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ANALYSIS OF THE MARKETING ACTIVITIES IN THE BLOOD SERVICE: BIBLIOMETRIC ANALYSIS

Abstract. *This paper summarizes the arguments and counterarguments within the scientific discussion on the marketing activities of blood service for over the last 20 years. The main purpose of the research is to understand the content and characteristics of existing research in the field of marketing in blood service to determine the direction of future research for both scientists and practitioners. Systematization of the literary sources and approaches for solving the problem of marketing in blood service indicates that a large amount of research in the field of marketing activities of blood service for the last 20 years requires a synthesis of existing research. The relevance of this scientific problem decision is that one of the criteria for the health level of the country's population is the availability of a sufficient number of blood donors (Global, 2017). Moreover, marketing activities of blood service allow to attract and retain the required number of donors and receive from them a sufficient amount of blood and its components. Investigation of the topic of the marketing activities in the blood service in the paper is carried out in the following logical sequence: it was determined the influence of authors, journals, and articles about marketing in the blood service, studied and identified marketing clusters in the blood service, conducted the content analysis and presented the visualization of scientific literature on marketing activities in the blood service. Methodological tools of the research methods were 2000-2019 years. The object of research is 262 relevant articles published in 25 journals over the period 2000–2019 because, namely, they explain the essence of marketing activity in blood service facilities. The paper presents empirical analysis publications on marketing in the blood service during the last 20 years, which showed that the most influential journals were Transfusion, Vox Sanguinis, and Transfusion Medicine Reviews. The most famous authors are Wakefield M.A., Gillespie T.W., Glynn S.A., Lemmens K.P.H., Bednall T.C., Sojka B.N., Masser B.M. The classification literature on marketing in the blood service is presented in the areas of recruitment and retention strategies, influence, and incentives for planned behavior, decision-making on donation. Each five-year plan covers research in the following areas: understanding donor behavior to develop engagement and use strategies, finding ways to recruit new donors, marketing tools to work with donors, focusing on donor retention, and using modern marketing communication tools. The research empirically confirms and theoretically proves that it is advisable to focus on the introduction of the most modern tools of marketing communications (messengers, mobile applications, ringtones on mobile phones, social networks) in combination with traditional (radio, brochures, videos, SMS messages, motivational interviews, and loyalty programs). It is also recommended to pay attention to average when building the loyalty of existing donors to increase the amount of blood donated by more donors and improve the quality of donors and blood safety. The results of the research can be useful for blood services and companies who promote unpaid voluntary donation.*

Keywords: blood donor, blood service, marketing, marketing activities, motivation, promotion, recruitment, retention.

Introduction. One of the criteria for the health level of the country's population is the availability of a sufficient number of blood donors (Global, 2017). Furthermore, marketing activities of blood service allows to recruit and retain the required number of donors and receive from them a sufficient amount of blood and blood components.

The study of marketing tools is based on the analysis of the effectiveness of direct marketing: mobile applications (Ouhbi, 2015; Yuan et al., 2016), SMS messages (Gemelli et al., 2018; Moussaoui et al., 2019), e-mail (Bachegowda et al., 2017), WhatsApp (Lucena et al., 2019); television recruitment, telephone messages; advertising: radio (Martin-Santana et al., 2018), postage stamps (Lefrere and Danic, 2010), mobile ringtones (Appiah et al., 2018), posters (Lefrere, 2012), social networks (Saturni et al., 2012; Sumnig et al., 2018; Rodrigues et al., 2018; Kwilinski et al., 2019a; Kuzior et al., 2019), online media (Aravindakshan et al., 2015), digital marketing; personal sales: motivational interview (France et al., 2017; France and France, 2018; Kwilinski et al., 2019b; 2019d; 2020; Miskiewicz, 2020; Miskiewicz & Wolniak, 2020), interpersonal communications (Abril, 2016; Dzwigol, 2020a; 2020b; Dzwigol et al., 2019; 2020a; 2020b; 2020c); sales promotion: gifts (Leipnitz et al., 2018), additional surveys, loyalty programs (Greffin et al., 2018); public relations: reputation, donor day (Kranenburg et al., 2017). In recent years, it appeared significant research into mobile and digital technologies in the marketing activities of the blood service.

