St. Petersburg University

Graduate School of Management

Master in Management Program

SEGMENTATION OF DIGITAL PRODUCTS CONSUMERS:
THE ROLE OF DIGITAL COMPETENCES AND GENERATIONAL FEATURES

Student: Julia Alekseeva, 2nd year MiM

Research advisor: Maria M. Smirnova,

Associate Professor

St. Petersburg

2021

ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

Я, Алексеева Юлия Иннокентьевна, студентка второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Сегментация потребителей цифровых продуктов: роль цифровых компетенций и принадлежности к поколению», представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата.

Все прямые заимствования из печатных и электронных источников, а также из защищенных ранее выпускных квалификационных работ, кандидатских и докторских диссертаций имеют соответствующие ссылки.

Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава Федерального государственного бюджетного образовательного учреждения высшего образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».

(Подпись студента)

6.06.2021   (Дата)

STATEMENT ABOUT THE INDEPENDENT CHARACTER OF THE MASTER THESIS

I, Julia Alekseeva, second year master student, program 080500 «Management», state that my master thesis on the topic "Segmentation of digital products consumers: the role of digital competences and generational features" which is presented for the public defense for the Official Defense Committee, does not contain any elements of plagiarism.

All direct borrowings from printed and electronic sources, as well as from master theses, PhD and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of Guidelines for instruction in major curriculum programs of higher and secondary professional education at St.Petersburg University «A master thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of Charter of the Federal State Institution of Higher Education Saint-Petersburg State University «a student can be expelled from St.Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

(Student's signature)

6.06.2021   (Date)

АННОТАЦИЯ

Автор	Алексеева Юлия Иннокентьевна
Название ВКР	Сегментация потребителей цифровых продуктов: роль цифровых компетенций и принадлежности к поколению
Образовательная программа	«Менеджмент (Master in Management - MIM)»
Направление подготовки	38.04.02 «Менеджмент», профиль - Маркетинг
Год	2021
Научный руководитель	К.э.н., доцент Смирнова Мария Михайловна
Описание цели, задач и основных результатов	Целью диссертации является разработка сегментации потребителей цифровых товаров на основе их цифровых компетенций и поколенческих особенностей. Задачами диссертации являются: обзор существующей литературы, посвященной онлайн-поведению потребителей, видам и особенностям цифровых товаров, существующим фреймворкам цифровых компетенций потребителей, различиям в покупательском поведении представителей разных поколений; выявление и анализ релевантных направлений исследования поведения потребителей; сегментация потребителей и описание сегментов по выбранным направлениям. Основными результатами работы являются: выделение девяти сегментов потребителей цифровых товаров на основе трех уровней цифровых компетенций и трех поколений потребителей, а также описание каждого из сегментов по демографическим признакам и составляющим онлайн-поведения.
Ключевые слова	Сегментация, цифровые продукты, цифровые компетенции, теория поколений, поведение потребителей

ABSTRACT

Master Student's Name	Julia Alekseeva
Master Thesis Title	Segmentation of digital products consumers: the role of digital competences and generational features
Educational Program	Master in Management - MIM
Main field of study	Marketing
Year	2021
Academic Advisor's Name	PhD, Associate Professor Maria M. Smirnova
Description of the goal, tasks and main results	The main goal of the Master Thesis is to develop a segmentation of consumers of digital goods based on their digital competencies and generational characteristics. The objectives of the thesis are: analysis of the existing literature on online consumer behavior, types and features of digital goods, existing frameworks for digital competencies of consumers, differences in purchasing behavior of representatives of different generations; identification and analysis of relevant areas of consumer behavior research; segmentation of consumers and description of segments in selected areas. The main results of the work are the identification of nine segments of consumers of digital goods based on three levels of digital competencies and three generations of consumers, as well as a description of each of the segments by demographic characteristics and components of online behavior.
Keywords	Segmentation, digital products, digital competencies, generational theory, consumer behavior

TABLE OF CONTENTS

INTRODUCTION

1.1. Research background: topic, focus and scope

The growth in the number of smart devices, the digital transformation of the world, the increasing connection speeds within the global network — all this contributes to the growth of the size of the digital content market. According to Digital Content Market Report (QYResearch, 2020), in 2019, the Global Digital Content Market size was estimated at USD 167.370 Million and it is expected to reach USD 397.390 Million by the end of 2026, with a compound annual growth rate of 13% during forecast 2021-2026.

The spread of digital products is not only obvious at first glance, but also statistically noted: according to the 2018 Russian consumer behavior survey conducted by PwC, at that time the share of digital product purchases was 54% of all online purchases made by consumers. Of course, in 3 years, the digital goods market has experienced an even greater development, not only due to rapidly emerging technological innovations but also due to factors associated with the Covid-19 pandemic.

Researchers of Demand institute (2015), jointly operated by The Conference Board and Nielsen Company, proposed the term Connected Spenders — buyers who will account for more than half of global consumption by 2025. Connected Spenders are digital avid shoppers who have internet access, the wherewithal to fund discretionary purchases, and a greater tendency to consume than other internet users (Kelly L., Anderson B., Cheng B., 2017). Optimistic and willing to spend money, Connected Spenders are easy enough to attract with marketing tools. However, not all consumer segments behave like them.

With the digitalization of the world, the study of motives and patterns of online consumer behavior has become a major area of digital marketing. New variables such as emerging technologies, innovative solutions, services, products, and so on are constantly affect the choices and actions of online consumers. To predict consumer behavior, marketers and researchers try to investigate their individual traits and identify factors that form the differences between the behavior of representatives of different consumer segments.

One of such individual traits of consumers that influence their online behavior is digital competencies — competencies consumers need to function actively, safely and assertively in the digital marketplace (Brečko, B., Ferrari, A., edited by Vuorikari R., Punie Y., 2016). In Digital Competence Framework for Consumers, developed by the Joint Research Center (JRC) on behalf of DG Education and Culture, it is stated that a high level of digital competence allows consumers to consciously make choices in the digital market, avoid becoming a victim of fraud, understand

digital marketing and advertising methods, and manage financial transactions on the Internet (Brečko, B., Ferrari, A., edited by Vuorikari R., Punie Y., 2016). In one of the recent researches, it was proofed that based on digital competencies, it is able to identify three distinct clusters of consumers of high, medium and low DigComp level (Sheremeeva A., 2020). Thus, consumers with different digital competencies make purchasing decisions, especially digital goods purchases, in different ways.

The importance of considering consumer personality traits in online shopping behavior has been discussed in many studies (Li and Zhang, 2002; O'Cass and Fenech, 2003; Hand et al., 2009; San Martín Gutiérrez, Camarero Izquierdo and San José Cabezudo, 2010). Personality traits in this context usually include the activities, interests, and values of people: all of these are classified using psychographics. Most approaches to psychographic segmentation (F. Reynolds et al, SRI International, D.R. Lehmann & R. Lines, A. Chen, W. Strauss, N. Hove) are based on dividing consumers into groups based on an analysis of their experience, activities, interests, opinions, beliefs, lifestyle, values, relationships, and other traits. One of the types of psychographic segmentation is the division of people into groups by generation.

According to W. Strauss and N. Hove (1997), who proposed generational segmentation, the experience of the same historical events, economic and socio-cultural realities leads to the formation of common values and attitudes among representatives of the same generation. Belonging to a generation is important because early life experiences shape people's attitudes and beliefs (Kupperschmidt, 2000) and, as a result, influence their behavioral patterns and patterns in different spheres of life, including consumer behavior.

1.2. Research gap, questions and objectives

New types of digital goods continue to emerge, and the market is growing permanently and rapidly. The situation in this growing market is determined by its players, one of the main among which are consumers of generations X, Y, and Z. It is clear that consumers with different levels of digital competence and belonging to different generations behave differently when buying digital goods: they choose different products, react to different types of advertising, and also have different backgrounds and demographic characteristics. It is useful for marketers and owners of electronic platforms on which digital goods are sold to study the behavior of their consumers as much as possible. However, the exact differences between consumers with different characteristics of competencies and generations have not been identified, moreover, their identification is a complex systematic process. Thus, marketers and owners of electronic platforms that sell digital goods need a ready-made, using which they can justify their actions and effectively attract

7

consumers with different characteristics: such a tool can be the developed segmentation of consumers of digital goods.

Despite the fact that there have been many studies of digital products (Quah, 2002; Hyeyoung Park et al., 2011; Bardhi et al., 2012, Linwan Wu, 2020, etc.), digital competencies (Golubovskaya, T., 2015; Ilomaki et al, 2016; Brečko, B. & Ferrari, 2016; Sharikov A., 2016; ROCIT, etc.) and behavioral consumer characteristics of representatives of different generations done separately, none of them combined all these terms, did not describe the relationship between them and reveal the features of the segments consumers who differ in era and digital competencies. But digital competences have to be considered in line with the psychographic profile of consumers (Smirnova, Golovacheva, 2019) to explore not only the formal skills of consumers, but also the motivations behind their behavior. This research aims to look at the behavior of consumers of digital goods from this new angle, linking behavior with psychographics, and identify some of the important characteristics of different audience segments.

So, the main goal of the research to segment digital product consumers through exploring the impact of the digital competence level and generational features in the behavior of consumers while buying digital products on e-commerce channels. Based on the main goal, the main research questions were formulated:

RQ1: What are the differences in the behavior of different consumers when buying digital goods?

RQ2: What is the role of digital competencies and generational features in the buying behavior of digital consumers?

To achieve the goal of the study and answer the questions posed, the following objectives should be obtained:

1. Explore the characteristics of consumer behavior when buying digital goods on e-commerce platforms
2. Identify differences in consumer buying behavior of different generations when buying digital goods
3. Identify differences in digital purchasing behavior of consumers with different digital competencies
4. Select groups of consumers of different generations with different digital competencies
5. Describe the behavioral features/patterns of the identified groups that are relevant to the owners/managers of e-commerce platforms involved in the sale of digital goods

8

1.3. Overview of research structure

In the study, we will try to find a connection between generation, digital competence and find out how these two characteristics affect consumer behavior when buying digital goods.

The first chapter of the study will focus on an analysis of the literature and theoretical framework on the topic. First, we will consider the theoretical basis of consumer behavior (offline and online), as well as the differences in consumer behavior of representatives of different generations and different levels of digital competencies. We will look at the concept of digital products and explore their features, parameters and characteristics. In order to understand what consumer skills should be analyzed in our study, we will look at the theory of digital competencies: first of all, we will focus on the new definitions of digital competencies and consider related concepts in order to get a general understanding of how digital competencies are researched at the moment. Next, we will analyze the already developed frameworks that test the digital competencies of people (and their consumer role).

The second chapter will be devoted to describing the research methodology: the type of research, methods of data collection, the sample of respondents that we plan to achieve. In addition, in the second part, a conceptual model will be described, according to which the practical part of this study will be carried out. As a result of the second part, we plan to receive data for analysis.

The third chapter of the research will focus on analyzing the collected data, developing data-driven segmentation of digital consumers, and describing the behavior of each of the segments. Finally, we will discuss the results achieved and their practical applications.

CHAPTER 1. DIGITAL COMPETENCIES AND BEHAVIOURAL FEATURES OF MODERN CONSUMERS: THEORIES, FRAMEWORKS, MODELS

This chapter is focused on the core theoretical concepts and frameworks related to consumer behavior, digital goods, digital competencies and psychographic features of consumers. The main goal of the chapter is to systematize the existing knowledge on the topic in order, on the basis of this analysis, to form a substantiated basis for our own research on the behavior of consumers of digital goods. All theoretical concepts, patterns and frameworks discovered at this stage will be used to substantiate this research, the description and findings of which will be made in the second chapter.

1.1. Consumer online behavior

Since the purpose of this study is to investigate the features of consumer behavior when buying digital goods and describe the differences in some components of this behavior of different segments of the target audience, it is necessary to understand the concept of consumer behavior itself. In this part, to find evidence that digital competencies and generation can be described as potential factors influencing consumer behavior, we will analyze the existing approaches to the behavior of consumers: in the "traditional" sense and in the context of the online environment.

1.1.1. Consumer behavior: definitions and models

Understanding how consumers think and what patterns can be used to describe their behavior directly affects the ability of marketers and business managers to influence consumer decision-making and effectively attract the attention of the right segments of the target audience. That is why the concept of consumer behavior using various approaches is studied in marketing, and continuously, since every year the set of factors influencing consumer behavior changes. Therefore, many researchers have tried and are trying to most fully and widely define and classify the concept of consumer behavior.

Consumer buyer behavior is considered to be an inseparable part of marketing: Kotler and Keller (2011) state that consumer buying behavior is the study of the ways of buying and disposing of goods, services, ideas or experiences by the individuals, groups and organizations in order to satisfy their needs and wants. The other definition given by Kumar (2010) suggests that consumer buying behavior "refers to the buying behavior of final consumers, both individuals and households, who buy goods and services for personal consumption". At the same time Consumer buying behavior is defined by Stallworth (2008) as a set of activities which involves the purchase

10

and use of goods and services which resulted from the customers' emotional and mental needs and behavioral responses.

The main goal of studying consumer behavior is to be able to divide all people into segments with different characteristics and patterns of behavior — that is, to segment the target audience in such a way as to understand the motives of consumers in making different decisions. Thus, we can assume that the motives that are guided by consumers can be complex and be influenced by various factors, including both learned skills (such as the ability to function in a digital environment) and individual personality characteristics.

The thing is, that these skills and characteristics are unique if not for every consumer, but at least for groups of consumers, which are called "segments" in marketing. According to Cant, Jooste, Plessis & Strydom (2009) segmentation is "a process of dividing a total market into segments or a target market with consumers with common needs or characteristics and selecting one or more segments to target with a distinct marketing mix". Thus, many attempts of building consumer behavior theoretical models were done.

Theoretical models (Table 1) of how consumers make purchase decisions have evolved from the economic paradigm of the 1940s, through the irrational consumer of the 1950s and 1960s, to the information processor of the 1970s, up to the 1980s cognitive miser (Zaichkowsky, 1991). But, of course, theoretical models continue to evolve in our time, when the basic foundations of marketing are already applied to new realities. Zaichkowsky (1991) described the history of the study of the concept of consumer behavior since its inception, here are the main stages of this evolution. So, talking about the evolution of consumer purchasing decisions, Zaichkowsky says that in the future (in relation to the time of this research, the future is happening now) consumption will follow more collective patterns, that is, consumer behavior can be described by individual characteristics that are relevant to certain groups of consumers.

DECADE	TYPE OF DECISION MAKER	EXEMPLAR
1940s	Economic man	Fitting of demand equations to products (statistical analyses of past data) (Telser 1962)
1950s	Irrational consumer	Hidden meaning of goods (Haire 1950) Use of projective techniques (Dichter 1964)
1960s	Transition from irrational consumer to problem solver	Hierarchy of effects model (cognitions to attitudes to behavior) (Palda 1966)
1970s	Problem solver	Prepurchase information seeking (Newman and Staelin 1972) Labeling of products (Asam and Bucklin 1973)
1980s	Cognitive miser	The cost of thinking (Shugan 1980) Low involvement decisions (Hoyer 1984)
1990s	Collective decision maker	Seniors

| | | Baby boomers |
| | | Immigrants |

Of course, after 1990s, where Zaichkowsky's (1991) comparison ends, many other decision-making models were described. According to Kotler's (2012) five stage model in consumer behavior, there are five main stages consumer passes through to buy something and then to reflect on it: problem recognition, information search, evaluation of alternatives, purchase decision, and post purchase behavior. Under the influence of various factors, not all steps of the model can be performed in pure form: for example, in the online environment, which will be considered in our research, each step can last much less, or the stages could be combined.

Of course, researchers supplement the basic concepts, making them more detailed, and rebuild them in modern conditions. So, for example, Schiffman & Kanuk (2004) divided the decision-making process by consumers into three main stages (see Figure 1): input, process and output. Input includes two main influencing factors: the marketing efforts of the firm and the sociocultural environment. The second stage, called the "process", draws attention to how the consumer makes his decisions. Here, among other things, external factors that influence the decision-making process proposed by Kotler (2012) earlier are taken into consideration. The description of this stage of the model by Schiffman & Kanuk (2004) proves that both experience, in the context of which we can further consider digital competencies, and psychological field and psychographic aspects of personality, which in our study, later on, we will look at generational affiliation as a way of describing personality traits and patterns of behavior. The last step of the Schiffman & Kanuk (2004) model describes the buying process and reflection on the decision made, that is, the post-purchase behavior of the consumer.
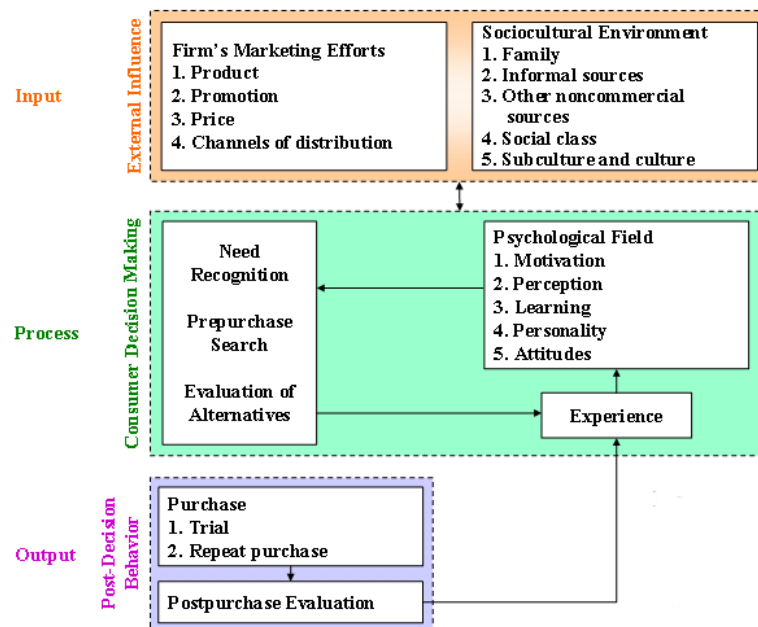

Figure 1. A Model of Consumer Decision Making by Schiffman & Kanuk, 2004

12

Many researchers adhere to almost the same logic when building models of consumer behavior and the decision-making process (Engel, Kollat, and Blackwell, 1968; Kotler, 1997; Shiffman, Kanuk, 2004; etc.), describing the stages in relation to the purchase — before, during, and after it, where one of the first stages always includes concepts related to experience, skills and psychological characteristics of the consumer. This allows us to believe that the initial assumption that the digital competence of consumers and the characteristics of the generation to which they belong has reasonable logic and could be tested in this research.

However, radically new approaches to the description of the buying process, which are not directly connected with purchase stages, are taking place.

"Winning brands owe their success not only to the quality and value of what they sell, but to the superiority of journeys that they create." (Edelman & Singer, 2015, p. 11). Researchers Edelman and Singer built a model of the consumer path, which explained that there are two paths that consumers can go — the classic and the new path. The classical path extends the phases of consideration and weighing; the new path, on the contrary, shortens these phases (see Figure 2). This does not mean that the stages of weighing and making a decision are absent at all, but it means that these stages are passed only once, and after passing them, the consumer falls into a loyalty loop. Looking at this model, we see that consumer skills and personality traits are little considered in it. That is, the factors of the personal characteristics of consumers are not taken into account, which can affect the fact that a particular consumer does not go into the loop, or still go through the stages of weighing and comparing alternatives anew.

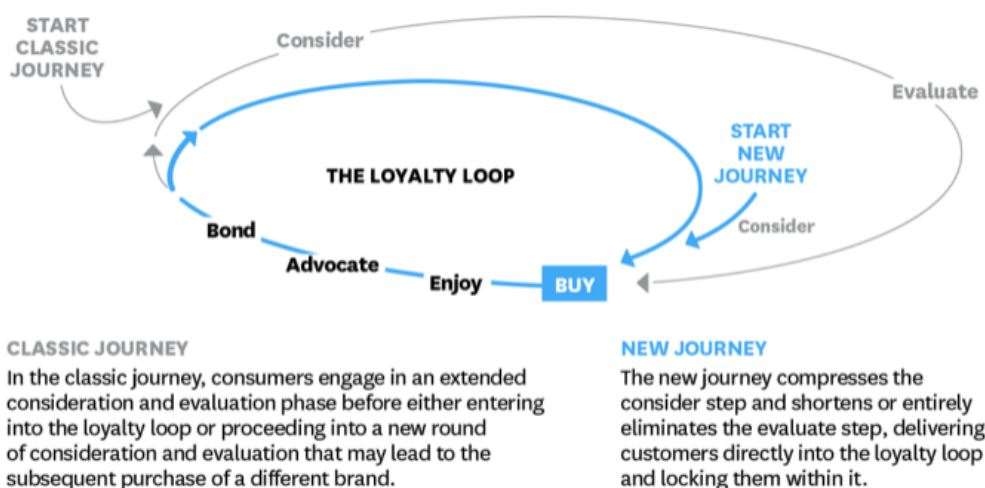*Figure 2. Streamlining the Decision Journey, Edelman & Singer*

Turning back to more traditional decision-making models, it is worth saying about the Lamb, Hair, and McDaniel's proposition (2014). They proposed a model, which clearly reflects the connection between consumer's "background", or his or her characteristics and the decision-making process he goes through when considering whether to make the purchase or not.

Researchers say that factors influencing consumers' decisions could be cultural, social, individual and psychological. The curious thing is, that these factors affect not the only first step of the process, but all its' stages (Figure 3).
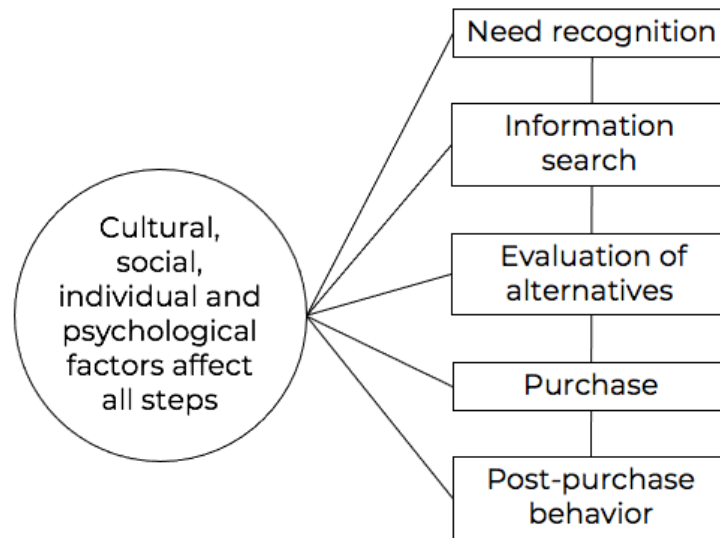

Figure 3. Consumer Decision-Making Process by Lamb, Hair, and McDaniel, 2014

According to Lamb et al, the groups of factors considered include all the characteristics of consumers that can influence their purchasing decisions and can cause them to shorten, lengthen or stop the buying process.

Psychological factors determine people's general behavior, thus influencing their behavior as consumers. Psychological factors include perception, motives, learning, attitudes, personality and lifestyles. Social include roles, family, reference groups, opinion leaders, social class, culture and subcultures. All these factors could be grouped and describes in another way to help marketers and managers to better and, more important, faster or easier understand their audience and apply different attraction tools to different segments.

Hence, here we are once again coming to the conclusion: investigating the dependence between consumers' digital competences as a part of their psychological characteristics from Lamb, Hair, and McDaniel's model (2014) and affiliation to a particular generation as a combination of social and psychological characteristics from this model is worth to be done.

Thus, after reviewing the literature on consumer behavior, we can say that this is a concept that changes over time, the main components of which, on the whole, remain the same, but can be interpreted differently depending on the situation under study and the specifics of partcular consumer areas. The study of consumer behavior will not stop at one comprehensive position but will be supplemented and transformed with the development of technology and the progress of the world. At the same time, it cannot be said that any of the research by scientists has made the

greatest contribution to the topic of consumer behavior — each work contributes to the development of marketing and helps marketers better understand the target audience.

1.1.2. Consumer online behavior patterns

The online behavior of consumers is different from the process they go through when making a purchase decision in a traditional offline environment. "This environment could have a profound effect on how customers construct their decision-making processes to adjust appropriately to the new decision-making environment" (Xia & Sudharshan, 2002).

Since the area of interest of our study is the characteristics of consumers of digital goods, we assume that digital competencies and the generational affiliation of consumers will be significant factors or motivators in online models. Therefore, our goal was also to review the theoretical framework on the topic of online consumer behavior.

With the penetration of digitalization into different spheres of life, online sales and electronic commerce have gained great popularity. Many researchers are trying to find out exactly how consumers behave online, how this behavior differs from offline, and how we can systematize and describe patterns of online consumer behavior.

The features of the behavior of "digital consumers" in the context of rapidly developing technologies, the worldwide penetration of the Internet and mobile communications were considered by Skorobogatykh and Musatova (2018). As the main trends in changing consumer behavior, the authors highlight the ability and willingness to make purchases of goods and services online, while the main means of communication for obtaining information, choosing a product (service) and paying for a purchase today are smartphones and tablets, which are actively used by representatives of various segments. consumers. In this regard, experts state the emergence of a new segment of consumers who are constantly in touch using the mobile Internet. The authors call such consumers "digital".

