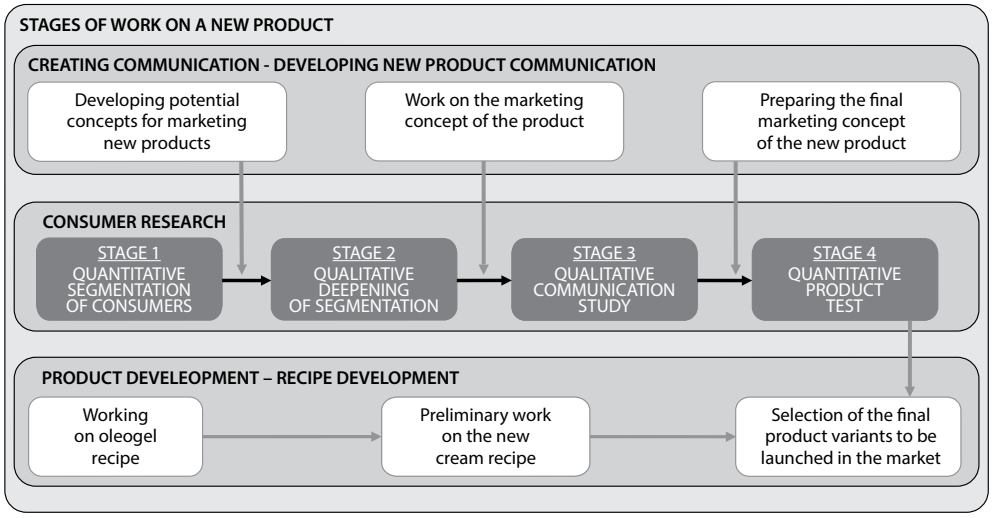

Fig. 1. Consumer research in the EIT FOOD Oleogel Project

Figure 1 shows that work on developing the oleogel production technology and then the creation of chocolate cream spread variants which were tested on the last stage of the process (product blind test) simultaneously accompanied the research process. Between the research stages, concepts of the product were developed, i.e. how such a product should be communicated (what benefits should be emphasized), in order to increase the consumers' acceptance to as high as possible.

2.1. Stage 1 – discovering consumer needs – segmentation study

Research aims and objectives

The aim of the first study was to understand consumers' behaviours and preferences in Poland and in Spain related to the general eating habits, the approach to eating different kinds of fats and, above all, to eating sweet bread spread products (chocolate spreads, jams, honey, etc.).

The detailed research aims concerned:

- A diagnosis of the knowledge, attitudes, and behaviours relating to healthy and unhealthy ingredients and food products;
- A description of the nutritional attitudes and eating habits related to fats in general and sweet bread spread products;
- Defining the consumer segments of spreads that are varied in terms of attitude, eating and the buying and habits related to purchasing and consuming chocolate creams and competing products.

Methodology

Two surveys were carried out on representative samples of bread spread products users (chocolate creams, jams and/or peanut butter) in Poland (n=891) and in Spain (n=908). The survey was done online – respondents independently answered questions in a 30 minute questionnaire.

The survey, alongside questions directly relating to bread spread purchasing and eating habits and the use of fats and chocolate creams also included issues that are more psychological in nature – the general approach to life, needs, and values. Such a broad spectrum of topics was necessary to identify the segments that differ not only in terms of the approach to food but also the approach to health, ecology, and psychological traits. Knowledge about the segments enhanced in such a way allowed for the development of a communication strategy over subsequent stages, which was then directed at these segments (potential target groups for the new product) referring to their specificity (Maison, 2014; Maison, Greszta, 2014; Furman et al., 2020).

Results

Based on cluster analysis (k-means) performed concurrently on the results from the Polish and Spanish study sample, 5 segments of people with a clearly different approach to life and nutrition were identified: Open-minded Home-birds, Indifferent Indolents, Lost Traditionalists, Chaotic Consumptionists, and Modern Hedonists (Fig. 2).

