

OPPORTUNITIES AND LIMITATIONS FOR USING BIG DATA IN THE MARKETING INDUSTRY

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Abstract. The use of big data in marketing in Latvia is a relatively new and unexplored field, therefore the most important information about the possibilities of using big data in marketing and the limitations related to it has not been collected so far. In order for company management and marketing specialists to be able to manage the risks arising from the use of big data and the implementation of privacy policies, it is necessary to identify them, assess the main causes and analyse the impact of risks on consumer behavior. Despite the rapid development of technology, many companies avoid the use of big data, and the interest of consumers in the use and processing of their data is also growing. The research objective is to evaluate the scientific and practical problems of big data use and privacy, to identify the main actualities of big data use in marketing, the advantages and limitations of use, as well as to investigate consumer attitudes towards the use of big data. In order to attain the objective of the research, a literature review of public databases, literature and research articles is performed followed by interviews of experts representing big data analytics in Latvia and consumer survey. As a result of the research, it was concluded that consumers' knowledge of big data use and processing technologies is relatively low, therefore there is a low interest in privacy compliance and violations, and the size of the company does not affect the awareness of the importance of using big data in marketing, making business decisions and conducting company consumer analysis.

Key words: big data analysis, marketing, consumer attitudes, advantages and limitations of big data.

JEL code: M31

Introduction

In less than a generation, the Internet has changed the way society lives and provided more opportunities for the generation, analysis, and distribution of large volumes of new data. As more and more data are generated, big data has attracted considerable attention from both the public and businesses. The use and analysis of big data allows companies to build profiles of their customers based on historical and real-time behavior at specific locations and times. Likewise, the results of big data analysis can improve a company's marketing strategy, provide a better customer experience, and increase revenue. Undoubtedly, big data analysis can create more opportunities to develop companies and business ideas, but with these opportunities come challenges. Not all consumers understand where and how their data is used and what information is used, so some companies refrain from using big data in marketing. There is a need to explore the risks and challenges associated with big data, as well as identify the benefits of using it.

The use of big data in marketing in Latvia is a relatively new and unexplored field, therefore the most important information about the possibilities of using big data in marketing and the obstacles related to it has not been collected so far. In order for company management and marketing specialists to be able to manage the risks arising from the use of big data and the implementation of privacy policies, it is necessary to identify them, assess the main causes and analyse the impact of risks on consumer behavior. Despite the rapid development of technology, many companies avoid the use of big data, and the interest of consumers in the use and processing of their data is also growing.

The **objective of the research:** evaluating the scientific and practical problems of big data use and privacy, identifying the main actualities of big data use in marketing, modern trends in privacy and its implementation in companies, identifying the importance of big data use and privacy in the development

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of the company. Research hypotheses: consumers' knowledge of big data use and processing technologies is relatively low, thus there is low interest in privacy compliance and violations. Research object - the importance of using big data in the development of the company.

Subject of research - opportunities and obstacles to the use of big data in Latvian companies.

Research tasks are: to identify the main benefits of using big data in marketing and the limitations associated with them in literature sources and scientific articles; to conduct an interview of big data analytical experts on the possibilities of using big data for Latvian companies and conduct a consumer survey on big data technologies and the importance of privacy.

The following **methods** were used in the study: the method of qualitative and quantitative research was used to achieve the objective of the research. In the study, a survey of Internet users was conducted, in which 443 Internet users, residents of Latvia, participated. A random sample was taken.

A qualitative research method was used - expert interview, in which six Latvian marketing experts were interviewed, who were selected according to their education and work experience.

At the end of the work, conclusions will be gathered and proposals will be developed for those working in the marketing sector and Latvian companies for increasing the understanding of the importance of using big data.

Research results and discussion

1. Literature review

Authors Moorthy, Lahiri and Biswas emphasize that like other socio-technical phenomena, Big Data triggers both utopian and dystopian rhetoric. On one hand, Big Data is seen as a powerful tool to address various societal issues, offering the potential of new insights into areas as diverse as cancer research, terrorism and climate change. On the other, Big Data is seen as a troubling manifestation of Big Brother, enabling invasions of privacy, decreased civil liberties, widening of inequality and increased state and corporate control (Moorthy et al., 2015). In this article, authors review the scientific literature to identify the benefits of using big data.

