CONSUMER DIGITAL TRUST: THE MAIN TRENDS AND RESEARCH DIRECTIONS

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The objective of this paper is to systematize the research on the consumer digital trust from 2016 to 2022 and to determine existing and future research trends. The authors apply a combined systematic and bibliometric review methodology using Scopus metrics and natural language processing techniques using R. Through an analysis of 173 journal publications from the Scopus database, the authors systemize accumulated knowledge on the topic. As a result, the authors have developed a knowledge map based on keywords, identified and analyzed seminal papers on digital trust, identified the main research directions on this topic, and analyzed their development and perspectives. From a practical point, the results of the study demonstrate that companies not only need to pay attention to the development of consumer trust in service, but that the quality of technical equipment and the security of consumer data are also important. Also, research demonstrates, that while digital trust is generally important for online services, it plays an especially significant role in the sharing economy, e-commerce, and digital health services.

Keywords: digital trust, trust, topic modelling, bibliometric analysis.

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INTRODUCTION

In the era of "Marketing 5.0", when a significant part of the interaction between a consumer and a brand, as well as interpersonal communications, are implemented in a digital environment, trust becomes especially important [Gefen, Karahanna, Straub, 2003; Pavlou, 2003; Kim, Ferrin, Rao, 2008; Kotler, Kartajaya, Setiawan, 2021]. Research on consumer trust has been conducted for several decades [Morgan, Hunt, 1994; Castelfranchi, Falcone, 2000; Sparks,

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Browning, 2011; Flavián, Guinaliu, Lu, 2020; Berezka, Rebiazina, Muravskaia, 2021]. In the early stages, trust was studied in an offline environment; in the last decade, the study of consumer trust in the digital environment has been gaining popularity [Etzioni, 2019; Vidiasova, Tensina, Bershadskaya, 2020]. Trust is studied by researchers from different fields [Calefato, Lanubile, Novielli, 2015]: management and marketing [Calefato, Lanubile, Novielli, 2015], cognitive sciences [Castelfranchi, Falcone, 2000], economics [Büttner, Göritz, 2008], software engineering [Schumann et al., 2012], etc. The specificity of gaining consumer trust in an online environment is the lack of opportunity to interact in person, which makes building trust a more complex process [Evjemo, Castejyn-Martínez, Akselsen, 2019]. The specifics of consumer trust in an online environment creates additional challenges for the management of companies, also trust is especially relevant for digital platforms, including e-commerce and sharing services.

Despite the scientific interest in the topic of trust in research on management and marketing, and its importance for business, a single definition of the term "trust" has not been developed. Some researchers claim that trust exists when one party is confident in the reliability and honesty of a partner [Morgan, Hunt, 1994]. Some authors consider trust as the willingness of one party (trustor) to depend on the other party (trustee), the authors argue that trust usually results from repeated interpersonal interactions [Doney, Cannon, 1997]. Trust is also described as a psychological state that includes the intention of the trustor to become vulnerable to the trustee, based on positive expectations about the intentions or behaviour of the trustee [Hoffmann, Lutz, Meckel, 2014]. In this study, the authors use trust defined as a psychological state that manifests itself through a willingness or intention of the trustor to take risks based on the expectation of positive intentions of the trustee [Mayer, Davis, Schoorman, 1995; McKnight, Choudhury, Kacmar, 2002a; Rousseau et al., 1998; Akhmedova, Vila-Brunet, Mas-Machuca, 2021].

This paper focuses on one of the aspects of trust — digital (also online- and cyber-) trust of consumers. The authors analyse the trust of users of digital services (studies on the digital trust of professionals and employees are excluded from the analysis). As a rule, digital trust is studied through empirical research [Corbitt, Thanasankit, Yi, 2003; Hoffmann, Lutz, Meckel, 2014; Chang et al., 2016; Wu, Lin, 2017], conceptual research [Utami, Agus, 2019], experiments [Calefato, Lanubile, Novielli, 2015] and other research methods. However, there are not enough papers that would systematise the results of digital trust research. The systematisation of the results of research in the field of digital trust is important, as it may allow to determine further directions for research, as well as find new opportunities for building trust between companies and consumers in the digital environment. Thus, the purpose of this paper is to systematise the research field on the topic of consumer digital trust and to determine existing and future research trends.

Researchers have already made attempts to systematise studies on digital trust and have conducted clustering of papers based on keywords [Berezka, Rebiazina, Muravskaia, 2021], which allowed them to identify research areas and reveal the role of trust and anxiety in consumer behaviour. However, the systematisation of papers was not the focus of the paper, the authors analysed the topic more broadly, so the research scope is required to be narrowed to consumer digital trust only and further systematised. For basic paper systematisation, the authors answer the following research questions.

RQ1. Which countries lead in the number of papers published in the field of consumer digital trust?

RQ2. Which are the leading institutions/affiliations in the consumer digital trust literature?

RQ3. What are the most cited papers on consumer digital trust and what is their contribution to the research?

The answers to *RQ1–RQ3* allow us to understand the popularity of digital trust research in developing and developed markets, to identify popular topics and some research trends. However, *RQ1–RQ3* will not allow us to understand how exactly the concept of digital trust was formed, and which papers are the basis of modern research on digital trust. Understanding how the theory of digital trust was developed can be an important step for the further development of the topic and for identifying future trends. To systematise research on the topic of consumer digital trust, it is necessary to analyse the knowledge structure and the seminal publications for the research field. To do this, a more advanced approach, relational bibliometric techniques, was used, which allow to answer the following research questions.

RQ4. What are the important keywords and themes used by authors in consumer digital trust research?

RQ5. What are the theoretical/intellectual foundations of consumer digital trust?

However, the analysis using keywords has some limitations and does not allow us to evaluate the content of analysed papers. A deeper method of analysis, literary review, is popular for the analysis of the research area, allowing researchers to conduct a deep analysis of the literature, but the disadvantages of this method are its inability to process large amounts of data and the subjectivity of the analysis. To systematise the research in the field of digital trust and identify existing research trends, the authors propose to use the natural language processing technique — topic modelling — which will help to answer the following research question.

RQ6. What are developing research themes/trends in the consumer digital trust topic?

The study continues as follows. In the first two sections we analyse concepts of trust and digital trust, also, these sections include definitions of the trust and digital trust and their advantages for the business. In the third section authors presented the methodology and the description of the research sample. After methodology, the findings of analysis, responding to *RQ1–RQ6* are given using evaluative and relational bibliometric techniques as well as using topic modeling. Finally, we conclude the review by summarising the study's findings, and present a research agenda for future research in consumer digital trust research.

1. TRUST AS A FACTOR OF THE DEVELOPMENT OF DIGITAL PLATFORMS

Trust is one of the key components of relationship marketing [Morgan, Hunt, 1994; Calefato, Lanubile, Novielli, 2015]. There is no single definition of trust in the literature, and most of the definitions of trust in management and marketing research are based on three aspects of trust: trustor, trustee, and expectations [Li, Betts, 2003]. In a trusting relationship, one party (the trustor) relies on the actions of the other party (the trustee) in a certain situation in the future [Alsheikh, Shaalan, Mezian, 2019]. The trustor does not have full control over the actions taken by the trustee, thus, the trustor cannot be sure of the results of the actions of the trustee, and as a result there is a risk that the trustor will not receive the result expected from the trustee [Mayer, Davis, Schoorman, 1995; Alsheikh, Shaalan, Meziane, 2019].

The absence of a single definition of trust is not only a consequence of different approaches of researchers to its study but also comes from the multidimensional nature of the phenomenon and the existence of many different understandings of trust [Tambovtsev, 2018]. For example, a study by [Lewis, Weigert, 1985] states that trust

has three levels: cognitive, emotional, and behavioural [Ozbal, Duman, Topaloglu, 2020]. In modern research, trust is analysed on two levels: cognitive and affective (the behavioural level of trust is excluded), where cognitive trust consists of a conscious assessment of the trustee's characteristics combined with the process of weighing the benefits of trust over risk [Calefato, Lanubile, Novielli, 2015]. Cognitive trust refers to the confidence of consumers or the willingness to rely on the abilities and reliability of service providers [Kim, Tadisina, 2008; Chang et al., 2016]. Affective trust, on the other hand, is based on emotions [Calefato, Lanubile, Novielli, 2015]. In addition to this classification, trust can be divided into trust in systems and interpersonal trust [Kapanova, Koidl, 2019], or interpersonal and inter-organizational trust [Huang, Wilkinson, 2013; Zhang, Li, 2019]. In research by [Aris, Mustaffa, Zabarudin, 2011] authors define different types of trust (technological, relational, moralistic, initial, strategic etc.), in addition, depending on the context, trust can become both a driver and a barrier to the use of digital services [Rebiazina, Smirnova, Daviy, 2020].