The peculiarity of digital consumers Skorobogatykh and Musatova (2018) call the fact that they are advanced media consumers, they more often than ordinary Internet users watch various media files or even programs, films from the screen of a smartphone or tablet. In addition, digital consumers study various consumer properties of goods on the Internet, so they do not deny various advertising messages, they only want them to be truthful and with their help it would be possible to go to the websites of manufacturers or sellers, where they can not only carefully examine the attributes of the product, but also compare the products of competitors.

15

Researchers Dave Chaffey and PR Smith (2017) say that the online environment has changed the behavior of customers, namely that it made the following changes to the traditionally considered buying decision-making cycle:

- Search engine marketing has tightened the cycle — the buying process often starts with a general search.
- Search for suppliers is now also limited to a few visits to comparison sites, which are often shown on search engines.
- Recommendations from other customers through user-generated content have a significant impact on conversion rates.
- The brand has become more important in the later stages of decision making as it provides trust.

The authors graphically reflected how the content on the site can support the purchase process (see Figure 4):
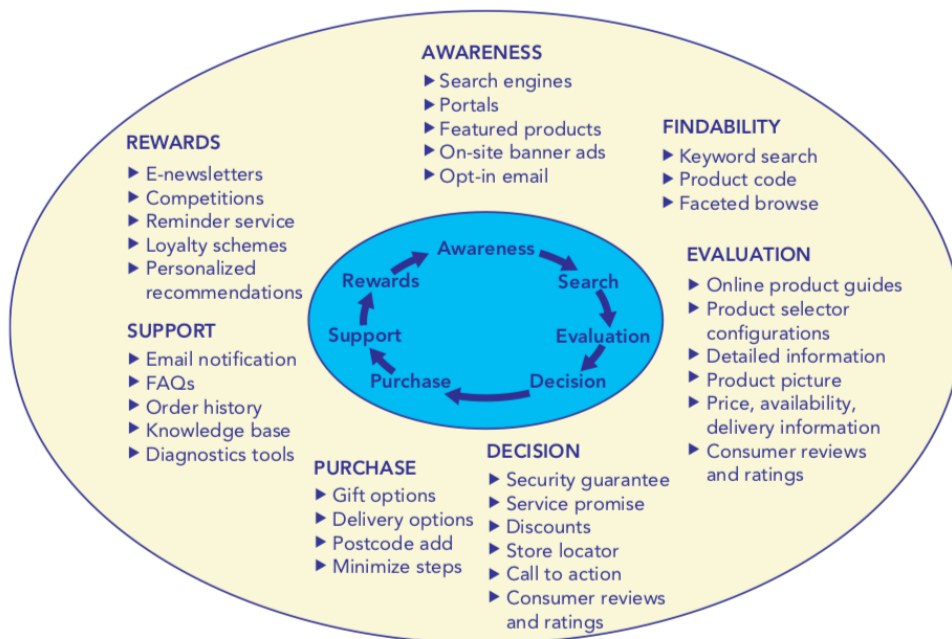
Figure 4. The buying process and how it can be supported by site content, Dave Chaffey & PR Smith, 2017

Blanca Hernández et al (2010) analyze the ideas that encourage customers to make purchases over the Internet and check the restraining effect of the electronic shopping experience. In addition, the study analyzes two groups of consumers — those who make a purchase for the first time on a certain e-commerce platform, and those who are an experienced buyer (that is, they have already made at least one purchase and have definitely returned for the second). It turns out that the motives for buying the two studied groups are different and depend on the experience that customers have experienced when making a purchase. This study is really interesting for

managers/owners of e-commerce platforms whose business models depend on consumer behavior in the online environment.

Understanding how consumer behavior works is crucial and it is obvious that not all consumers behave the same — different factors influence their actions in different situations. We examined different models of consumer behavior and made sure that their digital competencies and their psychographic characteristics can be factors influencing consumer behavior, both in a complex and separately.

Thus, in the next parts we will move on to narrowing the focus to consumers of digital goods, since the purpose of the study is to provide managers and marketers of electronic platforms with a description of their target audience in order, they could influence consumers' decisions effectively. To manage consumer behavior most effectively, it is important to know how different groups of consumers differ among themselves — this is where segmentation helps.

1.2.   Digital products

Moving to the considering the behavior of consumers of digital goods in particular, it is necessary to find out what features digital goods have in comparison with conventional ones, and what types of goods can be classified as digital.

As digitization continues, digital goods are becoming a more important presence in consumers' lives, and consumer spending on digital goods is increasing exponentially (Hyeyoung Park, Jong-Youn Rha, 2011). There is no doubt, that digital goods may be better suited for consumers in an increasingly mobile and liquid world (Bardhi et al. 2012). Before starting our research, it is important to define digital products and review literature on this subject.

In simple words, digital products are ideally defined by researcher Paul Belleflamme (2016). He says: "To illustrate the definition of digital goods, think of a novel that is built in the writer's mind as information; for readers to access this information, it should be written in which "or in any form, which may be analogue (printed book) or digital (electronic book); the same applies to music, images, films, television programs, software, applications, games, etc."

However, not all researchers agree with Belleflamme in his definition, and we can find different or even quite contradictory definitions of digital goods. Thus, Quah (2002) defines digital goods as "bit strings, sequences of binary digits, 0s and 1s that have economic value." Quah gives a number of examples of digital goods, which include ideas and knowledge, visual images, music, databases, videogames, and codified messages. In researcher's words, there is no difference between an original digital good and its' copy: any copy of a digital good is the good itself.

How else can we describe digital products? With the help of their characteristic features that distinguish these goods from physical ones and place these two types of goods in different categories, which is reflected by different consumer behavior in relation to these goods. So, Quah (2002), in his study, speaks of several important characteristics of intangible digital goods:

1) *Non-rivalry.* A product is considered nonrival if "its use by one consumer does not reduce its usefulness to any other consumer." This is really a unique feature that hardly any other types of goods possess and especially not physical ones. This means that two consumers can use the same digital goods without any confrontation or competition. Of course, this approach with physical goods is impossible.

2) *Infinite expandability.* A product can be expanded indefinitely when "its quantity can be arbitrarily increased arbitrarily quickly at no cost" (Quah, 2002). It is indisputable that such a characteristic is not applicable to physical goods, which makes digital goods even more unique and distinguishes their nature, making significant changes to modern retail.

3) *Aspiral.* Digital goods are aspatial, meaning they are nowhere and not everywhere at the same time (Quah, 2002). This means that digital goods cannot be felt, they are intangible, so they seem to be non-existent. Although, of course, their existence is proved by the value that they are endowed with and the fact that they can be distributed, used and sold through electronic media.

4) *Recombination*. New digital products may have properties not found in the original and parent digital products, such as in recombinant DNA (Quah, 2002). The combinatorial nature of digital goods allows consumers to add value to existing forms of digital goods, and at the same time, it is becoming increasingly difficult to distinguish between consumption and production of digital goods (Hyeyoung Park, 2011).

The attempt to classify digital goods make Choi, Stahl and Whinston (2003) in their work. Researchers divide digital products into three main categories, which in turn are divided into components. The presented classification fully reflects digital products, however, of course, it can be supplemented and transformed by future researchers taking into account modern realities.

CATEGORY	DIGITAL GOODS
Information and entertainment products	- Paper-based information products: newspapers, magazines, journals, books; - Product information: product specifications, user manuals, sales training manuals; - Graphics: photographs, postcards, calendars, maps, posters; - Audio: music recordings, speeches; - Video: movies, television programs.

Symbols, tokens and concepts	- Tickets and reservations: airline, hotels, concerts, sport events; - Financial instruments: checks, electronic currencies, credit cards, securities.
Processes and services	- Government services: forms, welfare payments; - Electronic messaging: letters, faxes, telephone calls; - Business value creation processes: ordering, bookkeeping, inventorying, contracting; - Auctions and electronic markets; - Remote education, telemedicine, and other interactive services; - Cybercafes and interactive entertainment.

Table 2. Digital products classification by Choi, Stahl & Whinston (2003)

Of course, when considering the phenomenon of digital products, it can be decided that consumers attach less importance to digital products than physical products — such an assumption is made on the basis of the theory that digital products can suppress a sense of ownership and possession. However, Linwan Wu (2020) refutes this assumption and, moreover, opens up a new reason why consumers can choose digital products: with digital products, consumers satisfy the fundamental need for control by focusing on digital experience. The proof of this fact once again confirms the importance of choosing digital products for our research: it turns out that despite the fears of marketers that digital products will never be appreciated by consumers more than physical ones, both types of these products are valued by consumers at least equally, they are simply used in different situations and for different purposes.

Another finding of the study is the importance of the concept of control by the consumer (Linwan Wu, 2020): it is stated that the desire for control varies from one consumer to another, but for consumers with a high level of control, the use of digital products can be more attractive. These consumers are willing to pay more for digital products and evaluate digital products more favorably than physical products.

We analyzed the features of digital goods that distinguish them from physical ones, and also explored the classification of digital goods with their examples based on existing research. Based on the analysis, it is obvious that it is incorrect to apply traditional research on consumer behavior to the digital goods market - consumer behavior in this market should be studied separately.

1.3. Consumer digital competences

Digital competence is one of two main characteristics, the impact of which on consumer behavior we want to analyze. This chapter focuses on understanding the concept of digital competence and analyzing existing research on this topic in order to build a methodology for your own research based on the analysis of frameworks.

1.3.1. Digital competences and related terms overview

Let's analyze the literature and theoretical concepts on the topic of digital competencies. The concept of digital competencies is given in various studies. Ilomaki et al (2016) say that the concept of digital competencies has not yet been fully studied and are trying to formulate a general definition of this term and consider digital competencies as a "boundary phenomenon" (see Figure 5), expanding the narrower terms used earlier, and combining these concepts into a new term, more suitable for modern phenomena. Researchers conclude that digital competencies are made up of four main elements:

1) Technical skills as the basis of digital competencies;
2) The ability to use and apply digital technology meaningfully and as a suitable tool for various activities;
3) The ability to understand the phenomena of digital technology (understanding ethical issues, limitations and problems, as well as the critical use of various technologies).
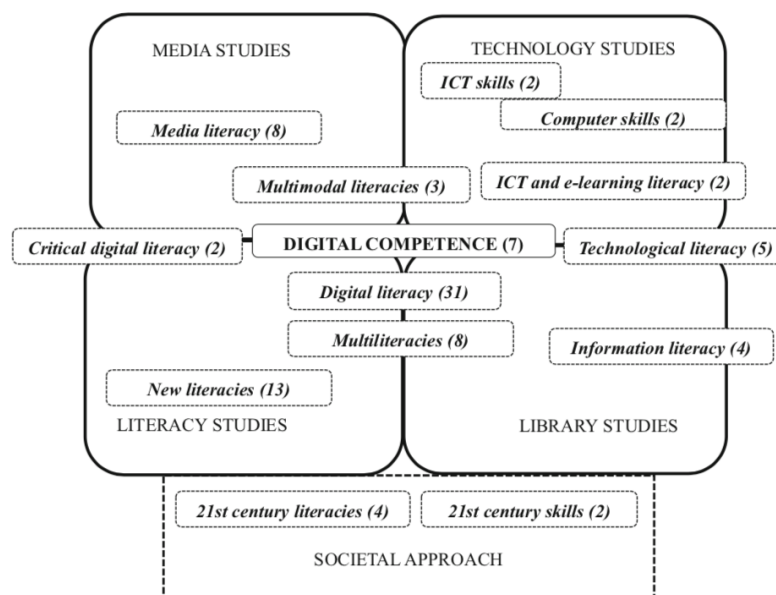4) Motivation to participate and engage in digital culture.

Figure 5. Digital competence, background disciplines, related terms and the number of articles in which the term was used by Ilomäki, L., Paavola, S., Lakkala, M., 2016

There are also many other approaches to defining digital competencies, and before moving on to considering specific digital competencies frameworks, it is worth noting that in some cases there are differences in the use of terminology: for example, "competencies" and "skills" are often used synonymously. Moreover, digital competencies are considered by authors in different contexts depending on the type of research: for example, digital competencies of citizens can be studied or, more narrowly, representatives of a specific profession, employees of companies from a specific industry, and so on. Our focus was on finding definitions and frameworks for digital competencies in a broad sense, as well as digital competencies of consumers. Below is a comparative table of definitions of digital competencies and skills from different studies.

Author(s)	Year	Term	Definition
European Parliament and the Council	2006	Digital competence	The confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.
Goodfellow	2011	Digital literacy	Awareness, attitude and the ability of an individual to use digital tools for communication, expression and social action in specific life situations
Ferrari	2012	Digital competencies	Set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment.
Aesaert	2013	Digital competences	Integrated and functional use of digital knowledge, skills and attitudes.
Rokenes and Krumsvik	2014	Digital competence	Wide range of skills including cognitive and emotional skills as well as sociological knowledge to use digital environments effectively.
The Digital Competence Framework for Consumers	2016	Consumer digital competence	Competence consumers need to function actively, safely and assertively in the digital marketplace.
Petersson	2017	Digital competence	Skills and literacies needed for the average citizen to be able to learn and navigate in digitalized knowledge society

United Nations Educational, Scientific and Cultural Organization (UNESCO)	2018	Digital literacy	Ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy

Table 3. Definitions of digital competencies made by different researchers

As can be seen from Table 3, different studies use different terms, the main ones from a wide variety — "literacy" and "competency". There are many reasons for the origin of such inconsistency in terminology. For example, Almos and Krumswick (2008) have suggested that linguistic reasons may be at the root of the differences, saying that competence as a concept has a broader, more holistic meaning in Scandinavian English than in traditional English. On the other hand, many researchers offer a different version of different terminology - the rapidly developing digital world and terminology that does not have time to "adapt" to it. For example, at the very beginning of the development of the world wide web, various scientists spoke about knowledge related to technology, using the terms "Internet culture" (Porter 1997), "Internet literacy" (Martin, 1997), e-culture (Druckrey, 1996) or Digital culture (Lister 1995). Ala-Mutka (2011) also confirms that the origins of terms associated with digital competencies are always changing. He argues that trying to freeze the concepts of digital literacy with one definition is not just impossible, but also irrelevant since many of the concepts of literacy that arose in the pre-digital context were then developed and expanded with the advent of digital tools and media capabilities.

All in all, many modern studies agree that the terms "Digital competence" and "Digital literacy" are often used in almost synonymous terms (Ilomaki, 2016; Siddiq, 2016). Kasinskaite-Buddeberg (2013) explains this by the fact that the concept of literacy, its status, and related processes have evolved.

The considered definitions and concepts differ in interpretation: the terminology is understood by different researchers in different ways. However, all the studies reviewed are similar in that the importance of digital competencies of consumers is not questioned in them - on the contrary, digital literacy is considered in these studies as one of the key inherent skills of members of society who want to keep up with the times and behave confidently and safely in the digital space. In this work, we will use the term "digital competence", based on the framework, the choice of which for research will be explained in the following parts.

1.3.2. Analysis of existing digital competences frameworks

As a rule, in most works, the concepts of digital literacy are mentioned as the main basis of digital competencies. But some studies also examine the individual components of the general concept of digital competencies. Alexander Sharikov (2016) made an attempt to cover all currently known areas of theoretical approaches and practices of digital literacy and describe them using four component parts. Based on the analysis of existing models, Sharikov created his own four-component model of digital literacy.
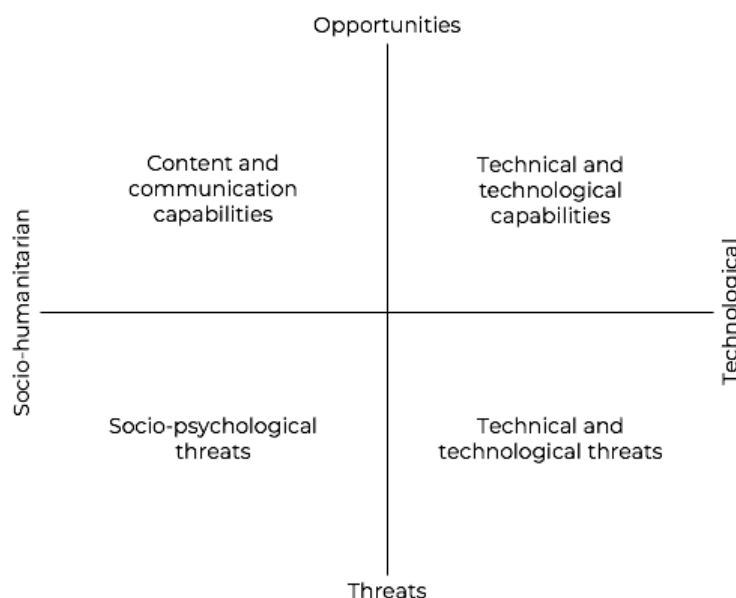
Figure 6. Four-Component Model of Digital Literacy by Alexander Sharikov, 2016

Sharikov's model considers digital literacy in the space of opportunities and threats, as well as technological and socio-humanitarian factors. In this space, there are four components of the approach to the study of digital competencies:

1) "Technical and technological capabilities" refers to utilitarian, pragmatic, or instrumental competencies;

2) "Content and communication capabilities" include the development of abilities to create, receive, perceive and interpret media texts;

3) "Technical and technological threats" refers to security elements when using software and the Internet;

4) "Socio-psychological threats" describe the social, psychological, and ethical aspects of working in a digital environment that may be associated with dangers, including Internet addiction, cyberbullying, etc.

23

An important work on the topic of digital consumer competencies is the research made in 2019 by Smirnova and Golovacheva "Towards an Integrative Framework of Consumers' Digital Competences", the purpose of which is to compare existing frameworks that assess consumer competencies, then, on their basis, highlight areas in which consumer competencies can be combined, and the result is to develop our own framework that goes beyond and improves upon existing ones.

Smirnova and Golovacheva examined four basic frameworks, with different approaches to the study of consumer digital competencies: DigCompConsumers framework, Technographics model, Consumer Savvy Index, and ROCIT Digital Literacy Index. Let's briefly describe the main principles of composing these frameworks.

According to the study, the methodology that performs the widest list of tasks is the ROCIT Digital Literacy Index (Golubovskaya, T., 2015), developed by the regional public information technology center as part of the study of digital literacy of Russians. The study also notes the development of infrastructure and the involvement of Russians in information processes, as well as the growth and expansion of the range of digital competencies.

The Regional Public Center for Internet Technologies (ROCIT) deals with research on the digital literacy of the country's residents and conducts research on the Digital Literacy Index of the Citizens of the Russian Federation on an ongoing basis. The index in question reflects the level of digital literacy of the population in the regions and federal districts of the Russian Federation, as well as in the country as a whole. The study analyzes aspects of digital consumption, digital competencies, and digital security in each Russian region.

The ROCIT Digital Literacy Index was created to study the level of digital literacy of the population, but it also relates to consumer behavior (including in the context of digital goods) and their digital competencies, therefore it includes testing skills such as money transactions, information retrieval, identification of pirated content, etc.

One of the first attempts to link digital behavior patterns and psychographic characteristics of consumers was made by Gina Fleming et al (2017). The study was conducted 4 years ago and was aimed exclusively at consumers living in the US. However, many useful outputs for this study can be derived from this work, so we will consider the "Technographics Model" in detail in the next section on the psychographics of consumers.

One more framework considered by Smirnova and Golovacheva (2019) in their research was also "Consumer savvy: conceptualization and measurement" (2007). Its author, Emma K Macdonald, examines the concept of savvy consumers - those who are endowed with six characteristics: they are endowed with competencies in relation to technological sophistication and innovative expertise, interpersonal network competence, online network competence, marketing

literacy, complaining and specifying self-efficacy, and information flow expectations. The model developed by the author looks like this:
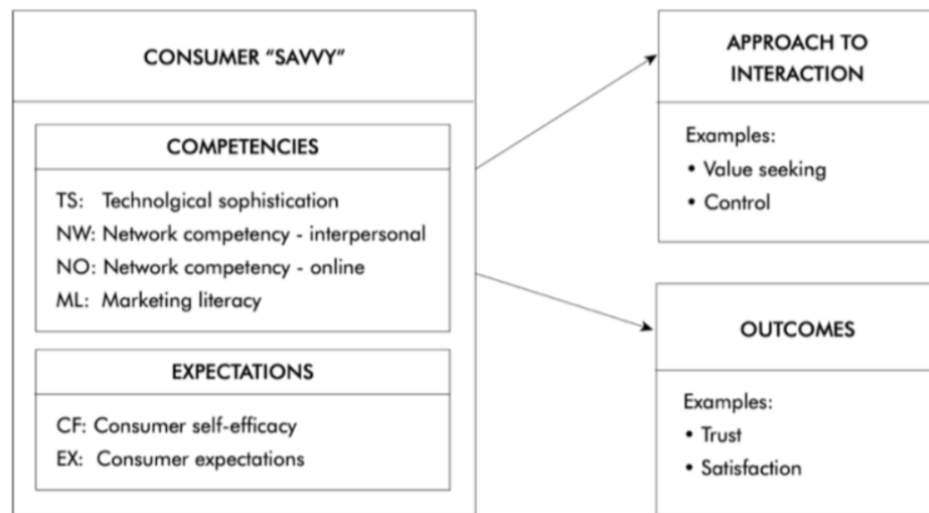
Figure 7. Consumer Savvy Framework by Emma K Macdonald, 2007

The author of the study was one of the first to attempt to introduce the concept of consumer ingenuity into the digital skills and competencies under consideration, showing its value in consumer decision making.

Based on the analysis below, The Digital Competence Framework for Consumers, by the Joint Research Center (JRC), the European Commission's science and knowledge service, is the framework that most fully evaluates digital competencies. The authors Brečko, B., Ferrari, A. in 2016 proposed a Framework dividing existing competencies into three main "phases": Pre-purchase, Purchase and Post-purchase. At each phase, competencies are described in detail:

- Pre-purchase: actions taken before the purchase of goods and services in the digital market (information search, information comparison, evaluation of alternatives, making responsible and sustainable decisions).
- Purchase: actions that occur during the purchase: making a purchase, managing payments, understanding copyrights, licenses and contracts for digital content, protecting data, and health.
- Post-purchase: actions taken after the purchase: exchange of information, consumer protection, updating the competencies of digital consumers.

Another important research in the field of determining the components of digital competencies is "The Digital Competence Framework for Citizens with eight proficiency levels and examples of use" (Carretero, S., Vuorikari, R., Punie, Y., 2017). The framework in the form of a set of digital competencies is designed to help consumers efficiently and safely operate in the

online space, make informed choices and responsibly manage their behavior by regularly updating their knowledge, skills and approaches.

Competence areas (dimension 1)	Competences (dimension 2)	Proficiency levels (dimension 3)	Examples of use (dimension 4)
Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content	Foundation (2 levels) Intermediate (2 levels) Advanced (2 levels)	Employment Scenario Learning Scenario
Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity	Highly specialised (2 levels)	
Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licences 3.4 Programming		
Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment		
Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps		

Table 4. The Conceptual Reference Model (DigComp 2.1) by Carretero, S.; Vuorikari, R. and Punie, Y., 2017

In the «The Digital Competence Framework for Citizens» five main areas of digital competencies are described — each area includes a set of skills. The first highlighted area is *Information and data literacy*, the second is *Communication and collaboration*, the third is *Digital content creation*, the fourth is *Safety*, and the fifth is *Problem solving*. After analyzing these areas, the consumer is assigned one of eight levels of digital competencies: Foundation (1 or 2), Intermediate (1 or 2), Advanced (1 or 2), Highly specialized (1 or 2).

Smirnova and Golovacheva (2019), based on the analysis of frameworks and methodologies in the study of, identified 16 competencies that are necessary to realize various consumer behaviors in 6 broader areas which are information, interaction, consumption, protection, self-responsibility, and innovations, according to which the comparison of existing

26

digital competences frameworks was made. Below is a comparative table of frameworks outlined in the study.

Consumer competence areas & competences	Consideration of competence in the framework			
	DigCompConsumers framework	Technographics model	Consumer savvy index	ROCIT Digital Literacy Index
Information competences				
Browsing, searching and filtering information on goods and services	+	+	+	+
Evaluating and comparing information on goods and services	+	+	+	+
Recognizing and evaluating commercial communication and advertisement	+	+	+	+
Interaction competences				
Interacting in the digital marketplace to buy and sell	+	+	+	
Sharing information with other consumers in the digital marketplace	+	+	+	+
Consumption competences				
Participating in collaborative economy platforms	+	+		
Managing payments and finances through digital means	+	+		+
Understanding copyrights, licenses, and contracts of digital goods and services	+	+		+
Protection competencies				
Managing personal data and privacy	+	+	+	+
Protecting health and safety	+			+
Asserting consumer rights in the digital marketplace	+		+	
Self-responsibility competences				
Identifying digital consumer competence gaps and limits	+			+
Considering responsible and sustainable consumption in digital markets	+			+
Managing digital identity and profile in the digital marketplace	+	+		+
Innovative competences				

| Adopting innovative products and technologies | | + | + | |
| Co-creating products and services with companies | | | | |

Table 5. Consumers' digital competences considered in various frameworks by Ksenia Golovacheva, Maria Smirnova, 2019

In addition, in the study, Smirnova and Golovacheva identified the main tasks that a framework created for researching digital competencies of consumers should solve: this was another angle from which a comparative study of existing frameworks was carried out. A comparative analysis was constructed as follows:

Framework	Tasks					
	Identify motivation behind digital behaviour	Identify technical opportunities for digital behaviour	Identify digital knowledge	Access digital competence	Register digital behaviour	Estimate digital behavior efficiency
DigCompConsumers framework				+		
Consumer Savvy Index			+		+	
Technographics model	+				+	
ROCIT Digital Literacy Index		+	+		+	

Table 6. Comparative analysis of tasks solved by existing frameworks by Ksenia Golovacheva, Maria Smirnova, 2019

From tables 5 and 6, the conclusion can be made that the framework that most fully evaluates the digital competencies of consumers is the DigCompConsumers framework, and the framework that covers the largest number of tasks to be solved is the ROCIT Digital Literacy Index: however, according to the authors of the study, the main problem of comparing the effectiveness of frameworks thus, "the mere fact of undertaking digital actions does not indicate whether these actions were realized efficiently".