Open-minded Home-birds is the segment that is most health-oriented in the nutritional context, with quite a lot of knowledge about nutrition. They pay a lot of attention, time and energy to buying and preparing meals. They carefully plan their shopping and daily meals which allows them to control their diet but also makes them spend a lot of time in the kitchen (sacrificing other aspects of their life, e.g., their free time). They feel responsible not only for their healthy

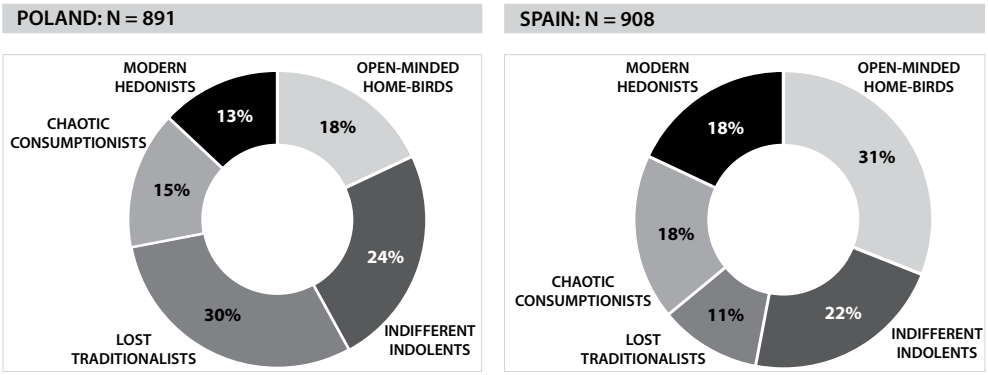

Fig. 2. Identified segments of consumers and their size in Poland and Spain

eating habits but also for providing healthy meals for their whole family. The strong focus on healthy eating and sense of great responsibility for the nutrition of their family makes preparing meals (and thinking about them) stressful and tensed – particularly in the context of the frequently changing dietary advice and the launch of new products on the market (e.g., the appearance of ever new foods in the superfood category).

Indifferent Indolents is a segment with a relatively low nutritional awareness – these people admit that they do not know how to eat healthily and, what is more, they do not actively look for information about healthy eating or about new products. They do not eat regularly and often eat on the go. Their greatest concern is to prepare their meals quickly and conveniently. They are also price driven. When choosing what they will have to eat, they place taste over the health qualities of meals.

Lost Traditionalists, alongside *Indifferent Indolents*, is a segment with the smallest nutritional knowledge and awareness – they admit not knowing how and what to eat so that the food they eat enhances their health. They do not look for information about healthy food, do not go on diets, and do not have a varied diet. They mostly eat at home, valuing homemade food – they think that eating out and ready-made meals will never be as good as the food prepared by them at home. Food – apart from having to be homemade and tasty – should above all give a sense of satiety.

Chaotic Consumptionists are people for whom taste is the most important when it comes to eating – they eat what they like and are often not bothered about the quality of their food or how it affects their health. Their dietary choices are based mainly on their whims and fancies. Their nutritional style is full of inconsistencies – on the one hand, they reach for fast food or ready-made meals most often out of all the segments, while vegetables and fruit appear in their diet much less often and, on the other hand – they claim that they buy food in organic food stores more often than others. This probably comes from their great need for self-presentation as well as keeping up with the trends. Since they are accustomed to tasty food and fast and convenient meal preparation, despite their

desire to stay on track with the latest nutritional products and trends and are on various diets, they are not ready to abandon their eating style.

The segment of ***Modern Hedonists*** is focused on finding the balance between pleasure (taste qualities) and healthy eating (Fig. 3). They are aware of the significance of healthy eating and try to follow the regime. At the same time, they feel that they are incapable of keeping a 100% healthy diet (or of forcing their household members to do so) because this would require them to give up the pleasure of eating. They are more open to novelties than other groups and are eager to try new meals and flavours. They like to cook but also take advantage of the local food establishments. Moreover, they are also the most sensitive to ecological issues out of all the groups.

Similar consumer types were identified both in Poland and Spain but they differed in terms of their size (Fig. 2). In Poland, the dominant segment was the *Lost Traditionalists* (PL – 30%; SP – 11%), whereas in Spain – *Open-minded Home-birds* (SP – 31%; PL – 18%).