In the era of big data and technology, the amount of available data has grown exponentially, and complex algorithms have been developed (Shi-Nash et al., 2017). In addition, computing power and data storage capabilities have continually improved. This has provided companies with the opportunity to create data analytics capabilities and increasingly digitize their operations, which has become a crucial element in the survival and prosperity of businesses. Today, discussions about big data are largely economic in nature. In addition to issues related to data collection, storage, and ownership, a key question is the value that big data can create, the economic benefits of its use, and how it can help companies outperform their competitors.

The results of McAfee and Brynjolfsson's study show that companies that self-identified as data-driven performed better in terms of objective financial and operational results than other companies that were not classified as data-driven companies (McAfee et al., 2012). For companies seeking technology-based competitive advantages to drive significant business growth, big data allows companies to create additional value. Big data enables companies to become smarter and more innovative in ways that have not previously developed. The author Saksonova (Saksonova, 2013) also emphasizes the importance of innovation and efficiency for companies in various industries.

The use of big data analytics allows managers and marketers to make decisions that are based on data rather than intuition or past experience. Based on the authors Katalina and Saksonova, companies are

always looking for ways to increase efficiency (Katalikina & Saksonova, 2022). According to a McKinsey Global Institute (MGI) report, big data is becoming a key foundation for competition, productivity and the creation of new products and services. Big data analytics are critical in times of data glut and can provide unanticipated insights and aids to decision makers (McKinsey Quarterly, 2011). Companies seek to use data analytics to better understand the changing external environment that will affect their competitive position and discover new business opportunities.

Research shows that companies can use customer information to create a competitive advantage and profit growth that is 5 to 6 percent higher than the company's competitors who do not use big data in marketing decision making (Biesdorf et al., 2013). However, such efforts by companies also increase the vulnerability of customer data or create a potential perception of a company's harm to consumer privacy through the unwanted use of big data or the mining of personal data, such as data mining that may result from data breaches or identity theft. As such, data collection efforts can also have a downside, with customers often expressing distaste for a company's privacy policies and data collection practices (Sipior et al., 2011). Therefore, a topical question in marketing is ways to prevent these negative effects from occurring and to balance the company's profit increase over its competitors.

Survey questionnaires have long been one of the main means of collecting data on consumer attitudes, beliefs and opinions and are useful for assessing specific characteristics of individuals, as well as for building an understanding of public opinion and producing accurate official statistics (Liu et al., 2017). With the development of technology, it is possible to turn the traces left by consumers in the digital environment into more information about consumer behavior (e.g. purchase history, personal interests obtained while browsing the Internet) in the form of big data. Authors Baker and Eck, Cazar, Callegaro, and Biemer believe that big data and surveys have great potential to complement each other, allowing scientists to better understand each consumer individually and society as a whole, for example by combining the low cost per unit of data of big data (compensating for the increasing cost of survey data collection) is an opportunity to collect very specific information about the research question (Eck et al., 2021). According to the authors of the paper, by combining the results obtained in customer surveys with consumer big data, it is possible to find in-depth regularities that can explain the factors creating customer experience, consumer satisfaction and loyalty.

Today's digital technologies have created many potential sources of personality-related big data. Smartphones and other personal electronic devices contain a variety of sensors (such as microphones, cameras, light and proximity sensors) and data logs (such as call and text message logs, web browser logs, and application usage logs) that provide rich and diverse sources of behavioral data (Tay et al., 2020). Bluetooth data and GPS navigation features in mobile phones can track where a consumer is, when and with whom, all of which can reveal personality and personality traits (Mønsted et al., 2018). Advances in technology not only offer new sources of personal data, but also enable companies to collect data in new and more efficient ways. However, the authors of the paper would like to emphasize that not all countries' legal framework allows the use of such personal data, as they allow identification of the consumer's place of residence and other personal information that may threaten consumer safety. Therefore, the company's data specialists need to use the advantages provided by the data, but carefully understand the extent to which the data is allowed to be used by the law. Further research on big data should look for technological solutions to be able to protect consumers' privacy (consumer's personality cannot be identified), but at the same time provide companies with opportunities to analyse these data, from which data analysts can obtain important market trends.