The main conclusion of the analysis of the study "Towards an Integrative Framework of Consumers' Digital Competences" is that existing frameworks are missing an important part of consumer behavior. These frameworks aim to learn about the actual actions of consumers, what consumers have already accepted in their practice. But frameworks remove the focus from the motivation that drives such consumer behavior and/or digital knowledge. In digital competency research, it is very important not only to list structured concepts, but also to find a connection between competencies, capabilities, and consumer knowledge. This missing link Smirnova and Golovacheva (2019) described in the result of the research — based on the analysis, they

developed their own framework (Figure 4) that solves all the tasks outlined above and is designed to help researchers and practitioners better understand the development paths of digital consumer competencies.
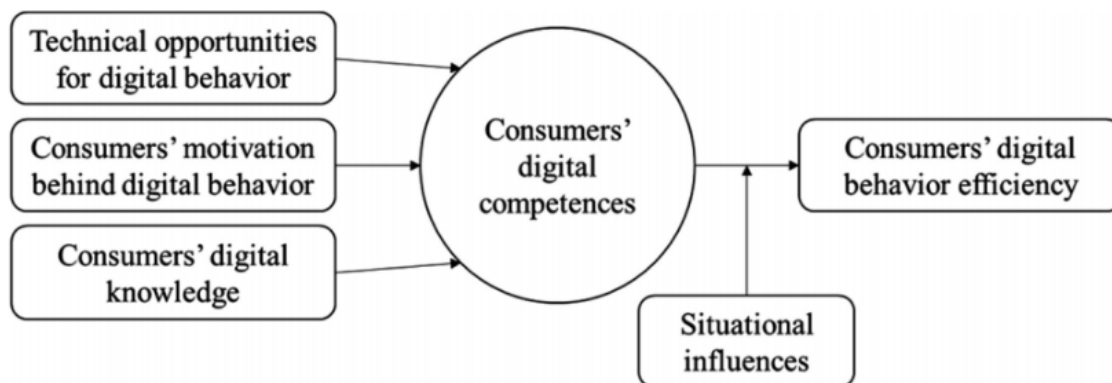

Figure 8. An integrative framework of consumers' digital competences, Golovacheva, Smirnova, 2019

Thus, simply the presence of digital competencies in one or another consumer cannot always lead to the full use of these competencies in practice (Smirnova and Golovacheva, 2019) — in other words, even if the level of the consumer's competencies is high, this does not mean that he or she uses his or her skills in the most effective way when interacting with the digital space. More important is how situational factors influence consumer behavior and how they relate to their digital competencies. The developed framework does not consider the constituent parameters of effective digital behavior but refers to the motivation, capabilities, and knowledge of consumers, which serve as the driving forces for the development of competencies.

We analyzed the terms associated with digital skills: comparing the use of the terms "Digital literacy" and "Digital competencies", it was decided in this study to focus on the term "Digital competencies" as a variant that is more relevant to the context of consumer characteristics. We also analyzed existing digital competence frameworks in order to choose a method for determining digital competencies for the respondents of this study. The analysis showed that the most relevant framework is DigCompConsumers framework (Brečko, B., Ferrari, A., 2016). How the research methodology will be based on it we will talk about in the following parts.

1.4. Generational approach as a type of psychographic segmentation

Having explored the theoretical base on digital competencies as a factor that influences consumer behavior, we move on to consider the second main factor, the possible influence of which on the behavior when buying digital goods, we want to analyze — the consumer's belonging to the generation. The purpose of this section is to understand what approaches the generational

29

segmentation is based on and what approaches exist to determine the generation of a particular consumer in order to choose an approach for the methodology of our research.

1.4.1. Psychographic segmentation: concept and main models

The better a marketer knows his consumer, the more likely he is to win his loyalty and turn him into a regular customer. In this case, the possibility of "switching" to competitors' products is minimized, the costs of conducting mass advertising campaigns are reduced and the consumer becomes a "brand advocate" who will not only purchase products on their own but also recommend them to friends. The main goal of audience segmentation is to create products and advertising messages that best meet the needs of potential buyers belonging to the same segment.

Market segmentation divides potential consumers of a specific product into several submarkets or segments, each of which determines one or more significant characteristics (F. Kotler, G. Armstrong, W. Wong, D. Saunders. Williams, 2013). A market segment can be based on the characteristics of the consumer and his behavior, on the geography, the usual level of the product, loyalty to the brand, and the type of consumer. There are many characteristics that can be used to divide consumers into different segments and target markets (Wells, W., 2008).

Psychographics has become an increasingly popular method of segmenting the target audience. Psychographic segmentation takes into account the personal characteristics of the consumer, such as life values, ways, and motives of behavior, lifestyle.

Psychography allows us to understand the consumer, determine the motive for making a purchase and, on the basis of this data, create the most accurate sales proposal that literally "reads" the individual needs of the buyer. The concept and term "psychographics" were introduced in 1974 by E. Demby, who gave a three-level definition of psychographics.

1) In its most general sense, psychographics can be seen as the practical application of the behavioral and social sciences to marketing research.

2) More specifically, psychographics is a quantitative scientific procedure that is applied when demographic, socioeconomic analyzes, and the division of consumers into "users" and "non-users" are insufficient to explain and predict consumer behavior.

3) In particular, psychographics tries to describe the characteristics of consumers that may be relevant to their reactions to products, packaging, advertising, and public relations. Such variables can cover a range of phenomena from self-concept and lifestyle to attitudes, interests, and opinions, as well as perceptions of the characteristics of the product.

30

The general psychographic approach is based on taking into account the personal characteristics of each consumer in the studied group, the motives of their behavior as consumers, their life values, behavioral attitudes and even beliefs. The psychographic analysis allows sellers to understand the lifestyles of buyers of their products, which in turn makes it possible to communicate more effectively with representatives of different segments. At the same time, we can figure out how to position a new or existing product, how best to "convey" it to consumers who adhere to a certain lifestyle (efficiency, in this case, is higher than using demographic indicators alone). The main idea of the method is to look beyond the standard variables, present the product in accordance with the actions, hopes, fears, and dreams of the target audience.

Psychographic research is usually carried out with 4 main objectives (Gunter B., Fernham A., 2001):

1) to identify target markets;

2) to obtain deeper explanations of consumer behavior;

3) to improve the strategic marketing of the company;

4) to minimize risks when introducing new products and new businesses.

The psychographic dimensions are deeper than the demographic, behavioral, and socio-economic dimensions. Demographic and psychographic dimensions complement each other, so their combination increases the effectiveness of consumer analysis.

The psychographic dimensions are deeper than the demographic, behavioral, and socio-economic dimensions. Demographic and psychographic dimensions complement each other, so their combination increases the effectiveness of consumer analysis. Demography presents objective quantitative indicators such as age, gender, education, marital status. Psychography, on the other hand, takes into account relatively "imperceptible" phenomena - motives, interests, social status, and life values of people. This information complements demographic data and further characterizes consumers (Mukhina M.K., 2000).

Psychographic approaches to audience segmentation have been developed by many researchers (Table 6). The problem with such studies is that they must be updated with sufficient regularity to remain accurate: with the introduction of digital technologies into the life of mankind and, in general, with the rapid development of the world, many segmentation criteria cease to be relevant and must be excluded from models or described in a new way.

Model	Researchers	Main idea
AIO (Activity Interests Opinions) Model	F. Reynolds, W. Darden, V.I. Dudina, E.E. Smirnova	Separation of consumers by groups of parameters: activities, interests, opinions

VALS 1 (Values and Lifestyles)	SRI International: A. Lobanova, S.A. Saninsky, L.L. Averyanova	Analysis of the lifestyle and worldview (principles, inner convictions) of a person
VALS 2	SRI International: A. Lobanova, S.A. Saninsky, L.L. Averyanova	Reliance more on the activities and interests of consumers than on their values
iVALS (Values and Lifestyles of internet users)	SRI International: D. Vine	Measuring the lifestyle of Internet users; the main goal is to improve the efficiency and quality of the online environment for userš and help providers
Global Scan (model of international lifestyles)	Backer Spielvogel Bates Worldwide: U. Kitchan, B. Schlegelmilch	Measuring and evaluating 250 elements inherent in values and attitudes, as well as related demographics, shopping preferences and media
List of Values (модель LOV)	LOV (List of Values): D.R. Lehmann	Respondents rank a list of 9 values by importance, then marketers use the most significant value to assign consumers to the appropriate segments
Market segmentation based on tastes	R. Lines, D.R. Lehmann	Consumers are divided into three classes based on their preferences in clothing, furniture, useful things, leisure, entertainment, food, literature, sculpture, music.
PRIZM model (Potential Rating Index for Zip) + 4 markets	Claritas Ink: A. Chen	Contains 62 clusters of consumerš, differing in demographic indicators and lifestyle; representatives of each cluster lead a similar lifestyle, have similar tastes in everyday life (cars, reading, etc.)
Psychographic segmentation based on generations theory	W. Strauss, N. Hove	It is assumed that people of the same generation have the same cultural values and ideological attitudes, a similar attitude towards a number of things, based on the experience of the same historical experience. Not age, but the values of a generation are a more significant factor influencing, among other things, consumer behavior.

Table 7. Psychographic segmentation models

Consideration of the described concepts led to the conclusion about their diversity and still lack of complete systematization in them. It follows from the Table 7 that most approaches to psychographic segmentation are based on dividing consumers into groups based on an analysis of their activities, interests, opinions, beliefs, lifestyle, values, attitudes, tastes, cultural characteristics, and experience. Marketing specialists, who apply various criteria to gain knowledge about consumers, drew attention to the fact that in the conditions of dynamically developing all spheres of society, it is necessary to react even more quickly to changes, to identify deep generational values that determine social transformations. In this regard, today, especially close attention is paid to the theory of generations as one of the theoretical and methodological foundations of market segmentation.

1.4.2. Generational approach to psychographic segmentation

Of the currently available and globally used types of psychographic segmentation, the generational theory is of particular interest for our study due to the inclusion of factors Consumer Motivation and Situational Influences (Smirnova, Golovacheva, 2019), which impact on consumer behavior we want to explore in this work. According to Astashova (2014), one of the most promising areas of application of the theory of generations in marketing is its use in consumer segmentation. Astashova (2014) says that the generational approach to segmentation has several advantages:

1) This approach is focused on strategic and long-term interaction with consumers;

2) The generation as a group of consumers has a constant composition of individuals, in contrast to the age group of consumers, the composition of which is constantly changing, which allows the company to strategically focus on existing and "understandable" customers from the point of view of needs;

3) Values, as a criterion for segmentation, correspond to modern marketing approaches and concepts (for example, the concept of cognitive marketing, the "one-to-one" approach of marketing, age marketing, etc.) and create the prerequisites for their development.

The modern generational theory was developed in the early 1990s by N. Howe and W. Strauss and was based on the idea of the similarity of behavioral models in people born in certain historical periods (Figure 9). According to researchers, the experience of the same historical events, economic and socio-cultural realities leads to the formation of common values and attitudes among representatives of the same generation. In the course of their work, the researchers described in detail a typical, collective representative of each generation of the American nation from the time of the Great Depression to the present day. The result of this work was the identification of several types of generations, namely: "builders" or "win-whether", "silent generation", "baby boomers", generation X, young generation Y or "millennials" and the emerging generation Z. Then, the analysis of the changes that have taken place in American society, 4 types of generation, or archetypes, were identified: idealists, reactive, civil and adaptive. Subsequently, they were renamed as prophets, nomads, heroes and artists (Lehmann D.R, Wiener R.S., 2015). According to researchers, these types are replaced after about 20 years, after which the cycle repeats.
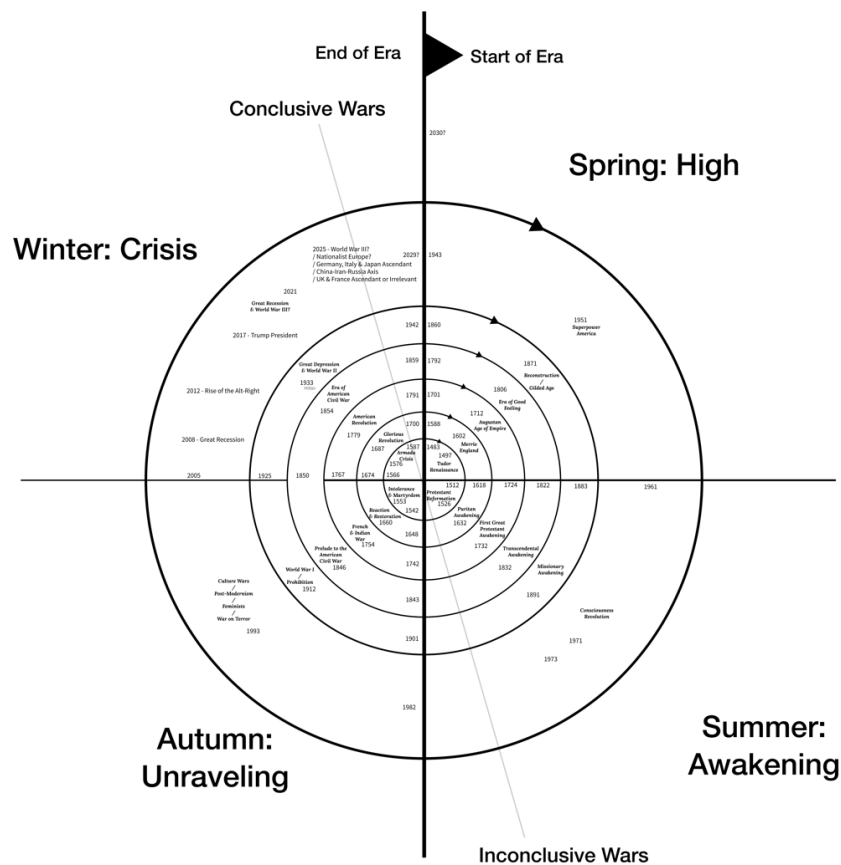
Figure 9. Anglo-American history 1483-2030. Source: hawramani.com

The issue of differentiation of generations, both in other countries and in Russia, is a significant methodological difficulty for researchers, which is expressed in a large number of approaches to identifying criteria that are decisive for determining people to a particular generation group.

When studying the socio-psychological characteristics of different generations, Russian researchers concentrate on the types of mentality (Pishchik V., 2011), the features of the value-semantic sphere (Artiukhina L., 2011; Vasilevskaia E., 2013; Sadykova K. et al, 2013), social attitudes (Sivrikova N., 2013), behavioral strategies (Shapiro J., 1999) and styles of attitude towards life (Jean M. Twenge, 2008), perception of representatives of other generations (Zopiatis A. et al, 2012), etc.

In the context of our research, first it is worth considering approach which is quite different from those which will be reviewed later — the generational classification developed by Marc Prensky (2001). In this theory, the era of human formation is considered as a differentiating feature, however, it is not the cultural and historical context that is taken as a basis, but the period of the onset of the so-called digital revolution. Mark Prensky (2001) identifies only 2 types of Digital Native and Digital Immigrants generations. First group is characterized by the researcher as "the indigenous inhabitants of the digital society", that is, these are people who are under the

influence of digital technologies from an early age. Digital Immigrants are all those who were born and formed before the start of the digital age. The main thesis of the theory is that the problems of modern education are related to the fact that Digital Immigrants teach Digital Native, but communicate with them in their own language, which is outdated for the younger generation.

At first glance, the theory of Prensky (2001) is suitable for our research because the subject of the work is digital goods, and in this context, considering representatives of generations in relation to the digital era will be relevant. However, in the previous parts, we have already considered digital competencies as a factor influencing consumer behavior and the conclusion is obvious that regardless of birth before or after the digital revolution, a consumer can be adapted to live in the digital world and its various components, or vice versa, not possess sufficient skills to function safely and effectively in a digital environment. Also, it is worth noticing, that number of researchers criticized the theory of a qualitatively new generation and a technology-driven gap between generations of teachers and students (Shukova G. 2013, Koutropoulos A., 2011). So, for example, Shukova (2013), while studying the differences between the perceptual and cognitive processes of "digital natives/digital immigrants", comes to the conclusion that there is no connection between the degree of intensity of digital experience and the nature of information preferences, and that the differences are more likely to be age related. character. Thus, Prensky's (2001) theory has the right to be considered and it makes sense to take parts related to the digital environment of people from it, but it does not seem relevant to fully use this approach to determining the generation in our study.

The effectiveness of the generational approach in considering the historical context was examined by Mitrofanova (2019).
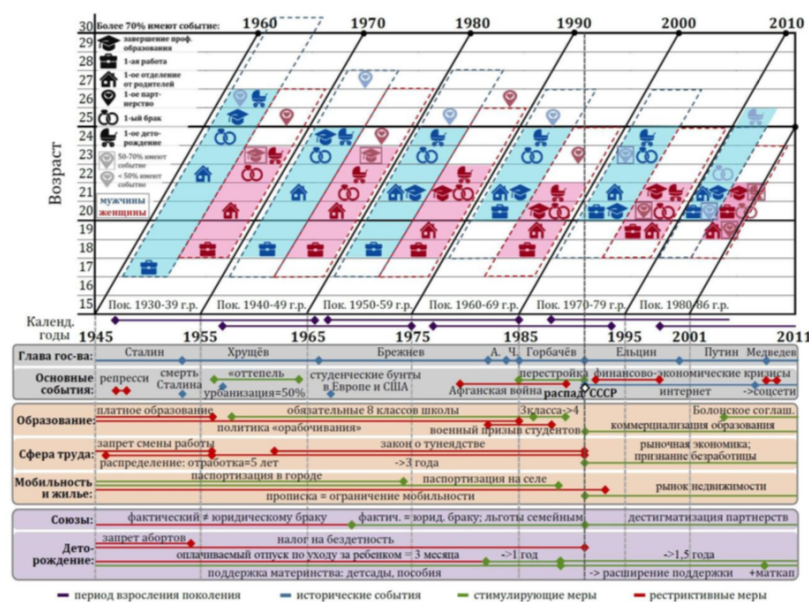

Figure 10. Visualization of the process of growing up by different generations of Russians in the conditions of the existing historical context by Mitrofanova, 2019

35

The diagram developed by Mitrofanova (2019) makes it possible to visually correlate historical events under the influence of which the generations of modern Russia were formed. The calendar time axis (X-axis) of the diagram gives an idea of the historical context in which each generation grew up. In the field under the X-axis, we plotted some historical events that could have influenced the onset of the starting events. We will describe in more detail these events and their impact in the following sections of the article. The age axis (Y axis) of the diagram begins at the point when the respondents reach the age of 15 and ends at the time of the 30th birthday, since the median values obtained are limited to this age.

Interestingly, Mitrofanova's (2019) model considers not only such obvious historical events that shaped the views of the world of generations, such as world wars and the political situation in the country and the world, but also the spheres of education, labor, housing, marriage and childbirth. Consideration of these non-obvious historical factors of influence makes even more obvious the differences in the European and American approaches to describing the mentality of representatives of generations with Russian society.

Speaking about more traditional versions of the generational theory, the review of literature showed that initially, this process was substantiated by social and biological reasons, but today the decisive role of technology development is actively emphasized. At the same time, most researchers adhere to the classical approach of W. Strauss and N. Hove and are unanimous in determining the boundaries of generational change. The Russian classification stated in the "Theory of generations" (Shamis E., Antipov A., 2007) is based on the American development but takes into account its national characteristics and specific features. Thus, the year boundaries of different generations are quite different from those, which were stated in Strauss & Hove theory (1991). In the Table 8 there is a visual representation of the differences:

Generation	Birth years	
	Classic theory (W. Strauss and N. Hove)	Russian adaptation
Greatest generation	1901–1924	1900–1923
Silent generation	1925–1942	1923–1943
Baby-boomers	1943–1960	1943–1963
Gen X	1961–1981	1963–1984
Gen Y / Millennials	1982–2004	1984 –2000
Homelanders/Gen Z	2005	2000 – present time

Table 8. Types and time boundaries of generations in the American and Russian versions of the generations theory by Astashova, 2014

In addition, there is a tendency in the literature not only to look for direct cyclical patterns of intersection of values after several generations (Howe N., Strauss W., 1991), but also an attempt to explain the intersecting values of societies of different ages with the concept of eco-generations

36

at the junctions of generally accepted segments. Representatives of the echo generations are the bearers of the values of both generations and act as a kind of mediators between generations (see Table 9).

Periods of "basic" generations		Periods of "echo"-generations	
GI	1903–1918	GI-Silent	1919–1926
Silent	1927–1939	Silent-Baby-Boomers	1940–1946
Baby Boomers	1947–1959	Baby Boomers - X	1960–1967(68)
X	1968(69)–1980	X-Y (Millennium)	1981–1987
Y (millennium)	1988–1999	Y (Millennium) - Z	2000–2005(6)
Z	2006(7)–2019	Forming and investigated now	

Table 9. Basic and "echo"-generations by Astashova, 2014

Nevertheless, considering echo-generations or not, according to Astashova (2014) and other researchers, the three generations studied by us, are the main component of Russian society, both according to classical periodization and according to the adapted Russian approach to classification (see Figure 11).
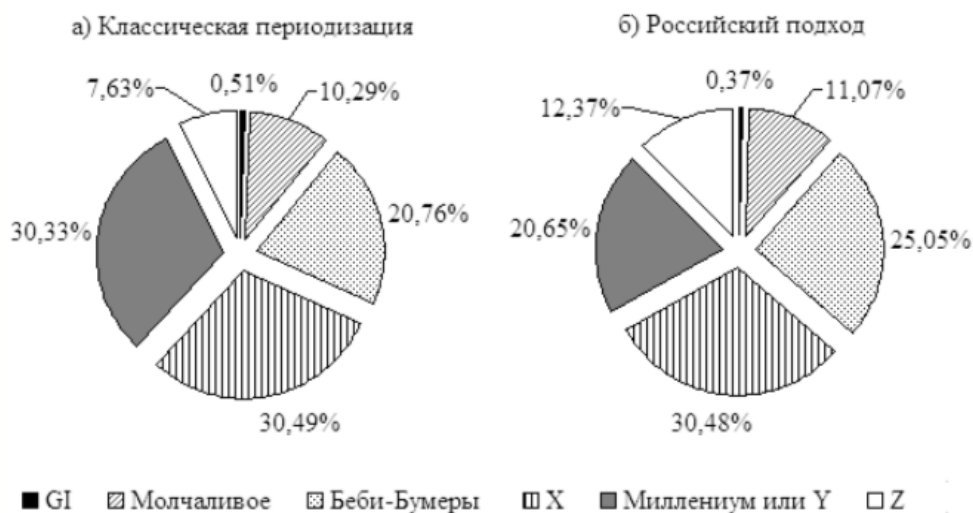
Figure 11. Generational structure of Russian society according to the classical and Russian approach to the periodization of generations by Astashova, 2014

Thus, the study by Mirofanova (2019) clearly demonstrated that the development of generations of Russian society was influenced by radically different events than those described in the classical generational theory by Hove and Strauss (1991), therefore, adaptation of the description of generations based on defining events of a generation and the basic values of its

37

representatives was needed (Table 10). Researchers Mironova and Chekmareva (2019) determined the time boundaries of the Russian generations in almost the same way as Astashova (2014), however, having specified the years of generations Y and Z, since their study was done 5 years later, and therefore the features of the representatives of the new generations could be studied more precisely.

Great generation GI, General Item, winners	Silent generation P, Pensioners	Baby Boomer generation BB, Boomers	Generation X, "X" unknown, "Children with a key around their neck"	Generation Y, Generation "Next", "Y", Millenials	Generation Z, Indigo children, since 2010 — alpha, "rainbow children"
1900–1923 yy.	1923–1943 yy.	1943–1963 yy.	1963–1983 yy.	1983–2003 yy.	2003–2023 yy.
Events					
The revolution of 1905, The great October socialist revolution, civil war, military communism, collectivization, electrification	Stalinist repression, the Great Patriotic War, the restoration of the country destroyed after the war	The birth boom, manned space flight, the Khrushchev thaw, the Cold War, the USSR is a world superpower	Continuation of the Cold War, bipolar world, war in Afghanistan, Chernobyl accident, lines and coupons, perestroika	The collapse of the USSR, market transformation, the "dashing 90s", terrorist attacks, military conflicts, the economic crisis of 1998, the development of Internet technologies, brands	The global financial crisis, the economic crisis of 2009–2010. in Russia, the formation of a new multipolar world, sanctions born in the era of digital technology
Basic values					
Diligence, responsibility, faith in a bright future, adherence to communist ideology, categorical	Devotion, adherence to the rules, respect for the position and status, sacrifice, patience, submission, frugality	Idealism, optimism, youth, health, teamwork, teamwork, personal growth, personal reward, expertise	Choice, global awareness, individualism, lifelong learning and education, pragmatism, "time is money", self-reliance, honesty, friendship, stability	Changes, optimism, pleasures, life "here and now", interesting work, immediate reward, naivety, technical professionalism, honesty, justice	The value system is in the process of formation, early digital literacy, communication and socialization difficulties

Table 10. Classification of generations of Russians on the basis of Howe-Strauss theory by Mironova & Chekmareva, 2019

38

Thus, from Tables 8 and 9 it can be seen that the adaptation of the Howe-Strauss (1991) theory in the Russian context presupposes a slight shift in the time boundaries of attributing representatives of different ages to one or another generational group. Besides, Mironova and Chekmareva (2019) highlight the differences in the research objects of Howe-Strauss (1991) theory and its' Russian adaptation: as a research object foreign scientists use representatives of the middle class, who have a fairly high level of income. In Russia, the assignment of a particular group of the population to the middle class is not self-evident and is determined primarily by the choice of its criterion. This can be both the level of income and the level of education, a clear connection between which in Russian conditions is poorly traced, since people with a high level of education in Russia, as a rule, belong to the category of "working poor", which is paradoxical for the West. Because of this, the object of research adapted to Russian conditions of the theory of generations is the so-called "majority of the population".