Many factors influence donation, both external and internal (Aldamiz-Echevarria and Aguirre-Garcia, 2014), including fear and reference groups (Barboza and da Costa, 2014). There is a causal relationship between perceptions of blood donation and expectations of bank services by demographics (Saha and Chandra, 2016).

Donors can be influenced by knowing that they are motivated as internal motives (France et al., 2017); existing donors can motivate others (Martín-Santana and Beerli-Palacio, 2013). There is a link between motivational factors (altruism, selfish interest, and reaction to direct appeal) and social capital (cognitive and structural) (Goncalez et al., 2013). Perceptions of quality affect satisfaction and intention to return (Martín-Santana and Beerli-Palacio, 2012). A powerful tool is a motivational interview (Livitz et al., 2019; Livitz et al., 2017).

The literature on marketing in the blood service includes 20 reviews that evaluate existing research in this area. They focus on donor behavior and motivation (Gillespie and Hillyer, 2002; Goette et al., 2010; Bednall and Bove, 2011; Godin et al., 2012; Bednall et al., 2013), marketing tools and strategies in the blood service (Wakefield et al., 2010; Ringwald et al., 2010; Rodrigues and Reibnitz, 2011; van Dongen, 2015; Charbonneau et al., 2016), factors influencing donors and understanding of motives donors (Dupin et al., 2019), segmentation and work with individual segments (Makin et al., 2019; Romero-Dominguez et al., 2019).

The main focus of this study is a bibliometric analysis of the literature about marketing in the blood service. The bibliometric analysis examines a full range of research in this area from an objective, quantitative perspective.

This paper examines research about marketing in the blood service in the scientific literature, conducts content analysis (text analysis), and analyzes the literature. Text analysis is the process of extracting meaning from textual data to understand better the research area (Hofmann and Chisholm, 2016), and visualization represents the content of the research domain in visual form.

The main purpose of this study is to understand the content and characteristics of existing research in the field of marketing in blood service to determine the direction of future research for both scientists and practitioners.

To achieve this goal, allow tasks:

– determine the influence of authors, articles, and countries in the field of marketing in the blood service;

      −   study and identify marketing clusters in the blood service;

      −   to analyze the content and present the visualization of the scientific literature on marketing activities in the blood service;

      −   to identify areas for future research.

The document begins with an introduction to the study, followed by a discussion of the research background, a brief description of bibliometric analysis, and a comparison of existing review articles on the subject. The next section examines key journals by authors studying marketing in the blood service. Next is the analysis of citations and hierarchical cluster analysis of the text. The following section describes the results of content analysis better to explain the evolution of the literature over time. The last section contains recommendations for future research.

Literature Review. A large amount of literature about marketing in the blood service is examined in 20 literature reviews. These articles give a deep understanding and have particular importance. Classification of articles by topic gives three categories:

      −   articles about donor behavior and motivation;

      −   articles about specific marketing tools and strategies used by the world's blood services to recruit and retain donors;

      −   articles about segmentation and work with individual segments.

Twelve reviews of the literature are focused on donor behavior and motivation. It is considered current areas of psychological research about the attitude and behavior of blood donation, emphasizing the return of donors, and repeated behavior of blood donation (Masser et al., 2008). It is investigated the role of financial and other incentives to support blood donors (Goette et al., 2010). It was analyzed stimulus (Bednall and Bove, 2011). It was identified as the best significant impact on donors and ways to add them to donors (Godin et al., 2012). It was studied the behavior and intentions of donors (Bednall et al., 2013). It was analyzed articles on barriers and motivation (Detoc et al., 2016). It was analyzed 71 documents to identify stimulants and the stationary nature of stimulatory factors that influence their blood donation and blood safety behavior (Chell et al., 2018). It was analyzed barriers to blood structure among the North African population (Klinkenberg et al., 2019).

