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Kaczorowska-Spychalska D. Shaping Consumer Behaviour in the Fashion Industry by Interactive Communication Forms.

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Abstract
The intense processes of digital transformation are resulting in changes in consumer behavior in the fashion market. The digital consumer expects increasingly attractive products that reflect new fashion trends, a low risk of purchase and immediate availability. They are active and engaged, and interaction with them is becoming a form of creating value for a company/brand. Being aware of fashion and their related needs, consumers require from brands a dialogue, transparency of activities undertaken, and personalisation of experiences created together with their diversity. A good solution here could be a fast fashion strategy, which is a new way of thinking about creating value with the customer and for them in the textile market. However, it requires from brands an increasingly customer-focused market orientation and looking for forms of communication that are much more engaging than before. The aim of the paper is to identify the influence of interactive forms of communication on shaping customer behavior in the fashion market. Particular attention was paid to social media, mobile marketing and solutions based on the concept of the Internet of Things.

Key words: fashion industry, fast fashion, interactive communication, consumer behavior.

Introduction

Fashion is defined as the prevailing style of consumer products or a way of behaving that is temporarily adopted by a discernible proportion of members of a social group because that chosen style or behavior is perceived to be socially appropriate for the time and situation [1]. Consequently it is one of the vital parts of our life. People all over the world can make different choices based on different preferences. Consumers buy items with which they feel familiar and comfortable. An individual’s preferences and level of comfort is derived through the inherent things that guide them to make decisions. Fashion starts and ends at the consumer [2]. Realisation of this fact should provide a basis for companies/brands of this sector to understand consumer behavior in an innovative and creative way.

The business of fashion has undergone a revolution in the digital age, consequently it has democratised, disrupted and even shifted the business model of the traditional fashion system. As a result, by the beginning of the twenty-first century, technological advances such as Apple’s smartphone, the iPhone, social media open-platforms and Web 2.0 applications had begun to transform both the creation and marketing of fashion [3]. Digital transformation and the resulting convergence of individual fashion market sectors as well as the degree of implications of modern technologies have led to a change in the character of activities, both inside and outside the enterprise – between brands and their customers. They have also changed the position and role of the consumer in a natural way – from a passive recipient to an active co-designer of value. But the era of customer empowerment demands new tools to understand what they want. To succeed, companies must understand the different sources of customer intelligence and take advantage of tools that will help them get closer to them [4]. Homocentric business models in the fashion market definitely want products that reflect the newest trends, individualised collections, an impression of exclusivity that is often related to limited availability of the collection and/or selected models, low risk of purchase based on an accepted level of prices, as well as an intensification of impressions and emotions resulting from interactions with the brand at every stage of the purchasing process. As a result, brands in the fashion market are becoming kinds of artifacts around which experiences are created together with related emotions and recollections. They definitely become unique for every consumer while determining the value of the brand and its offer. However, it requires engagement and close cooperation between companies/brands and their customers in order to optimise individual elements of that process: dialogue, transparency of activities undertaken, and personalisation of created experiences.

As a result, new technologies are becoming an intrinsic part of the activities of brands from the fashion market, which are changing the character of so-called touch points and extending beyond individual tools. Creating value in such market conditions obliges brands to take a new look at the market, which is more complex, and take into consideration changes resulting from digital transformation. A good solution here could be a ‘fast fashion’ strategy that is directed at restricting processes connected with the purchase cycle and the introduction...
of new clothing products to shops so that consumers’ needs could be met at the moment in which they are maximum. It also uses, to a great extent, all channels, particularly in digital space, to reach consumers. On the one hand, it enables to increase their level of involvement in the process of co-designing brand value, and on the other hand, to shape their desired behavior, including purchase decisions. However, such an approach requires from brands an increasingly customer-focused market orientation that blurs the classic boundary between production and consumption as well as diversified forms of communication directed at intensification of the process of mutual interactions. Therefore in the near future the Information Age can become a new challenge in a fashion market that is becoming more and more ubiquitous and adaptive.

The textile, apparel (clothing) and footwear industries are what many consider to be elements of the fashion industry. However, the term fashion can be used more broadly and cover a much greater range of goods, like home furnishings, fabrics, curtains, various upholstery, and wall and floor coverings [5]. Nevertheless much of the focus of this article will remain on the clothing industry.