At the end of the consideration of the generational theory and the types and branches arising from it, it is worth saying that at the moment in Russia there is no only recognized and regularly supplemented classification of representatives of the living generations: despite the widespread of the generational approach in various areas of business and marketing, the majority studies of the behavioral characteristics of different generations are carried out with a rather narrow focus on a specific subject of research. One way or another, most researchers distinguish the same or slightly different time boundaries of generations, from which we can conclude that this way of determining whether the respondent of our future questionnaire belongs to a certain generation will be relevant for our research.

1.4.3. Representatives of different generations as consumers

In addition to a general consideration of the generational theory and its models, our research should consider the theoretical basis and existing research on the behavior of representatives of different generations as consumers.

As we can see, many existing descriptions of the characteristics of different generations representatives often differ from each other or even contradict each other. However, most of the studies demonstrate similar views on the general consumption patterns of representatives of the same generations. Many scientists have conducted research on the consumer behavior of representatives of different generations during traditional (offline) shopping.

So, Albaz J. and Howe N. (2011) say that representatives of generation X tend to save time, and they are ready to spend more money for their convenience. The opinion of relatives and friends about the product, reviews on the Internet or an advertising video may be of certain interest to

them, however, they make a purchase decision based on their own opinion (Shamis E., Nikonov E., 2016). This generation is sophisticated about goods, advertising and shopping. This group is the most price oriented and has the lowest price sensitivity. They need products and messages designed specifically for their tasks and lifestyles. They see technology changing their world and value techno literacy (Williams K., Page R., 2011).

Y's are characterized by an attitude towards the dematerialization of values, the transition to other status symbols, such as pleasures, impressions, and gaining an interesting experience (Shcherbakova E.G., Islamova V.A., Kaufman O. D, 2018). Speaking about the marketing in general and marketing of digital goods in particular, it allows us to talk about the need to develop a new direction — marketing of experiences, the concept of which requires the manufacturer not only to take into account the positive image of the product or service already created by the consumer but also to purposefully and thoughtfully form the customer's pleasant impressions of the subject of his demand.

McKinsey researchers (2018), in their classification of the population by generations (see Figure 12), divided the characteristics of representatives into three parts: context - events that had the most powerful influence on the formation of a generation, behavior - common behavioral traits of representatives of a generation, and consumption - values of consumers of different generations. The third category is interesting for our study. However, it is only ephemeral to reconsider the consumption values of physical goods in relation to digital ones: for example, with the help of digital goods, it is more difficult to give to X-ers the status that they value. Nonetheless, knowing the characteristics of consumers when buying digital goods remains an important challenge for marketers, which is why the marketing world requires continuous research on this topic.

	Baby boomer 1940–59	Gen X 1960–79	Gen Y (millennial) 1980–94	Gen Z 1995–2010
Context	• Postwar • Dictatorship and repression in Brazil	• Political transition • Capitalism and meritocracy dominate	• Globalization • Economic stability • Emergence of internet	• Mobility and multiple realities • Social networks • Digital natives
Behavior	• Idealism • Revolutionary • Collectivist	• Materialistic • Competitive • Individualistic	• Globalist • Questioning • Oriented to self	• Undefined ID • "Communaholic" • "Dialoguer" • Realistic
Consumption	• Ideology • Vinyl and movies	• Status • Brands and cars • Luxury articles	• Experience • Festivals and travel • Flagships	• Uniqueness • Unlimited • Ethical

Figure 12. Generations of consumers by Francis T., Hoefel F., McKinsey & Company, 2018

40

So, in the context of our study, it is of the most interest to consider the differences in consumer behavior of different generations when purchasing digital goods in the online environment. Differences in the behavior of representatives of different generations when buying digital goods have been little studied at the moment: generations are not studied in comparison with each other, but separately. More often, differences in the age and generations of consumers of digital goods are not made at all — mainly general statistics are studied and patterns of behavior of the entire consumer society.

Nevertheless, some characteristics of consumers online behavior that can be used when describing the developed segments of the target audience can be identified. Studies compare online consumers of generations X and Y. From the practical part, it is concluded that millennials are more inclined to shop online than X-ers. In addition, it was found that within Generation X, the likelihood of shopping online decreases with age, while within Generation Y, the likelihood of shopping online increases with age. However, the researchers associate this with the growing needs of consumers in connection with the growth or shrinking of their families. Therefore, such a conclusion will be irrelevant in relation to digital goods, since the need for them does not depend on the number of people in the immediate environment of a particular consumer. Moreover, for both generations, the study found a strong influence of the perceived risks of online shopping on purchasing decisions, and the level of this influence was approximately the same for both generations. Thus, the greater propensity of millennials to shop online, with the same importance of perceived risks, may indicate that in the case of Generation Y, the risks are compensated by the confidence of millennials when operating in the online space — that is, with higher digital competencies.

Millennials have been the subject of much research into online consumer behavior. One of the recent studies (B. Melovic, D. Sehovic, V. Karadzic, M. Dabic, D. Cirovic, 2021) deduced the determinants of the behavior of millennials when shopping online. The results showed that millennials are aware of the benefits of online shopping but tend to buy low-cost goods online such as clothing and cosmetics online. Another study (Mudaa M., Mohdb R., Hassan S., 2015) also confirms the cautious attitude of millennials towards online shopping but emphasizes that trust in the seller has the greatest influence on the consent of a representative of the generation Y to make a purchase online. We can test this assumption for digital products by examining the main motivators that influence consumers' decisions to purchase a digital product. Millennials were the first generation to significantly shake the traditional marketing strategies of large companies: having 24/7 access to information on the Internet and actively using social media, according to many studies, they do not trust direct advertising. They can check and verify any information about the quality of products and reviews about it online.

41

Representatives of generation Z, unlike millennials who prefer online shopping more often, do not see anything shameful in traditional offline shopping: a study by Euclid Analytics (Amato-McCoy D., 2017) suggests that 66% of Gen Z surveyed in the United States prefer to shop in regular stores, while 28% do not mind talking to consultants there. 53% already shop at regular stores at least once a week. Marketers suggest (Amato-McCoy D., Euclid Analytics, 2017) that Gen Z, being the first fully digital generation, prefers to pre-evaluate a product on the Internet, and then go to the store to touch it, discuss with consultants and then accept the decision. In addition, buzzers continue the trend of millennials not to trust direct advertising, but to lean towards the advice of friends or those they trust. However, all these conclusions are made for physical goods and we have to cross-check them in the field of digital goods.

Considering the literature on the online behavior of consumers of different generations, we can say that the vast majority of studies investigate the online shopping of physical goods - that is, those after payment for which they are delivered to the end-user offline. However, there are currently no studies on the consumption of digital goods and the behavior of consumers of different generations when buying them. In addition, the distinction in consumer behavior across generations in the study of specific categories of goods in general is made quite rarely — researchers choose only one type of division: either by type of product or by segment of consumers. Nevertheless, this part of the market continues to grow and become more significant and profitable, so market players need to get to know their consumers better and study their behavioral characteristics as closely as possible.

CHAPTER 2. RESEARCH METHODOLOGY

2.1.   Research approach

In the previous chapter, we examined the concept of online consumer behavior and concluded that most of the research on it, although it does important work, explaining the general patterns that can be used to describe consumer behavior, nevertheless, cannot always be extrapolated to different areas of online commerce due to features of each individual area. So, the features of digital goods, as an important part of the modern online market, dictate the rules of a new reality to managers, to which they need to adapt in order to successfully attract buyers and be profitable. Based on the consideration of the theoretical base, we concluded that the behavior of online consumers is a complex sphere due to the rapid development of technologies and the emergence of new services. Finding the reasons for certain online consumer behavior and classifying them by segment is necessary because it makes it clear to the business what methods to use when building business and marketing strategies. To substantiate the behavior of consumers of digital goods, we took two of their characteristics as a basis — belonging to the X/Y/Z generation and their digital competence level.

It was confirmed that both factors, digital competencies and generational characteristics, have an impact on consumer behavior when buying a product. However, it is clear from the previous sections that the role of these factors in consumer behavior has not been explored in the literature and theoretical framework on the topics.

Thus, speaking about the research gap on the segments of digital goods consumers, we can say that their behavior has not been studied so that managers and marketers of e-commerce platforms have a tool, such as segmentation, to better understand the target audience.

The goal of this research is to segment digital product consumers through identifying connections and patterns of consumer behavior with different levels of digital competencies and belonging to different generations.

Based on the goal of the work, the conceptual research model was developed (see Figure 13). The diagram shows that the individual traits of a consumer are dependent on both factors, competencies and generation. And the individual traits of the consumer, in turn, shape the behavior of the consumer when buying digital goods.

It was decided to investigate several components of the consumer behavior of digital products:

- The frequency of buying various types of digital products in order to build a plan for advertising campaigns and marketing promotion, depending on the type of

43

product and the frequency with which a representative of a particular segment purchases it.

- The driving forces or motivators for buying digital products are necessary to study, as they will help to form an understanding of the priority characteristics of digital products for representatives of different segments.

- In addition, in order to build a marketing plan and more efficiently set up advertising campaigns, you need to know about the attitude of consumers to online advertising, in particular, about the level of trust in various types of advertising (outdoor/TV/email/mail/brand sites/advertising integrations of influential individuals/bloggers) and the most attractive types and characteristics of online advertising for buyers of digital products.

From all of these areas several ones could be statistically analyzed in terms of factors dependence: these areas were included into the "Behavior" section of the conceptual research model. In the "Data analysis" part we will explain which statistical methods are chosen to investigate the impact of digital competences and generational features on the consumer behavior while buying digital products. Other characteristics of consumer behavior malso have to be investigated in order to more fully describe the final segments which will form the segmentation of digital products buyers.
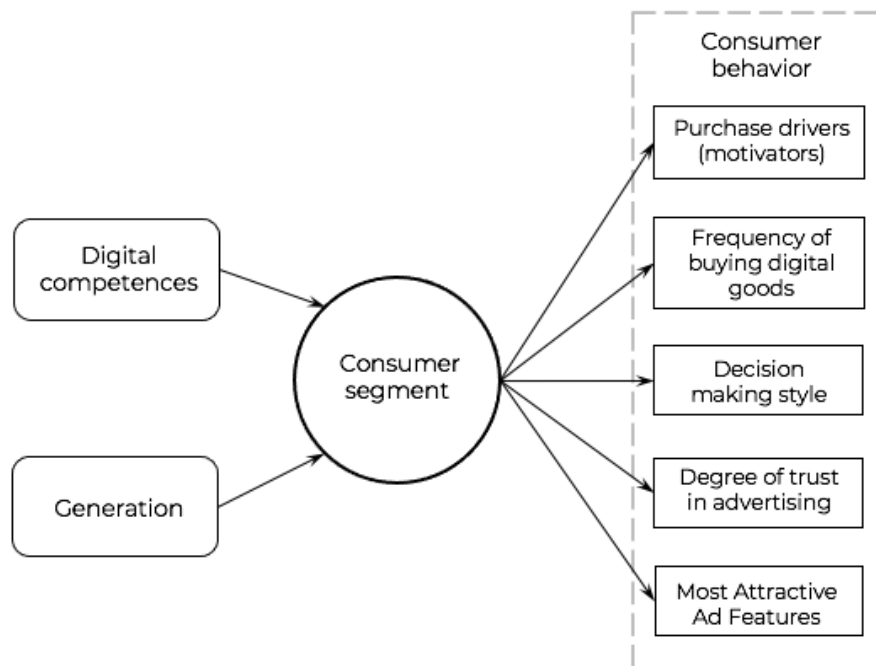

Figure 13. Conceptual research model: connection between consumer digital competences, generational features and consumers' behavior while buying digital products

Thus, based on the research gap described above and the conceptual research model, research questions were formulated:

RQ1: What are the differences in the behavior of different consumers when buying digital goods?

RQ2: What is the role of digital competencies and generational features in the buying behavior of digital consumers?

To answer the research questions, during the work we need to perform the following tasks:

1. Explore the characteristics of consumer behavior when buying digital goods on e-commerce platforms

2. Identify differences in consumer buying behavior of different generations when buying digital goods

3. Identify differences in digital purchasing behavior of consumers with different digital competencies

4. Select groups of consumers of different generations with different digital competencies

5. Describe the behavioral features/patterns of the identified groups that are relevant to the owners/managers of e-commerce platforms involved in the sale of digital goods

To achieve the research goal, a quantitative research method was chosen — a survey that we will distribute among respondents in the online space. This method will allow us, by analyzing statistical data, to track the impact of digital competencies of representatives of different generations on their behavior when buying digital products. Tracking this dependence, we, firstly, will be able to understand the reasons for certain patterns of consumer behavior, and secondly, we will be able to develop a segmentation of consumers of digital goods.

In the next part, we will describe the plan for achieving the research goal and accomplishing the tasks: we will tell which sample of respondents and why it is planned to target and what data on their behavior when buying digital goods, we will collect using the questionnaire.

2.2.   Data collection methods and procedures

The purpose of the questionnaire launch is to collect data on consumer characteristics in four areas: the level of their digital competencies, their preferences in buying digital goods, behavioral characteristics when buying digital goods, and demographic data.

Sections for the study of digital competencies were formed on the basis of the DigCompConsumers framework (Brečko, B., Ferrari, A., 2016): from it we selected the knowledge, skills and attitudes of digital competences constituents that are most relevant for

45

consumers of digital goods. Based on the analysis of the theoretical base about digital products, the types of goods purchased by consumers on e-commerce platforms were selected: this list was formed to form a connection between a specific consumer segment, the type of goods that its representatives of this segment prefer to buy, and the frequency of purchase of these goods. Questions for the section "Behavior" were formed on the basis of the selected areas of behavior of consumers of digital goods, described above in the conceptual research model. For a more accurate description of future consumer segments, a section for studying demographic characteristics was also included in the questionnaire. Thus, the parts of the questionnaire can be structured as shown in Table 11.

DIMENSION	DESCRIPRION
Level of digital competences	Digital competence constituents to be investigated: - Digital Security - Digital Communication - Digital Literacy - Digital Rights
Preferences in buying particular digital products through e-commerce channels	Types of digital products to be considered: - "Text" (e-books, training materials, manuals, etc.) - "Sound" (music, audio books, podcasts, etc.) - Video content (films, video templates, instructional video instructions, etc.) - "Graphic" (photos, fonts, icons, etc.) - Software and supporting files (applications, presentation templates, templates for documents, etc.) - Tickets and reservations (electronic airline tickets, hotel reservations, etc.) - Tickets for cultural events (concerts, cinema, theaters, etc.) - Entertaining (computer games, games for a smartphone, etc.) - Online courses and trainings (online training courses and trainings)
Behavior	- Frequency of buying digital goods - Incentives to buy digital goods - Decision making style (impulsive/deliberate) - Degree of trust in advertising (in general and in relation to different types of advertising) - The most important characteristics of advertisements that attract attention
Demographics	- Age - Gender - Education level - Marital status - Financial position

Table 11. Data to be collected using the questionnaire

46

After choosing the areas of research (particular parts of research interest in digital competence, consumer behavior and when buying digital goods) and frameworks, on the basis of which it was planned to formulate questions for respondents, it was necessary to create the first version of the questionnaire and test it in a focus group to ensure that the questionnaire does not show bias results, all respondents clearly understand the questions and do not experience difficulties in reaching the end of the questionnaire. So, the test version of the questionnaire will allow us to identify the problem areas of the questionnaire and reformulate the questions or eliminate unnecessary parts if necessary.

GSOM SPbU master students were chosen as a focus group for testing the questionnaire: they were suitable for the role of a focus group, since they were part of one of the segments of the sample desired for the study (generation Y and Z), and also had a sufficient level of digital competencies and experience in buying digital products on platforms ecommerce.

The first version of the questionnaire included a large block for determining the respondent's belonging to the generation based on his values. However, after testing the focus group questionnaire, a secondary analysis of this part of the study was carried out, since the assignment of respondents to a particular generation was difficult for two reasons.

First, too few questions about the respondent's value orientations did not give a complete picture of his or her vision of the world, while the answers to these questions could be interpreted in different ways, as was proved in the first chapter. Secondly, the inclusion in the final survey questionnaire of too large a block for determining value orientations would many times reduce the likelihood of each respondent passing the questionnaire to the end.

Thus, it was decided to determine the respondent's generation based on his year of birth - this method is the most accurate in the context of this study, which includes comprehensive testing of the respondent for various characteristics. Moreover, most of the studies on the topic of generations in Russia, discussed in the previous chapter, converged on practically the same definition of the time boundaries between generations. So, it was decided to define three investigated generations according to classification by Astashova (2014), but dividing border years based on the theory of echo-generations described before, as follows:

-   Generation X — 1963 – 1984;
-   Generation Y — 1985 – 1999;
-   Generation Z — 2000 – present time.

The target audience of the survey was limited in two ways. The first is generations. It was decided to investigate the behavioral characteristics of three generations as representatives of the main consumer force of the present and the next few years in Russia — more, than 94% of all active consumers of the country (Mironova and Chekmareva, 2019). In addition, an important

reason why we do not take Baby Boomers into consideration but take Gen Z is the specificity of the topic. We are investigating digital purchases that the BB generation are purchasing in small quantities. And representatives of generation Z, although they are still the younger generation, whose representatives do not all have their own finances to fulfill all their needs, nevertheless, in the future, represent most of the purchasing power of digital goods and the "digital natives" segment (Prensky, 2001).
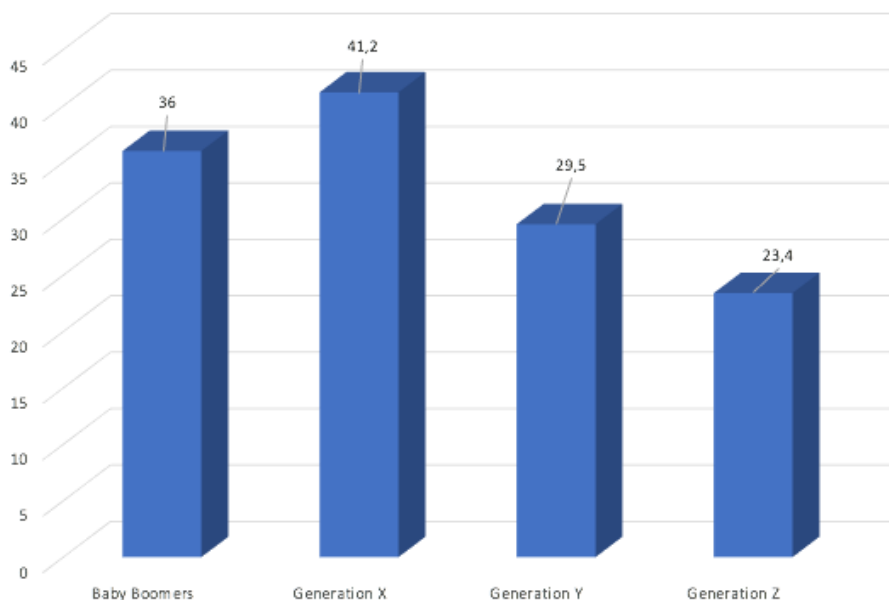
Figure 14. The number of the most active generations of consumers in Russia in 2017 by Mironova and Chekmareva, 2019

In addition, the term "connected spenders", which Kelly L., Anderson B. and Cheng B. (2017) describe the most active consumers, can serve as another justification for the choice of just such a focus group and, in general, generations of millennials and Z for the entire study living in cities and using the Internet to make purchases of all types, including purchases of digital goods. The average age of such consumers is 25-34 years old; this age category can be described as people belonging to the late Z's and millennials. According to a study (Kelly L., Anderson B. and Cheng B., 2017), there are about 50 million connected spenders in Russia. The study concludes that it is connected spenders that are the ideal target audience for consuming goods and services, and it is this group that should be considered first by managers and entrepreneurs when making decisions about which markets to invest in, how to communicate with consumers and using which marketing tools. build an attraction strategy.

The second direction of characterizing the target audience is geographic location. It is expected that the majority of the survey respondents will be residents of the North-West region of Russia and, to a greater extent, residents of St. Petersburg and the Leningrad region. This choice is justified by the data of the analytical report of ROCIT and the Higher School of Economics

(Golubovskaya T., 2015). The Northwestern Federal District is the leader in the digital literacy index in Russia, its value — 6.46 points — more than 34% above the average. The highest values, on the basis of which the index was calculated, have digital consumption and digital competencies, as well as the level of consumption of social networks, competence in the use of mobile communications. In the Northwestern Federal District, groups of active users showing interest in Internet media on a daily basis are residents of St. Petersburg, the Kaliningrad Region, and the Komi Republic. The expected leaders among the subjects of the federation, St. Petersburg and the Leningrad region, noticeably increased the average indicators of consumption and competency blocks across the country.

The online questionnaire is planned to be placed on an open specialized online platform Google Forms. This platform allows to compose questionnaires of any size for free, has in the interface all the types of answers we need, as well as the ability to logically branch parts of the questionnaire to filter respondents. Also, the questionnaire is planned to include closed types of questions of several types: dichotomic, with a Likert scale, with multiple answers and one answer.

2.3. Data analysis and methods

During the survey, quantitative data were collected, so statistical analysis was chosen as the analytical method. It was decided to use the statistical analysis software SPSS to analyze the data collected through the questionnaire.

In the course of data analysis, it is planned to use the following methods:
- Descriptive statistics: for a preliminary description of the demographics of the sample of respondents, as well as for the analysis of the part about digital products consumed by representatives of different generations. Using descriptive statistics, we want to find out how the preferences of different generations differ in terms of the choice of categories of digital goods, as well as the motivators to buy them.
- Cluster analysis: to highlight segments with low, medium and high levels of digital competence, as well as to further describe these segments using crosstabs according to different criteria of consumer behavior.
- ANOVA analysis for comparing the average values of variances across segments within different directions of consumer behavior in order to select characteristics by which segments will be described.

49

CHAPTER 3. THE ROLE OF DIGITAL COMPETENCES AND GENERATIONAL FEATURES IN DIGITAL PRODUCTS CONSUMERS' BEHAVIOUR

In this part, first of all, we will describe the audience among which the questionnaire was distributed, and then we will proceed to analyze the data of our research concerning the study of specific groups of digital goods purchased by representatives of different generations and different digital competencies, as well as consumer behavior. Based on the results of the analysis, clusters and segments of consumers will be identified, which will be described on the basis of behavioral characteristics and demographic data of their representatives.

Finally, we will look at the research findings and how they can be applied, both in theoretical and practical terms, and discuss potential ways to expand the research topic, delve into specific parts, and work around the limitations that this research has encountered.

3.1. Research sample

The survey was conducted over two weeks and collected 293 responses, which included both consumers of digital goods and those who have never bought digital goods on e-commerce platforms. To ensure that the respondents are familiar with all the terminology and the general concept of digital competence of the client, explanatory examples and definitions were placed at the beginning of the survey.