Six literature reviews focus on marketing tools to recruit and retain donors. It was summarized some critical recommendations for considering a donor support strategy (Ringwald et al., 2010). It was examined media outcomes in the context of various behavioral risks (e.g., tobacco, alcohol, and other drug placement, heart disease risk factors, gender-related behavior, road safety, cancer screening and prevention, child residence, and organ donation) (Wakefield et al., 2010). The review by examines strategies for attracting blood donors who use blood banks (hemocenters) in Brazil reveals strategies for attracting blood donors, which were grouped as follows: greetings, advertising campaigns, and educational strategies. There was also a need for greater socialization of the strategy for attracting blood donors, which helps create hemocenters to reduce inter-service communication, increase the number of blood donors in Brazil, find new donors, and their loyalty (Rodrigues and Reibnitz, 2011). It was reviewed discusses the literature on the importance of donor efforts, such as new donors (van Dongen, 2015). A review is compared the conditions of voluntary and unpaid demographics of donors and agents that constrain blood donation among plasma donors, regular whole blood donors, and lost whole blood donors (Charbonneau et al., 2016). It focused on releasing new donors, predicting their retention, and contributing factors (Bagot et al., 2016).

Two literature reviews focus on segmentation and work with individual segments. It was assessed the effectiveness of measures to increase blood donation among ethnic/racial minorities in developed countries (Makin et al., 2019). It was investigated the barriers used to segment Spanish active blood donors to identify specific assurance and loyalty strategies (Romero-Dominguez et al., 2019).

The authors found 262 articles (including 20 reviews) related to marketing activities in the blood

service. A visual search of articles is made from 1999 to 2019.

They have published in 25 journals: Transfusion, Vox Sanguinis, Transfusion Medicine, Transfusion and Apheresis Science, Transfusion Clinique et Biologique, Transfusion Transfusion Medicine Reviews, ISBT Science Series, Transfusion Medicine and Hemotherapy, Journal of Nonprofit Public Sector Marketing, Plos One, State of The Art Presentations etc.

During 1999-2019, most articles were published in the journals Transfusion (28.4%), Vox Sanguinis (13.0%), and Transfusion Medicine (8.4%).

During 2015-2019 45% of all articles (118 publications) were published (Figure 1). It indicates the recent growth of research in this area.
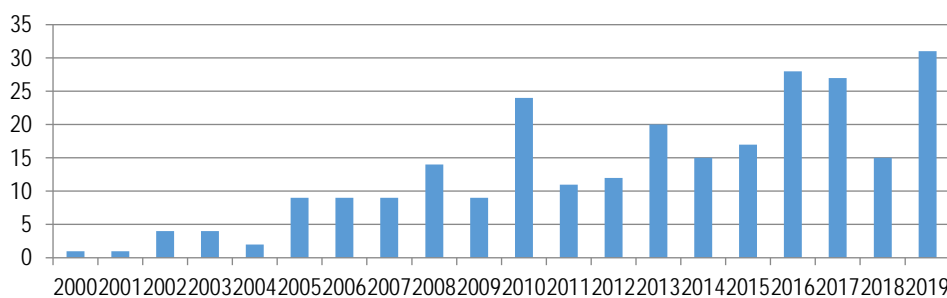

Figure 1. Number of publications by year

Sources: developed by the authors.

To understand the trend of the study, the authors graphically represent all 262 articles that are considered in this study. For clarity, one divided the articles into four time periods: 2000-2004 (11 articles), 2005-2009 (49 articles), 2010-2014 (83 articles), 2015–2019 (118 articles).

The publication with the number of published articles more than three was analyzed. Most of them were published in the journal «Transfusion» – 74 articles, «Vox Sanguinis» – 34, «Transfusion Medicine» – 22, «Transfusion and Apheresis Science» – 17, «Transfusion Clinic and Biology» – 11, «Blood Transfusion» – 9, «Transfusion Medicine Reviews» – 8, «ISBT Science Series» – 5, «Transfusion Medicine and Hemotherapy» – 5, «Journal of Nonprofit Public Sector Marketing» – 3, «Plos One» – 3, «State of The Art Presentations» – 3.