Consumer trust is very important for business. Brands trusted by consumers are better remembered. The probability of consumers leaving a trusted brand for a competitor is significantly less than if there is no trust [Pintado et al., 2017]. Research on the topic of trust demonstrates several positive effects of trust (the list is not exhaustive):

- increase in the effectiveness of advertising and its perception by consumers [Pintado et al., 2017];
- reduction of transaction costs [Pérez-Munoz et al., 2011];
- reduction of consumer sensitivity to risk [Zhang, Li, 2019];
- reduction of the amount of time spent on negotiations with partners [Zhang, Li, 2019];
- positive influence on consumer decision-making [Jarvenpaa, Tractinsky, Saarinen, 1999; Bart et al., 2005; Flavián, Guinalíu, Gurrea, 2006; Zloteanu et al., 2018].

At the beginning of the 21st century, resulting from the digitalization, a new type of trust began to develop — digital trust — which refers to the interaction of counterparties in the digital environment. Digital trust, while a part of trust, has some specifics, requiring a separate study; the theory of trust cannot be applied to digital trust. Digital trust will be considered in the next section.

2. DIGITAL TRUST: THEORETICAL OVERVIEW

Trust as a psychological state based on positive expectations about the intentions or behaviour of the trustee [Rousseau et al., 1998], is particularly important in the digital environment due to uncertainty and lack of information [Stewart, 2003; Aguirre et al., 2015]. While in an offline environment, trust between strangers is built on face-to-face interaction, building trust online is more difficult, also due to the high level of anonymity in the digital environment. In e-commerce consumers interact with websites, and not the actual storefronts [Bart et al., 2005; Etzioni, 2019], and while buying the product, a customer must be able to believe that they will receive a service or product in return and that it will have the promised qualities. On the other hand, sellers should assume that they will be paid within a reasonable time. Some consumers may still prefer traditional channels for buying goods and receiving services, despite the greater convenience of electronic services. This is due to a greater level of trust in the former, which creates additional challenges and competition for digital services. Thus, digital trust is increasingly important for digital services [Tsai et al., 2010].

Digital trust as trust in general does not have a single definition. Researchers have used alternative terms, such as cyber-trust

Table 1

Definitions of the digital trust

Term	Definition	Source
Digital trust	the consumer's belief that the service is technically capable of ensuring the successful execution of the transaction	[McKnight, Choudhury, Kacmar, 2002b]
	confidence in the counterparty that stores and use consumers' digital information in such a way that this meets the expectations of consumers	[Li et al., 2003]
	a concept that defines confidence in the reliability of all components of digital interaction: users, processes, devices, technologies and vendors	[Orekhova, 2020]
Online trust	includes consumer perceptions of how the site would deliver on expectations, how believable the site's information is, and how much confidence the site commands	[Urban, Amyx, Lorenzon, 2009]
	Consumers' perception of a web site's usefulness, security, privacy, reputation, quality, and e-vendors' willingness to customise	[Wu, Hu, Wu, 2010]
Cyber-trust	the user's confidence in the predictability of the "behaviour" of software and hardware systems (digital technologies), their reliability, which is manifested in the willingness to delegate several tasks to various software and hardware systems	[Vidiasova, Tensina, Bershadskaya, 2020]
Online trust	an attitude of confident expectation in an online situation of risk that one's vulnerabilities will not be exploited	[Corritore, Kracher, Wiedenbeck, 2003]]
Cyber-trust	confident expectation — the belief that online actions can frequently be taken without additional safeguards	[Cugelman, Thelwall, Dawes, 2008]

or online-trust. They may be divided into two groups: technology-related trust, and counterparty-related trust. A common feature of all definitions of digital trust is the interaction of counterparties via the Internet and the importance of the correct functioning of hardware and software. Definitions of digital trust also have features of offline trust, in particular — expectation of counterparty not using partners' vulnerabilities. Table 1 demonstrates some of the most popular definitions of digital trust.

Currently, research demonstrates that digital trust has a positive impact on the use of digital services and digital platforms [Konya-Baumbach et al., 2019]. In some cases platforms are providers of the trust between consumers, for example in the sharing economy services [Nikishina, 2020]. An example of such services are commercial sharing systems [Rebiazina, Berezka, Antonova, 2020]. For such companies, trust is one of the key requirements for successful functioning. The role of digital trust is increasing thanks to, among other things, social networks, the large amount of information on the Internet, fake news etc. [Zhang, Li, 2019]. The most important is trust for digital services that operate in the P2P format (C2C) [Belk, 2010]. Digital trust, as well as offline trust, gives many advantages:

- the perceived control of the buyer, over uncertainty, increases [Kannan, 2017; Konya-Baumbach et al., 2019];
- trust has a positive effect on making a purchase decision [Pavlou, 2003];
- consumer satisfaction increases while using trusted goods or services [Kim, Tadisina, 2007; Chang et al., 2016];
- trust in the digital service provides a positive eWOM [Akhmedova, Vila-Brunet, Mas-Machuca, 2021];
- consumers' concerns about the dissemination of their data are reduced [Evjemo, Castejyn-Martínez, Akselsen, 2019];
- consumers' concerns about the security of transactions are reduced [Eiteneyer, Bendig, Bretel, 2019];
- consumers' concern about the quality of the information provided by service is reduced [Eiteneyer, Bendg, Bretel, 2019];
- there is also growing trust in reviews and advertisements posted on a trusted company's website [Stewart, 2003; Wu, Lin, 2017]. If the consumer often sees content from a trusted brand, this content is less annoying than if they saw the content of a brand that he does not trust [Pintado et al., 2017].

Building user trust in a digital environment can be more challenging than offline, since personal contact and social cues are missing [Evjemo, Castejyn-Martнnez, Akselsen, 2019], which creates additional challenges. For digital services, an offline presence will have a positive effect on sales [Hoffmann, Lutz, Meckel, 2014], since an offline presence increases the perceived quality and reliability of goods. Studies demonstrate that components such as functionality [Otero, Gallego, Pratt, 2014; Ozbal, Duman, Topaloglu, 2020], the speed and simplicity of the company's digital application, the absence of bugs, customization options, etc. [Ozbal, Duman, Topaloglu, 2020], are critical for building trust in digital platforms. In research by [Kim, Sharma, Setzekorn, 2002] authors demonstrate that to earn the trust of consumers in the digital environment, a company must meet the following criteria: be customer-oriented, ensure consumer safety, and cooperate with other companies in the market [Ozbal, Duman, Topaloglu, 2020].

The interpretability and simplicity of the information posted on the company's website are also the basis for increasing the level of consumer trust [Esposito et al., 2017]. Trust in the company's website can also be increased by visualising the site's content and working with colours, brightness levels, and graphic effects [Emeakaroha et al., 2016]. Users may also be inclined to trust or not trust the website due to personal traits [Hoffmann, Lutz, Meckel, 2014]. To earn the trust of consumers on the Internet, companies not only need to provide goods and services, they also need to solve consumer problems using their technological base. In research by [Akhmedova, Villa-Brunel, Mas-Machuca, 2021] authors identified the main areas of digital services that modern companies could implement within their activities to become trusted:

- the company needs to create an attractive brand image at all stages of interaction with customers;
- the company needs to implement targeted intelligent marketing in social networks, which will emphasise the security of the advertised service;
- it is necessary to facilitate decision-making by consumers (reliable search / matching systems), technological added value;
- the company needs to focus on transaction security and cybersecurity.

Thus, the results of research on digital trust demonstrate that it is very important for companies. However, digital trust only continues to develop, so the potential of its benefits for companies is not fully disclosed. The systematisation of the results of research in digital trust may allow us to determine further directions for research in the field of digital trust, as well as new opportunities for building trust between companies and consumers in the digital environment.

3. METHODOLOGY AND SAMPLE DESCRIPTION

The methodologies suggested by [Cui et al., 2020; Anand et al., 2021a, Anand et al., 2021b; Mustak et al., 2021] were adapted in this study. The authors combine the bibliometric analysis approach (evaluative and relational methods) with a qualitative literature analysis approach (the most cited and seminal papers were analysed). In addition, a topic modelling approach was used, allowing us to identify the dynamics of the research on digital trust [Cui et al., 2020; Mustak et al., 2021].

Overall, this research methodology comprises five steps: (1) development of the search query; (2) selection of relevant publications and analysis of the research field using; (3) evaluative bibliometric techniques; using; (4) relative bibliometric techniques; (5) analysis of abstract using topic modelling. The complete research scheme is represented at Figure 1.

The authors conducted a comprehensive study to find relevant publications. For this purpose, the Scopus database was used. In the first stage of the empirical research, a systematic review of the most popular papers on the topic of digital trust was conducted and the final list of search terms was established.