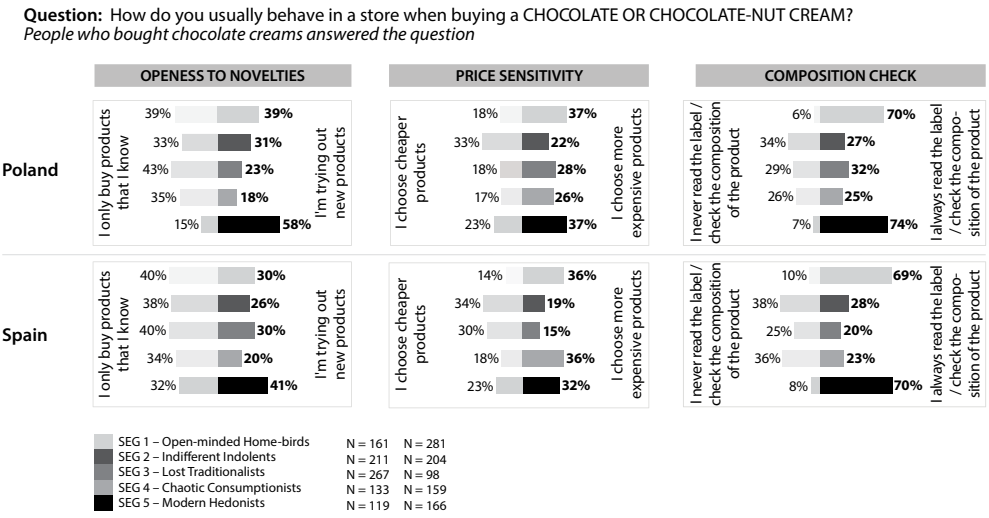

Fig. 3. The approach to buying chocolate creams in particular segments (Poland and Spain)

An analysis of segments in the business context, therefore, not only the results of the survey but also the competing products present on the market (and their marketing positioning strategy) revealed that the segments with by far the greatest potential for the new product (their own or with a view to their children) were: *Open-minded Home-birds* and *Modern Hedonists*, and they should be the main target groups for the new product. In the next two segments *Indifferent Indolents* and *Chaotic Consumptionists*, the new product also has some potential but it is much more limited due to the full acceptance of palm oil-based products present on the market (and an absence of ecological sensitivity) and small openness to communication related to the health aspects of nutrition. The segment

with an almost zero potential for the new product was the *Lost Traditionalists* – persons characterised by a small openness to novelties, attachment to nutritional solutions familiar to them, and low chocolate cream consumption (if they do buy any, they buy it sporadically and because of other household members).

2.2. Stage 2 – qualitative deepening of the segmentation study – setting the direction of communication

Research aims and objectives

The next stage of the project consisted of ethnographic qualitative research (carried out in the homes of respondents) aimed at gaining a better understanding of the identified segments. Thanks to projective techniques in qualitative research it is possible to reach less conscious motives and consumer barriers and diagnose their psychological profile (Maison, 2010). In the case of nutrition, consumers are unconscious of many areas (e.g., barriers to using different products or choice motives), despite the fact that their behaviour is affected by them (Stasiuk, Maison, 2014). Furthermore, dietary attitudes are often sensitive to the effects of self-presentation (e.g., pro-health- and pro-environmental behaviours) and their meaning is often overstated in quantitative studies. Qualitative research, however, through the use of projective techniques and observation, is capable of diagnosing true attitudes.

The qualitative ethnographic research that was carried out served to answer the following questions:

- What role does nutrition have in the life of the persons from the given segments? Which emotions as associated with eating? What are the eating styles of particular consumer segments?
- What does the decisional process of choosing foods (with particular emphasis on spreads) look like in a store? What product characteristics do consumers from particular segments take into account and why do they focus on these traits specifically? What impact do particular household members have on the food decisions being made?
- What is the perception of the chocolate cream category? What are the motives for reaching for this category of products and what are the barriers? What does the chocolate cream spread purchasing process look like and what emotions accompany it?
- How are particular fats perceived? What characteristics are attributed to them? Which fats are perceived as healthier and why?
- What is the level of knowledge and convictions related to eating among consumers from various segments? To what extent and how are concepts related to healthy and unhealthy eating understood (e.g., omega 3 fatty acids, refined oil, trans fats)?

Methodology

For organisational and financial reasons, this study and the next two studies were carried out exclusively in Poland. A total of 21 ethnographic interviews

were carried out in the homes of respondents, 5 in each of the following segments: *Open-minded Home-birds*, *Indifferent Indolents*, and *Modern Hedonists*, and 6 in *Chaotic Consumptionists* (due to the largest internal differentiation of this segment visible in the quantitative study). No qualitative interviews were carried out in this study in the group of *Lost Traditionalists* because the results of the survey revealed that this group will not be interested in a new product (lack of marketing potential).