Most of the articles for all periods have been published in the journal «Transfusion», each year their number gradually increases. «Vox Sanguinis» has published more than 30 articles in the last 15 years. The number of publications in the journal «Transfusion Medicine» has increased sharply over the past five years.

Most of the articles were published by researchers from the United States (75 articles), Australia (31 articles), the Netherlands (28 articles), England (20 articles), and Canada (18 articles). Simultaneously, in some regions, including Ukraine, this topic is poorly studied (Figure 2).
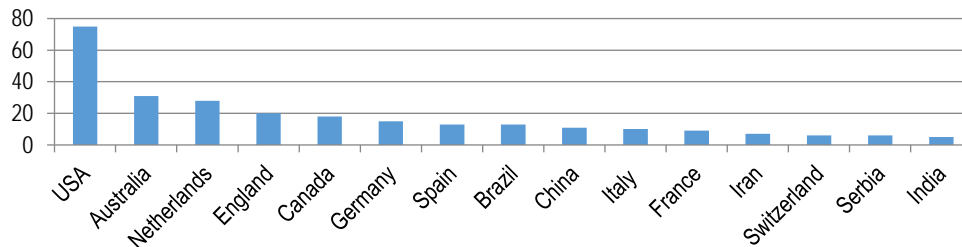
Figure 2. Number of publications by country

Sources: developed by the authors.

Methodology and research methods. This study begins with a systematic review of the literature to describe existing knowledge about research in the field and to identify those gaps that provide opportunities for new research. There were 20 reviews of the literature about marketing in the blood service. The literature about marketing in the blood service was reviewed in economic and medical journals. It included research about donor behavior and motivation, factors influencing donor decision-making, marketing communication tools used to recruit new and retain such donors and evaluate their effectiveness, experience in advertising campaigns in the service of blood, arguments in advertising, segmentation, and work with individual segments of donors.

The search was carried out by the following keywords: promotion, marketing, recruitment, retention, and blood donation. It was searched the prominent journals in marketing and transfusiology (the branch on medicine about blood and its components).

The search included 25 journals: Transfusion, Vox Sanguinis, Transfusion Medicine, Transfusion and Apheresis Science, Transfusion Clinique et Biologique, Transfusion Blood, Transfusion Medicine Reviews, ISBT Science Series, Transfusion Medicine, and Hemotherapy, Journal of Nonprofit Public Sector Marketing, Plos One, State artistic presentations, etc. A visual search of articles is made from 1999 to 2019. The authors found 262 articles (including 20 reviews) related to marketing in the blood service. The Web of Science data helped to analyze and cite existing blood marketing publications. This choice has been used for all necessary database data and its widespread use in modern research. In the first stage, it was selected and identified literature and keywords about marketing in the world's blood service. In the next step, the authors used the titles of the articles, the author of the authors, the title of the journal, the dates of the publications, and the number of citations for further analysis. There was a leading trend analysis of publications by journals. It was carried out an analysis of citations of authors, articles, publications to determine more influential. Based on the keywords and the content of the annotations, it was analyzed the content and the leading hierarchical cluster analysis was conducted. Visualization of topics of scientific literature was carried out with the help of VOSviewer programs. To better understand the authors and the impact of specific research on marketing in the blood service, the authors used profile research (Shevtsova, 2018). It includes detailed information about the authors, the impact of journals on research by indicators: number of publications, and number of citations. The key indicator is the citation rate. The average citation rate per year was calculated, which shows how the age of the article affects the level of citation. The calculation of the average citation rate per year requires dividing the total number of citations by the number of years from the date of publication of the article to the time of calculation. To better understand the clusters of marketing in the blood service, the authors used hierarchical cluster analysis.

Results. The question arises as to whether many articles published in Transfusion, Vox Sanguinis, and Transfusion Medicine means that these journals are the most influential in terms of citations.