The aim of the article is to identify the influence of interactive forms of communication on shaping consumer behaviour in the fashion market. The first part of the paper presents the notion of “fast fashion” as a business model, with particular focus on the impact of interactive forms of communication on creating consumer behaviour, including building brand value. Particular attention was paid to social media, mobile marketing and solutions based on the concept of the Internet of Things, which are the main pillars of digital transformation. The subsequent part depicts the results of the author’s own studies in the area discussed.

II Review of literature

Fashion is one of the world’s most important industries, driving a significant part of the global economy [6]. According to Fashion United, the global textile market is currently valued at over 3 trillion dollars and accounts for 2% of the global Gross Domestic Product. Thus it is one of the biggest consumption industries, generating 1.5 billion Euros of annual revenue from the sale of clothes and footwear in 2016 and employing over 60 million people in the whole value chain [7]. The biggest retail markets for clothes and footwear in the world belong to China and the US (these markets separately amount to a value of more than 30 billion USD). In Europe, the leaders in terms of the value of the retail textile-footwear market are Great Britain and Germany – in this case the value of the retail textile-footwear market can be estimated at 70-80 billion USD, Poland, with a market of about 10-12 billion USD, has less than 0.3% of the share of the global market, putting Poland at the end of the first ten of EU countries and at the end of the third ten among all the world countries [8].

The fashion apparel industry has evolved significantly, particularly over the last 20 years, where the boundaries of the industry have started to expand. The changing dynamics of the fashion industry over this period, such as the fading of mass production, the increase in the number of fashion seasons, and modified structural characteristics in the supply chain have forced brands to desire low cost and flexibility in design, quality, delivery and speed in the market [9]. The consequence of that is the fast fashion model, which has changed the world of fashion. Previous seasons such as spring/summer and autumn/winter have transformed into a form of permanent seasonality, getting customers used to constant stimuli in the form of new fashionable styling while assuming consumer needs as a criterion at a given point of the year. Fast fashion is one of immediate consumption. These are clothes that are designed in such a way so that the spirit of the time could be grasped, with no need to be worn for many years. It is meant to be worn only in a given season so that a fashion-conscious consumer could experience discomfit when a new collection appears and, thereby, a need to buy again [10].

By adopting a specific system of activity, enterprises of the fast fashion segment have created and imposed on consumers a new fast and frequent pace of shopping, for clothes. However, at the same time, as a kind of alternative, a ‘slow fashion’ trend has developed, in which the consumer does not follow the latest trends and does not buy new clothes that are current hits and solutions of the must-have type, but prefers timeless clothes that can be combined creating various stylisations. Slow fashion is about designing, producing, consuming and living better. It is about choice, information, cultural diversity and identity [11]. Slow fashion helps consumers to better understand their clothing by capitalising on local culture or local resources, which shortens the distance between producers and consumers. Less intermediation between the producer and consumer results in more transparent production systems and facilitates collaboration between designers, producers and consumers. But slow is not the opposite of fast – there is no dualism – it is a different approach in which designers, buyers, retailers and consumers are more aware of the impacts of products on workers, communities and ecosystems [12].

The emergence and rapid dissemination of the fast fashion phenomenon is frequently attributed to socio-cultural changes in the lifestyle of the consumer, who is constantly knowledgeable about the latest fashion trends and feels the need to adapt to reality in an affordable, dynamic manner. Consequently fast fashion implies a personal and social experience. It illustrates a new concept of wearing that pertains even to luxury fashion: post-modern consumers’ attention is moving away from the intrinsic quality of a product to the experience and emotional charge of it [13]. Determination of what the modern fashion consumer is, what fashion means to them, and what inspires them enables to understand their attitudes and expectations better. It seems reasonable to superimpose a picture that emerges from digital anthropology, thanks to which it is possible to determine in a multilayered way how they behave while being surrounded by technology and how it is used in that space. Digital transformation and its commercialisation are the common drivers of light industry change, and can provide enormous scope for production, distribution and consumption [14]. As a result, today’s fashion marketplace is global, and fashion news is spread instantly around the world via the Internet and mobile communications. At the same time, social media has opened a two-way dialogue between consumers and marketers – not to mention providing consumers with a vast source of fashion information and influence at their fingertips. This communications network permits consumers to express their needs and marketers to understand and fulfill them at a faster speed than ever before [15]. Consequently the digital revolution is one of the most significant influences on
consumer behaviour, and the impact of the Web will continue to expand as more and more people around the world log on. The cyber space explosion has created a revolution in consumer activity [16].