Results

The qualitative research focused mainly on gaining a better understanding of the motives for the consumer choices of the persons belonging to the relevant segments and the potential of the new product in these segments, as well as the directions of its communication (positioning).

This study confirmed the hypothesis formulated on the basis of the results of quantitative data that the segment with the largest potential for the new product constitutes *Modern Hedonists* – the most open to new solutions and brands, extremely eager to look for and try new tastes. Additionally, the results of the qualitative research revealed that the persons from this segment are characterised by a relatively high environmental awareness, thus, communication emphasising the pro-ecology aspect of the new product has a real chance of reaching them and it is highly likely that they will take it into consideration when making their purchase decisions.

The second group of potential recipients of the new product are *Open-minded Home-birds* – for them, too, the motive for buying the new product may be the absence of palm oil in the ingredients, but this time more for health than for environmental reasons (communication where chocolate cream is presented as being less harmful to health than those already on the market). Pro-environmental argumentation turned out to be less convincing for this segment – in the case of this group, the pro-environmental arguments are "defeated" by health arguments when choosing food products.

The qualitative research also revealed that the new product has a much smaller potential among persons from the two remaining segments (*Chaotic Consumptionists* and *Indifferent Indolents*). *Chaotic Consumptionists* may be interested in the product provided that it fits the prevailing nutritional trend at a given time (e.g., stop palm oil use trend). Additionally, something that can attract persons from this segment is appropriate brand positioning for the new product as an aspirational product and, thanks to this, referring to a certain kind of consumer snobbery that is characteristic of this group. The group with the smallest potential are *Indifferent Indolents* – they have very little sensitivity to pro-environmental and health-oriented communication, they are often price-driven in their choices and unwilling to pay more for a better quality product (Table 1).

An important element of the qualitative research was understanding the chocolate spreads category. The deepening of this knowledge enabled guidelines to be developed for the potential positioning of the new product. The study revealed that the taste is the most important reason to eat the product (typical

Table 1.

Examples of emotional benefits that are characteristic of relevant segments identified in the qualitative research (deepening of segmentation)

SEGMENT	Modern Hedonists	Open-minded Home-birds	Chaotic Consumptionists	Indifferent Indolents
Emotional benefit that can be used in communication	The sense that I can choose a product that will satisfy my sweet cravings and, at the same time, I will be a wise consumer (I will be making choices that are good for the environment)	The sense that despite eating an unhealthy product, I am minimising its negative impact on my health.	The sense that I am choosing something trendy, which is currently being bought by those who I admire and want to follow.	The sense that I am choosing something that my family enjoys eating – everyone (my family and I) will be pleased with this choice.

of hedonistic products) for all chocolate cream users (regardless of the segment) – the pleasure that every one of the respondents treats themselves to more or less often. Every new product that appears on the market is compared to Nutella, which is an absolute prototype in this category and its taste standard. Thus, a new product has to meet high taste standards (be at least as chocolaty and smooth as Nutella), but also build a strong brand intensely supported by marketing that will be capable of being competitive in relation to the so firmly established on the Polish market and strongly supported by communication Nutella brand. It is important to underline that palm oil is not spontaneously perceived as a drawback in the context of chocolate creams. Furthermore, many people are unaware of the fact that it is an ingredient that is present in most chocolate creams on the market. It is only once a deeper conversation is engaged in that the respondents focus on the ingredients, after which it starts to be perceived as undesirable. In the case of a "pleasurable" product that is in itself "sinful", consumers do not pay so much attention to the ingredients and it does not really deter them from buying it. Sometimes *Open-minded Home-birds* are an exception – they also search for alternatives within hedonistic products with a better set of ingredients, even at the expense of taste.

The conclusion from this part of the research was that the communication for the new product based solely and exclusively on the absence of palm oil may be too weak in order to break through the habits and the communication of the market leader, which clearly refers to pleasure. An in-depth analysis and understanding of the eating style of persons belonging to the given segments, the decision paths when choosing food products, and expectations towards different product categories obtained in the study carried out allowed the potential emotional benefits that can be used in communication to be identified (alongside the hedonistic product benefit relating to taste).