When processing the data, we immediately reworked the answers to the question about the year of birth of the respondent and attributed each answer to one of the three studied generations. A small part of the respondents (7 people), were excluded from the sample — representatives of the Baby Boomers generation: in the previous parts, based on statistics, we explained why we are planning to focus on representatives of generations X, Y and Z. In addition, 27 replies were from those respondents who do not make purchases of digital goods on the Internet — although data on these respondents do not directly need to be used in our study, however, in order to understand how consumers of different generations behave in the online space, we can make analysis using contingency tables (see Figure 15). This analysis revealed that the largest number of consumers who do not buy digital goods are among the representatives of generation X – 16.85%. The most active consumers of digital goods are representatives of generation Z. The decision not to consider representatives of generation B was confirmed on the one hand — almost half of the survey respondents of this generation, 44.4%, are not consumers of digital goods.
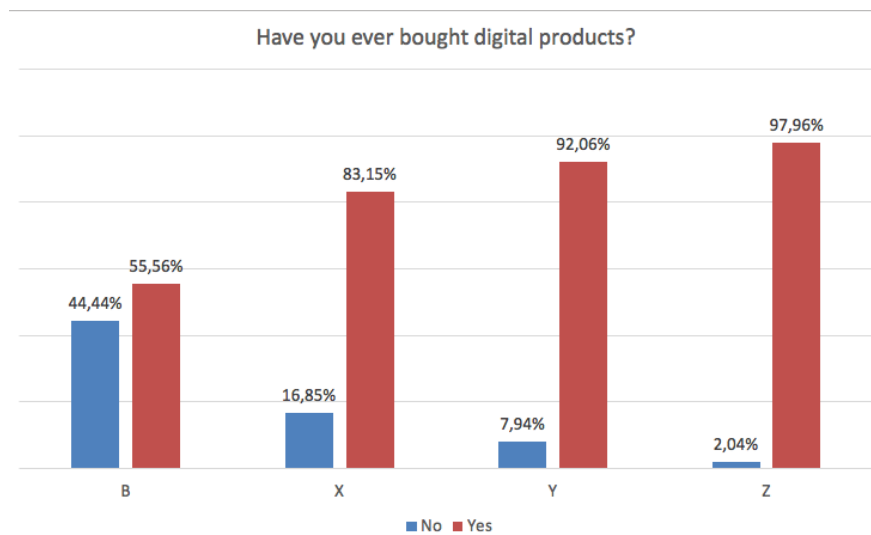
Figure 15. Percentage of digital goods consumers by generation

Thus, after weeding out the data we do not need, there are 259 answers left for the analysis. Let's return to a more detailed description of the respondents. Of the people who passed the survey, genders were distributed in the direction of the prevalence of women: 59.07% to 40.93%. This distribution (see Figure 16) can be due to several reasons: the fact that women, in general, are more inclined to make online purchases and purchases of digital products in particular, as well as, in general, the ratio of men and women in Russia, the inhabitants of which are all respondents of the questionnaire — according to Rosstat in 2020, there were 866 men per 1,000 women in Russia.
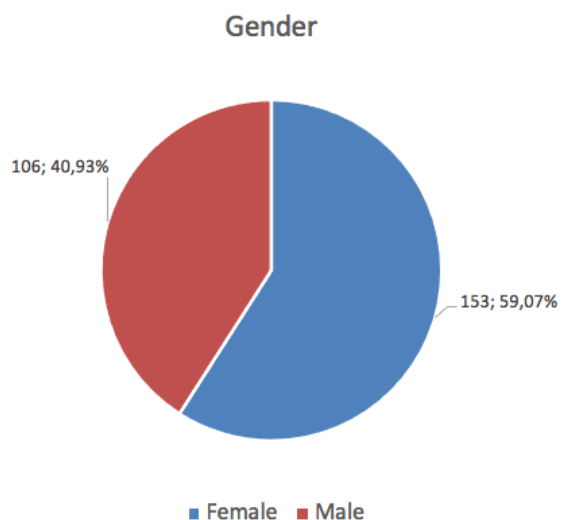
Figure 16. Gender distribution of survey respondents

Other demographic characteristics — generation, education, and primary employment — were tabulated. From the Table 12, we see that most of the respondents already have a master's or bachelor's degree or are currently pursuing higher education. As for the main type of activity, most of the respondents work in full-time jobs.

Characteristics	Frequency	Percentage
Sex		
Male	106	40.93%
Female	153	59.07%
Generation		
X	74	28.5%
Y	116	44.8%
Z	69	26.6%
Education		
Secondary education	27	10.42%
Specialized secondary education	12	4.6%
Bachelor's Degree	70	27.02%
Master's Degree	136	52.5%
Postgraduate study	14	5.4%
Occupation		
Getting secondary education	10	3.86%
Getting higher education	64	24.7%
Working part-time	51	19.69%
Working full-time	96	37.07%
Freelance	22	8.49%
Retired	2	0.77%
Unemployed	4	1.15%

Table 12. Demographic characteristics of respondents

An important component of the demographic block was also the study of the income level of respondents (see Figure 17) since this parameter is an important characteristic for the demographic complement of the descriptions of consumer segments. In our questionnaire, specifically, so as not to trigger people with numbers, we asked about income according to the level of what people can afford. Most of the interviewed respondents noted that they have enough money to buy small household appliances, but not enough to buy such expensive things as a computer, refrigerator, or washing machine – we attributed these respondents to the middle class. Upper-middle-class respondents turned out to be almost equal to the number of middle-class respondents – 36.3%. Such statistics indicate that the overwhelming majority of our respondents are able to buy digital goods on an ongoing basis or once in a period, since their basic needs are satisfied, and their financial condition is stable.

0,77% 5,41%

15,44%

36,29%

42,08%

■ Very low income   ■ Low income   ■ Middle class   ■ Upper-middle class   ■ High income
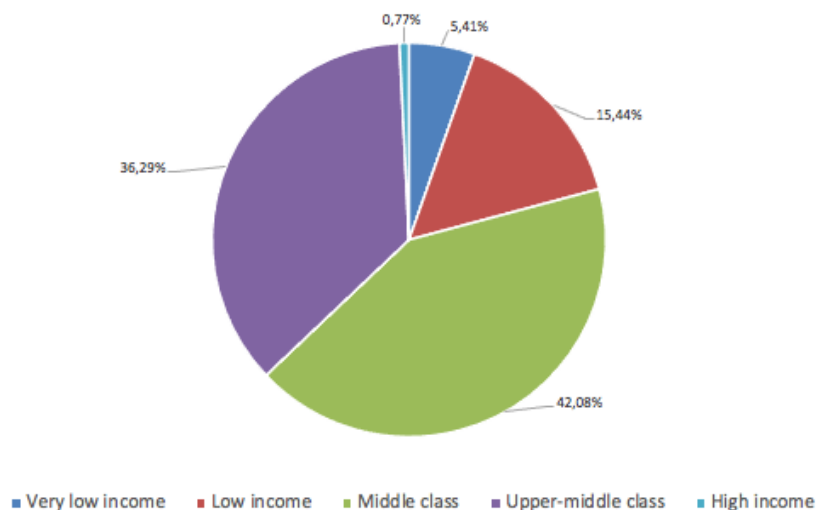
Figure 17. Respondents income level

Of the respondents who completed the survey, the overwhelming majority, 70.6% do not have children, in second place are those who have two children, there are almost 14% of them. The smallest number of respondents supporting large families (from 4 children) is 1.54%. This statistic, firstly, is due to the fact that the sample did not include representatives of the Baby Boomers generation, whose number of children would have been greater than that of Generation X, and this also indicates the tendency of recent decades, in general, to give birth to children in families later — after 30 years old and later.

legally married   unregistered marriage   divorced   was not married   widow/widower   single

■ No children   ■1   ■2   ■3   ■4   ■5 and more

Figure 18. Presence of kids in different marital status groups

The correlation between the presence of children is also clearly traced in relation to marital status: respondents with children are mainly in officially registered marriages (see Figure 18).

53

3.2. Digital products consumers of different generations

The first objective of our research work was to study the behavior of consumers belonging to different generation groups in order to identify the relationship between their age and their behavior — the digital goods they prefer, attitudes towards advertising, incentives and motivators to buy and other components of consumer behavior, the goal the studies of which we described above.

As the first part of the study of the differences in the behavior of representatives of different generations when buying digital goods, we want to investigate the categories of goods that are preferred by different consumers and the frequency of purchasing these goods.

Before proceeding to a detailed consideration of the consumption of each category of goods by representatives of different segments, it is worth saying that in most of them the part of respondents who do not buy digital goods is large enough. However, this does not mean that the digital goods market is unpromising or unpopular. Such statistics can be explained by the fact that consumers prefer to find free ways to get the digital goods they need (this can be done with almost any of the categories) and tracking illegal content publishing in Russia is complicated by a large number of alternative technological solutions, such as, for example, VPN addresses and site mirrors. Marketers can deal with this problem by changing the consciousness in people towards the fact that by paying for a certain digital product, consumers not only spend their money, but also encourage legal publishing of content, which allows content authors to generate income and, as a result, can reduce the price of content.
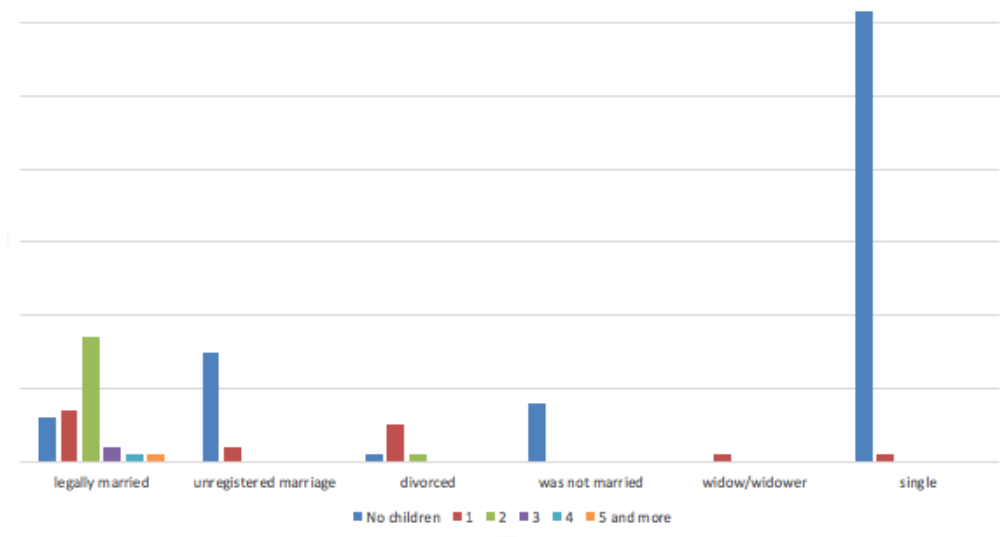
Let's take a look at a summary graph (Figure 19) of consumers of different categories of digital products, in which all consumers are divided by generations X, Y, and Z. The percentages on the graph show the proportions of those people who, when asked about the frequency of purchasing a certain digital product, did not choose the option "I do not buy", that is, these respondents are digital consumers of these categories. We can see that the most popular category of digital goods is tickets and reservations. This is natural since in the modern world it is no longer necessary to go to the ticket office to buy a plane ticket or to a hotel to book a room. Other categories of digital goods are of more interest to us. From the graph (Figure 19), we can see that representatives of different generations are leading in different categories as consumers. For example, in the purchase of games — zoomers, smartphones apps — millennials, software — X-ers. All this can be associated only with the behavioral characteristics and main activities of representatives of these generations. However, upon closer examination, it becomes clear that the final choice of product categories may be influenced by another factor – the digital competencies of consumers, which differ from generation to generation.

54
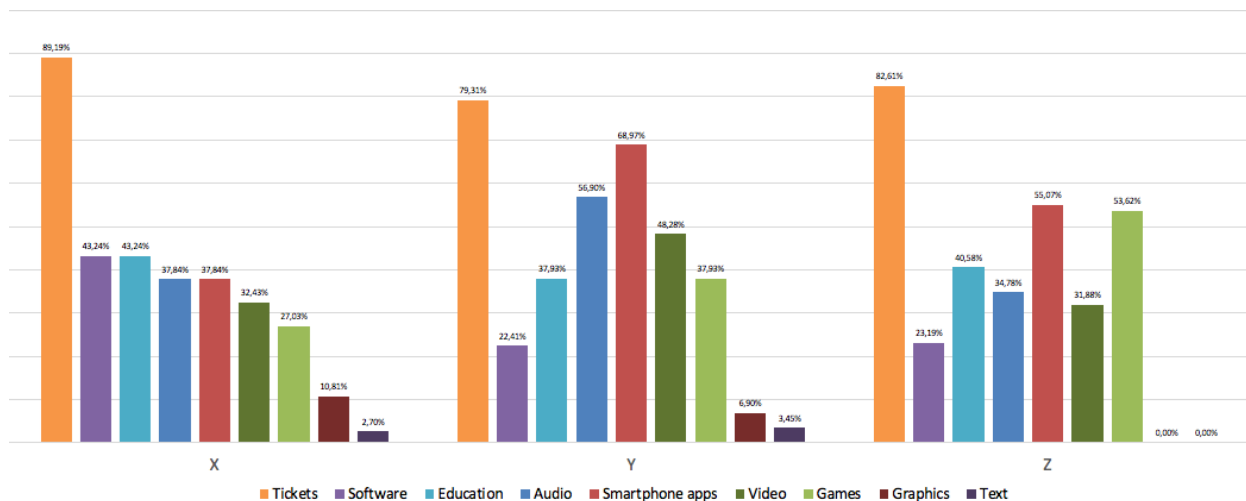
Figure 19. Consumers of different categories of digital goods of different generations

Now let's look at the analysis of the frequency of consumption of different categories of digital goods by buyers, where statistics is the most interesting. So, the first category analyzed in the study is audio content, which includes music, audiobooks, podcasts, and other types of digital goods. From Figure 20, we see that the most active consumers of this category are representatives of generation Y. Representatives of generation Z turned out to be more active consumers of audio content than X-ers. In addition, according to the graphic, we can conclude that the majority of consumers of audio content prefer streaming services such as Spotify, Deezer, Yandex Music and so on, that is, they use a monthly subscription, and a one-time purchase of one music track becomes irrelevant. However, X-ers are the only ones who buy music "by the piece", several times a week, in 2-3 weeks or a month. This may be due in general to the lower digital competencies of this generation, namely lower awareness of how to buy digital content. We will analyze this assumption in the next section.

The situation with video content (see Figure 21) is similar to the consumption of audio content: Millennials are the most active buyers of films, TV series, etc. However, when it comes to frequency of purchase, the distribution of preferences is not so uniform. Approximately equal shares of representatives of different generations use subscriptions to services, buying video content once a month, but many prefer to make one-time purchases of different frequencies.

55

Figure 20. Frequency of buying audio content by consumers of different generations
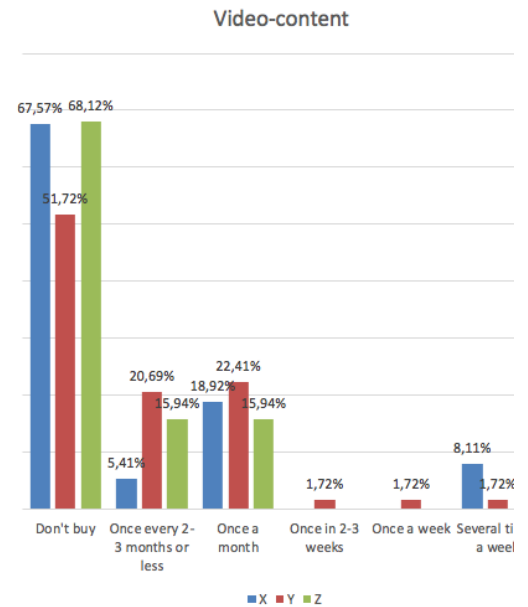
Figure 21. Frequency of buying video content by consumers of different generations

The category in which there is a clear dominance of Gen X consumers is software (see Figure 22), which includes antivirus programs, plugins, data processing packages, and so on. The reason for such statistics may be that, compared to representatives of generations Y and Z, X-ers are more financially stable (see the analysis of the demography section) and can afford to buy expensive software. However, nearly 19% of millennials also reported they buy software every 2-3 months, due to the fact that this generation has already started to take up the majority of the workforce.
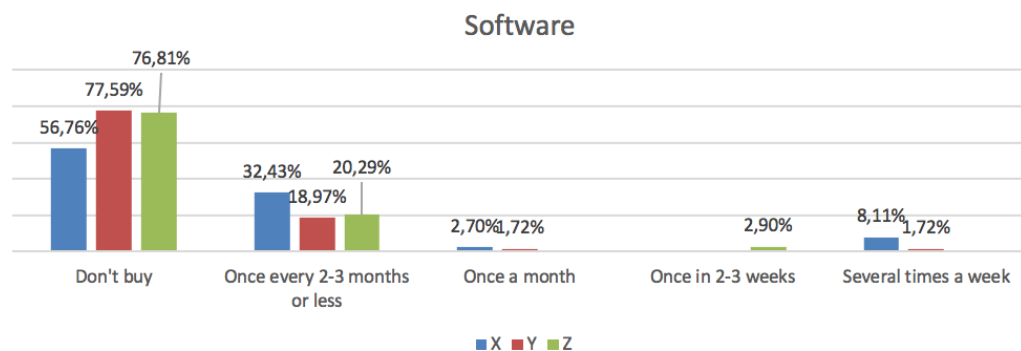
Figure 22. Frequency of buying software by consumers of different generations

Cloud storages has also become a category with clear differences in preferences and purchase frequency: millennials are the leaders here. They prefer to store data online and even pay for cloud storage on a monthly basis. Since it is logically impossible to associate this feature with generational characteristics, we again come to the assumption about the importance of digital competencies in such behavior. The ability to use cloud storage is a high level of digital

competence. However, the statistics from Figure 23 may not say that their lower digital competencies follow from the rarer use of clouds by zoomers, and rather, this indicates the still less need for Z's in such a technological solution since a small part of them work and store large the amount of information on devices. However, in order to get a final look at this survey, we will check the digital competence levels of generations in the following parts.
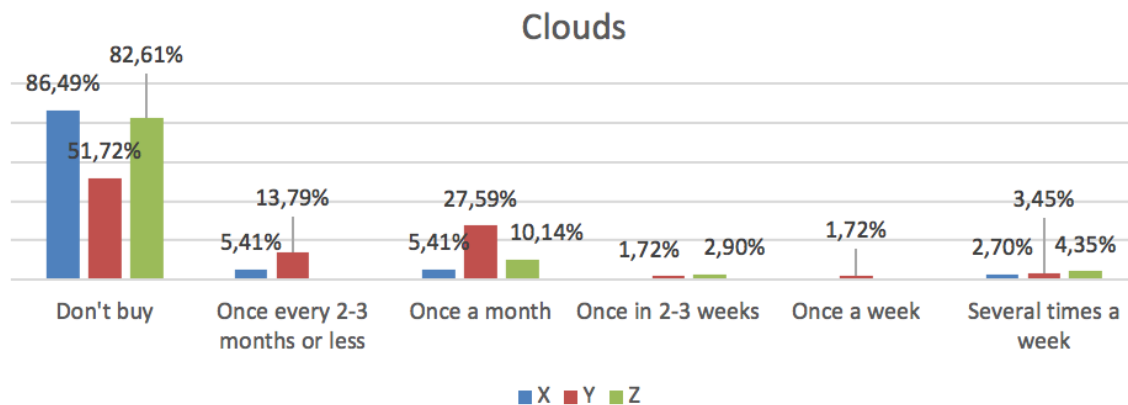
Figure 23. Frequency of buying cloud storages by consumers of different generations

The categories of graphic and text content were the least popular among consumers of digital goods (see Figures 24 and 25). When it comes to graphic content (photos, presentation and resume templates, fonts), the gap in the number of consumers by generation is small. Nonetheless, the largest proportion of graphics consumers are Gen X. In addition, among all graphics product categories, there was a distinctive case – 100% of Gen Z digital consumers said they did not buy graphics online. The same goes for text content (see Figure 25) – Z's are also not taking the initiative here and report very low consumption of e-books, manuals, etc. This may again be due to two reasons: both the absence of the need for this type of digital goods, and the possible highest level of digital competence of zoomers among all generations, the consequence of which is the ability to easily find high-quality graphic and text content on open platforms.
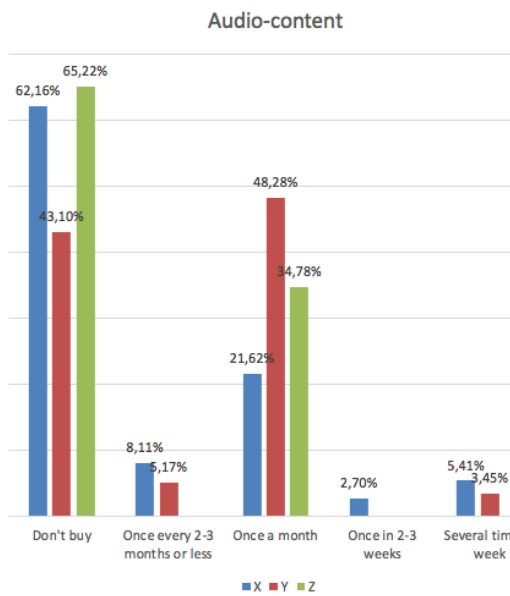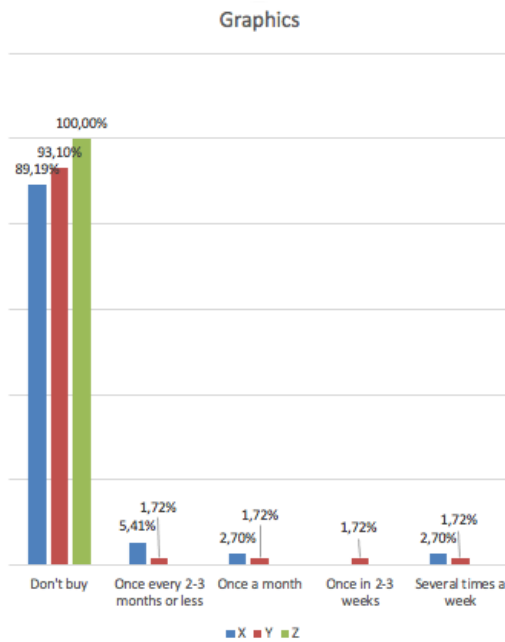
Figure 24. Frequency of buying graphic content by consumers of different generations
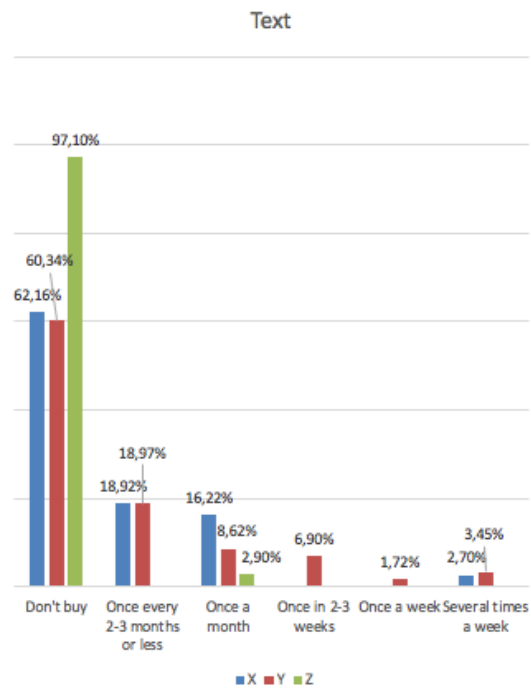
Figure 25. Frequency of buying text content by consumers of different generations

When it comes to motivators to buy digital goods, the data for different generations also differs. To correctly assess the level of importance of different characteristics of digital goods when making a purchase decision, we, first of all, normalized the number of respondents of each generation, so as data could not be interpreted wrong. Further, based on the answers of the respondents, where they measured the level of importance of each characteristic from 1 to 5, the formula was derived:

$$Imp = 1*x_1 + 2*x_2 + 3*x_3 + 4*x_4 + 5*x_5 ;$$

where *Imp* — the level of importance of a characteristic of a digital product in a purchasing decision,

$x_1 - x_5$ — the number of respondents rated the importance of each characteristic from 1 to 5, respectively.

Thus, we calculated the level of importance for consumers of different generations of different characteristics of digital products. First of all, let's look at the summary chart (see Figure 26). The characteristics on the graph are arranged in descending order of importance for all groups of consumers in total.

58
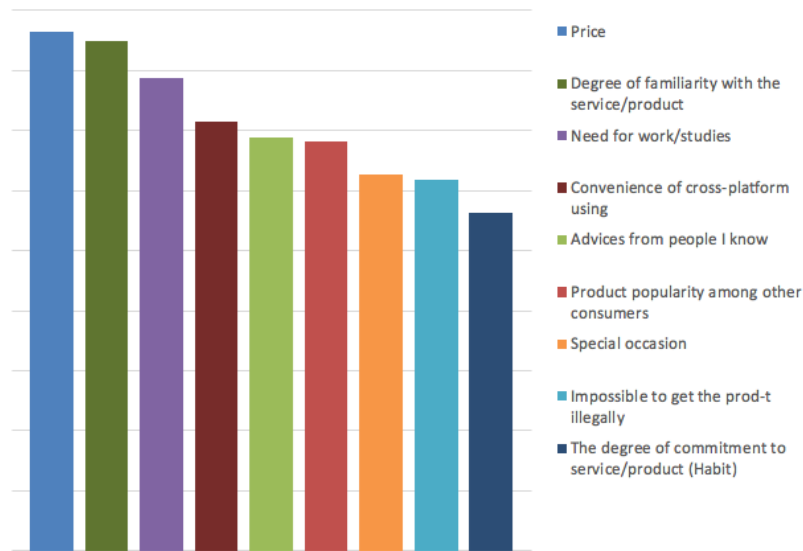
Figure 26. Percentage of consumption of digital product categories by digital consumers of different generations

- Price
- Degree of familiarity with the service/product
- Need for work/studies
- Convenience of cross-platform using
- Advices from people I know
- Product popularity among other consumers
- Special occasion
- Impossible to get the prod-t illegally
- The degree of commitment to service/product (Habit)

From the summary chart, we can see that the most important factor that we have considered influencing a buying decision is price. An interesting conclusion was that the most important factor in making a purchase decision is the price factor for X-ers (see Figure 27).
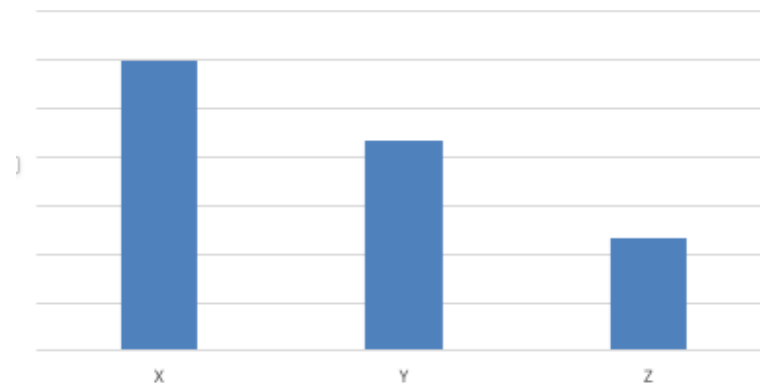
Figure 27. Influence of the price of a digital product on purchasing decisions by representatives of different generations

First, this can be explained by the highest purchasing power of the oldest of the generations under consideration. But also, when we analyze future factors influencing buying decisions, we more often come to the conclusion that it is important to consider the impact of digital competencies on consumer behavior. Thus, linear dependence of the level of importance of different characteristics on the generation of digital consumers is observed in relation to the popularity of the product among other users (see Figure 28) and the impossibility of obtaining the product in an illegal way, that is, not buying it, but using pirated copies (see Figure 29).