At the second stage, the papers obtained from the search are limited by the following criteria: the article should be written in English, publications on topics that are not relevant for research are excluded (astronomy, physics, and other sciences that do not correspond to the research scope), the final sample includes only papers published in peer-reviewed scientific journals. As a result of the selection, the number of publications was reduced to 307. Despite these limitations, some publications were still irrelevant for this research, so at the next stage the articles were reviewed by the authors manually. As a result of man-

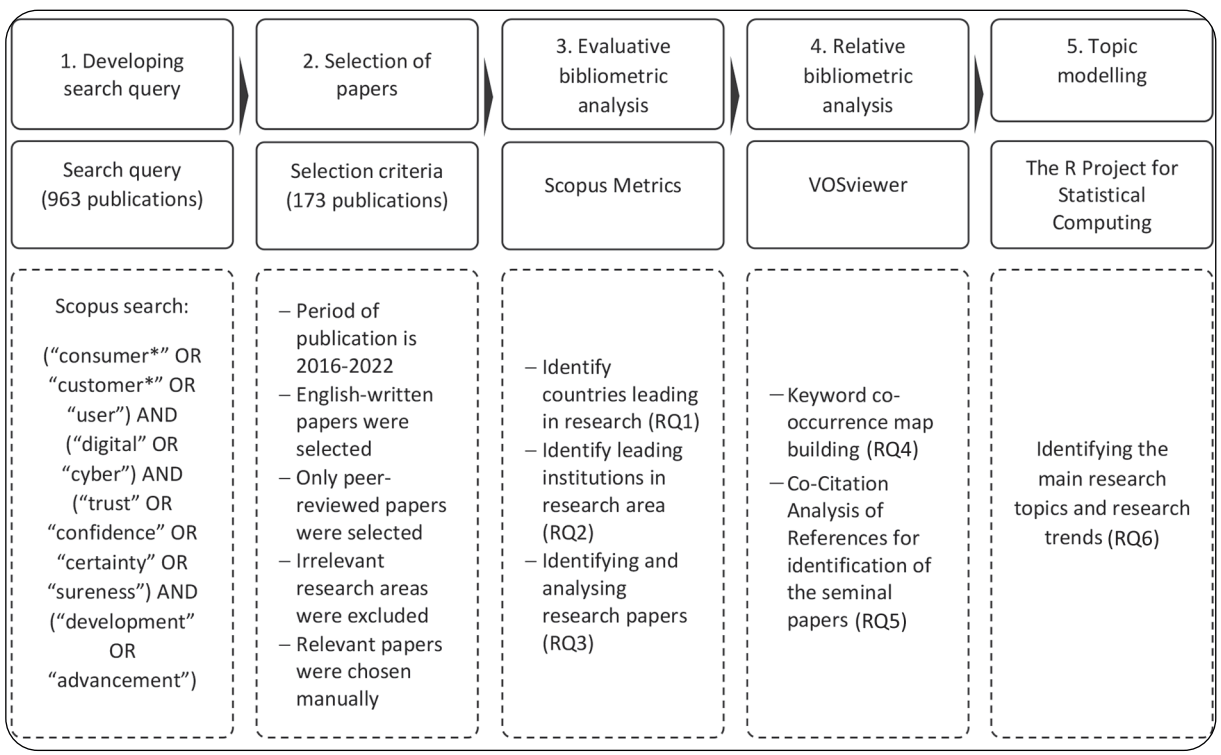

Fig. 1. Complete research scheme

ual selection, the number of publications was reduced to 173.

To analyse the research with evaluative metrics at the third stage, Scopus metrics is used, identifying the most cited publications, and the number of papers published by a certain country or organisation in a certain year. At the fourth stage of the research, the authors uploaded a Scopus file with the full bibliographic description of the selected publications, which was subsequently processed using VOSviewer. Based on the co-occurrence of keyword analysis (only the authors' keywords were used), a map of keywords was built indicating the most important keywords, as well as highlighting their clusters. Further, with the help of VOSviewer, seminal papers in the digital trust area were identified using the co-citation analysis of references method, the seminal papers were subsequently analysed using a literary review method.

In the last stage, the abstracts of the selected publications are analysed by topic modelling to identify the main research subfields and the dynamic development of these subareas. To do this, the authors used the *R* software package. Before modelling, the data were preprocessed: the words were reduced to a single register, stop words, technical words and punctuation marks were removed from the corpus. At the next stage of preprocessing, the procedure for determining the basis of the word was used. In the final stage, topic modelling is conducted, and the results are interpreted.

Topic modelling is an information summarization technique that can be viewed as a semi-automated content analysis method [Vallurupalli, Bose, 2020]. Topic modelling reduces the dimensionality of the data and moves from terms and words to topics [Korshunov, Gomzin, 2012; Aggarwal, Zhai, 2012]. Topic modelling is gaining popularity in research, due to its versatility, constant development, and extensibility [Guo, Barnes, Jia, 2017; Vallurupalli, Bose, 2020]. The areas of use of the topic modelling method are wide ranging: it could be used for the analysis of user feedback on a product [Vallurupalli, Bose, 2020], for the definition of user sentiment [Tirunillai, Tellis, 2014], for the identification of the most important aspects of services [Guo, Barnes, Jia, 2017], and for analysis of news or social networks to identify trends [Korshunov, Gomzin, 2012; Papakyriakopoulos et al., 2018]. In this paper, the method of topic modelling will be used to identify the main areas of research on the topic of digital trust.

Methods of topic modelling can be divided into two groups: probabilistic and algebraic. Probabilistic includes latent Dirichlet Allocation (LDA) and probabilistic Latent Semantic Analysis (pLSA). Algebraic models include the standard Vector Space Model (VSM) and the Latent Semantic Analysis (LSA).

As a result of analyzing the methods of topic modelling and studying their strengths and weaknesses, it was decided to use the LDA method. It performs better and more accurately with large amounts of data, does not require a complete restructuring of the model when adding new variables, and does not retrain. In this method there are no linear relationship between the number of documents and the number of topics [Korshunov, Gomzin, 2012].

The final product of LDA model is the probability matrix of words and texts belonging to topics [Koltsova, Maslinsky, 2013]. Basically, the topic profile is a probability vector in which each cell contains the probability of a topic being mentioned in a text array. The empirical study methodology was based on the methodology of the research of the commercial sharing systems conducted by [Cui et al., 2020, Mustak et al., 2021]. The topic modelling method allows researchers to analyse research on digital trust in sufficient depth, identify possible gaps in the theory, and directions for further research. Topic modelling is a cross between a quantitative study and a literary review, the method of topic modelling allows to use the positive features of both methods.

4. FINDINGS FROM THE ANALYSIS USING EVALUATIVE BIBLIOMETRIC TECHNIQUES

In this section, the authors provide answers for research questions 1–3 using Scopus metrics and qualitative analysis for the most cited papers. This analysis has a descriptive character. More sophisticated techniques are used in the following sections.

Answering *RQ1*, the authors analysed existing research on the topic of consumer digital trust by country. It can be concluded that the majority of papers on digital trust are published in the USA (20,6 % of the total), the UK (16,4 %), and China (11,1 %). In other countries, English-written research on this topic is less represented. Excluding China and India, it can be concluded that currently, there exists a research gap in the research on digital trust in the emerging markets.

At the same time, answering *RQ2*, it can be mentioned that the greatest contribution to research, in the context of consumer digital trust, was made by research institutes in the UK (University College London, King's College London and the University of Oxford).

According to [Anand, Brix, 2022], highly cited publications are well-written and contain "hot" topics in each discipline. Thus, as part of the response to *RQ3*, the authors decided to analyse the most cited publications and identify relevant research topics. The top-cited articles are represented in table 2.

Analysing the most cited publications, we can conclude that there are almost no recent publications (2021–2022) among them, because they have not yet received enough citations. The analysed top-cited publications on the topic of digital trust can be divided into three subfields: "trust towards social networks", "information safety", and "trust in e-services".

Table 2

The most cited articles on the topic of digital trust

Source	Citation	Research focus
Trust towards social networks		
[Hollebeek, Macky, 2019]	160	Digital content marketing's role in fostering consumer engagement, trust, and value
[Jacobson, Gruzd, Hernández-García, 2020]	57	Users' trust in social networks and digital practices of marketers
Information safety		
[Yuan, Yu, 2015]	105	Developing a system for secure cloud data storage
[Wakefield, 2013]	98	Consumer trust for providing personal data online
[Salahdine, Kaabouch, 2019]	88	Social engineering and information safety
Trust in e-services		
[Efendioglu, Yip, 2004]	72	E-commerce specifics in China
[Bunker, 2020]	63	Building user trust in digital platforms in the context of infodemia
[Chang et al., 2016]	51	The mediation of cognitive attitudes for e-commerce
[Clemons, 2007]	50	The role and influence of rating systems in e-commerce

The publication of [Hollebeek, Macky, 2019] is the most cited of all the selected ones, which can be explained by the relevance of the topic for the modern research environment. The most popular papers on the topic of the digital trust analyse several independent areas. For example, in the publication by [Hollebeek, Macky, 2019], the authors analyse the impact of content marketing on consumer engagement and trust. In the publication by [Jacobson, Gruzd, Hernández-García, 2020], the authors analyse the trust of social network users in marketers, using social network data for research purposes. These papers mainly analyse consumers' social network activity.