2.3. Stage 3 – Communication test – product positioning

Research aims and objectives

After the second stage of the study, the target groups were limited to three segments with the greatest potential for the new product and a qualitative communication test (positioning) was conducted with these persons: *Open-minded Home-birds*, *Modern Hedonists*, and *Chaotic Consumptionists*. Two positioning concepts were created: (a) Referring to the health benefits of the new product thanks to the elimination of palm oil (personal benefit – health-related): (b) Relating to the benefits to the natural environment (social benefit – environment-related). The way in which these two concepts were received by the representatives of the three selected segments was tested in the study.

Methodology

A total of 12 focus group interviews (FGIs) were carried out, 4 in each of the selected segments. Overall, 72 persons took part in the whole study. The respondents in this study were women only, due to their greater involvement in decision making when it comes to the nutrition of entire families, particularly of children.

Results

The qualitative investigation of concepts confirmed the hypothesis formulated on the basis of an ethnographic study on the benefits of greatest importance referring to the pleasure of eating a new chocolate cream in the communication of a new product, which comes as no surprise in the case of hedonistic products like chocolate cream. Additional benefits – whether health- or environment-related – should still support the sensory attribute but in no case should they dominate the message or undermine the pleasure communication.

The message related to the individual health benefit ("better for you because it's healthy") definitely responded to the needs and expectations of *Open-minded Home-birds* – fitting their day-to-day strategy of finding increasingly new and healthier alternatives to food products, particularly those used by children. The study also revealed that persons belonging to this segment are more sensitive to subtle differences in communication, which is why particular attention should be given to the precision of the information being conveyed in communication directed at them. Health-related communication also reached *Modern Hedonists*. For them, the health aspect is also significant but it cannot be dominant – a balance between health-related arguments and taste is necessary in their case. For the third group studied – *Chaotic Consumptionists* – health-related communication is the least convincing. In order for it to be accepted and for it to incline this segment to purchase the new product, it should be supplemented by an element of prestige (references to "stop palm oil use trend", being seen and making a statement).

Communication referring to the benefits for the natural environment ("better for the environment") only reaches the *Modern Hedonists* group. Their relatively large consumer awareness in the sustainable food area makes them capable of

understanding and accepting pro-environment messages. Nevertheless, just as in the case of health-related communication, they are mainly looking for pleasure benefits in communication relating to a chocolate cream (they are not ready to give up pleasure for pro-environment behaviour). When it comes to *Open-minded Home-birds*, however, fostering personal health and wellbeing is definitely more important than caring for the environment – their responsiveness to health-related communication will probably lead to them not noticing the message where the main focus is on the benefits to the natural environment and, if it is noticed, it will not respond to their needs. *Chaotic Consumptionists*, on the other hand, are a group that is indifferent to environmental aspects and until caring for the environment becomes fashionable in their milieu, communication based on such a benefit will go unnoticed by them.

A qualitative study of positioning concepts also revealed that "palm oil free" information raises concerns in some consumers in relation to the ingredient with which palm oil could be replaced and suspicions on the use of an ingredient that is "equally as bad" as palm oil. Information on the use of rapeseed oil (the base in oleogel production) in the product gave consumers a sense of security, an impression that they are well informed by the manufacturer and, therefore, do not suspect any food fraud when it comes to the ingredients. Nevertheless, rapeseed oil is not associated with sweet products, which questions the inclusion of such information in communication. Providing information about the oleogel (meant to replace palm oil) turned out to be an inappropriate solution as this ingredient is completely unknown to respondents and, therefore, raises suspicions that it may be unhealthy.