Among the many directions of development in digital technologies, social media platforms stand out as particularly rich sources of personal big data (Alexander III et al., 2020). Given the large number of people who now regularly use social media networks, extremely large data samples with a wide demographic range (race/ethnicity, gender, age, geographic origin, and culture) are often represented. Social media content such as tweets, comments, news and reviews have contributed to the extensive generation of big data from platform providers or various websites. The analysis of social media data using various traditional data mining and machine learning techniques is still an active research area. For example, social media data can reveal market research information through consumer insights that improve business decision-making (Ghani et al., 2019).

The most common uses of big data in the social media environment are trend detection, social media analysis, sentiment analysis and opinion mining (Pavaloaia et al., 2019). For example, social media helps companies get customer feedback about their products, which can be used to adjust the decisions they make and gain value for their product. Research has confirmed that most existing social media big data analysis approaches are based on machine learning. Machine learning is an area of artificial intelligence that has been used in many social media platforms to identify patterns and relationships in data. However, working with large amounts of data collected from social media in different formats has also created some challenges related to social media specificities, such as the slang and jargon used in social media posts. Big data collected from social media is meaningless until it is properly used to guide decision-making by turning massive amounts of social network data into meaningful results (Gandomi et al., 2015). Also in this aspect, according to the authors of the work, the quality of big data is essential. Although the data that has been collected from social media is very diverse, quality is also very important for this category of data, but precisely because of this diversity, it is difficult to determine whether the data will provide qualitative and usable conclusions.

An accurate and efficient demand, supply and price forecasting model directly affects customer satisfaction and inventory accumulation (Atnafu et al., 2018). To ensure the proper operation of the supply chain management system, companies need to improve demand forecasting. Businesses are in the era of big data, and companies are collecting data from multiple dimensions. There is a shift from traditional forecasting methods to advanced data science methods as business leaders realize that historical sales data and marketing channels have a huge impact on forecasting accuracy. Companies are trying to map customer behavior patterns so that they can optimize their marketing spend, thereby improving their overall financial performance. By measuring the quantitative effect of marketing campaigns through various channels, these companies attempt to calculate the return on investment (ROI) impact. This has ultimately led to the emergence of a new buzz phrase, demand-driven forecasting, which is a combination of demand generation, demand sensing and responding to real consumer demands. These methods use big data analytics to evaluate the success of marketing strategies by identifying consumer behavior patterns (Kumar et al., 2020).

The need to change the mindset of a company's culture is very important in big data analysis, because the use of big data can mean changing traditional practices (Wang et al., 2018). Big data analysis refers to companies' ability to identify sources from which it is possible to obtain different types of data with different output rates, as well as ways to collect, store and further analyse this data in order to achieve the company's strategic and operational goals. Although big data is available, it does not immediately give the company a guarantee that these goals will be achieved, it depends on the company's information system and IT capabilities (Tay et al., 2020). From this perspective, the possibilities of using big data in marketing

are closely dependent on the skills, knowledge and motivation of employees, which in turn depends on the company's material resources, such as IT hardware and computer programs for processing big data.

Data analytics capabilities have become critical business skills as the amount of data available to companies, the types of data, and the rate of data change in business increases (LaValle et al., 2011). Enterprise data analytics capabilities refer to their ability to leverage and develop resources based on big data analytics to gain insights that can lead to sustainable competitive advantage in a dynamic environment. Building data analytics capabilities requires the integration of strategic resources, including tangible, intangible and human skills (technical and managerial skills), among which human skills stand out as the most important to execute and develop data analytics capabilities (Akter et al., 2016).