At the same time, several publications analyse consumer trust in cloud data storage, from the points of view of data in general and consumers' personal data [Wakefield, 2013; Yuan, Yu, 2015; Mahmud et al., 2018]. Some of the studies are related to the fraud using social engineering methods, which negatively affects consumer digital trust, therefore fraud area research is also very important [Salahdine, Kaabouch, 2019].

Another important research field is "e-services", for which consumer trust is also very important and has local specifics for different countries [Efendioglu, Yip, 2004; Clemons, 2007; Chang et al., 2016].

5. FINDINGS FROM THE ANALYSIS USING RELATIONAL BIBLIOMETRIC TECHNIQUES

In the next stage, answering *RQ4*, the keywords of the selected papers were analysed, which allowed authors to identify the knowledge structure of the digital trust research. Keywords are important because they represent topic aspects highlighted by the authors, thus they can be used to analyse the research field. Using the VOSviewer program, the authors identified 741 keywords. The keywords with a threshold of a minimum occurrence of 3 in all papers were selected and this led to a collection of 31 keywords. The resulting keyword co-occurrence map is demonstrated in Figure 2. As a result of the analysis, 6 main cluster topics were identified and analysed. The central topic, according to keywords, is the topic "Trust in sharing services", which is closely related to other topics, such as "Electronic services", "Social networks", "Cloud data security", "Blockchain and Big Data", and "Trust in electronic health".

The cluster "Trust in sharing services" focuses on consumer trust in the sharing economy and digital platforms, the papers from this cluster, as a rule, analyse trust through consumer behaviour. The "Electronic services" segment covers the topics of digital services, such as e-commerce and digital government in the context of the digital economy.

An important position in the research is occupied by developing sectors such as "Trust in electronic health". Research in this segment describes the ethical side of e-health, the security of providing health data to digital services and, in general, the subject of e-health services through the prism of trust. The "Social networks" group combines not only social networks analysis, but also research of social capital and social media, which also have one of the central places in digital trust research.

We can also see technological sectors: "Cloud data security" includes research on such important topics as artificial intelligence, cyber security, data privacy, which is undoubtedly a significant part of digital trust research. The "Blockchain and Big Data" segment focuses on the research on trust towards blockchain and Big Data.

To answer *RQ5*, it was decided to analyse the seminal publications on the topic of the digital trust. For this, the approach of [Anand et al., 2021a] was applied using VOSviewer to conduct a co-citation analysis of references. After downloading the raw bibliometric data, which included 173 articles,

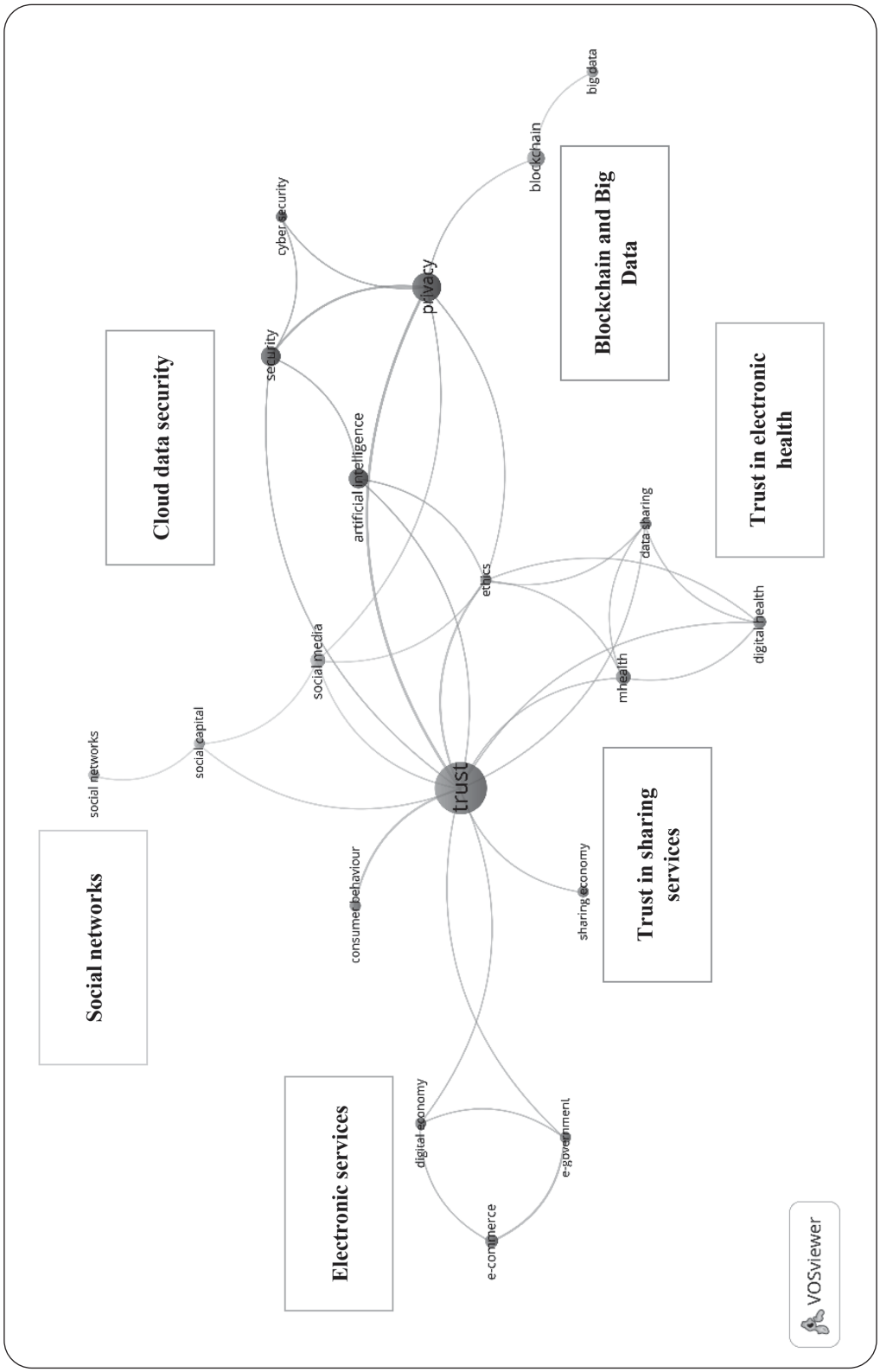

Fig. 2. Keyword co-occurrence map

VOSviewer identified a total of 9 054 references, of which five met the threshold four cited references. The number of references was then decreased to 3 and 23 articles were found. These publications are central to the consumer digital trust research area; therefore, they were used to identify the theoretical/intellectual foundations. These papers, both chronologically and by research field, can be divided into three clusters: "Acceptance of information technology" (1989–1995), "Trust" (1994–2000) and "The study of trust in digital services" (2000 — present time).

The pioneer papers that became the base of research on the topic of digital trust were [Davis, 1989; Davis, Bagozzi, Warshaw, 1989], which considered user acceptance of computer/information technology. Later, in 1995, S. Taylor and P. A. Todd [Taylor, Todd, 1995] analysed a similar topic using the "technology acceptance model" and "the theory of planned behaviour". At that period, internet and computer technologies were not widespread, so these papers mainly analysed user acceptance of information technology.

The next seminal papers are the publications on the classical concept of trust, which is logical since the concept of digital trust is a combination of digital technology and trust. These papers analyse the topics of trust and organisational trust [Morgan, Hunt, 1994; Mayer, Davis, Schoorman, 1995; Rousseau et al., 1998]. These papers are basic for trust research and have also become the basis of research on digital trust.

A quantum leap in the analysed papers takes place in the 2000s, when the first studies on consumer trust in digital services appeared. The first papers on consumer trust in e-commerce services were the papers of [Mcknight, Choudhury, Kacmar, 2002b; Pavlou, 2003; Gefen, Karahanna, Straub, 2003; Kim, Ferrin, Rao, 2008], followed by topics such as privacy concerns, touched on by [Malhotra, Kim, Agarwal, 2004; Dinev, Hart, 2006]. Both topics are still popular for researchers.