Consumers functioning in a virtual environment are increasingly often engaged and dynamic in their behavior, particularly the representatives of Generation Z (people born after 1997). They now shop online, at their desks and on their phones, choosing fashion items from all over the world with nary a thought for where they come from [17]. Their purchasing decisions are determined by opinions presented in hypermedia space. They look for opinions of other internauts, ask questions online, and describe products themselves, promoting their advantages and recommending them or discouraging from buying. What they expect from products is mainly variety, competitive prices, new emotions and enjoyment, as well as adjustment to their individual needs and preferences [18]. They are people who are not only aware of the potential of the market offer and the activity of their favourite brands, but also of their own needs in the fashion area. As a result, on the one hand they expect offers and discounts that will enable them to buy a full-featured product at a lower price, but at the same time they are aware that this dream product will be still available at that time. Consequently their willingness to be discouraged from shopping weakens, especially when gained experience and emotional load have a multi-layered and, at the same time, consistent character. In their opinion, it increases the value of a brand that becomes more human centric and integrated with their personality and lifestyle. Therefore access to information is becoming one of the most important criteria of changes in consumer expectations, which are getting more sophisticated, refined and unique towards brands active in the fashion market. It concerns individual collections, the opportunity to buy products by means of various devices (multi-screening) and channels (omnichannel), as well as the exclusivity of an offer and its personalisation. For the modern customer fashion is definitely a way to express themselves. It is also a part of their life because clothes create a voiceless means of communication that we all understand. They want, on the one hand, to preserve their individuality through fashion and to distinguish themselves, but at the same time to avoid ostracism and to establish and/or maintain social relationships built earlier. This is a form of expression of own identity and distinctiveness that enables to increase self-confidence, become someone special, and to build own social position based on it. But the current complex nature of fashion consumption is such that it is not so easy to shape consumer behaviour and motivate them to buy fashion and textiles products [19]. Thus brands in the fashion market should be physically, emotionally and intellectually attractive as well as sociable, while simultaneously showing a strong personality [20].

The digitisation and networking of information are transforming marketing communications into a vastly different set of practices for connecting consumers and brands. Digital media are bringing about an infinite reproduction of content, consumer networking, user-generated content and an expansion of media from news and entertainment to almost any technology that has a digital interface with people. The role of media in marketing communications practices is shifting from the execution of message strategies into an extension of consumer understanding [21]. However, what it requires from brands active in the fashion market is much greater flexibility towards the potential of new technologies and a proper choice of methods and tools engaging the consumer in that world. Key tools in this area currently include:

1. **Social media**, which are a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 [22]. They enable to exchange opinions, experiences, multimedia materials, etc. between a company/brand and its customers as well as between customers themselves. From the point of view of the fashion market, a crucial role now belongs to blogs and vlogs, content portals (e.g. YouTube), social networking services, and recommendation services. Building relations, establishing an emotional contact with brands, and creating own communities around them is not only directed at branding activities but also at after-sale activities connected with obtaining the biggest number of effective leads and support of a process of making a purchase decision (social shopping and social media commerce).

2. **Mobile marketing**, which, together with the increase in the number of mobile devices and available applications, can be defined as the planning and execution of all mobile-based marketing activities that influence a shopper, from the initial shopping trigger, to the purchase, consumption and recommendation stages [23]. It allows to increase the level of personalisation of messages transmitted by means of them, including mobile advertisements as well as an increase in the level of consumption of information concerning individual brands. Solutions that prove particularly important in the fashion market are mostly connected with augmented reality (AR), geo-localisation, and QR codes, including so-called touch codes and mobile vouchers. Mobile marketing also enables to intensify interactivity through access to social media from the level of mobile devices, e.g. geographically oriented communities. It is also much more important in the purchasing process, influencing the level of the consumer shopping experience. It concerns the opportunity to look through offers, compare prices, gain access to reviews, make payments, get customer service, and to build consumer confidence in a brand.

3. **Internet of Things (IoT)** in the consumer sector, together with the development of mobility, Big Data, cloud computing and machine learning, cause that devices included in the global network can communicate with each other, often without human intervention, and also on the basis of collected information and its analysis, they can make autonomous decisions. It is a new technology paradigm envisioned as a global network of machines and devices capable of interacting with each other [24]. In the fashion market it currently concerns such solutions as iBeacons, which enable both brands and customers to optimise a purchasing path while taking into consideration such products that the consumer is truly interested in as well as chatbots that perform the function of a virtual consumer advisor analysing their questions and giving answers based on matching key words and the context of a specific conversation. Growing popularity is also observed in the case of smart mirrors and fitting rooms, which enable to visualise clothes and additional information such as the place of production or availability in different sizes as well as
as smart fabrics which alone recognise the user’s emotions and activities undertaken by them while providing desired usefulness (e.g. smart sports clothes that analyse the sportsperson’s activity in real time). IoT is also significant in terms of so-called emphatic advertising that is adjusted to a specific place, time of day and consumer profile (e.g. age, gender etc.) and their attitude to messages displayed.