Summarizing the advantages of using big data in marketing, the authors of the work conclude that the collection and processing of big data can provide companies with very extensive knowledge about their consumers, contributing to the understanding of the customer's wishes and needs, thus improving the service experience. Based on the findings of scientific and theoretical research, used as a basis for further research, which is intended as a basis for clarifying the opinions of experts in the field of marketing, IT and data protection on the possibilities and limitations of the use of big data in marketing and the development trends of data analysis, as well as to discover what is consumer knowledge about the use of big data in marketing.

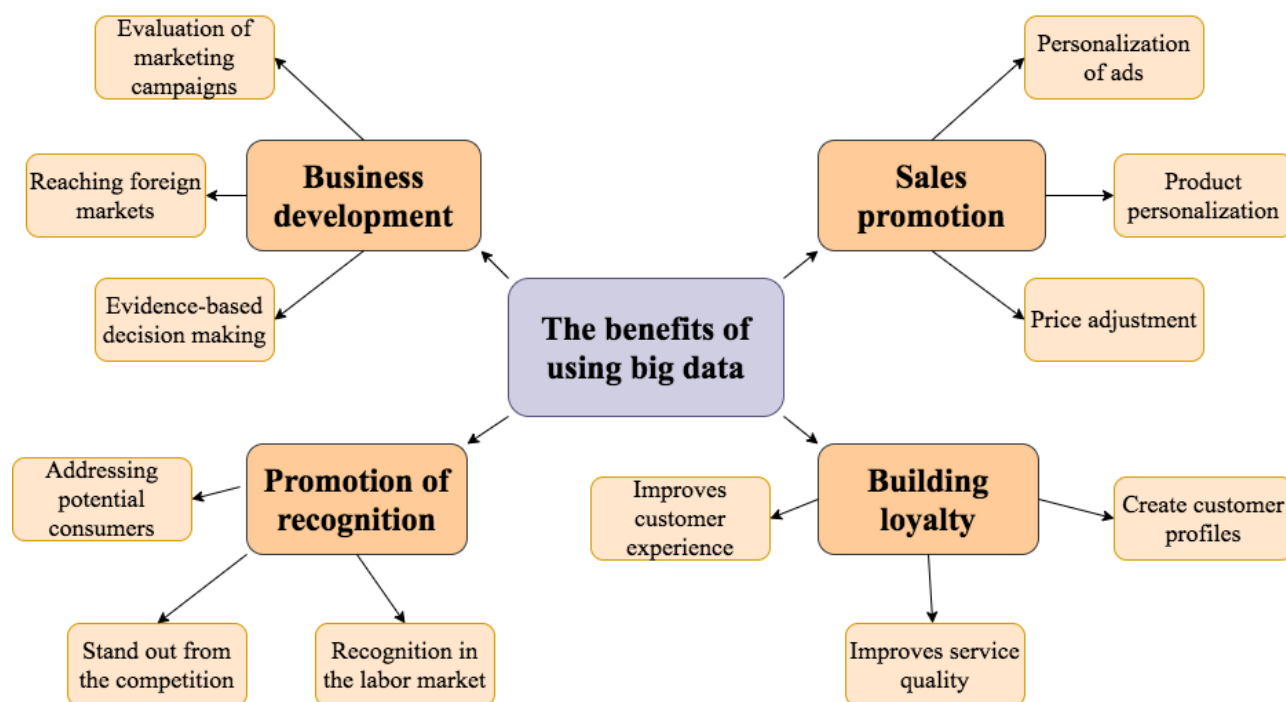
2. Advantages and limitations of using big data

The method of qualitative and quantitative research was used to achieve the objective of the research. In the study conducted by the authors, a survey of Internet users has been conducted with a participation of 443 Internet users, the residents of Latvia. A random sample was taken. The aim of the study is to find out the opinions of experts in the field of marketing, IT and data protection on the possibilities and limitations of using big data in marketing and the development trends of data analysis, how to discover what consumers' knowledge is about the use of big data in marketing. The consumer survey was conducted in the period from April 25, 2022 to May 8, 2022. The survey was created and completed using the survey tool Question Pro. 443 respondents took part in the consumer survey. Data analysis was performed using statistical data analysis methods: descriptive statistics and Pearson's correlation, gathering data in tables (simple and cross tables) and creating graphs. The SPSS Statistics 22 program was used for analysis, as well as Microsoft Excel 2016. Graphs were created using Microsoft PowerPoint 2016.