In 2010, such topics as online trust [Beldad, De Jong, Steehouder, 2010], trust of users towards social networks [Kaplan, Haenlein, 2010] and papers on the adoption of internet banking [Yousafzai, Yani-de-Soriano, 2012; Montazemi, Qahri-Saremi, 2015] have emerged. These research areas are among the central ones in digital trust research.

The analysed papers may not be the earliest in their area, but they are seminal for research on digital trust. This analysis reflects the evolution of seminal publications, but they do not reflect the main areas of research in digital trust and their evolution overall, therefore, another approach was used to answer *RQ6*.

6. FINDINGS FROM THE TOPIC MODELLING ANALYSIS

The last stage of this research is to identify the main research areas of consumer digital trust, the development of these topics, and trending research areas. The keyword analysis approach, which was presented in previous stages, makes it possible to build a scientometric map and identify research clusters, but with this approach it is not possible to analyse the content of publications, therefore important information is missing. To analyse the content of the selected papers, the topic modelling approach was used, as a result the authors identified eight topics that can be divided into three blocks: consumer-related research, platform-related research, technology-related research. The results are presented in Table 3.

The first column displays the name of the topic assigned by the authors based on the words, presented in column 3. These words are the result of the topic modelling and they represent research areas. The "Probability" column reflects the probability of mentioning a topic in a randomly selected publication. Thus, the most frequently researched topic in the studies is topic "Perception of and intention to use e-banking", the probabil-

Table 3

Topic modelling results

Topic label	Probability	Top-5 Construct	Examples of publication
1	2	3	4
Perception and intention to use e-banking	0.18	Consumer, perceive, bank, intention, service	[Alzaidi, Qamar, 2018; Khoa, 2020; Lappeman, Meyer, Miguel, 2022]
Adoption of mobile technologies	0.13	Mobile, adoption, technology, application, system	[Saprikis, Avlogiaris, Katarachia, 2020; Buhr, Schicktanz, Nordmeyer, 2022]
Privacy of user information	0.08	App, privacy, user, information, trustworthiness	[Li, Jiang, Wu, 2014; Chandramohan et al., 2015; Visinescu et al., 2016]
Digital platforms	0.13	Platform, digital, share, practice, relationship	[Janowski, Estevez, Baguma, 2018; Ntouros, Kouki, Vlachokyriakos, 2021]
Social networks marketing	0.13	Social, media, online, communication, marketing	[Correia, Medina, 2014; Ahuja, Alavi, 2018; Jacobson, Gruzd, Hernández-García, 2020]
Digital health services	0.11	Health, data, customer, care, ethic	[Grundstrom et al., 2020; Pool, Akhlaghpour, Fatehi, 2020; LaMonica et al., 2021]
Blockchain, IOT and Big Data	0.14	Blockchain, propose, system, data, IOT	[Abubakar, Hassan, 2018; Koroma et al., 2022]
Cloud Services	0.10	Cloud, data, security, authentication, user	[Kim, Park, 2013; Al-Ruithe, Benkhelifa, Hameed, 2018]

Note: the topic numbers and constructs are generated automatically, the topics are named by the authors after studying the content of each topic.

ity of its mention in the text is more than 18%. If we compare these results with keyword analysis results from Figure 2, we see that results have similar features.

The papers on the topic "Perception of and intention to use e-banking" are related to the banking sector. These studies consider not only the credibility of the banking sector or the adoption of banking technologies, as, for example, in the study of [Alzaidi, Kamgjara, 2018], but also the issue of data safety, as, for example, in the publication of [Lappeman, Meyer, Miguel, 2022]. In addition, special attention is paid to mobile banking [Khoa, 2020].

In research on the topic "Adoption of mobile technologies", the authors consider not only mobile technologies directly, but also the trust in mobile applications [Buhr, Schicktanz, Nordmeyer, 2022]. Other important aspects of this research topic are the safety of user information and the use of new innovative mobile technologies [Saprikis, Avlogiaris, Katarachia, 2020].

The topic "Privacy of user information" is closely related to cloud technologies, since data storage in cloud services leads to certain risks for users [Li et al., 2014; Chandramohan et al., 2015; Visinescu et al., 2016]. In addition, there is a connection between re-

search on the safety of user information and research on the digital health of users, for which privacy is very important.

Papers on the topic "Digital platforms" have much in common with the research cluster from the scientometric map from the previous subsection ("Electronic services" and "Trust in sharing platforms"). In particular, such topics as research on sharing economy [Ntouros, Kuoki, Vlachokyriakos, 2021] and digital government services [Janowski, Esteves, Baguma, 2018] can be highlighted.

The research on the topic "Social networks marketing" analyses the development of consumer trust in digital services [Ahuja, Alavi, 2018] and the benefits of using marketing in social networks for business [Correia, Medina, 2014]. An important aspect of the consumer behaviour analysis in social networks is the ethical aspect and compliance with professional standards when collecting and analysing data.

"Digital health services" is one of the youngest and actively developing areas of research. This topic has a particularly close connection with research on the trust in data storage on cloud services and research on the analysis of information safety in general [Grundstrom et al., 2020; Pool, Ahlagpur, Fatehi, 2020; LaMonica et al., 2021].

The topic of "Blockchain, IOT and Big Data" is more technological than others. Within this research area, one can notice research on increasing the level of consumer trust in the blockchain [Koroma et al., 2022] and on digital technologies as a whole [Abubakar, Hassan, 2018].

The "Cloud services" topic also refers to the technological aspect of digital trust research. Among the papers in this area, we would like to highlight papers on trust and consumer behaviour when using mobile cloud computing [Kim, Park, 2013] and studies on user data management in cloud storage [Al-Ruithe, Benkhelifa, Hameed, 2018]. At the next stage of the research, the dynamics of probabilities of conducting research in the identified topics for the period 2016–2022 year was analysed. The results are represented in Figure 3.

Figure 3 shows that, while the topic "Privacy of user data" and "Social network marketing" have approximately the same share, in research throughout the period, the topic of "Perception and intention to use e-banking" is actively growing. In the context of technological research in the field of digital trust, the popularity of research on the topic "Cloud services" is decreasing, the share of research on the topic "Blockchain, IOT and Big Data" remains approximately at the same level. A decrease in the proportion of any topic in digital trust research does not mean that interest in the topic as a whole is fading.

DISCUSSION AND CONCLUSION

Consumer digital trust has gained significant attention in scientific research, which has resulted in emergence of the big quantity of knowledge requiring systematisation. In this paper, the authors applied a complex approach to analyse research on digital trust, 173 English-language papers published in Scopus since 2016 were analysed. As the result of the analysis with evaluative techniques, the authors identified that most of the research on the topic of digital trust is carried out in the US, the UK, and China, in other countries research on the topic of digital trust is less popular, which can be the result of the "digital divide" and is confirmed by the results of other studies [Mustak et al., 2021].

As the result of the relational bibliometric analysis, the authors developed a scientometric map characterising the accumulated knowledge on digital trust. Six clusters were identified based on the analysis of the keywords: (1) "Trust in sharing services"; (2) "Electronic services"; (3) "Social networks"; (4) "Cloud data security"; (5) "Blockchain and Big Data"; (6) "Trust in electronic health". In addition, using