Modern technologies need to be analysed in a holistic approach while treating them as a broad set of tools which complement one another, thanks to which individual experiences of the consumer can be deepened while providing additional knowledge and entertainment as well as building their related positive emotions. They are something that evoke excitement, attract attention and build a space in which it is possible to shape a real brand personality. Technology has come not merely as a technical capability, but as a social phenomenon. Every technological device communicates on the level of every day experience, creating a cultural ripple effect as people use the potential of technologies to act differently [25], thanks to which they feel different. Although undoubtedly interactive tools and methods of communication with a consumer stimulate their desired behavior while letting brands produce more for less time, money and effort, they must be aware of the fact of which of them are truly indispensable from the point of view of building brand capital in the fashion market.

**Methodology**

Studies presented herein concerning identification of the influence of interactive forms of communication on shaping consumer behaviour in the fashion market are a subsequent element of broader analyses and studies concerning that sector, with particular focus on the Łódź Province. It is generally a region that is perceived through the prism of the history of the textile industry, whose key element it is, and at the same time it is currently the Polish centre of fashion and development of advanced textile and clothing technologies. Taking that fact into consideration, it was assumed that the results of initial studies conducted in that region will become a basis to develop unified research tools that are indispensable in subsequent stages of studies concerning the whole area of Poland.

The quantitative research conducted was of an exploratory character and constituted, besides simultaneous studies based on digital anthropology methods (social listening and ethnography), one of the elements directed at creating a multi-dimensional model of building fashion brand attractiveness in the era of digital transformation. In the studies conducted, the main focus was put on the assessment of the influence of a set of tools based on interactive forms of communication (social media, mobile marketing, the IoT) as tools for creating attitudes and behavior desired by brands in consumers’ opinions. The results presented, due to the territorial limitation of the studies conducted – Łódzkie Province and their local context, are at this stage of a fragmented and informative nature, determining at the same time the specificity and profile of further discussion in that area.

The research was of a quantitative character and was conducted by means of a survey addressed directly to young consumers – representatives of Generation Z. It was assumed that in the near future consumers from this generation will constitute a crucial subculture among a group of Netizens – citizens of network, especially in the context of their interactions with brands by means of modern technologies as well as fashion consumption as a sign of their cultural distinctiveness. Even today, it is already a generation for whom new technologies are a natural thing, whereas in the world of fashion they value originality and expressive solutions.

The research comprised 609 respondents, of which 579 correctly filled in the questionnaires, which met the criterion of age analysed (slightly above 95% of respondents). Among respondents a slightly prevailing group were women, who accounted for almost 52% of the total number of those surveyed (compared to 48% of men). Every second respondent had a permanent address in a town of above 30 thousand inhabitants. Thus it can be assumed that they are people who come from Łódź and the biggest towns of the province, such as Piotrków Trybunalski, Pabianice, Tomaszów Mazowiecki, Zgierz and Zduńska Wola. Slightly above 23% of those surveyed have a permanent address in a town below 5 thousand inhabitants, and 13% in towns between 15 thousand to 30 thousand inhabitants. One in ten was from a town of between 5 to 15 thousand inhabitants. Almost 55% of respondents spent online over three hours a day and slightly above 37% spent between one to three hours a day. Therefore they are typical representatives of Generation Z, that is computerised, connected, always clicking and content-centric. All respondents were, due to the set criterion of age, students of the 1st cycle studies, of whom 91% attended full-time programmes (9% extramural studies). Those surveyed studied mostly Management (38%), Logistics (24%), Marketing (11.6%), Entrepreneurship and Management of Innovations (11.4%) as well as Human Resources Management (10%). The remaining 5% included students of such courses as Business Analytics and Public Management.

In the group examined, 577 respondents admitted that they use diversified interactive channels of communication with brands from the textile market. They were mainly social media, pointed out by 99.6% of respondents, as well as tools of mobile marketing, which was declared by slightly above 80% of respondents. Solutions based on the concept of the Internet of Things were indicated by only one in five respondents, which might be a result of the fact that this is emerging technology and/or lack of respondents’ awareness that utilities used by them are a sign of new technological innovations applied to the fashion market.