An expert interview has been used as a qualitative research method, during which six Latvian marketing experts have been interviewed: Maris Kulikovskis, Janis Bergs, Aldis Erglis, Andris Kalniskans, Ivo Krievs, Emils Ludvigs Erglis. The experts have been chosen in accordance with their education and work experience. In order to obtain information about the use of big data in marketing in Latvian companies, the author of the paper chose to conduct a qualitative study - semi-structured in-depth interviews, which consisted of five questions. Given that semi-structured interviews do not follow a precise interview plan, they are easier to adapt to the conversation process and the professional experience of the interviewee. One of the main advantages is that, if necessary, it is possible to change the order of questions and ask additional questions that supplement the expert's answers.

As shown in Fig. 1., several experts recognize the personalization of a service or advertisement as one of the most important benefits, because today's consumer wants to receive very specific and directly addressed offers. Also, several experts mention that traditional marketing channels, such as print advertising, television or radio, will no longer be as effective because they offer the same content to all consumers. Therefore, one of the categories of advantages could be defined as a sales promotion, which

includes benefits that contribute to the growth of the company's sales results - a personalized advertisement or an offer that reaches the consumer at the right stage of making a purchase decision.

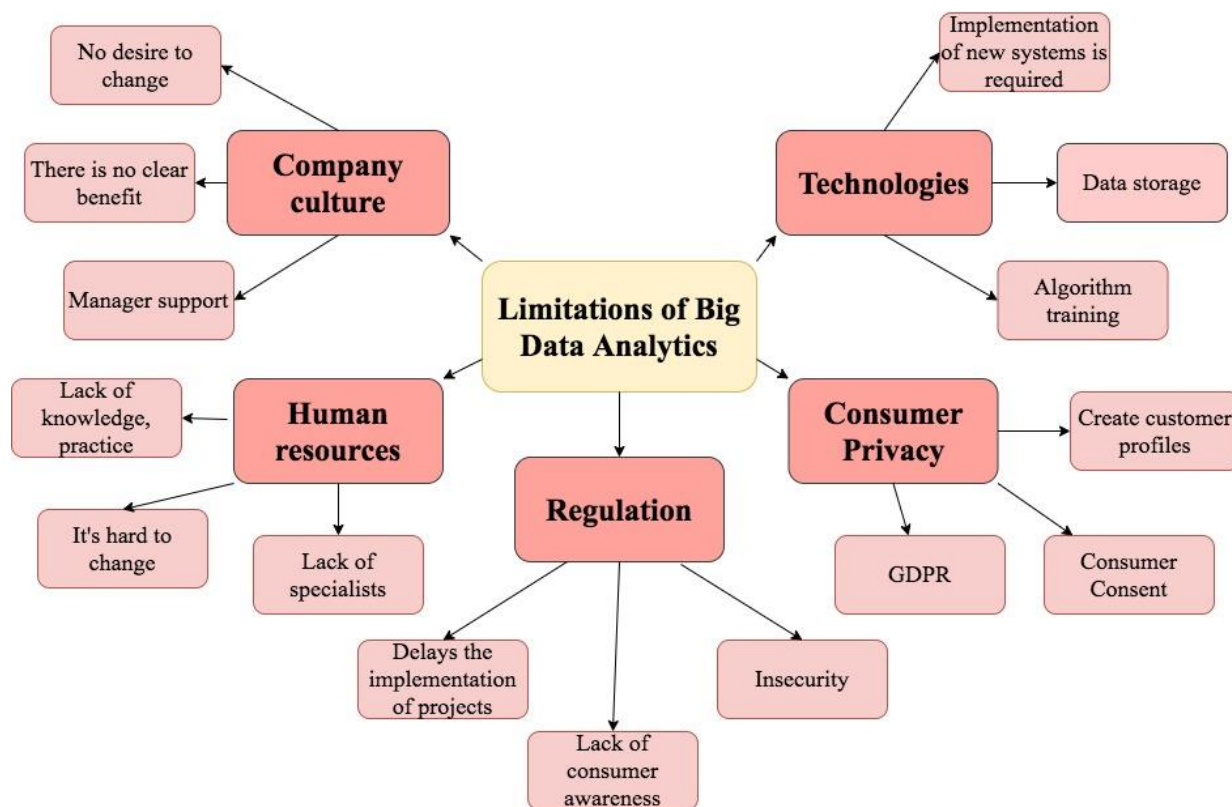


Source: author's construction based on expert interviews

Fig. 1. The benefits of using big data

Experts emphasize that not only is advertising personalization essential, but content marketing customization is also very important as it can improve consumer loyalty, which is essential in a saturated market. As the second most important benefit, experts recognize the improvement of the customer experience. Experts repeatedly emphasize that in a saturated market, for example, in retail and gas stations, it is very important to retain the consumer, but this will not be possible if service or service errors occur regularly in the consumer's experience, which are not identified and corrected. Big data analysis helps to determine at which stage of the service or in which trading institution this error occurred and allows to correct it quickly and efficiently. Big data in e-commerce also allows identifying at which stage of the shopping process the consumer has stopped the process or spent too much time, which may indicate system errors or processes that the consumer does not understand. Improving the customer experience is important not only for a specific customer, but for all customers in general, because the entire service delivery process is improved. Therefore, the authors of the work define the second category of benefits - promotion of loyalty, which includes benefits such as improving customer experience and service, preventing service errors and creating special, individual offers, creating a consumer profile and predicting future purchase behavior.