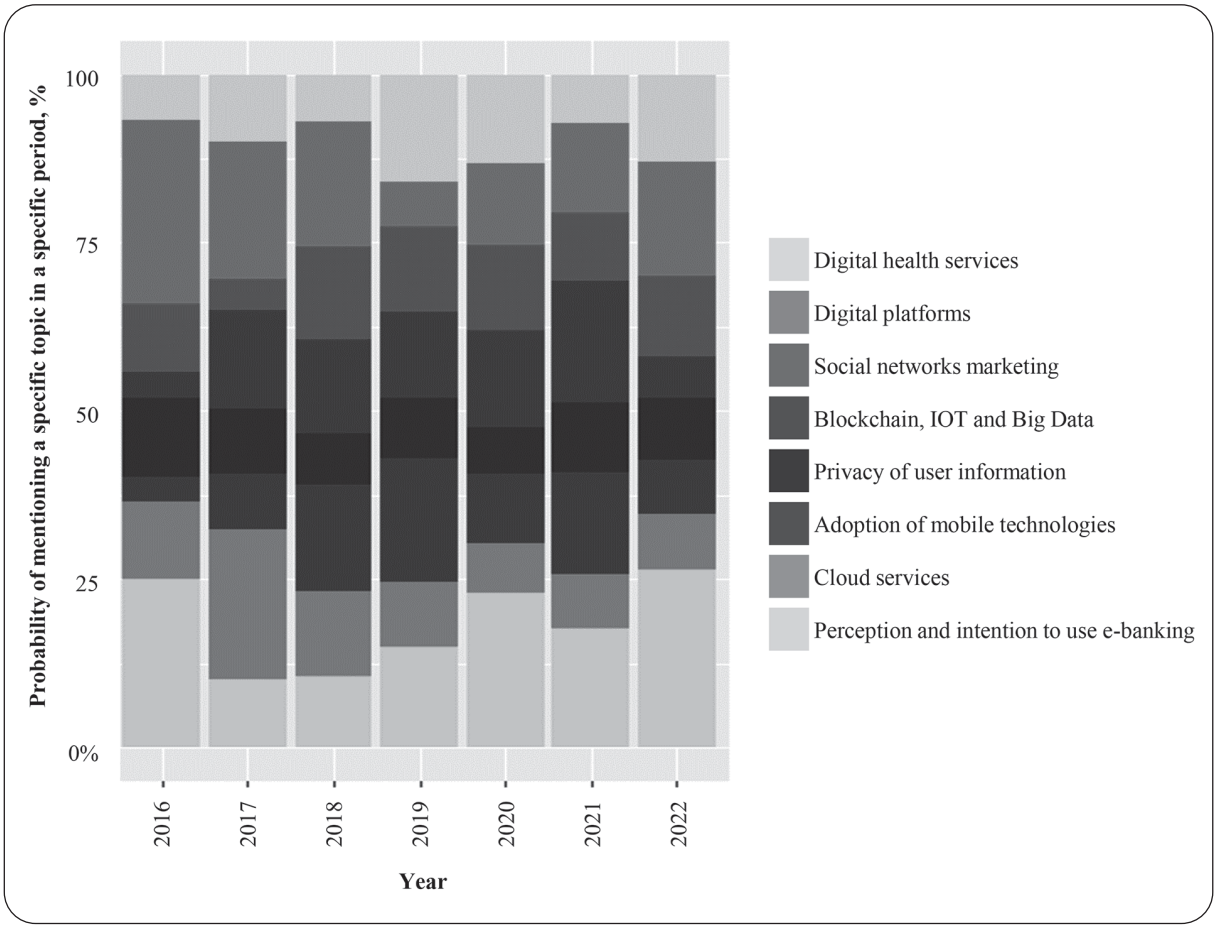

Fig. 3. Topic modelling results by year

Based on: analysis, conducted by authors.

Note: Figure 3 demonstrates a bar chart where the probability of mentioning a specific topic in a specific period is marked in colour in each column.

the co-citation analysis of references, the authors identified seminal studies which became the basis of digital trust theory. These publications were divided into three clusters chronologically and by content: the adoption of information technology (1989–1995), trust (1994–2000), the study of trust in digital services (2000 — present time). From such a chronology, it can be concluded that digital trust is based on research on trust and the adoption of digital technologies, these topics are most relevant for the development of the digital trust.

At the last stage, a topic modelling method was applied to analyse research on digital trust. As a result of the analysis, eight main directions of research in the field of studying consumer digital trust have been identified, which can be divided into three blocks:

1) consumer-related research: (1) "Perception and intention to use e-banking", (4) "Adoption of mobile technologies", (8) "Privacy of user information";
2) platform-related research: (3) "Digital platforms", (5) "Social networks marketing", (6) "Digital health services";

3) technology-related research: (2) "Blockchain, IOT and Big Data", (7) "Cloud services".

The topics identified as the result of the analysis are similar to topics obtained from the scientometric map. Thus, we can conclude that research results may characterise research on consumer digital trust. Thus, the paper makes the following main theoretical contributions: authors identified the existing structure of the research on consumer digital trust and research trends in the digital trust area. Some of the topics have growing popularity in the digital trust research (for example e-banking), and popularity of some other topics is decreasing (for example, cloud services). Moreover, the authors identified the seminal publications in the field of consumer digital trust, these papers became the base of consumer digital trust research. Lastly, leading countries and institutions in the digital trust research are identified.

This research also has significance for trust management in digital services. For these services trust is especially important, since there is always the possibility of a consumer choosing a classic buying channel [Tsai et al., 2010]. The results of the study demonstrate that companies not only need to pay attention to the development of consumer trust in the service, but that the quality of technical equipment and the security of consumer data are also extremely important. The authors would also like to highlight the multilevel nature of trust, which can be related not only to trust in the company, but also to trust in a particular technology or even other consumers.

In addition, the results of the research demonstrate that while digital trust is generally important for online services, it plays an especially significant role for the sharing economy, e-commerce, and digital health services. Companies from these fields need to pay special attention to the development of trust in all levels, which has also been confirmed by previous studies. By earning consumer trust companies may increase consumer loyalty, increase positive eWOM etc.

This research has some limitations. Firstly, since the topic of digital trust research is becoming popular, the number of publications on this topic also continues to grow, so the results of the research may change with a larger sample. Second, the names of the topics are determined by the authors based on the words comprising the topic, so to some extent the names may be subjective. The third limitation is the choice of keywords and the choice of a database — Scopus. In addition, only English-language papers were used for the analysis, this means that some important information could be lost.

However, these limitations may become future directions for development of this research. In future research, the study sample can be increased by including publications from other databases (Web of Science, Google Scholar) and using experts to analyse the names of topics. The authors could also add some other bibliometric methods to the analysis. Another area of future research is the analysis of papers specific for one of the e-service industries (sharing economy, e-commerce etc.). However, despite the limitations, the authors managed to systematise a significant part of the accumulated scientific experience in the field of digital consumer trust and identify opportunities for the further development of research on this topic.

REFERENCES

Abubakar H., Hassan S. 2018. A framework for enhancing digital trust of Quranic text using Blockchain technology. *Journal of Telecommunication, Electronic and Computer Engineering* **10** (2–4): 7–17.

Aggarwal C.C., Zhai C. 2012. A survey of text classification algorithms. In: *Mining Text Data*, 163–222. Springer: Boston, MA.

Aguirre E., Mahr D., Grewal D., De Ruyter K., Wetzels M. 2015. Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of Retailing* **91** (1): 34–49.

Ahuja V., Alavi S. 2018. Using Facebook as a digital tool for developing trust amongst consumers using netnography and social media analytics: A study of Jet Airways. *Journal of Relationship Marketing* **17** (3): 171–187.

Akhmedova A., Vila-Brunet N., Mas-Machuca M. 2021. Building trust in sharing economy platforms: trust antecedents and their configurations. *Internet Research*.

Al-Ruithe M., Benkhelifa E., Hameed K. 2018. Key issues for embracing the cloud computing to adopt a digital transformation: A study of Saudi public sector. *Procedia Computer Science* **130**: 1037–1043.

Alsheikh S.S., Shaalan K., Meziane F. 2019. Exploring the effects of consumers' trust: A predictive model for satisfying buyers' expectations based on sellers' behavior in the marketplace. *IEEE Access* **7**: 73357–73372.

Alzaidi A., Qamar S. 2018. Factors affecting the adoption of internet banking: a systematic literature review. *International Journal of Business Information Systems* **28** (1): 95–124.

Anand A., Argade P., Barkemeyer R., Salignac F. 2021a. Trends and patterns in sustainable entrepreneurship research: A bibliometric review and research agenda. *Journal of Business Venturing* **36** (3): 106092.

Anand A., Brix J. 2022. The learning organization and organizational learning in the public sector: A review and research agenda. *The Learning Organization* **29** (2): 129–156.

Anand A., Kringelum L.B., Madsen C.Ø., Selivanovskikh L. 2021b. Interorganizational learning: A bibliometric review and research agenda. *The Learning Organization*.

Aris A., Mustaffa N., Zabarudin N.S.N.M. 2011. Concepts and constructs in online trust. In: *2011 International Conference on Research and Innovation in Information Systems*, 1–6. *IEEE*.

Bart Y., Shankar V., Sultan F., Urban G.L. 2005. Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *Journal of Marketing* **69** (4): 133–152.

Beldad A., De Jong M., Steehouder M. 2010. How shall I trust the faceless and the intangible? A literature review on the antecedents of online trust. *Computers in Human Behavior* **26** (5): 857–869.

Belk R. 2010. Sharing. *Journal of Consumer Research* **36** (5): 715–734.

Berezka S., Rebiazina V., Muravskaia S. 2021. Changes in consumer behavior in the BRICS countries during the COVID-19 pandemic: The role of trust and anxiety. *BRICS Journal of Economics* **2**: 53–73.

Buhr L., Schicktanz S., Nordmeyer E. 2022. Attitudes Toward Mobile Apps for Pandemic Research Among Smartphone Users in Germany: National Survey. *JMIR mHealth and uHealth* **10** (1): e31857.

Bunker D. 2020. Who do you trust? The digital destruction of shared situational awareness and the COVID-19 infodemic. *International Journal of Information Management* **55**: 102201.

Büttner O.B., Göritz A.S. 2008. Perceived trustworthiness of online shops. *Journal of Consumer Behaviour: An International Research Review* **7** (1): 35–50.