Citation analysis. All articles are available through the selected database were reviewed to assess the journal; the average number of citations was calculated.

The impact of journals was assessed using the total number of articles published in each journal for marketing research in the blood service.

Twenty of the 74 articles published in «Transfusion» have a total of 1,377 citations. A single article in the «Lancet» has 776 citations («Use of mass media campaigns to change health behavior») published in 2010. 5 of the 8 articles published in «Transfusion Medicine Reviews» have 439 citations in total.

The most cited authors are presented in Table 1.

Table 1. Authors with the most citations

Author	A number of citations of the author, pcs.	A number of cited articles, pcs.
Wakefield Melanie A.	776	1
Schreiber G.B.	549	9
Masser B.M.	288	14
France C.R.	267	15
De Kort Wlam	223	9
Gillespie T.W.	149	1
Glynn S.A.	143	1
Godin G.	140	5
Lemmens K.P.H.	132	1
Bednall Timothy C.	127	1
Veldhuizen I.J.T.	123	8
Van Dongen A.	121	8
France J.L.	114	8

Sources: developed by the authors.

As shown in Table 1, the most cited author is Wakefield M.A., which has the only 1 article with 776 citations; Schreiber G.B. has 549 citations for 9 articles, Masser B.M. has 288 citations for 14 articles, France C.R. has 267 citations for 15 articles, and De Kort Wlam has 223 citations for 9 articles.

There are two methods of studying the impact of articles on the research area. The first method studies the total number of citations obtained in the article. However, articles published in recent years have fewer years to accumulate citations due to the shorter time between publication and measurement; therefore, the ranking is dominated by older articles. The second method is used when the number of citations per year is used to compare articles. Therefore, the authors evaluated each of the 262 articles by the total number of citations and the number of citations per year.

The most cited are 10 articles. They are published in the «Lancet» (Wakefield) – 776 citations, «Transfusion» – 563 citations for 5 articles, «Transfusion Medicine Reviews» 383 citations for 3 articles together, «Vox Sanguinis» – 195 citations for 2 articles.

2 articles were published in 2010–2011, most of them in 2002–2007. The oldest article was published in 2002.

4 of the 10 most cited articles were published in the journal «Transfusion». Another 3 of this list are posted in «Transfusion Medicine Reviews», 2 articles in «Vox Sanguinis» and 1 in «Lancet». And none of the articles "Transfusion Medicine", "Transfusion and Apheresis Science" and "Transfusion Clinique et Biologique" were included in this sample, although they published a total of 50 articles.

Besides, the authors used the year 2020 as the reference year for counting references and divided the total number of citations by the age of the article (the number of years between the year in which the article was published and 2020).

In the Table 2 is shown the number of citations per year for the top 10 articles.

Table 2. Articles with the highest average citation rate

Author	Magazine	Year	Citations, pcs.	Average citation rate, pcs.
Wakefield Melanie A.	Lancet	2010	776	70,55
Bednall Timothy C.	Transfusion Medicine Reviews	2011	127	12,7
Sojka B. Nilsson	Vox Sanguinis	2008	109	8,36
Lemmens K.P.H.	Transfusion	2005	132	8,25
Masser Barbara M.	Transfusion Medicine Reviews	2008	107	8,23
Gillespie T. W.	Transfusion Medicine Reviews	2002	149	7,84
Glynn S. A.	Transfusion	2002	143	7,53
Bednall Timothy C.	Social Science & Medicine	2013	59	7,38
Godin Gaston	Transfusion	2007	91	6,5
Newman Bruce H.	Transfusion	2006	97	6,48

Sources: developed by the authors.

These results have some necessary consequences. 2 of the 10 most cited articles were published in Transfusion Medicine Reviews. Looking at the combination of two methods and articles, 9 articles are common to both lists. An article published in 2013 with high average citation rate of 7.38 also was included in the second group. Both groups have journals «Transfusion», «Vox Sanguinis», «Transfusion Medicine Reviews» and «Lancet».