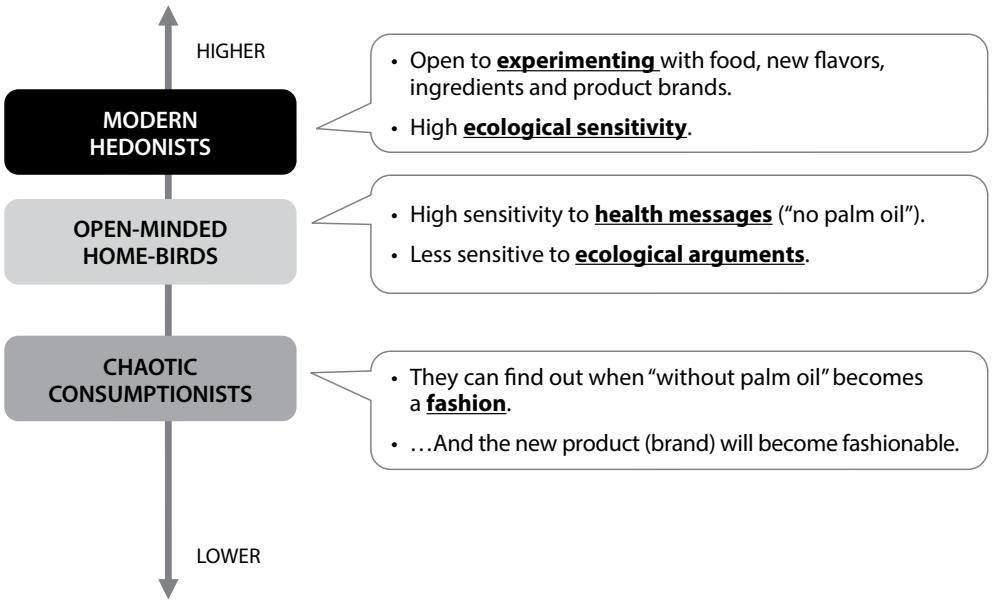

Fig. 4. The potential of the new "palm oil free" product in the three segments selected as target groups (qualitative communication study)

2.4. Stage 4 – product test – selecting the best taste variant for production

Research aims and objectives

The aim of the last study in the project was a taste test of the new products – an oleogel-based variant of a chocolate cream. The reception of the taste depending on communication referring to consumer health-related benefits or benefits to the natural environment was also checked.

Methodology

The product test was carried out exclusively in Poland and 1,052 persons, 314 of which were children, took part in the study. The study had an experimental design and 10 variants of the new product were tested, which differed in two dimensions: (a) The type of oleogel (5 variants); and (b) The taste: chocolate vs chocolate and hazelnut. In Group I, the study participants tested one new product (out of 10 versions) and two competing products present on the market: the market leader and a popular own brand – these products were tested in rotating order. After trying each product, the respondents were tasked with replying to a set of questions concerning their assessment. In the case of children (Group 2), only chocolate-hazelnut tasting variants were tested and the same two competing products. When it came to the adults from Group 3, only 5 types of product in the chocolate-hazelnut version (more popular) were tested and, depending on the condition, the taste test was preceded by one of the versions described (positioning relating to health vs environmental arguments). All the products were tested in a version where the name of the product and any information that could lead to the brand being identified were not revealed (a blind test).

Results

The results of the quantitative blind test showed that, despite the overall positive reception of the new product, its weakness in the current version is that it is slightly too sweet and that the fat can be tasted more than in the competing products.

Among the new products, the higher ratings across specific dimensions were obtained by chocolate and hazelnut products compared to chocolate products. Making a business decision as to the choice of a specific variant to launch on the market is still difficult because, based on the assessment of specific attributes, a leader could not be identified – every variant had a different strong feature. However, something that additionally complicated the picture of the results was that the taste preferences of children turned out to be different than the choices of adults.

The positioning concepts shown (pro-environmental vs health-oriented) did not fundamentally affect the perceived sensory features of the product like the appearance, colour, sweetness, consistency, cocoa content, and spreading ease.

The results of the research did not allow a single variant of the new product to be identified that could be fully recommended to be launched on the market

as a strong competitor to the current category leader. This did reveal, however, that the crafted formulations have a huge potential and can be considered as the basis for the production of chocolate creams constituting an alternative to those currently available on the market.

3. DISCUSSION OF RESULTS

The presented example of the OLEOGEL project shows how a series of consumer research studies accompanying the launch of an innovative product on the market can look like. Such research, alongside marketing knowledge, harnesses advanced methodological knowledge: surveys, qualitative research, including ethnographic research, experimental research, and psychological knowledge concerning needs, values, motives, barriers, and emotions, among others. This example reveals how, thanks to the combination of knowledge from various fields and the implementation of scientific knowledge, better business solutions can be successfully created.