Analyzing the data on the resulting graphs (Figures 28 and 29), we can also assume that digital competencies play their role in just such consumer behavior. Assuming that the digital competencies of consumers grow with each generation (that is, representatives of generation X have the lowest level of competence on average, and representatives of generation Z have the highest), we can explain the graphs. The popularity of the product among other users can be

59

important for Z's because, firstly, they use social networks more actively than others and are the first to learn about market innovations, and secondly, they know that you should not rely on many marketing moves, but you need to look at people's opinions. As for the distribution of pirated copies, the data showed that Zoomers use this method of obtaining digital goods least actively of all generations, which can also indicate a high level of digital awareness and, as a result, digital competencies.
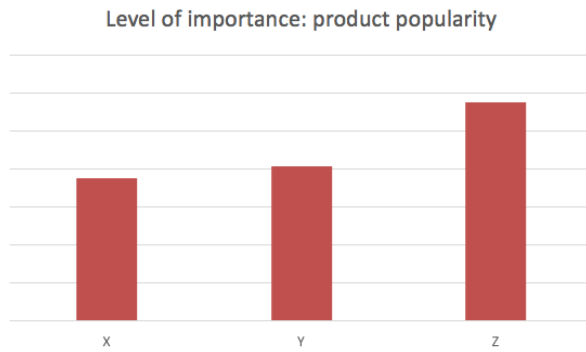
Figure 28. Influence of the product popularity among other users of a digital product on purchasing decisions by representatives of different generations
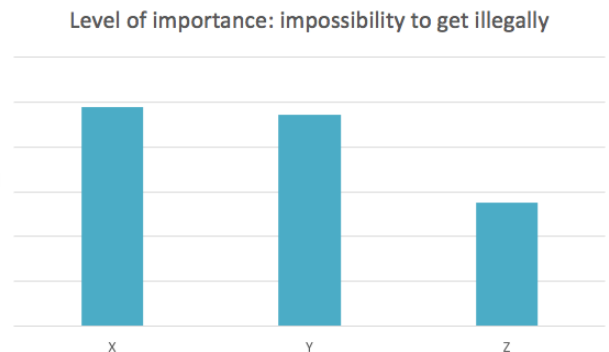
Figure 29. Influence of the impossibility to get the product illegally on purchasing decisions by representatives of different generations

However, among the analyzed motivators for buying digital goods, there are also those that are most important for representatives of generation Y: this is the degree of familiarity with the digital product or the platform on which it is purchased, as well as the degree of commitment to the product, that is, the habit of buying it once in the period, such as a subscription to streaming platforms. Thus, from Figures 19, 30 and 31, it can be concluded that the most frequent users of streaming services are millennials — they are the ones who are motivated to buy digital goods by the convenience of a monthly/annual subscription and the degree of familiarity with the platform on which they purchase a digital product.
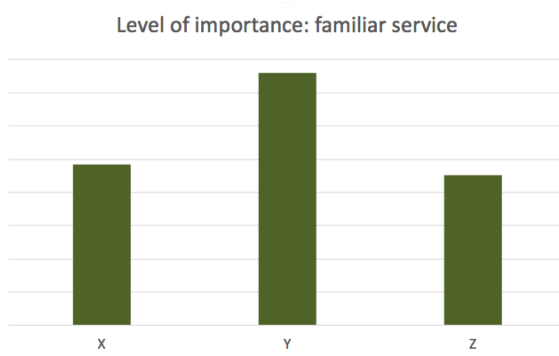
Figure 30. Influence of the awareness level of product/service on purchasing decisions by representatives of different generations

Figure 31. Influence of the level of commitment to a product/service on purchasing decisions by representatives of different generations

Thereby, we analyzed digital buying habits across different generations. On the basis of descriptive statistics at different stages, it was concluded that only generational personality characteristics of consumers in the study of their behavior are not enough to understand the reasons for their choice and understand the patterns of behavior — it is important to study the factors in a complex and analyze whether digital competencies affect the choices made by consumers. In the following parts, we first will cluster the respondents by digital competency levels and then will analyze the relationship between generations and competencies to describe future digital consumer segments.

3.3.   Defining segments of digital consumers: factor and cluster analysis

Since the final segmentation of digital consumers is designed to be based not only on their belonging to a generation but also on their digital competencies, the next step in the practical part was the selection of segments with different levels of digital competencies.

In the previous chapter, we described the selection of certain areas of digital competence that were selected as relevant to the consumer experience of buying digital goods. The respondents of the questionnaire, passing the block on the assessment of competencies, assessed each direction from 1 to 5 in accordance with the level of their knowledge, skills, and attitudes on this issue.

First of all, in order to reduce the number of variables affecting the determination of the level of digital competencies, it was decided to conduct a factor analysis. Chronbah's Alpha test for testing reliability on 15 variables, assessing the digital competence of the respondent, showed a result of 0.83 (see Table 13), which is interpreted as a high level of reliability.

Reliability statistics	
Cronbach's Alpha	N of Items
0,831	15

Table 13. Reliability statistics, SPSS

The data were also tested for suitability for factor analysis using the Kaiser-Meyer-Olkin (KMO) test and the Bartlett sphericity test (see Table 14). The KMO indicator showed a result of> 0.5, and the significance according to the Bartlett test does not exceed 0.05, which indicates the feasibility of factor analysis due to the correlation of factors.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,823
Bartlett's Test of Sphericity	df	105
	Sig.	,000

Table 14. KMO and Bartlett's Test, SPSS

After completing the necessary data suitability tests, we run factor analysis, and then normalize the results to obtain five skill levels, divided into groups.

According to the Scree Plot (see Figure 32) and the Table of Total Variances Explained (see Appendix 2), the initial recommended number of factors was 4, where the Eigenvalues were more than 1. But, after analyzing the factors placed into groups, it was decided to unite two of them, which both correspond to Digital Rights, intro one group. So, the result of factor analysis was the identification of three groups of knowledge and skills, which can be divided into three large areas: Digital Rights, Digital Literacy and Digital Security.
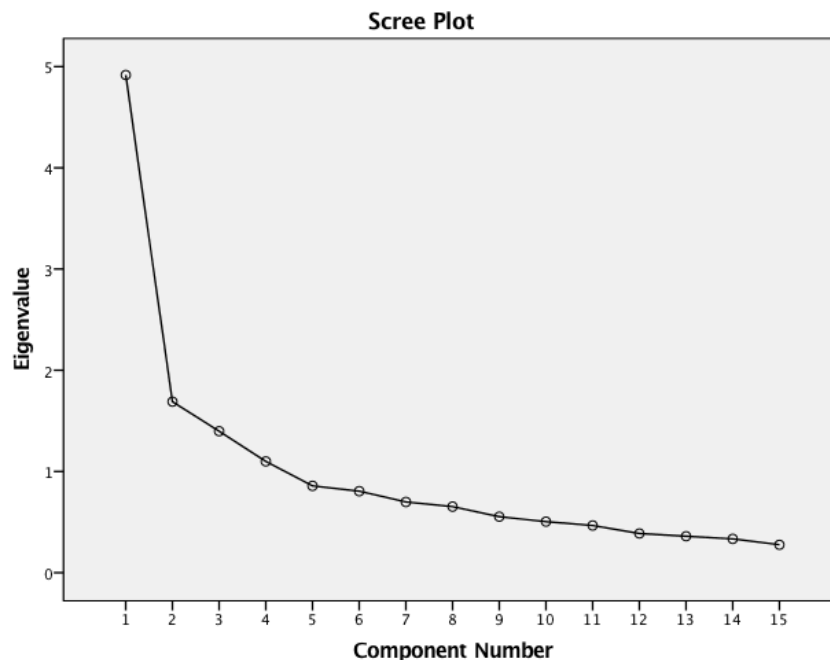
Figure 32. Scree plot, SPSS

Digital rights reflect the respondent's knowledge of the legality of placing paid content (that is, digital goods) in the online space, knowledge and ability to protect their rights as a digital consumer, understanding of the laws and conditions for the sale of digital goods.

With digital literacy, we have combined factors related to making online payments, knowledge of service support, searching and filtering information about a product, including reviews about it, as well as managing personal accounts on e-commerce platforms.

Digital security included knowledge about the possibility of using personal data of users for marketing purposes or for fraudulent purposes, the ability to manage the level of privacy of their data on the Internet and attitude towards illegal content.

Finally, hierarchical cluster analysis using Ward's method was performed, based on the results of which three clusters of respondents were identified (see Figure 33).
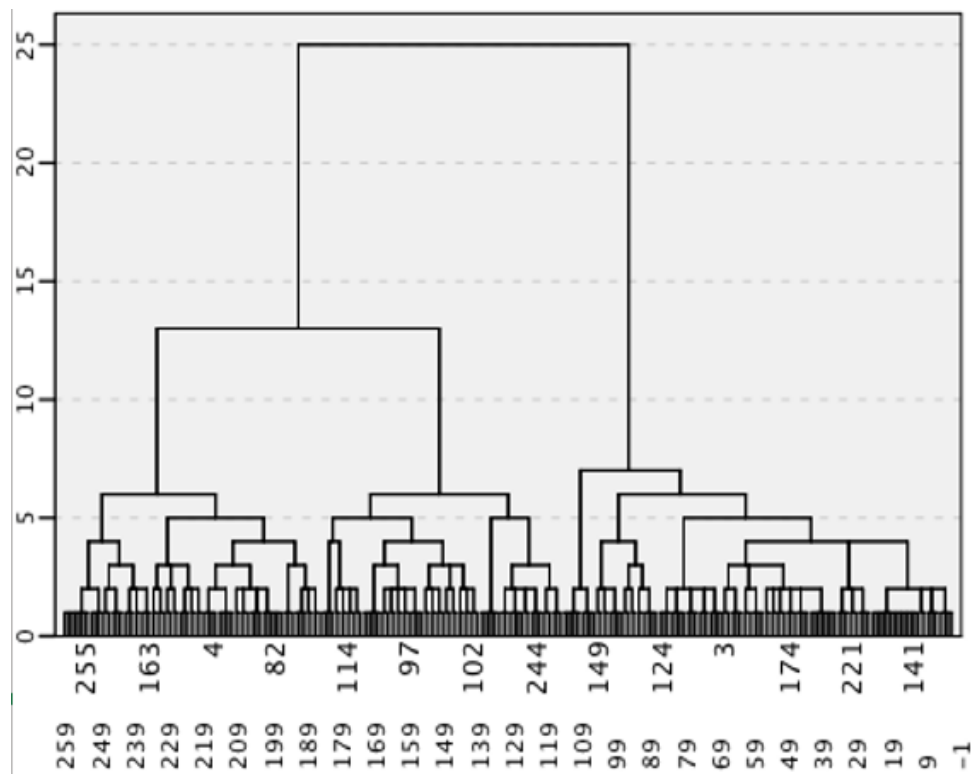
Figure 33. Three consumers clusters of high, medium and low digital competences

To understand definitely what level of competencies each cluster possesses, we used contingency tables, normalized the number of respondents of each generation so as not to get erroneous data, and calculated the level of each direction of digital competencies, based on the dimensions defined during the factor analysis. Also, digital communication was highlighted as a separate dimension of consumer digital competences, so finally we've got four dimensions: digital security, digital literacy, digital communication and digital rights.

Cluster	DigComp Level	Number of respondents	Digital Security	Digital Communication	Digital Literacy	Digital Rights
1	High	114	4,79	4,63	4,3	3,51
2	Medium	75	4,49	4,49	3,9	2,19
3	Low	70	3,81	3,27	3,4	2,23

Table 15. Evaluation of Digital Competence Dimensions by levels

As reported in the Table 15, representatives of the High level of consumer competencies have a high level of Digital Security (knowledge and skills about the protection of personal data,

63

knowledge about the possibility of using data for marketing purposes or for fraudulent purposes), a strong level of Digital Communications (Skills of interacting with other users using digital technologies, "netiquette", digital identity management), a strong level of Digital Literacy (browsing, searching, filtering, evaluating data and managing data and digital content) and an average level of Digital Rights (knowing digital consumer rights and how to protect them).

Respondents with the Medium level of digital competencies have strong levels of Digital Security and Digital Communication skills and knowledge, average level of Digital Literacy, and low level of Digital Rights. Representatives of a generally Low level of digital competencies have medium levels of Digital Security, Digital Communication, and Digital Literacy skills and knowledge, and low level of Digital Rights.

The first step in future segmentation based on the purpose of the study was the division of respondents into representatives of different generations within the framework of digital competencies.

First, let's take a look at the overall distribution of generations by digital competency levels. This distribution was achieved by calculating the maximum possible level of digital competencies of a generation (when each representative is included in the first segment of digital competencies), and then determining the number of representatives of the generation with low, medium, and high levels. Thus, millennials have the highest level of consumer digital competencies, that is, representatives of generation Y. Zoomers and representatives of generation X who completed the survey of this study showed almost equal results of digital competencies – 63% and 65%, respectively (see Figure 34).
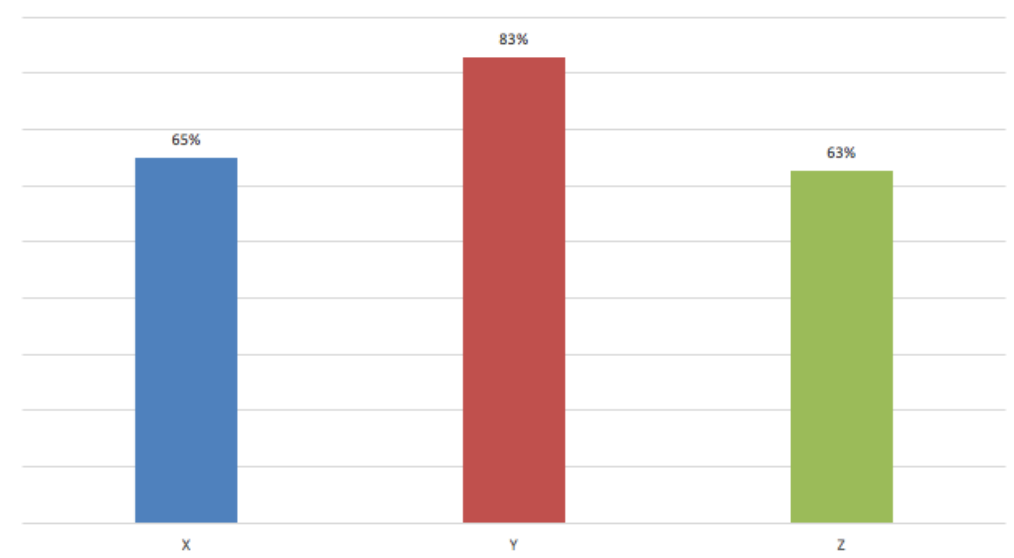
Figure 34. Consumers Digital Competence Level across Generations

However, knowledge about the distribution of representatives of different generations within the levels of digital competencies and vice versa is of great value both for describing the segments and for the entire study as a whole.

That is, the answers to the questions:

- How many, as a percentage, consumers of different digital competencies within each generation?
- How many, as a percentage, consumers of different generations within each level of digital competencies?

The answer to the first question is reflected in Figure 35. We see that the largest proportion of consumers with High DigComp level are millennials, the smallest are zoomers. At the same time, zoomers lead in the Medium level of digital competencies, and X-ers in the Low-level.
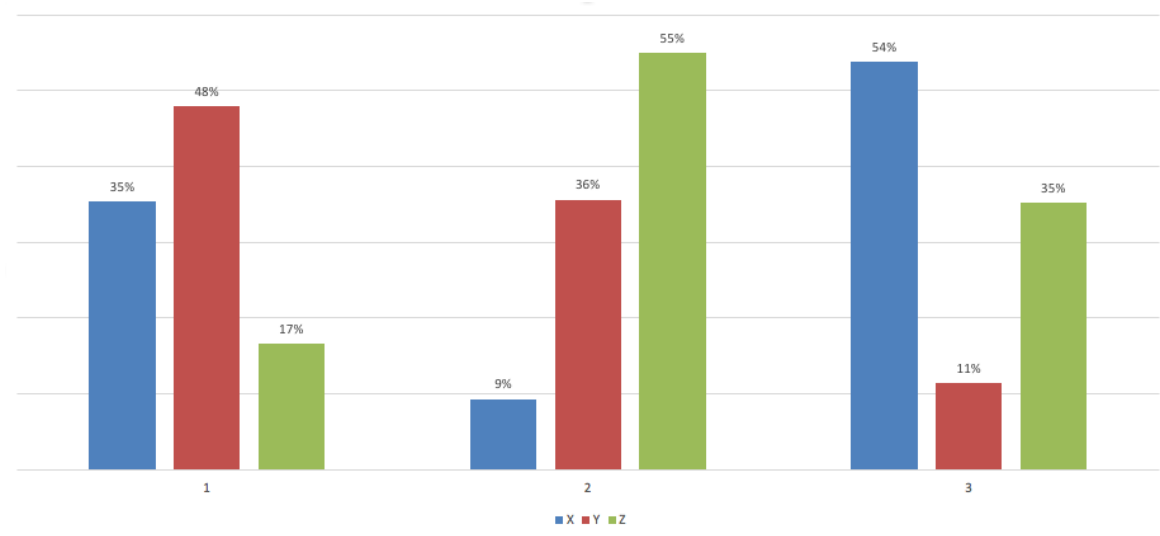
Figure 35. Distribution of Generations Consumers across DigComp Levels

A different look at the data, from the side of the distribution of competence levels among generations (see Figure 36), will also be useful for managers who, for example, definitely know which generational group their product is aimed at, but do not know what percentage of representatives of which competence levels are in this group. It is interesting that the number of representatives of the average level of digital competencies is growing with each generation. A linear dependence of the number of representatives of high and medium levels on age cannot be drawn, since the number of these segments increases from generation X to generation Y and decreases from generation Y to Generation Z.

In general, analyzing Figures 34, 35, and 36, we see that although millennials are leaders in terms of digital competencies, the number of zoomers of Medium DigComp Level allows us to

65

assume that in the future the average value from the level of competencies will grow with their professional and career development and the growth of education level.
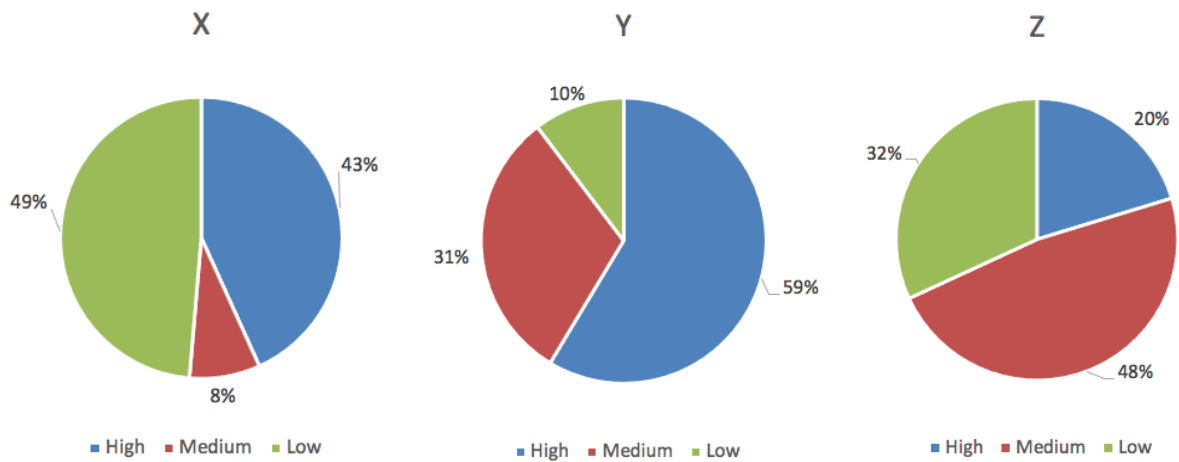
Figure 36. Distribution of Consumer DigComp Levels across Generations

The next step, using the SPSS built-in Direct Marketing function, we identified 9 segments based on the "DigCompLevel" variable created from the cluster analysis and the generation variable immediately determined in the database based on the date of birth of each respondent. Since we know with certainty that these two variables have definite meanings and, in our sample, there are representatives of all three levels of digital competence, as well as all three generations, we knew that we could rely on the automatic segmentation function in SPSS. So, based on digital competencies and belonging to generations, 9 segments were identified, the distribution of respondents for which was as follows:

Cluster	DigComp Level	Generation	Percentage	Number of respondents
1	High	Y	26,25%	68
2	Medium	Y	13,90%	36
3	Medium	Z	12,74%	33
4	High	Z	5,41%	14
5	Low	Y	4,63%	12
6	Low	Z	8,49%	22
7	Low	X	13,90%	36
8	High	X	12,36%	32
9	Medium	X	2,32%	6

Table 16. Respondents distribution by segments

3.4. Exploring the features of defined segments

To investigate the nature of the behavior of each segment of digital consumers and describe it, we will use analysis of variance and contingency tables as ways to study the impact of belonging to each of the 9 segments (summed up by generation and level of competence) on certain behavioral characteristics.

First of all, using ANOVA analysis, we will analyze the directions of the behavioral characteristics of digital consumers, which differ in values between the 9 highlighted segments, in order to highlight the characteristics that are relevant to describe the final segmentation. Let's consider ANOVA analysis using the example of the characteristic "Trust in advertising", which measures the level of trust in television, e-mail, social-media and other types of advertising.

The homogeneity test carried out in the framework of the analysis showed a satisfactory result of significance on 5 measuring scales of advertising types out of 7 (see Table 21, Appendix 3), which allowed us to continue the analysis.

H_0: There is no difference in means of 9 consumer segments in the levels of trust in different types of advertising.

H_1: There are at least two segment means that are statistically significantly different from each other in the levels of trust in different types of advertising.

Analysis of variance showed a significant difference in the average within nine consumer segments for the areas Trust in TV advertising, Trust in social media advertising, Trust in outdoor advertising, Trust in online recommendations of strangers, Trust in e-mail advertising, Trust in advertising on the branded web-sites (see Table 17). These five directions have been identified as the main focus on them when describing future segmentation. However, the other two types of advertising, Trust in online recommendations of friends and acquaintances and Trust in advertising on the branded web-sites, were not excluded from the segment descriptions, since their level of importance does not greatly exceed the acceptable level for the data we want. Enter into description.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Trust in TV advertising	Between Groups	15,838	8	1,980	3,839	,000
	Within Groups	128,911	250	,516		
	Total	144,749	258			
Trust in social media advertising	Between Groups	20,176	8	2,522	2,640	,009

	Within Groups	238,820	250	,955		
	Total	258,996	258			
Trust in outdoor advertising	Between Groups	13,575	8	1,697	2,416	,016
	Within Groups	175,583	250	,702		
	Total	189,158	258			
Trust in online recommendations of friends and acquaintances	Between Groups	11,458	8	1,432	1,343	,223
	Within Groups	266,697	250	1,067		
	Total	278,154	258			
Trust in online recommendations of strangers	Between Groups	58,136	8	7,267	6,979	,000
	Within Groups	260,335	250	1,041		
	Total	318,471	258			
Trust in e-mail advertising	Between Groups	10,550	8	1,319	2,992	,003
	Within Groups	110,199	250	,441		
	Total	120,749	258			
Trust in advertising on the branded web-sites	Between Groups	18,096	8	2,262	1,872	,065
	Within Groups	302,012	250	1,208		
	Total	320,108	258			

Table 17. ANOVA analysis on the dimension of Trust in advertising, SPSS output

Thus, we accept hypothesis H_1 that segment membership has a significant impact on consumer behavior, expressed in trust in different types of advertising.