As shown by the answers of experts collected above, not all companies choose to use big data analysis in marketing, therefore the authors wanted to find out what, according to experts, are currently the most significant limitations in the use of big data and how these obstacles could be overcome. As shown in Fig. 2., the authors of the work categorized the most frequently mentioned limitations of using big data into five groups – barriers related to company culture, technological barriers, human resource limitations, consumer privacy and existing regulatory barriers.



Source: author's construction based on expert interviews

Fig. 2. Limitations of big data analytics

One part of these limitations relates to data collection, maintenance and analysis systems. Companies need to invest in data systems - CRM systems (customer relationship management system), marketing automation systems, web platforms are needed. Expert A. Erglis believes that some of the technological obstacles are related to the development of big data algorithms themselves - the biggest obstacle or side effect from the use of big data is that data sets often contain biases that can unfairly put certain groups at a disadvantage or focus excessively on certain actions to the detriment of others. For example, if a data set is dominated by a certain gender, then the algorithm will most often choose that gender. It is not enough that the company has this data, but it must also be arranged correctly so that discriminatory factors do not arise.

Experts believe that a company can overcome technological limitations, as long as the existing culture of the company is favorable to it. The desire and ability of the company to change and develop is very important. Also, in the implementation of various new solutions, the manager's support and understanding of why the particular technology is necessary in the company is essential. The expert also adds that it is the duty of specialists to convince the manager of the need for data analysis. Also, the company must evaluate the ROI (return on investment) - whether the organization will really benefit financially, because the goal of every business is to make a profit. One should not just follow the big data trend and implement this analysis only after the implementation. Equally important is the involvement of marketing specialists and lawyers in this process, and their attitude towards changes, because, as expert M.Kulikovskis claims, the company's legal, marketing and IT departments must work in harmony. These conditions are especially important in the e-commerce industry. A global solution is difficult to find, but surely the company must be based on these three cornerstones. As the last, but not the least, obstacle, the authors of the work categorize all restrictions related to consumer privacy. Both consumer actions and attitudes can affect the effectiveness of using big data in an enterprise.