When introducing product innovations to the market, consumer research constitutes a key element both in product development (in the OLEOGEL product – the product composition and manufacturing process), the choice of target group, as well as in the development of the communication and business strategy. The first field of research in the OLEOGEL project allowed for the identification of the consumer segments differing in terms of the preferences for bread spread and chocolate cream products, enabled the creation of consumer profiles, the choice of target group, and the diagnosis of barriers and factors that could induce consumer interest in the new product. Thanks to this, it was possible to firstly determine and thoroughly describe the target group for the new product (in terms of the directions of communication) and, secondly, to develop consumer insights ("truths") on which communication can be based or which can be used to complement the core communication and, thirdly, the desired benefits (product and emotional) for use in communication could be defined for each segment. This manner of carrying out consumer research allowed the strategy for placing a product on the market to be optimised, particularly in terms of the communication. Thanks to the recommendations resulting from the research, the prepared concepts better correspond to the needs and expectations of consumers and are thus more persuasive and increase the chance of success of the marketable product.

The second field in the study series – the sensory testing of the product – allowed to check if, on the taste experience level, the newly developed product has a chance of being accepted by consumers (i.e., whether it is at least equally as good as those presently available on the market) or – if such is the goal of the producer – if it could "win" with competing products. Product tests allow undesirable product characteristics to be identified that, after recipe changes, may lead to the improvement of the end product so that it meets the expectations of the largest possible consumer group. However, the results of the research carried

out failed to provide unequivocal results and it was difficult to identify one winner. Firstly, each of the tested versions of the product (oleogel base ingredient version) had their weak and strong sides, which made it more difficult to choose a single product with the greatest market potential. Secondly, in the case of the hazelnut variant, another product (based on a different fat) than in the chocolate and hazelnut variant received the highest ratings. Moreover, another fact that further complicated the picture of the results was that different products were assessed as the best by adults and children. Although children are frequent consumers of chocolate creams it is adults who buy them and also frequently consume them, too.

The example presented in the article, apart from the case study, is also an illustration of the numerous challenges accompanying the partnership between business and science in the context of the creation of innovative products.

The first of such challenges concerns the very pace of work and the differences in this pace between science and business. Scientific projects usually last for many years and, before commencing with scientific research, a scientist has many months to study literature and reflect on the studies that should be carried out. In the case of EIT Food projects, the average duration of a grant is 1 year. This means that the time from the concept to the creation of the end product is very short – in this case, one year. Both the laboratory product tests and the consumer research has to be carried out during this time. Therefore, a researcher has around 2 months to complete one consumer research project and the research has to be planned, carried out, analysed, and recommendations have been given to the members of the consortium responsible for the creation of the product during such short a time.

The second challenge when it comes to the collaboration between science and business concerns the formulation of recommendations from research. Scientists are usually very cautious when it comes to drawing binary conclusions from research because this is often illegitimate from the point of view of statistical or methodological rigours. This is why a series of studies are usually carried out when doing research, where subsequent studies attempt to answer the questions that emerge during the course of previous studies. Scientists often state that the data does not allow them to give an unequivocal answer, that "it depends". Business, however, does not tolerate such situations and expects unequivocal answers from the researcher. This often requires a scientist who collaborates with businesses to pluck up more courage to draw conclusions, make greater compromises and treat the results of statistical tests less rigorously. This does not mean that the researcher has to unequivocally specify the directions for development (e.g., variant A yes, variant B no), but they should be capable of clearly describing the advantages and drawbacks of given strategies that the business can adopt, identifying the potential competitive advantages (from the consumer decision perspective).

The third challenge posed by the partnership between science and business concerns the researcher having to cross boundaries and move beyond the scientific field. A scientist working for (or with) business cannot be an expert only in the field of science but has to also understand the business side of things, for

instance, the purpose of the research. It is crucial that scientists understand the business aims and objectives of the project as it is only thanks to this that they will be capable of preparing and carrying out the research so that valid conclusions can be drawn from it and harnessed in building a business strategy. Without understanding the business aims and objectives, the scientific research accompanying the entire process may turn out to be useless. One example of a flawed approach to such cooperation is when a scientist conducts studies (or asks research questions) that are subjugated to satisfying his/her scientific curiosity and not to the business aims and objectives (providing business with specific information concerning further solutions).

Combining the scientific approach with the business approach when developing solutions serving to improve the quality of life of consumers allows the synergy effect of the actions of both sides to be harnessed. The involvement of researchers and business practitioners in joint actions facilitates the harnessing of knowledge, skills, abilities, and experiences of experts in various fields, which increases the chances of the work outcomes producing product and service concepts that will answer the needs and expectations of consumers as well as the changing economic and social realities of the world surrounding us.

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