Among the instruments of social media, respondents mostly indicated social networking platforms, of which Facebook was the most popular (slightly above 30% of respondents) and Instagram, which was pointed out by one in four respondents, as well as content portals, among which the dominant one was the
expect from them are constant novelties, such as New Look and Cropp, which represent most frequently interacted with such brands. By means of interactive tools respondents assessed prizes in such competitions as "deteriorating quality of clothes" (32%) – among full-time students such an attitude was expressed by 28% (compared to men – 21%) as well as by respondents studying in the extramural mode (32%) – among respondents in full-time studies such a decision was made by slightly above 24%. The greatest willingness to give up interest in a given clothing brand was observed in people with a permanent address in towns of over 30 thousand inhabitants, which was indicated by 1/3 of respondents. This might result from the fact that these people have greater access to the fashion world through a typical number of traditional points of sale of various clothing brands and different events organised by brands, such as shows or pre-sales. As a result, respondents have greater convenience of reaching specific collections and gaining knowledge, enabling them to make a decision in a short time, finalize a transac-

By means of interactive tools respondents most frequently interacted with such brands as H&M, Reserved, Zara, Bershka, New Look and Cropp, which represent a business model for the fast fashion segment. What respondents mainly expect from them are constant novelties, unconventional solutions, and a unique play with fashion and positive emotions. Things, respondents declared knowledge and lifestyle blogs and vlogs. Such a structure of responses seems to overlap, on the one hand, with the degree of popularity of individual social media tools in Poland, and on the other with what they carry with respect to the specificity of the fashion market (photos of collections, video of shows and stylistizations). However, what respondents used to a slight extent were corporate blogs of brands connected with the fashion market and discussion forums devoted to fashion. By means of mobile devices (smartphones and tablets) they connected with a brand profile in selected networking and content sites as well as looked through information concerning it. Solutions based on geo-localisation were also used quite often (87% of respondents). Thanks to installed applications, they received current information about novelties and promotion programmes including discount vouchers. According to respondents, an attractive offer could also be in augmented reality (AR), which was indicated by 43% of respondents. However, in their opinion it may seem that this is a solution that is currently identified with tools of interactive advertising. What was used by a small number of respondents were QR codes (only 11% of respondents), which after scanning were an additional source of information about price promotions and potential availability of a given model at a different point of sale. Mobile devices also did not represent an actual place of purchase for them; the so-called last click effect. In the case of solutions based on the concept of the Internet of Things, respondents declared knowledge of such tools as beacons (45% of respondents), which in their opinion, enabled to optimise their shopping path and wearables (43% of respondents), identified mainly with smart clothes and sports shoes (e.g. training suits and T-shirts by Nike or self-tying shoes by Nike). None of the respondents had tried interactive fitting rooms or smart mirrors in practice, although one in ten admitted that they had heard about them before.

However, analysis of the results of the studies with respect to assumed respondents’ features in that area indicates that these features differentiate respondents’ opinions, although the differences observed in most cases were not significant. Women were more willing to make such a decision – 28% (compared to men – 21%) as well as people studying in the extramural mode (32%) – among full-time students such a decision was made by slightly above 24%. The greatest willingness to give up interest in a given clothing brand was observed in people with a permanent address in towns of over 30 thousand inhabitants, which was indicated by 1/3 of respondents. This might result from the fact that these people have greater access to the fashion world through a typical number of traditional points of sale of various clothing brands and different events organised by brands, such as shows or pre-sales. As a result, respondents have greater convenience of reaching specific collections and gaining knowledge, enabling them to make a decision in a short time, finalize a transac-

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Definitely willingness to give up observing a given clothing brand was increasing together with growth in the amount of time respondents devoted to online activities a day. Therefore it seems justified that these people are more experienced and have bigger related knowledge, which allows them to choose brands and undertake digital activities in a more prudent and rational way.