3. Attitude of Latvian consumers towards the use of big data in marketing and willingness to share private data

According to the results of expert interviews, consumers' attitudes towards the use of big data in marketing and willingness to share their private data could be influenced by consumers' knowledge about the use of big data in marketing. In order to assess consumers' digital environment habits, survey participants were asked to indicate which mobile devices they use on a daily basis for work and private needs and which services or products they regularly use on the Internet. In the digital environment, respondents most often use social media (99.32%), communication options (99.10%), such as WhatsApp and Messenger, e-mail services (65.01%), navigation (62.08%) and search engines (64.79%). On the other hand, the most popular devices used by consumers for work or private purposes are a smartphone (98.87%), a laptop (87.58%) and a desktop computer (51.92%). Therefore, it can be concluded that the participants of the survey are active users of digital services and devices, whose private data is controlled or unknowingly ends up in the digital environment or with companies that can use this data for marketing purposes. This division is also essential for marketing content creators, when it is important to adapt the content created by the company to the needs of the consumer or the device of content consumption. If the content is not consumed due to its inappropriateness, the company is less likely to obtain consumer data that could then be used to analyse the information and create personalization.

Univariate analysis of variance or ANOVA shows that the respondent's age and income level have a statistically significant effect on whether the consumer is ready to provide his private data to companies so that the company can improve its services. Younger consumers are more willing to allow companies to analyse their private data for service improvement purposes than older consumers (the lowest average score for this statement is among the 55-64 age group - 2.71 out of 5 points). Likewise, consumers with an income level above 500 EUR per month will have a lower average rating for readiness to provide their data than consumers with an income level below 500 EUR per month. According to the results of the ANOVA test, the respondents' gender and education level do not statistically significantly affect the consumer's willingness to provide their data to companies. Marketers whose company's target audience is older people need to pay close attention to what consumer data is used for and how this analysis is communicated to the target market in order to increase the positive attitude of this age group towards marketing big data collection and analysis. Also, attention should be paid to the fact that the conditions of data collection and analysis are clear, transparent and easy to understand.

Crucial to the study was whether consumers would be willing to pay for online products and services but protect the security of their data. According to the results of the study, the majority of consumers, or 74.5%, would prefer not to pay for services, but understand that in return the company is going to collect and use the consumer's personal data for commercial purposes. As can be seen in Table 1, this trend is most clearly visible in the age group up to 44 years. On the other hand, starting from the age of 45, the proportion of consumers who would rather pay for services rather than allow companies to use their personal data for commercial purposes increases. The authors of the paper explain such results with the greater caution of consumers in these age groups and the desire to insure against various risks.

Table 1

Cross-tabulation of respondents' willingness to pay for online services and respondents' age

Respondents' willingness to pay for online services		Age of respondents						Total
		up to 24 year	25-34	35-44	45-54	55-64	65 and over	
In general, I'd rather pay for a service than let companies use my personal data for commercial purposes	Number of respondents	18	39	24	26	3	3	113
	%	24.7%	27.5%	16.0%	39.4%	37.5%	75.0%	25.5%
In general, I would prefer not to pay for the service, but I understand that in return the company is going to collect and use my personal	Number of respondents	55	103	126	40	5	1	330
	%	75.3%	72.5%	84.0%	60.6%	62.5%	25.0%	74.5%
Total	Number of respondents	73	142	150	66	8	4	443
	%	16.5%	32.1%	33.9%	14.9%	1.8%	0.9%	100.0%

Source: author's construction based on survey, n = 443

According to the authors, the negative (26.58%) or neutral attitude (48.20%) of consumers towards the use of big data in marketing can be explained by the uncertainty associated with both the use of data and the implementation of privacy measures in most companies. The majority of respondents (48.20%) are not sure or see more advantages or disadvantages of using big data in marketing.