Calefato F., Lanubile F., Novielli N. 2015. The role of social media in affective trust building in customer–supplier relationships. *Electronic Commerce Research* **15** (4): 453–482.

Castelfranchi C., Falcone R. 2000. Trust is much more than subjective probability: Mental components and sources of trust. In: *Proceedings of the 33rd Annual Hawaii International Conference on System Sciences*, 10. *IEEE*.

Chandramohan D., Sathian D., Rajaguru D., Vengattaraman T., Dhavachelvan P. 2015. A multi-agent approach: To preserve user

information privacy for a pervasive and ubiquitous environment. *Egyptian Informatics Journal* **16** (1): 151–166.

Chang S. H., Chih W. H., Liou D. K., Yang Y. T. 2016. The mediation of cognitive attitude for online shopping. *Information Technology & People*.

Clemons E. K. 2007. An empirical investigation of third-party seller rating systems in e-commerce: The case of buySAFE. *Journal of Management Information Systems* **24** (2): 43–71.

Corbitt B. J., Thanasankit T., Yi H. 2003. Trust and e-commerce: A study of consumer perceptions. *Electronic Commerce Research and Applications* **2** (3): 203–215.

Correia P. P., Medina I. G. 2014. Digital social media: An interactive technology incorporated as a competitive advantage for business. *International Journal of Interactive Mobile Technologies* **8** (2): 23–27.

Corritore C. L., Kracher B., Wiedenbeck S. 2003. On-line trust: concepts, evolving themes, a model. *International Journal of Human-Computer Studies* **58** (6): 737–758.

Cugelman B., Thelwall M., Dawes P. 2008. Website credibility, active trust and behavioural intent. In *International Conference on Persuasive Technology* (pp. 47–57). Springer, Berlin, Heidelberg.

Cui L., Hou Y., Liu Y., Zhang L. 2020. Text mining to explore the influencing factors of sharing economy driven digital platforms to promote social and economic development. *Information Technology for Development*: 1–23.

Davis F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*: 319–340.

Davis F. D., Bagozzi R. P., Warshaw P. R. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science* **35** (8): 982–1003.

Dinev T., Hart P. 2006. An extended privacy calculus model for e-commerce transactions. *Information Systems Research* **17** (1): 61–80.

Doney P. M., Cannon J. P. 1997. An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing* **61** (2): 35–51.

Efendioglu A. M., Yip V. F. 2004. Chinese culture and e-commerce: An exploratory study. *Interacting with Computers* **16** (1): 45–62.

Eiteneyer N., Bendig D., Brettel M. 2019. Social capital and the digital crowd: Involving backers to promote new product innovativeness. *Research Policy* **48** (8): 103744.

Emeakaroha V. C., Fatema K., van der Werff L., Healy P., Lynn T., Morrison J. P. 2016. A trust label system for communicating trust in cloud services. *IEEE Transactions on Services Computing* **10** (5): 689–700.

Esposito G., Hernбndez P., van Bavel R., Vila J. 2017. Nudging to prevent the purchase of incompatible digital products online: An experimental study. *PloS One* **12** (3): e0173333.

Etzioni A. 2019. Power as a Societal Force. In: *Power in Modern Societies*, 18–28. Routledge.

Evjemo B., Castejyn-Martínez H., Akselsen S. 2019. Trust trumps concern: findings from a seven-country study on consumer consent to 'digital native' vs. 'digital immigrant' service providers. *Behaviour & Information Technology* **38** (5): 503–518.

Gefen D., Karahanna E., Straub D. W. 2003. Trust and TAM in online shopping: An integrated model. *MIS Quarterly*: 51–90.

Flavián C., Guinaliu M., Lu Y. 2020. Mobile payments adoption–introducing mindfulness to better understand consumer behavior. *International Journal of Bank Marketing*.

Flavián C., Guinalíu M., Gurrea R. 2006. The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management* **43** (1): 1–14.

Grundstrom C., Korhonen O., Väyrynen K., Isomursu M. 2020. Insurance customers' expectations for sharing health data: Qualitative survey study. *JMIR Medical Informatics* **8** (3): e16102.

Guo Y., Barnes S. J., Jia Q. 2017. Mining meaning from online ratings and reviews: Tour-

ist satisfaction analysis using latent Dirichlet allocation. *Tourism Management* **59**: 467–483.

Hoffmann C.P., Lutz C., Meckel M. 2014. Digital natives or digital immigrants? The impact of user characteristics on online trust. *Journal of Management Information Systems* **31** (3): 138–171.

Hollebeek L.D., Macky K. 2019. Digital content marketing's role in fostering consumer engagement, trust, and value: Framework, fundamental propositions, and implications. *Journal of Interactive Marketing* **45**: 27–41.

Huang Y., Wilkinson I.F. 2013. The dynamics and evolution of trust in business relationships. *Industrial Marketing Management* **42** (3): 455–465.

Jacobson J., Gruzd A., Hernández-García Á. 2020. Social media marketing: Who is watching the watchers? *Journal of Retailing and Consumer Services* **53**: 101774.

Janowski T., Estevez E., Baguma R. 2018. Platform governance for sustainable development: Reshaping citizen-administration relationships in the digital age. *Government Information Quarterly* **35** (4: 1–16).

Jarvenpaa S.L., Tractinsky N., Saarinen L. 1999. Consumer trust in an Internet store: A cross-cultural validation. *Journal of Computer-Mediated Communication* **5** (2).

Kannan P.K. 2017. Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing* **34** (1): 22–45.

Kapanova K., Koidl K. 2019, September. Towards a model of interpersonal trust in Social Media Applications. In: *Proceedings of the 5th EAI International Conference on Smart Objects and Technologies for Social Good*, 120–123.

Kaplan A.M., Haenlein M. 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons* **53** (1): 59–68.

Khoa B.T. 2020. The impact of the personal data disclosure's tradeoff on the trust and attitude loyalty in mobile banking services. *Journal of Promotion Management* **27** (4): 585–608.

Kim D.J., Ferrin D.L., Rao H.R. 2008. A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems* **44** (2): 544–564.

Kim E., Tadisina S. 2007. A model of customers' trust in e-businesses: Micro-level inter-party trust formation. *Journal of Computer Information Systems* **48** (1): 88–104.

Kim J., Sharma S., Setzekorn K. 2002. A framework for building brand equity online for pure-play B2C retailers and services. *International Journal on Media Management* **4** (2): 123–133.

Kim S., Park H. 2013. Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance. *International Journal of Information Management* **33** (2): 318–332.

Konya-Baumbach E., Schuhmacher M.C., Kuester S., Kuharev V. 2019. Making a first impression as a start-up: Strategies to overcome low initial trust perceptions in digital innovation adoption. *International Journal of Research in Marketing* **36** (3): 385–399.

Koroma J., Rongting Z., Muhideen S., Akintunde T.Y., Amosun T.S., Dauda S.J., Sawaneh I.A. 2022. Assessing citizens' behavior towards blockchain cryptocurrency adoption in the Mano River Union States: Mediation, moderation role of trust and ethical issues. *Technology in Society* **68**: 101885.

Kotler P., Kartajaya H., Setiawan I. 2021. *Marketing 5.0: Technology for Humanity*. John Wiley & Sons: N.Y.

Koltsova O.Y., Maslinsky K.A. 2013. Identifying the thematic structure of the Russian blogosphere: Automatic text analysis methods. *Sotsiologiya 4M (Sociology: methodology, methods, mathematical modeling)* **36**: 113–139. (In Russian)

Korshunov A., Gomzin A. 2012. Topic modeling in natural language texts. *Trudy Instituta Sistemnogo Programmirovaniya RAN* **23**: 215–244. (In Russian)

LaMonica H. M., Roberts A. E., Lee G. Y., Davenport T. A., Hickie I. B. 2021. Privacy practices of health information technologies: Privacy policy risk assessment study and proposed guidelines. *Journal of Medical Internet Research* **23** (9): e26317.

Lappeman J., Meyer S., Miguel D. 2022. Exploring online sentiment (OS) as a measure of customer experience (CX) for telecommunication services. *Services Marketing Quarterly* **43** (3): 257–276.

Lewis J. D., Weigert A. J. 1985. Social atomism, holism, and trust. *The Sociological Quarterly* **26** (4): 455–471.

Li F., Betts S. C. 2003. Trust: What it is and what it is not. *International Business & Economics Research Journal (IBER)* **2** (7).

Li H., Jiang J., Wu M. 2014. The effects of trust assurances on consumers' initial online trust: A two-stage decision-making process perspective. *International Journal of Information Management* **34** (3): 395–405.

Mahmud M., Kaiser M. S., Rahman M. M., Rahman M. A., Shabut A., Al-Mamun S., Hussain A. 2018. A brain-inspired trust management model to assure security in a cloud based IoT framework for neuroscience applications. *Cognitive Computation* **10** (5): 864–873.