Analysis of variances similar to the considered example was carried out for other directions (see Table 18). The following characteristics that are relevant for the description of the segments were identified in the directions (all SPSS outputs can be seen in APPENDIX 3):

Behavioral characteristic	ANOVA hypotheses	Significant constituents
Motivators to purchase digital products	H_0 *(rejected)*: There is no difference in means of 9 consumer segments in the "Motivators to purchase digital products" dimension. H_1: There are at least two segment means that are statistically significantly different from each other in the "Motivators to purchase digital products" dimension.	• Price • Product popularity • Advices • Need • Can't get illegally • Special occasion • Habit • Usefulness

Attractiveness of different characteristics of advertisement	**H₀ (rejected)**: There is no difference in means of 9 consumer segments in "Adds Attractiveness" dimension. **H₁**: There are at least two segment means that are statistically significantly different from each other in "Adds Attractiveness" dimension.	• Design • Interesting information • Including celebrity • Memorable slogan • Describing the best features of the product • Provides usefulness
Frequency of buying different types of digital products	**H₀ (rejected)**: There is no difference in means of 9 consumer segments in "Digital products consumption" dimension. **H₁**: There are at least two segment means that are statistically significantly different from each other in "Digital products consumption" dimension.	• Audio • Text • Video • Graphics • Software • Tickets • Self-development • Clouds • Games • Smartphone apps
Reaction to Internet advertisement	**H₀ (rejected)**: There is no difference in means of 9 consumer segments in "Ads reaction" dimension. **H₁**: There are at least two segment means that are statistically significantly different from each other in "Ads reaction" dimension.	• Want to buy immediately • "Try on" the advertised product • Keep it in my memory to purchase later • Interest arises and goes away quickly • Does not arouse any interest • Get annoyed and try not to pay attention
Decision-making style when buying digital goods (spontaneously or deliberately)	**H₀ (rejected)**: There is no difference in means of 9 consumer segments in "Style of decision making" dimension. **H₁**: There are at least two segment means that are statistically significantly different from each other in "Style of decision making" dimension.	• Deliberation • Spontaneity

Table 18. Results of ANOVA analysis

According to the directions of relevant behavioral characteristics selected on the basis of ANOVA analysis, statistics were carried out using contingency tables, and then, based on normalized values, consumer segments were described. The final segmentation can be seen in **APPENDIX 4.**

3.5. Explicit answers to research questions

Discussing the findings of the research and those discovered using the developed segmentation in particular, let's turn to the research questions that we asked at the beginning of the work.

RQ1: What are the differences in the behavior of different consumers when buying digital goods?

RQ2: What is the role of digital competencies and generational features in the buying behavior of digital consumers?

Answering these questions, we can definitely say that this study has proven the impact of a set of digital competencies and generational characteristics on the online behavior of consumers when buying digital products. This influence manifests itself in all the areas studied: the choice of specific categories of digital goods, the frequency of their purchase, trust in various types of advertising, the degree of positive reaction to advertising depending on its characteristics, as well as motivators for buying digital goods.

The main answer to the research questions is developed segmentation (see APPENDIX 4), which is based on differences in consumer generation and level of digital competence, and which clearly reflects the differences in behavior between all nine segments.

Comparing the obtained segments in order to find differences in the behavior of their representatives, we can draw many conclusions, let us turn to some of them.

First of all, considering the direction of the purchase of different categories by representatives of different segments, we can say with confidence that the differences in elections are noticeable, this was first proved by comparing the means by the ANOVA test, and then confirmed by descriptive statistics for comparing segment by segment: for example, in relation to purchases, digital goods in general X-ers with low digital competencies are the least active consumers of all 9 segments. By contrast, millennials with low digital competencies are the most active consumers of digital goods. The only category of goods (the least popular among other consumers) that representatives of this segment do not buy is graphic content. As expected, the most active in terms of consumption of game content are Z's, but a new discovery is that among all zoomers, those whose digital competencies are the least developed are most actively buying games. This and other discoveries that can be made on the basis of segment descriptions once again prove the importance of segmentation not only by demographic and generational characteristics but also the inclusion of the variable of digital competencies in it.

When it comes to buying motivators, the most difficult thing is to motivate those consumers who have the lowest level of digital competence to buy digital goods - the number of weak buying

70

motivators is the largest in these categories. An interesting fact is also that the distribution of the degree of influence of different motivators on a purchase is the widest in the categories of consumers with the highest level of digital competence: that is, these consumers can well recognize which characteristic of a digital product is very important for them, not very important and unimportant at all.

Trust in the recommendations of acquaintances, as expected, has become the most frequently chosen category in comparison with advertising. Millennials of low digital competence level has the lowest level of trust in advertising messages in general among all. In general, consumers with low digital skills tend to trust recommendations most, especially from people they know but consider other types of advertising to be untrustworthy. In addition, we can conclude that as the level of digital competence grows, so does consumer confidence in advertising — this is because the more people understand digital technologies in general, the better they know which advertising messages can be trusted and which cannot, outside. depending on the type of advertisement. Another important conclusion of the comparative analysis of segments in this part was that the third place in terms of the trust after recommendations from friends and strangers was advertising on social networks as an opportunity to quickly and directly find out all the most important information about products.

Of course, it is possible to trace the dependence of behavior along the "vertical" — the level of digital competencies, and "horizontal" — generation, for a long time. This opens up opportunities for a wide range of expansion of the topic in the future, which we will talk about later.

3.6.   Theoretical and managerial implications

So, the developed segmentation and the conclusions made on its basis make a significant contribution to understanding the behavior of online consumers and consumers of digital goods, in particular. In addition, as we found out in the course of the study, the topic of online consumer behavior, in general, has been studied quite extensively, therefore, narrow studies aimed at specific parts of the market will have both theoretical and direct practical benefits for business.

The study demonstrates that dividing consumers into different levels of digital competencies and into different generations is of practical value since all segments with cross-characteristics formed on the basis of these two directions differ in preference for specific digital products, trust, and reactions to different types of advertisements, motivators to buy digital goods, and other behaviors. Although this study already narrows the topic of digital consumers to specifically the consumption of digital products, it can be a starting point for even more narrowed

research aimed at studying specific categories of digital goods or a more detailed study of the characteristics of each of the identified segments.

There are many ways to apply the resulting digital consumer segmentation. For example, the manager of a specific e-commerce platform on which, for example, audio content is sold, having found his category of digital goods in each segment, can track which of the segments is the main target audience of a particular platform, as well as with the help of what types of advertising and motivators this the audience can be persuaded to buy more effectively.

In addition, segmentation allows managers and owners of electronic platforms to expand the product line if they already know the demographic and other descriptive characteristics of their own audience. By these parameters, you can again find other types of digital products consumed by a specific segment of the nine considered and expand business opportunities by improving the product line both in-depth and in breadth. Finally, segmentation also offers opportunities to explore the development potential for startups and entrepreneurs looking to tap into a promising and rapidly growing digital goods market.

3.7. Limitations and opportunities for further research

This study has some limitations due to the specific type of sample and other reasons. These limitations may serve as an opportunity for future in-depth and extended studies of digital consumer segmentation or individual characteristics.

Firstly, this study was conducted with a focus on residents of the North-West region, however, expanding the geography of respondents may open up new facets for the study: in other regions, the number of segments is likely to be different, since according to the data described in the literature review, residents of the considered region have the highest level of digital competence. The consumer behavior of the segments itself is more likely to not differ from region to region, however, this hypothesis can be tested in future studies. Thus, deepening research in this direction may show, on the whole, less benefit of targeting the digital goods market to residents of other regions, except for the most developed in our country.

In addition, expanding the directions of consumer behavior, namely focus on its other components, can become an opportunity to expand knowledge on the topic of consumer behavior of digital goods. For example, you can correlate the stages and speed of adoption by consumers of innovations (of which there are many among digital products) with the decision to buy a digital product that they make. Also, the expansion of the study of the component about advertising may be of a different nature - an experiment in which respondents will choose those online advertising formats for digital goods that appeal to them the most.

As for the statistical methods used in this study (descriptive statistics, factor and cluster analysis, ANOVA), these can also be expanded. For example, you can use regression models to investigate the influence of factors on consumer behavior or conduct a detailed comparative analysis of several segments.

Finally, an important offshoot of this study for e-commerce platform managers will be to deepen the study of each category of digital goods separately. This will provide the most accurate statistics, and as a result, segmentation, on which platform managers and marketers will be able to base future business development strategies and research the market in more detail.

CONCLUSION

Digitalization of the world transformed many of areas, including consumption: the nature of consumer decision-making changes depending on the environment in which they are located (offline/online), the type of goods they purchase (traditional, tangible/digital), and their personal characteristics. The market for online shopping and digital goods, in particular, is expanding every year and becomes

Meanwhile, it is becoming increasingly difficult for owners and managers to target narrow audience segments, to understand what specific characteristics these segments have and how they differ in their consumer behavior. At the same time, the existing segmentation of online consumers, firstly, does not focus exclusively on digital goods, and secondly, they do not take into account such a characteristic of consumers as the level of digital competencies, which has been proven to influence the nature of decision-making and other components of behavior.

Thus, the aim of this master's thesis is the segmentation of digital goods consumers based on two characteristics that are equally important factors influencing behavior: digital competence and generational affiliation. By segmentation, we mean the development of a matrix in which, at the intersection of the axes, there is a description of the behavior of consumers of digital goods in selected areas. The study was divided into phases and described in this document in three chapters.

In the first chapter, we explored the theoretical basis (frameworks, articles, reports, and books) to build a reasonable practical part of the research. First of all, the literature on the features of online consumer behavior was studied to find differences with offline consumer behavior. We investigated existing consumer behavior patterns and patterns of consumer purchasing decisions online. Further, the features of digital goods, their types, and differences from traditional goods were studied. In addition, in the first chapter, a lot of attention was paid to the study of existing frameworks that determine the digital competencies of consumers, with the aim, firstly, to prove that competencies have a direct impact on consumer behavior and, secondly, in order to determine

a way to measure the level of digital competencies. for the respondents of this study. In addition, in the course of the analysis of the theoretical framework, generational theory and the role of belonging to a generation in consumer behavior were studied. Based on the results of the first chapter, it was concluded that there is a gap in research, namely that the existing descriptions of consumers of digital goods do not explain in detail the behavior of consumers, and also do not associate their behavior with digital competencies, generation, and demography, which means that existing research difficult to apply to the real-life of e-platform managers selling digital goods.

The second chapter was devoted to describing the methodology for conducting this study: you focus on the representatives of three generations X, Y, and Z as the main consumers of digital goods, the survey was chosen as the most appropriate research method to achieve the set goals. Later, in the second chapter, the conceptual research model and methods for collecting and analyzing data were described.

Finally, in the third chapter, we examined the survey data. First of all, from a demographic point of view, the sample was described, from which we excluded respondents who were not suitable for analysis in advance. Further, on the basis of descriptive statistics, we analyzed the differences in preferences of different categories of goods by representatives of different generations.

The main part of the study was devoted to developing the segmentation of respondents: first of all, using factor analysis, we identified areas of digital competencies that significantly affect consumer behavior, and then, using cluster analysis, we formed three segments with low, medium and high levels of digital competencies. Based on three clusters and three generations, a segmentation was formed as a 3x3 matrix, where, at the intersection of the axes, we described each segment according to the parameters of motivators to buy digital goods, the frequency of buying digital goods, the level of trust in advertising and the most attractive characteristics of advertising. Concluding the discussion of the results, explicit answers to research questions were given, as well as ways of applying the results in practice and expanding the results for future research.

This study makes a significant contribution to the digital goods market, as it explains the influence of at least two factors, digital competencies and generational characteristics, on consumer behavior. By applying the developed segmentation, managers and marketers of e-commerce platforms can base their actions on the description of specific segments, and therefore make marketing strategies and business development strategies more effective and accurate.

References

1. Bardhi, Fleura, Giana M. Eckhardt, and Eric J. Arnould (2012). Liquid Relationship to Possessions. Journal of Consumer Research, 39 (3), 510–29.

2. Belleflamme, P. (2016). The economics of digital goods: A progress report. Rochester, NY: Social Science Research Network, SSRN Scholarly Paper.

3. Quah, D. (2002). Digital goods and the new economy. LSE Economics Department, Working paper.

4. Nielsen Co (2015), Success strategies in the changing ad market.

5. Strauss, W., Howe N. (1991). Generations: The history of America's future, 1584 to 2069.

6. Strauss W., Howe N. (1997). The fourth turning: What the cycles of history tell us about America's next rendezvous with destiny. New York: Broadway Books; 382 p.

7. Global Digital Content Market 2020-2024 report (2020). Global Industry Analysts, Inc

8. Peeters M. (2018). Consumer Behavior Survey in Russia 2018, The digital revolution is shaping consumer habits. PwC.

9. Park H., Rha J. (2011). Toward a Digital Goods Consumer Competence Index: An Exploratory Study. Doi: 10.1111/j.1552-3934.2011.02103.x

10. Wu, Linwan, and Jiangmeng Liu (2020). Need For Control May Motivate Consumers To Approach Digital Products: A Social Media Advertising Study. Electronic Commerce Research. Doi:10.1007/s10660-020-09399-z.

11. Zaichkowsky J.L. (1991). Consumer behavior: Yesterday, today, and tomorrow. Business Horizons. Volume 34, Issue 3, May–June 1991, Pages 51-58

12. Cant M.C., Jooste C.J., Plessis P.J., Strydom J.W. (2009). Marketing Management.

13. Kumar, P. (2010). Marketing of Hospitality & Tourism Services. Tata McGraw-Hill Education

14. Kotler, P. and Keller, K. (2011). Marketing Management. 14th edition, London: Pearson Education

15. Mukhina M. (2002). Studying the lifestyle of consumers and segmenting the market based on psychographic types // Marketing in Russia and abroad. - No 3.

16. Skorobogatykh I., Musatova J. (2018). Features of the behavior of "digital" consumers. Problems of the modern economy, (4 (68)), 127-130.

17. Ala-Mutka, K. (2011). Mapping digital competence: Towards a conceptual understanding. Luxembourg: Publications Office of the European Union. Retrieved September 30, 2012 from http://ftp.jrc.es/EURdoc/ JRC67075_TN.pdf

18. Druckrey T. (1996). Electronic Culture: Technology and Visual Representation, New York: Aperture.

19. Lister M. (1995). The Photographic Image in Digital Culture, London: Routledge

20. Aesaert, K. (2015). Identification and assessment of digital competences in primary education. Ghent University. Faculty of Psychology and Educational Sciences.

21. Goodfellow, R. (2011). Literacy, Literacies, and the Digital in Higher Education. Teaching in Higher Education, 16(1). http://doi.org/10.1080/13562517.2011.544125

22. Røkenes F., Krumsvik R. (2014). Development of Student Teachers' Digital Competence in Teacher Education. Nordic Journal of Digital Literacy 9(4):250-280

23. Pettersson F., Lindfors M., Olofsson A. D. (2021). Conditions for professional digital competence: the teacher educators' view. Education Inquiry Follow journal

24. Kasinskaite-Buddeberg I. (2013). Na puti k edinomu podhodu k gramotnosti: media- i informacionnaja gramotnost", Moscow: Interregional Library Cooperation Centre: 23–28.

25. Stallworth, P. (2008). Consumer behaviour and marketing strategic

26. Edelman D., Singer M. (2015). Competing on Customer Journeys. Harvard Business Review.

27. Brečko, B., Ferrari, A., edited by Vuorikari R., Punie Y. (2016). The Digital Competence Framework for Consumers; Joint Research Centre Science for Policy Report; EUR 28133 EN; doi:10.2791/838886

28. Carretero, S.; Vuorikari, R. and Punie, Y. (2017). DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, EUR 28558 EN, doi:10.2760/38842

29. Ilomäki, L., Paavola, S., Lakkala, M. (2016). Digital competence – an emergent boundary concept for policy and educational research. Educ Inf Technol 21, 655–679 https://doi.org/10.1007/s10639-014-9346-4

30. Golubovskaya (2015). T. Digital Literacy Index.

31. Golovacheva K., Smirnova M. (2019), Towards an Integrative Framework of Consumers' Digital Competences. In: Alexandrov D., Boukhanovsky A., Chugunov A., Kabanov Y., Koltsova O., Musabirov I. (eds) Digital Transformation and Global Society. Communications in Computer and Information Science, vol 1038. Springer, Cham. https://doi.org/10.1007/978-3-030-37858-5_23

32. Sharikov A. (2016), On four component model of digital literacy. J. Soc. Policy Stud. 14(1), 87-97.

33. Hernández B., Jiménez J., Martín J. (2010), Customer behavior in electronic commerce: The moderating effect of e-purchasing experience; Journal of Business Research, 964-971. https://doi.org/10.1016/j.jbusres.2009.01.019

34. Obšatníková K., Rigelský M. (2018). Quantitative study of consumer behaviour in the online environment – model of consumer behavior. Megatrendy a médiá 1:545-567.

35. Fleming G., Reitsma R., Pappafotopoulos T., Duan X., and Birrell R. (2017). "The State Of Consumers And Technology: Benchmark".

36. Strauss W., Howe N. (1991), The fourth turning: What the cycles of history tell us about America's next rendezvous with destiny. New York: Broadway Books; 382 p.

37. Albats E. (2011), They grew up in a cynical environment The New Times. The New Times. URL: http://newtimes.ru/articles/detail/33302

38. Shamis E., Nikonov E. (2016), Theory of generations. Extraordinary X. Moscow: Synergy Institute; 398 s.

39. Shukova G. (2013), The intensity of digital experience and age-related characteristics of cognitive processes, psychological research.Koutropoulos A. (2011), Digital natives: Ten years after. Journal of Online Teaching and Learning. Vol. 7(4). URL: http://jolt.merlot.org/vol7no4/koutropoulos_1211.html

40. Prensky, M. (2001), "Digital Natives, Digital Immigrants". In On the Horizon, October 2001, 9 (5). Lincoln: NCB University Press.

41. Astashova Y. (2014), Theory of generations in marketing. Bulletin of the South Ural State University. No 1.P. 108–114.

42. Mironova O., Chekmareva G. (2019). On the issue of the application of the generational approach in the management of the marketing activities of enterprises. Management Sciences, (4), 53-62.

43. Mitrofanova, E. (2013), The use of applied aspects of the theory of generations in the formation of social, corporate and public policy.

44. Sivrikova (2015), Problems of Studying Generations in Psychology

45. Xia, L., and Sudharshan, D. (2002) "Effects of interruptions on consumer online decision processes," Journal of Consumer Psychology, pp 265-280.

46. Artyukhina L. (2011), Life and professional values of generations - the basis of the corporate culture of the company in the conditions of crises and competition. Modern humanitarian research. No 5.P. 179-183.

47. Belleflamme P. (2016), The economics of digital goods: a progress report. Université Catholique de Louvain – UCLouvain.

77

48. Melović B., Šehović D., Karadžić V., Dabić M., Ćirović D. (2021), Determinants of Millennials' behavior in online shopping – Implications on consumers' satisfaction and e-business. Technology in Society, https://doi.org/10.1016/j.techsoc.2021.101561.

49. Shcherbakova E., Islamova V., Kaufman O. (2018), The use of electronic marketing in business. Sistemnoe upravlenie. URL: http://sisupr.mrsu.ru/2008–2/pdf/105-Sherbakova.pdf

50. Vasilevskaya E., Molchanova O. (2013), Features of the period of adolescence: age and socio-historical context. Cultural and historical psychology. No. 1. P. 52-60.

51. Sadykova Kh., Khamatkhanova M. (2013), Generational changes in value orientations: methodology and research results. News of higher educational institutions. Sociology. Economy. Politics. No. 1. P. 58-61

52. Lobanova A, Saninsky S, Averyanova L. (2016), Theory and practice of applying the VALS model of psychographic segmentation in marketing.

53. Chen A. (2005), Behavioral targeting: coming to a PRIZM near you.

54. Lehmann DR, Winer RS. (2005), Product management. New York: McGraw-Hill Irving; 512 p.

55. Twenge J., Campbell S (2008), «Generational differences in psychological traits and their impact on the workplace». Journal of Managerial Psychology. Vol. 23, Iss: 8. P. 862—877

56. Zopiatis A., Krambia-Kapardis M., Varnavas A. (2012) Y'ers, X'ers and Boomers: Investigating the multigenerational (mis)perceptions in the hospitality workplace. Tourism and Hospitality Research. 2012. Vol. 12. No. 2. P. 101—121.

57. Johnson, D.S., Bardhi, F. and Dunn, D.T. (2008), "Understanding how technology paradoxes affect customer satisfaction with self-service technology: the role of performance ambiguity and trust in technology", Psychology & Marketing, Vol. 25 No. 5, pp. 416-443.

APPENDIX 1. QUESTIONNAIRE
Original language — Russian

PART 1. BUYING DIGITAL PRODUCTS
The section explores the behavioral characteristics of respondents when buying digital goods online

Filter Question: Have you ever bought digital goods?
(Explanation: A digital good is a product that is presented in electronic format, such as online magazines, courses, photographs, webinars, e-learning materials, and so on.) • Yes • No

How often do you purchase digital products from the following categories?	
Digital products categories: • Text content (e-books, reports, manuals, etc.) • Audio content (music, audiobooks, podcasts, etc.) • Video content (films, TV series, etc.) • Graphic content (photos, presentation/resume templates, fonts, icons, etc.) • PC software (antiviruses, plugins, software packages, etc.) • Tickets and reservations (e-tickets, hotel reservations, etc.) • Education (online courses/webinars related to your professional activity and/or career development) • Self-development (webinars / marathons / courses / app subscriptions related to physical and internal self-improvement) • Cloud storage space (iCloud, Google Drive, Yandex Drive, Cloud Mail.ru, etc.) • PC/PlayStation Games and Game Subscriptions • Apps and subscriptions for smartphones	Answer options: • Do not buy • Few times a week • Once a week • Once every 2-3 weeks • Once a month • Every 2-3 months or less • Made 1-2 one-time purchases

What influences your decision to buy a digital product?	
• reasonable price • popularity, great demand from other consumers • advice from friends/acquaintances/those whom I trust • need for work/study	Rate from 1 to 5, where 1 – does not affect my buying decision at all, 5 – strongly influences my buying decision.

- impossibility of obtaining by illegal means (using "torrents", sites with pirated copies, etc.) - a special occasion (for example, I buy as a gift, one-time) - habit (I can't imagine my life without subscriptions to certain services/opportunities to quickly buy certain products) - ease of use (the product is equally convenient to use on different devices or in different formats – on a website, in an application, etc.) 11) the product is sold through a familiar service/store /website that I trust	
I shop smartly and carefully for digital goods	- Constantly - Often - Sometimes - Never
I shop for digital goods spontaneously or impulsively	
Buying digital goods is more convenient for me in the form of:	- Monthly subscription with unlimited access to content (For example, if you buy a monthly subscription to Storytel, an app for reading e-books and listening to audiobooks, you can read and listen to any books) - One-time purchase of a specific product

PART 2. DIGITAL COMPETENCES

This section defines the level of your digital competence — both knowledge and skills, thanks to which the consumer is able to operate safely and confidently in the digital space.

In the entire section, the type of answers to questions is a rating scale from 1 to 5, where 1 is not about me at all, 5 is about me.

Digital Security
- I can create a personal account on e-commerce platforms.
- I am aware of the risk of using my personal information from online platforms (passwords, credit card details, etc.) for fraudulent / criminal purposes.
- I know how to change privacy settings and why you need to do it.
- I can successfully make online payments in a variety of ways.
- I understand that data about my online activities may be viewed and analyzed for marketing purposes.

Digital Communication
- I know where to find other customer reviews for digital products, and which of those reviews can be trusted more and which less.

	• I know that when making an online purchase, I can contact the platform's support team for help. • I know how to share my digital purchase feedback with other buyers. • I always carefully choose the style of communication with other people in an online environment.
	Digital Literacy • I can find information about the digital products I need on the Internet. • Among digital product information, I can distinguish relevant from untrustworthy information. • I am quick to master new e-commerce platforms and applications. • I can use filters to select the products I need according to different parameters.
	Digital Rights • I know the theoretical basis on how to protect your rights online. • I always review the terms of purchase and use of a digital product before purchasing it. • I can easily determine if digital goods are legally hosted on an e-commerce platform. • I do not endorse the publication and purchase of digital goods by illegal means. • I can easily detect when an illegal action is being taken by other Internet users. • I know how and where to report a violation of my rights as a consumer, if I deem it necessary

PART 3. BEHAVIORAL CHARACTERISTICS

Attitude Towards Advertising

In the entire section, the answers to the questions are built on a rating scale from 1 to 5, where 1 is not about me at all, 5 is about me.