The results of the quantitative study show the knowledge and attitude of Latvian consumers towards the use of big data in marketing and implemented privacy security measures. Summarizing the data obtained in the study, it can be concluded that, despite the respondents' high use of digital technologies and services, the respondents have no information about what internet user data is generated, where it ends up and who analyses it, which indicates low knowledge in the use of big data in marketing and business. Most consumers do not object to having their data analysed so that companies can provide consumers with personalized offers or to improve the quality of the company's product or service. However, consumers object if this data is sold to third parties for marketing and commercial purposes, which proves the importance of data control emphasized in the theoretical part.

In general, experts agree that the use of big data for marketing purposes is becoming an increasingly important part of business and can give a company's products and services a number of advantages over their competitors. Also, experts believe that the existing regulation partially prevents Latvian companies from reaching the full potential of using big data, because often the law is not sufficiently specific or relevant to the industry. But despite the limitations of the General Data Protection Regulation, companies are choosing to use big data analytics because of the benefits it brings.

The authors of the paper conclude that although the use of big data has many of the advantages listed above, they do not arise solely from the fact that big data analysis is performed. According to experts, the company must constantly improve its customer database and make sure that this data is of high quality. Similarly, the use of big data does not depend on the industry in which the company operates, but on the business goals that the company wants to achieve. If the company's goal is to improve customer service, then it is likely that the company will pay attention to the data of the customer's experience, data acquisition and analysis of the obtained information, regardless of the industry in which the company operates.

Conclusions

- 1) Big data analysis is very important in the era of data saturation and digitization, and it can provide previously unexpected insights and aids to decision makers, such as creating personalized advertisements and offers, giving a company a competitive advantage, improving search engine results, increasing profit growth, obtaining information about consumer behavior, build a consumer profile, obtain more information from survey results and improve the consumer experience.
- 2) One of the main limitations of big data is not data storage or analysis, but how organizations can effectively transform data into relevant and reliable information that can be used in further stages of business.
- 3) As the main advantages from the collection and analysis of big data, experts recognize the potential for business development (reaching foreign markets, service automation), sales promotion measures (advertising personalization, price adjustment), building consumer loyalty and promoting brand recognition. The experts' assessment coincides with the advantages of using big data found in the literature analysis.
- 4) The use of big data is recommended and suitable for any business sector that is characterized by continuous environmental and product changes and where these changes are difficult to predict. One of the prerequisites for data analysis is the datafication of the customer experience, as a result of which the company obtains digital data about the experience of using the customer's service.
- 5) There is no statistically significant positive correlation between high or average consumer digital skills and knowledge about privacy and big data collection on the Internet, suggesting that consumers with high technological skills are less concerned about their privacy than consumers with low digital skills.
- 6) The majority of consumers, or 74.5%, would prefer not to pay for services, but understand that in return the company is going to collect and use the consumer's personal data for commercial purposes.
- 7) 51.3% of the survey participants would rather allow the company to use the collected data to provide the consumer with personalized offers, while 29.3% of the respondents find it difficult to answer this statement.

Recommendations

- 1) In order for companies to be able to prevent changes caused by the rapidly changing external environment and to reduce unpredictability in the industry, the authors of the paper recommend marketing specialists to implement big data analysis in the company.
- 2) The company's marketing specialists should emphasize consumer benefits, such as receiving personalized advertisements and offers and price optimization, when communicating with consumers about private data collection and analysis.
- 3) The company's marketers should make sure that the privacy rules and policies intended for the consumer are written in understandable language, without redundancy and specific terms, in order to promote consumer understanding of the big data analytics measures implemented by the company and increase consumer trust in the brand.
- 4) For the company's marketers, facilitate the alignment of marketing, IT, and legal departments to help overcome barriers related to big data analytics, such as technological, regulatory, and consumer privacy trends.
- 5) In order for companies to be able to implement big data analysis, the authors of the paper recommend marketing and data analysis specialists to dataize the consumer's purchase decision-making

process, from the stages of which it is possible to obtain the consumer behavior, profile and satisfaction data necessary for big data analysis to improve service quality.

6) For the company's marketing and data analysis specialists, develop data analysis methods that ensure obtaining marketing conclusions even from a small data set, in order to save the company's technological resources and adapt to the trends of the big data analysis industry.

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