Malhotra N. K., Kim S. S., Agarwal J. 2004. Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model. *Information Systems Research* **15** (4): 336–355.

Mayer R. C., Davis J. H., Schoorman F. D. 1995. An integrative model of organizational trust. *Academy of Management Review* **20** (3): 709–734.

McKnight D. H., Choudhury V., Kacmar C. 2002a. Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research* **13** (3): 334–359.

McKnight D. H., Choudhury V., Kacmar C. 2002b. The impact of initial consumer trust on intentions to transact with a web site: a trust building model. *The Journal of Strategic Information Systems* **11** (3–4): 297–323.

Montazemi A. R., Qahri-Saremi H. 2015. Factors affecting adoption of online banking: A meta-analytic structural equation modeling study. *Information & Management* **52** (2): 210–226.

Morgan R. M., Hunt S. D. 1994. The commitment-trust theory of relationship marketing. *Journal of Marketing* **58** (3): 20–38.

Mustak M., Salminen J., Plé L., Wirtz J. 2021. Artificial intelligence in marketing: Topic modelling, scientometric analysis, and research agenda. *Journal of Business Research* **124**: 389–404.

Nikishina E. N. 2020. Trust and sharing platforms. *Moscow University Economic Bulletin* **4**: 71–83. (In Russian)

Ntouros V., Kouki H., Vlachokyriakos V. 2021. Designing sharing economy platforms through a 'Solidarity HCI' lens. *Proceedings of the ACM on Human-Computer Interaction* **5**: 1–25.

Orekhova E. A. 2020. Digital trust as a contributor to development under uncertainty and turbulence. *Bulletin of the Saratov State Socio-Economic University* **3**: 24–27. (In Russian)

Otero E. L., Gallego P. A. M., Pratt R. M. 2014. Click-and-Mortar SMEs: Attracting customers to your website. *Business Horizons* **57** (6): 729–736.

Ozbal O., Duman T., Topaloglu O. 2020. A trust-based peer-to-peer digital brand equity (P2P-DBE) model. *Journal of Marketing Theory and Practice* **28** (4): 497–520.

Pavlou P. A. 2003. Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce* **7** (3): 101–134.

Papakyriakopoulos O., Hegelich S., Shahrezaye M., Serrano J. C. M. 2018. Social media and microtargeting: Political data processing and the consequences for Germany. *Big Data & Society*, **5** (2): 205395171881184.

Pérez-Luco A., Medina C. C., Lavado A. C., Rodríguez G. C. 2011. How social capital and knowledge affect innovation. *Journal of Business Research* **64** (12): 1369–1376.

Pintado T., Sanchez J., Carcelén S., Alameda D. 2017. The effects of digital media advertis-

ing content on message acceptance or rejection: Brand trust as a moderating factor. *Journal of Internet Commerce* **16** (4): 364–384.

Pool J., Akhlaghpour S., Fatehi F. 2020. Towards a contextual theory of Mobile Health Data Protection (MHDP): A realist perspective. *International Journal of Medical Informatics* **141**: 104229.

Rebiazina V.A., Berezka S.M., Antonova N.G. 2020. Consumer's attitude to the sharing economy in Russia. *Russian Management Journal* **18** (2): 255–278. (In Russian)

Rebiazina V.A., Smirnova M.M., Daviy A.O. 2020. E-commerce adoption in Russia: Market- and store-level perspectives. *Russian Management Journal* **18** (1): 5–28.

Rousseau D.M., Sitkin S.B., Burt R.S., Camerer C. 1998. Not so different after all: A cross-discipline view of trust. *Academy of Management Review* **23** (3): 393–404.

Salahdine F., Kaabouch N. 2019. Social engineering attacks: A survey. *Future Internet* **11** (4): 89.

Saprikis V., Avlogiaris G., Katarachia A. 2020. Determinants of the intention to adopt mobile augmented reality apps in shopping malls among university students. *Journal of Theoretical and Applied Electronic Commerce Research* **16** (3): 491–512.

Schumann J., Shih P.C., Redmiles D.F., Horton G. 2012. Supporting initial trust in distributed idea generation and idea evaluation. In: *Proceedings of the 17th ACM International Conference on Supporting Group Work*, 199–208.

Sparks B.A., Browning V. 2011. The impact of online reviews on hotel booking intentions and perception of trust. *Tourism Management* **32** (6): 1310–1323.

Stewart K.J. 2003. Trust transfer on the world wide web. *Organization Science* **14** (1): 5–17.

Tambovtsev V.L. 2018. A construct of trust in management studies. *Russian Management Journal* **16** (4): 577–600. (In Russian)

Taylor S., Todd P.A. 1995. Understanding information technology usage: A test of competing models. *Information Systems Research* **6** (2): 144–176.

Tirunillai S., Tellis G.J. 2014. Mining marketing meaning from online chatter: Strategic brand analysis of big data using latent dirichlet allocation. *Journal of Marketing Research* **51** (4): 463–479.

Tsai Y.H., Lin C.P., Chiu C.K., Joe S.W. 2010. Learning cyber trust using a triadic functioning analysis: a qualitative approach. *Quality & Quantity* **44** (6): 1165–1174.

Urban G.L., Amyx C., Lorenzon A. 2009. Online trust: state of the art, new frontiers, and research potential. *Journal of Interactive Marketing* **23** (2): 179–190.

Utami T.R., Agus A.A. 2019. The Role of Trust in Determining Consumers' Intention to Click on Online Personalized Ads. In *2019 2nd International Conference of Computer and Informatics Engineering (IC2IE)* (pp. 147–152). IEEE.

Valluripalli V., Bose I. 2020. Exploring thematic composition of online reviews: A topic modeling approach. *Electronic Markets* **30** (4): 791–804.

Vidiasova L., Tensina I., Bershadskaya E. 2020, June. Cyber-social trust in different spheres: an empirical study in Saint-Petersburg. In: *International Conference on Digital Transformation and Global Society*, 3–13. Springer: Cham.

Visinescu L.L., Azogu O., Ryan S.D., Wu Y.A., Kim D.J. 2016. Better safe than sorry: A study of investigating individuals' protection of privacy in the use of storage as a cloud computing service. *International Journal of Human–Computer Interaction* **32** (11): 885–900.

Wakefield R. 2013. The influence of user affect in online information disclosure. *The Journal of Strategic Information Systems* **22** (2): 157–174.

Wu G., Hu X., Wu Y. 2010. Effects of perceived interactivity, perceived web assurance and disposition to trust on initial online trust. *Journal of Computer-Mediated Communication* **16** (1): 1–26.

Wu T.Y., Lin C.A. 2017. Predicting the effects of eWOM and online brand messaging: Source trust, bandwagon effect and innovation adoption factors. *Telematics and Informatics* **34** (2): 470–480.

Yousafzai S., Yani-de-Soriano M. 2012. Understanding customer-specific factors underpinning internet banking adoption. *International Journal of Bank Marketing*.

Yuan J., Yu S. 2015. Public integrity auditing for dynamic data sharing with multiuser modification. *IEEE Transactions on Information Forensics and Security* **10** (8): 1717–1726.

Zhang C.B., Li Y.N. 2019. How social media usage influences B2B customer loyalty: roles of trust and purchase risk. *Journal of Business & Industrial Marketing*.

Zloteanu M., Harvey N., Tuckett D., Livan G. 2018. Digital identity: The effect of trust and reputation information on user judgement in the sharing economy. *PloS One* **13** (12): e0209071.

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Цифровое доверие потребителей: основные тренды и направления исследований

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Целью данной работы является систематизация исследований цифрового доверия потребителей за период с 2016 по 2022 г. и определение тенденций в исследованиях цифрового доверия. Авторы применяют комбинированную методологию систематического и библиометрического обзора литературы с использованием метрик Scopus и методов обработки естественного языка с использованием *R*. В результате анализа 173 статей из рецензируемых научных журналов базы научного цитирования Scopus авторы систематизировали исследования по анализируемой тематике: разработана карта знаний на основе ключевых слов, выявлены и проанализированы основополагающие научные статьи о цифровом доверии, определены основные направления исследований в данной исследовательской отрасли и проанализирована динамика их развития и перспективы. С практической точки зрения результаты исследования демонстрируют, что компаниям необходимо уделять внимание не только развитию доверия потребителей к сервису, но и качеству технического оснащения и безопасности данных потребителей. Кроме того, результаты исследования показывают, что, несмотря на важность построения доверия для функционирования онлайн-сервисов в целом, оно играет особенно важную роль в развитии экономики совместного потребления, электронной коммерции и онлайн-медицины.

Ключевые слова: цифровое доверие, доверие, тематическое моделирование, библиометрический анализ.

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