The interactive tools in the fashion market analysed have, in respondents’ opinion, an impact on their consumer behaviour and attitudes. Nearly 80% of respondents admitted that before buying a product they check a brand’s profile in social and content networking sites, and based on this information, they form their attitude to a brand. At the same time, only every second respondent paid attention to the number of fans in a brand’s profile. What proved more relevant were the style and frequency of posts added, the form of discussion conducted, the way of moderating it, as well as the time that a brand needs to respond to questions or signs of customers’ dissatisfaction. ¾ of respondents are also convinced that social and content networking sites enable to build long-term relations with customers. Almost 60% of respondents are guided by opinions of bloggers and vloggers connected with the fashion market, treating them as experts in that field. Interestingly advertising in traditional media was important only for one in four respondents. Slightly above 70% of respondents recommend fashion brands which they observe in social media, while 66% trust opinions about them placed on the web by other users. Factors that would make respondents more willing to add a positive opinion about a given clothing brand or products offered included the following: the process of communication run by a brand in an interesting way in various channels, coherence of this process, a high degree of satisfaction with purchased products as well as willingness to share their experiences, and prizes that might additionally be won. The attitude to a brand, especially in the fast fashion sector, is a result of a great number of individual experiences in its every touchpoint and messages sent by it, mostly in digital space. However, it seems that rational application of interactive forms of influencing consumer behaviour enables to intensify these experiences and emotions while exerting an impact on the final brand value and its significance in customers’ life.

**Conclusions**

Fashion is a unique, exciting and very dynamic market that undoubtedly shows an ability to generate changes of a social or cultural nature. Digital transformation causes that fashion brands look for the best methods and tools of reaching a consumer, Generation Z in particular, whose behavior is often determined by advanced technology. This is a relatively young group of customers who, however, have extensive knowledge of fashion and brands, and new interactive digital tools can become a crucial factor in determining new trends in the clothing market for them. Mutual combination of the uniqueness of fashion, its aesthetics and the potential of modern technologies creates a fascinating space of own expression, both of brands connected with the fast fashion market, but also of their clients. Fashion must definitely be based on the passion of both parties.

However, building brand value in such circumstances entails implications, especially those that have a crucial impact on consumer behavior (looking for information, its gathering and analysing, making a purchase, recommending, building relations with a fashion brand, engagement in activities undertaken, etc). The studies conducted indicate that the crucial factor in that area for young people are social media. They generally look for information that will increase their sense of safety in the purchasing process and offer conditions allowing to optimise their choices. They also appreciate the role of social media in the process of customer service and in creating their positive experience [26]. Nevertheless it does not mean that they negate other mobile solutions or the IoT. It seems rather to confirm that their smaller popularity in respondents’ opinion results from a still limited degree of their usage by brands from the fast fashion sector in relation to the potential of social media already adapted by them.

The studies conducted were only a fragment of a broader analysis of opportunities to use interactive tools in the process of forming consumer behavior in the fashion market. Yet they opened a prospect for further studies and analyses in the area discussed, in particular with reference to opinions of brands connected with this market as well as the preferences of consumers. It would enable to determine the causes of the choice of particular interactive forms of creating the behaviour of clothing market consumers, fast fashion in particular, and to develop a multidimensional integrated model directed at creating the value of such brands in the digital era. Obviously it is not enough to do anything to get noticed: it is necessary to generate unique value for recipients of the message, which requires a carefully thought-out strategy, patience and engagement from brands [27].

**References**

The Laboratory works and specialises in three fundamental fields:

- R&D activities:
  - research works on new technology and techniques, particularly environmental protection;
  - evaluation and improvement of technology used in domestic mills;
  - development of new research and analytical methods;

- research services (measurements and analytical tests) in the field of environmental protection, especially monitoring the emission of pollutants;

- seminar and training activity concerning methods of instrumental analysis, especially the analysis of water and wastewater, chemicals used in paper production, and environmental protection in the paper-making industry.

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- Working out and adapting analytical methods for testing the content of pollutants and trace concentrations of toxic compounds in waste water, gaseous emissions, solid waste and products of the paper-making industry.
- Monitoring ecological legislation at a domestic and world level, particularly in the European Union.

A list of the analyses most frequently carried out:

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- Halogenoorganics (AOX, TOX, TX, EOX, POX)
- Organic sulphur compounds (AOS, TS)
- Chlorinated and chloroeorganic hydrocarbons
- Saturated and unsaturated fatty acids
- Phenol and phenolic compounds (guaiacols, catechols, vanillin, veratrols)
- Tetrachlorophenol, Pentachlorophenol (PCP)
- Benzene, Hexachlorobenzene
- Naphthalene, Chlorendane
- Polychloro-Biphenyls (PCB)
- Glyoxal
- Tin organic compounds
- Polyhalogenated compounds
- Organic phosphorus compounds
- Fatty acids
- Steroids
- Aromatic and polycyclic hydrocarbons
- Polycyclic aromatic hydrocarbons
- Nitro compounds
- Polychlorinated compounds

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