• I tend to trust ad integrations for bloggers/influencers
• I trust ads I see on TV more often.
• I tend to trust social media advertisements (targeted ads that are tailored to my interests)
• I tend to trust outdoor advertising (billboards in the streets and in public places)
• I often trust the recommendations of friends and acquaintances that I see in the online space.
• I often trust the recommendations of users I don't know who I see in the online space.
• I more often trust the advertising of goods in the e-mail newsletters that come to my mail.
• I tend to trust advertisements on company-branded websites more often.

| How, in your opinion, can advertising attract a consumer? | Multiple Choice Question
 • bright, beautiful design
 • interesting information
 • participation of a celebrity
 • pleasant, catchy slogan
 • talks about the best qualities of the product / service
 • focuses on those goods / services that are really needed by everyone
 • involves using usefulness
 • other |

What emotions and thoughts do you have when you see ads on the Internet?	• I want to buy this product / service immediately • I start "trying on" the advertised product / service • I am inspired by the advertising image and keep it in my memory, so that later I can purchase • at first advertising arouses interest and a desire to buy, but this quickly passes • does not arouse any interest • get annoyed and try not to pay attention • other
PART 5. DEMOGRAPHICS	
Gender	• Male • Female
Year of birth	Text field
Marital status	• legally married • unregistered marriage • divorced • was not married • widow (widower)
How many children do you have now (relatives, adopted children, under guardianship)?	• no children • one • 2 • 3 • four • 5 and more • Other
Educational level	• Secondary (unfinished or completed) • Secondary vocational (unfinished or completed) • Undergraduate (unfinished or completed) • Master (unfinished or completed) • Postgraduate studies (unfinished or completed) • Other:
Main occupation	• I get secondary education • I am getting higher education • I work (combine with studies) • I work (full time, do not combine with studies) • I own my own business • Freelancer / Self-employed • Retired • Unemployed • Other:
Which option best	• Only enough money for food

characterizes your financial situation?	• There is enough money to buy clothes and shoes, but not enough to buy small household appliances • There is enough money to buy small household appliances, but not enough to buy such expensive things as a computer, refrigerator or washing machine • I can afford almost everything, but in order to buy a car, an apartment or a country house, we need to accumulate money or take it out on credit • I can afford everything

APPENDIX 2. FACTOR ANALYSIS FOR DIGITAL COMPETENCE DIMENSIONS

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,917	32,780	32,780	4,917	32,780	32,780
2	1,690	11,264	44,044	1,690	11,264	44,044
3	1,398	9,319	53,363	1,398	9,319	53,363
4	1,099	7,330	60,693			
5	,858	5,719	66,412			
6	,805	5,370	71,782			
7	,699	4,658	76,440			
8	,652	4,350	80,790			
9	,553	3,688	84,477			
10	,505	3,364	87,841			
11	,466	3,108	90,950			
12	,387	2,582	93,532			
13	,360	2,400	95,932			
14	,334	2,228	98,160			
15	,276	1,840	100,000			

Table 19. Total Variance Explained, SPSS

Rotated Component Matrix[a]	Component		
	1	2	3
Knowledge about legality	,795		
Knowledge of laws	,668		
Knowledge of reporting the violation of rights	,648		
Theory on protecting consumer rights	,620		
Knowledge about terms of purchase	,595		
Online payments		,709	
Sharing product reviews		,684	
Support		,618	
Personal account		,528	
Communication style			,679
Knowing about using personal data			,630

Knowing about using data in marketing			,590
Attitude towards illegal content			,571
Knowing which reviews to trust			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 11 iterations.			

Table 20. Rotated Component Matrix, SPSS

APPENDIX 3. ANOVA's

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Trust in TV advertising	7,564	8	250	,000
Trust in social media advertising	1,309	8	250	,239
Trust in outdoor advertising	5,798	8	250	,000
Trust in online recommendations of friends and acquaintances	3,255	8	250	,002
Trust in online recommendations of strangers	1,762	8	250	,085
Trust in e-mail advertising	3,999	8	250	,000
Trust in advertising on the branded web-sites	4,661	8	250	,000

Table 21. Test of homogeneity, Trust in advertising

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Design	15,833	8	250	,000
Intresting information	6,510	8	250	,000
Including celebrity	14,688	8	250	,000
Memorable slogan	45,342	8	250	,000
Describing the best feauters of the product	41,214	8	250	,000
Focuses on the necessary goods / services	9,096	8	250	,000
Provides usefulness	8,804	8	250	,000

Table 22. Test of homogeneity of variances, Ads Attractiveness

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Design	Between Groups	10,264	8	1,283	6,578	,000
	Within Groups	48,763	250	,195		
	Total	59,027	258			
Intresting information	Between Groups	3,922	8	,490	2,527	,012
	Within Groups	48,502	250	,194		
	Total	52,425	258			

Including celebrity	Between Groups	2,013	8	,252	2,943	,004
	Within Groups	21,376	250	,086		
	Total	23,390	258			
Memorable slogan	Between Groups	5,551	8	,694	3,343	,001
	Within Groups	51,893	250	,208		
	Total	57,444	258			
Describing the best feauters of the product	Between Groups	11,296	8	1,412	6,614	,000
	Within Groups	53,376	250	,214		
	Total	64,672	258			
Focuses on the necessary goods / services	Between Groups	3,138	8	,392	1,610	,122
	Within Groups	60,908	250	,244		
	Total	64,046	258			
Provides usefulness	Between Groups	6,464	8	,808	4,074	,000
	Within Groups	49,575	250	,198		
	Total	56,039	258			

Table 23. ANOVA analysis on the dimension of Ads Attractiveness, SPSS output

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Deliberation	3,094	8	250	,002
Spontaneity	8,691	8	250	,000

Table 24. Test of homogeneity of variances, Decision making style

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Deliberation	Between Groups	26,774	8	3,347	11,628	,000
	Within Groups	71,952	250	,288		
	Total	98,726	258			
Spontaneity	Between Groups	18,414	8	2,302	8,685	,000
	Within Groups	66,258	250	,265		
	Total	84,672	258			

Table 25. ANOVA analysis on the dimension of Decision-making style

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Want to buy immediately	27,072	8	250	,000
"Try on" the advertised product	5,469	8	250	,000
Keep it in my memory to purchase later	7,893	8	250	,000
Interest arises and goes away quickly	9,209	8	250	,000
Does not arouse any interest	9,360	8	250	,000
Get annoyed and try not to pay attention	3,645	8	250	,000

Table 26. Test of homogeneity of variances, Attitude towards advertising

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Want to buy immediately	Between Groups	,716	8	,090	6,944	,000
	Within Groups	3,222	250	,013		
	Total	3,938	258			
"Try on" the advertised product	Between Groups	3,203	8	,400	2,225	,026
	Within Groups	44,982	250	,180		
	Total	48,185	258			
Keep it in my memory to purchase later	Between Groups	1,233	8	,154	1,623	,119
	Within Groups	23,740	250	,095		
	Total	24,973	258			

Interest arises and goes away quickly	Between Groups	4,052	8	,507	2,938	,004
	Within Groups	43,106	250	,172		
	Total	47,158	258			
Does not arouse any interest	Between Groups	5,270	8	,659	3,001	,003
	Within Groups	54,884	250	,220		
	Total	60,154	258			
Get annoyed and try not to pay attention	Between Groups	3,678	8	,460	1,915	,058
	Within Groups	60,021	250	,240		
	Total	63,699	258			

Table 27. ANOVA analysis on the dimension of Attitude towards advertising

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Price	4,078	8	250	,000
Product popularity	2,357	8	250	,018
Advices	2,938	8	250	,004
Need	15,166	8	250	,000
Can't get illegally	5,961	8	250	,000
Special occasion	2,253	8	250	,024
Habit	3,852	8	250	,000
Usefulness	1,840	8	250	,070
Familiar service	1,946	8	250	,054

Table 28. Test of homogeneity of variances, motivators for purchase of digital goods

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	28,524	8	3,565	3,719	,000
	Within Groups	239,661	250	,959		
	Total	268,185	258			

Product popularity	Between Groups	73,974	8	9,247	6,533	,000
	Within Groups	353,856	250	1,415		
	Total	427,830	258			
Advices	Between Groups	54,617	8	6,827	5,388	,000
	Within Groups	316,773	250	1,267		
	Total	371,390	258			
Need	Between Groups	46,038	8	5,755	4,500	,000
	Within Groups	319,715	250	1,279		
	Total	365,753	258			
Can't get illegally	Between Groups	115,908	8	14,488	9,268	,000
	Within Groups	390,833	250	1,563		
	Total	506,741	258			
Special occasion	Between Groups	48,722	8	6,090	3,234	,002
	Within Groups	470,838	250	1,883		
	Total	519,560	258			
Habit	Between Groups	124,637	8	15,580	6,485	,000
	Within Groups	600,606	250	2,402		
	Total	725,243	258			
Usefulness	Between Groups	40,098	8	5,012	2,600	,010
	Within Groups	481,886	250	1,928		
	Total	521,985	258			
Familiar service	Between Groups	17,332	8	2,166	1,247	,272
	Within Groups	434,205	250	1,737		
	Total	451,537	258			

Table 29. ANOVA analysis on the dimension of motivators for purchase of digital goods

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Audio	2,632	8	250	,009
Text	16,295	8	250	,000
Video	7,941	8	250	,000
Graphics	11,168	8	250	,000
Software	3,443	8	250	,001
Tickets	1,623	8	250	,119
Education	3,917	8	250	,000
Self-development	7,351	8	250	,000
Clouds	11,188	8	250	,000
Games	3,719	8	250	,000
Smarthone apps	2,612	8	250	,009

Table 30. Test of homogeneity of variances, Digital products types

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Audio	Between Groups	51,579	8	6,447	2,451	,014
	Within Groups	657,548	250	2,630		
	Total	709,127	258			
Text	Between Groups	81,867	8	10,233	5,309	,000
	Within Groups	481,847	250	1,927		
	Total	563,714	258			
Video	Between Groups	54,476	8	6,809	2,886	,004
	Within Groups	589,949	250	2,360		
	Total	644,425	258			
Graphics	Between Groups	18,487	8	2,311	2,813	,005
	Within Groups	205,404	250	,822		
	Total	223,892	258			

Software	Between Groups	108,891	8	13,611	9,705	,000
	Within Groups	350,645	250	1,403		
	Total	459,537	258			
Tickets	Between Groups	63,625	8	7,953	4,089	,000
	Within Groups	486,267	250	1,945		
	Total	549,892	258			
Education	Between Groups	28,908	8	3,613	1,462	,172
	Within Groups	618,050	250	2,472		
	Total	646,958	258			
Self-development	Between Groups	46,003	8	5,750	2,899	,004
	Within Groups	495,827	250	1,983		
	Total	541,830	258			
Clouds	Between Groups	77,125	8	9,641	4,096	,000
	Within Groups	588,489	250	2,354		
	Total	665,614	258			
Games	Between Groups	66,782	8	8,348	2,928	,004
	Within Groups	712,777	250	2,851		
	Total	779,560	258			
Smarthone apps	Between Groups	94,317	8	11,790	4,547	,000
	Within Groups	648,192	250	2,593		
	Total	742,510	258			

Table 31. ANOVA analysis on the dimension of Digital products types

			ClustersFinal									Total
			1	2	3	4	5	6	7	8	9	
AdsAttractiv Design		Count	42	26	30	12	6	20	20	8	4	168
		% within $Q37	25,0%	15,5%	17,9%	7,1%	3,6%	11,9%	11,9%	4,8%	2,4%	

		% within ClustersFinal	61,8%	72,2%	90,9%	85,7%	50,0%	90,9%	55,6%	25,0%	66,7%	
		% of Total	16,2%	10,0%	11,6%	4,6%	2,3%	7,7%	7,7%	3,1%	1,5%	64,9%
Intresting information		Count	50	22	28	6	8	20	26	24	2	186
		% within $Q37	26,9%	11,8%	15,1%	3,2%	4,3%	10,8%	14,0%	12,9%	1,1%	
		% within ClustersFinal	73,5%	61,1%	84,8%	42,9%	66,7%	90,9%	72,2%	75,0%	33,3%	
		% of Total	19,3%	8,5%	10,8%	2,3%	3,1%	7,7%	10,0%	9,3%	,8%	71,8%
Including celebrity		Count	14	2	0	0	0	4	2	2	2	26
		% within $Q37	53,8%	7,7%	0,0%	0,0%	0,0%	15,4%	7,7%	7,7%	7,7%	
		% within ClustersFinal	20,6%	5,6%	0,0%	0,0%	0,0%	18,2%	5,6%	6,3%	33,3%	
		% of Total	5,4%	,8%	0,0%	0,0%	0,0%	1,5%	,8%	,8%	,8%	10,0%
Memorable slogan		Count	30	16	10	2	4	0	16	8	0	86
		% within $Q37	34,9%	18,6%	11,6%	2,3%	4,7%	0,0%	18,6%	9,3%	0,0%	
		% within ClustersFinal	44,1%	44,4%	30,3%	14,3%	33,3%	0,0%	44,4%	25,0%	0,0%	
		% of Total	11,6%	6,2%	3,9%	,8%	1,5%	0,0%	6,2%	3,1%	0,0%	33,2%
Describing the best		Count	36	18	15	14	6	17	4	20	4	134
		% within $Q37	26,9%	13,4%	11,2%	10,4%	4,5%	12,7%	3,0%	14,9%	3,0%	
		% within ClustersFinal	52,9%	50,0%	45,5%	100,0%	50,0%	77,3%	11,1%	62,5%	66,7%	

93

		Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8	Col9	Total
		% of Total	13,9%	6,9%	5,8%	5,4%	2,3%	6,6%	1,5%	7,7%	1,5%	51,7%
Focuses on the necessary	Count	36	18	13	2	4	13	14	12	4	116
	% within $Q37	31,0%	15,5%	11,2%	1,7%	3,4%	11,2%	12,1%	10,3%	3,4%	
	% within ClustersFinal	52,9%	50,0%	39,4%	14,3%	33,3%	59,1%	38,9%	37,5%	66,7%	
	% of Total	13,9%	6,9%	5,0%	,8%	1,5%	5,0%	5,4%	4,6%	1,5%	44,8%
Provides usefulness	Count	50	24	23	14	8	18	26	10	4	177
	% within $Q37	28,2%	13,6%	13,0%	7,9%	4,5%	10,2%	14,7%	5,6%	2,3%	
	% within ClustersFinal	73,5%	66,7%	69,7%	100,0%	66,7%	81,8%	72,2%	31,3%	66,7%	
	% of Total	19,3%	9,3%	8,9%	5,4%	3,1%	6,9%	10,0%	3,9%	1,5%	68,3%
Total	Count	68	36	33	14	12	22	36	32	6	259
	% of Total	26,3%	13,9%	12,7%	5,4%	4,6%	8,5%	13,9%	12,4%	2,3%	100,0%

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Table 32. Crosstabulation between three digital competence clusters and three generations by consumer behaviour dimensions

APPENDIX 4. SEGMENTATION OF DIGITAL CONSUMERS

		Generation X (years)	Generation Y (years)	Generation Z (years)
Low		13,90% of the total number of digital consumers	4,63% of the total number of digital consumers	8,49% of the total number of digital consumers
	General description	Low income — 11% Middle class — 44% Upper-middle class — 44% 17% — no children More than 60% — 1-2 children 11% — 3 children 6% — 4 and more Working part-time — 22% Working full-time — 61% Freelance — 6% Retired — 6% Unemployed — 6%	Middle class — 50% Upper-middle class — 50% No children Working full-time — 83% Freelance — 17%	Low income — 27% Middle class — 64% High income — 9% No children Getting secondary education — 27% Getting higher education — 73%
	Digital products purchase frequency	Least active category of all digital consumer segments Practically do not buy (less than 15% of segment representatives): video content, software, cloud storage, games Fewer and fewer other generations purchase applications for their phone Do not buy graphic content at all	Do not buy graphic content at all The most active of all segments are consumers of text content (there are more than 65% of them here): they mainly make purchases from once a week to several times a month Practically the most active consumers of audio content with a pronounced preference for streaming services	The most active consumers of gaming content of all segments: 40% buy it once a month, about the same – once every 2-3 months Audio content is the least likely to buy: 23% make a purchase once a month, the rest do not do it at all Do not buy text and graphic content at all 84% answered that they do not buy software, the rest – once every 2-3 months or less Educational digital materials are the least likely to purchase (less than 14% of consumers)
	Attractiveness of advertising*	Design – important Interesting information – very important Including celebrity – doesn't matter Memorable slogan – important Describing the best feauters of the product – doesn't matter Focuses on the necessary goods / services – not very important Provides usefulness – very important	Design – important Interesting information – very important Including celebrity – doesn't matter Memorable slogan – not very important Describing the best feauters of the product – important Focuses on the necessary goods / services – not very important Provides usefulness – very important	Design – crucial Interesting information – crucial Including celebrity – doesn't matter Describing the best feauters of the product – very important Focuses on the necessary goods/services – very important Provides usefulness – crucial
	Trust in advertising**	Weak trust level (1-1.9 / 5): TV advertising, Social media ads, outdoor ads, e-mail ads Moderate trust level (2-2.9 / 5): Recommendations of strangers, ads on the branded web-sites Strong Trust level (3-3.9 / 5): recommendations of familiar people	Weak trust level (1-1.9 / 5): TV advertising, Social media ads, outdoor ads, e-mail ads Moderate trust level (2-2.9 / 5): Recommendations of strangers, ads on the branded web-sites Strong Trust level (3-3.9 / 5): Recommendations of familiar people	Weak trust level (1-1.9 / 5): TV advertising, Social media ads, outdoor ads, e-mail ads, ads on the branded web-sites Moderate trust level (2-2.9 / 5): Recommendations of strangers, Strong Trust level (3-3.9 / 5): recommendations of familiar people
	Motivators for buying digital	Not motivating (0-2 / 5): habit Weak motivators (2.1-3 / 5): the popularity of the product among other users, Moderate motivators (3.1-4 / 5): impossibility to get illegally, need for study/work, special case, need for work/study, advice from friends Strong motivators (4-5 / 5): price	Weak motivators (2.1-3 / 5): popularity of the product among other users, advice from friends, inability to obtain illegally, need for study/work, special occasion Moderate motivators (3.1-4 / 5): price, habit, cross-platform usability, familiar service	Weak motivators (2.1-3 / 5): habit, special occasion, impossibility to obtain illegally, popularity of the product among other users, Moderate motivators (3.1-4 / 5): price, familiar service, cross-platform usability, need for work/study Strong motivators (4-5 / 5): advice from friends

		Generation X (years)	Generation Y (years)	Generation Z (years)
Medium	General description	2,32% of the total number of digital consumers	13,90% of the total number of digital consumers	12,74% of the total number of digital consumers
		Middle class — 33% Upper-middle class — 67% More than 85% — 1-2 children The vast majority work full-time	Low income — 33% Middle class — 39% Upper-middle class — 28% No children Getting higher education — 6% Working part-time (combining with studies) — 39% Working full-time — 33% Freelance — 22%	Low income — 17% Middle class — 57% Upper-middle class — 26% No children Getting secondary education — 12% Getting higher education — 61% Working part-time (combining with studies) — 15% Freelance — 12%
	Digital products purchase frequency	About 60% buy educational content once every 2-3 months. Once every 2-3 months and less often, about 30% of consumers buy: software, games, applications for smartphones. Others don't buy Not buying: graphic content and cloud storage Audio: 60% buy once a month (subscription), the rest make irregular one-time purchases or do not buy Video content consumers – about a third of the segment, prefer to buy video content every 2-3 months or less	Least active consumer of Y generation About 65% of this segment digital consumers of average activity: basically, all categories of goods except tickets, applications for the phone and cloud storage, buy once every 2-3 months or less often	The most active consumers of tickets and online bookings of all segments (100% buy this type of digital goods only online): 18% buy several times a week, 21% - once a month, 42% - once every 2-3 weeks The most inactive consumers of cloud storage — only 6% use them Do not buy graphic content at all
	Attractiveness of advertising*	Design — very important Interesting information – not very important Including celebrity — not very important Memorable slogan – doesn't matter at all Describing the best feauters of the product – very important Focuses on the necessary goods/services – very important Provides usefulness – very important	Design is very important Interesting information – very important Including celebrity – doesn't matter Memorable slogan – important Describing the best feauters of the product – important Focuses on the necessary goods/services – important Provides usefulness – very important	Design – crucial Interesting information – nec crucial essary Including celebrity – doesn't matter at all Memorable slogan – not very important Describing the best feauters of the product – important Focuses on the necessary goods/services – not very important Provides usefulness – very important
	Trust in advertising**	Weak Trust Level (1-1.9 / 5): TV advertising, outdoor, e-mail ads, ads on the branded web-sites, recommendations of strangers Moderate trust level (2-2.9 / 5): Social media ads, recommendations of familiar people	Weak trust level (1-1.9 / 5): TV advertising, outdoor ads, e-mail ads Moderate Trust Level (2-2.9 / 5): Social media ads, ads on the branded web-sites Strong confidence level (3-3.9 / 5): Recommendations of strangers, Very Strong Trust level (4-5 / 5)): Recommendations of familiar people	Weak trust (1-1.9 / 5): TV advertising, outdoor ads, e-mail ads Moderate trust (2-2.9 / 5): Social media ads, ads on the branded web-sites Strong Trust (3-3.9 / 5): Recommendations of strangers, recommendations of familiar people

		Generation X (years)	Generation Y (years)	Generation Z (years)
High	General description	12,36% of the total number of digital consumers Low income — 13% Middle class — 25% Upper-middle class — 63% More than 85% — 1-2 children 94% work full time 6% part time	26,25% of the total number of digital consumers Low income — 12% Middle class — 39% Upper-middle class — 48% 85% without children Others — not more than 2 Getting higher education – 21% Working part-time (combining with studies) – 29% Working full-time – 38% Freelance – 9%	5,41% of the total number of digital consumers Low income — 17% Middle class — 83% No children Getting higher education – 86% Working part-time (combining with studies) – 14%
	Digital products purchase frequency	Consume audio content with the lowest activity among all segments: 69% do not buy, 13% buy once a month More graphic consumers than among other segments (but in general, still few): they prefer to make purchases every 2-3 months The most active consumers of software of all segments: 63% - once every 2-3 months, 13% - several times a week Most clearly in video content, they prefer to make one-time purchases as opposed to subscriptions to services. All consumers in this segment buy tickets and bookings online	Audio: Almost 50% buy a subscription to streaming audio services once a month Text: about 30% of segment representatives buy every two or three months Video: about a third of the segment representatives prefer streaming services with a monthly subscription, the rest buy video content once every 2-3 months or less A quarter of segment consumers use cloud storage with a monthly subscription A quarter of the segment's representatives purchase training courses every 2-3 months 79% buy tickets and bookings online: 50% - once every 2-3 months, 24% - once a month Applications for smartphones: about 25% buy once every 2-3 months or less, 10% - several times a week, 10% - once a month Consumers of software are 24% - they purchase software every 2-3 months	Rarely consume video content: only 21% of the segment representatives are consumers, who prefer buying video once a month Most segments consume software more actively: 59% of representatives buy it once every 2-3 months About 40% are regular (once every 1-2 months) consumers of educational content 43% are game consumers: 14% of them buy games several times a week, the rest – once every 2-3 months 50% of smartphone app consumers: of which 14% buy apps several times a week Do not buy text and graphic content at all
	Attractiveness of advertising*	Design – not very important Interesting information – very important Including celebrity – doesn't matter Memorable slogan – not very important Describing the best feauters of the product – very important Focuses on the necessary goods/services – not very important Provides usefulness – not very important	Design – very important Interesting information – very important Including celebrity – somewhat important Memorable slogan – important Describing the best feauters of the product – important Focuses on the necessary goods / services – important Provides usefulness – very important	Design – crucial Interesting information – important Including celebrity - doesn't matter at all Memorable slogan - doesn't matter Describing the best feauters of the product - crucial Focuses on the necessary goods/services - doesn't matter Provides usefulness - necess crucial ary
	Trust in advertising**	Weak trust level (1-1.9 / 5): Social media ads, TV advertising, outdoor ads, e-mail ads Moderate trust level (2-2.9 / 5): recommendations of strangers, ads on the branded web-sites Strong Trust level (3-3.9 / 5): recommendations of familiar people	Weak level of trust (1-1.9 / 5): TV advertising, outdoor advertising, email advertising. Moderate level of trust (2-2.9 / 5): advertising on social networks, recommendations from outsiders, advertising on branded sites. Strong Trust Level (3-3.9 / 5): Recommendations from people you know	Weak Trust Level (1-1.9 / 5): TV advertising, outdoor ads, e-mail ads, ads on the branded web-sites, recommendations of strangers, Moderate trust level (2-2.9 / 5): Social media ads Strong Trust Level (3-3.9 / 5): Recommendations of familiar people
	Motivators for buying digital	Weak motivators (2.1-3 / 5): familiar service, advice from friends, popularity of the product among other users, impossibility to get illegally, habit Moderate motivators (3.1-4 / 5): price, special occasion Strong motivators (4-5 / 5): ease of cross-platform use, a must for work / study	Weak motivators (2.1-3 / 5): popularity of the product among other users, inability t$o obtain illegally, special occasion Moderate motivators (3.1-4 / 5): price, advice from friends, cross-platform usability, trust and service awareness Strong motivators (4-5 / 5): habit, commitment to purchase a product / subscription	Weak motivators (2.1-3 / 5): the inability to obtain illegally, the popularity of the product among other users Moderate motivators (3.1-4 / 5): price, need for work / study, habit of buying a product/service, special occasion, advice from friends

Attractiveness of advertising* - the characteristics of advertisements that are most attractive to consumers. Measured on a five-point scale of the importance of a specific characteristic for segment representatives, where 1 is a characteristic that consumers do not pay attention to, 5 is a necessary characteristic of an advertising message in order for an advertisement to attract the attention of consumers.

Trust in advertising:** the level of consumer trust in different types of advertising. Measured on a five-point scale, where 1-1.9 is low trust in a specific type of advertising, 2-2.9 is moderate trust in a specific type of advertising, 3-3.9 is a strong trust in a specific type of advertising, 4-5 is very strong trust in a particular type of advertising

Motivators for buying digital products*:** Features of digital products that motivate consumers to buy. Measured on a five-point scale, where 2.1-3 is a weak motivator, 3.1-4 is a moderate motivator, 4-5 is a strong motivator, a value less than 2.1 is a lack of motivation