Hierarchical cluster analysis. The second task of this study is to study and identify marketing clusters in the blood service. One analyzed the keywords in the publications. The authors used hierarchical cluster analysis to understand the subdomains of blood service marketing research. The following clusters were identified: recruiting and retention strategies, impact and incentives for planned behavior, and decision-making about donation. The authors described the clusters obtained as a result of hierarchical cluster analysis (Figure 3).
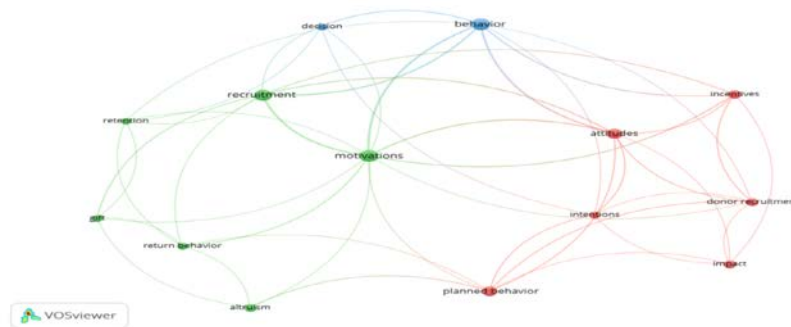

Figure 3. Marketing clusters in the service of blood

Sources: developed by the authors.

Cluster 1: Recruirmant and retention donors strategies. Cluster 1 consists of articles that provide a review of the components of marketing communications to recruit and retain blood donors. The central focus of the articles in this cluster is the use of various communication tools in the blood service: direct marketing, advertising, personal selling, sales promotion and public relations.

Direct marketing: it was explored the prospects of using mobile applications in the blood service (Yuan et al., 2016), tele-recruitment to attract donors (Agrawal and Tiwari, 2014), using WhatsApp to communicate with donors (Rodrigues et al., 2018), e-mail messages (Bachegowda et al., 2017), thank

you text message (Moussaoui et al., 2019), the role of SMS messages to novice donors (Gemelli et al., 2018), the effectiveness of letters and reminders over the phone (Hashemi et al., 2019), the best ways to use telemarketing, the Internet, e-mail, social media, text messaging, education, and motivating donors to retain them.

Advertising: it was explored the use of posters (Lefrère and Danic, 2012) and postage stamps (Lefrère and Danic, 2010), social media in motivation and recruitment of blood donors (Sumnig et al., 2018), the use of radio advertising to stimulate donation (Martin-Santana et al., 2018), ringtones on a mobile phone to promote donation (Appiah et al., 2018), use of Facebook (Rodrigues et al., 2018), donor management through online media (Aravindakshan et al., 2015).

Personal sale: it was studied the impact of motivational interviews on donor retention (France et al., 2017), the effectiveness of motivational interviews over the Internet (France and France, 2018), the role of interpersonal communication to promote donation (Abril, 2016).

Sales promotion: it was investigated the effectiveness of the donation promotion strategy, where the main idea is health testing (Leipnitz et al., 2018), donor examination as a tool for incentives (van Dongen et al., 2013), the implementation of loyalty programs for donor retention(Greffin et al., 2018), the effect of small gifts (Garbarino et al., 2013).

Public relations: it was investigated the use of Donor Day to attract new donors (Kranenburg et al., 2017).

5 articles are devoted to donor segmentation. It was investigated the effectiveness of working with different donor segments to obtain the required amount of blood (Sun et al., 2016); other authors segmented donors according to barriers (Romero-Dominguez et al., 2019).

Thus, one can single out several groups of topics on which research was conducted on marketing in the blood service.

Cluster 2: Impact and incentives for planned behavior. This cluster consists of articles that explore the factors influencing the return and continuation of donation, behavioral factors for different parameters, factors influencing certain groups of the population, causal relationships between blood donation and specific factors, as well as articles that explore different motivational factors, the effectiveness of the motivational interview and the motivation of individual segments that motivate donors to donate blood.

Various scientists studied internal and external influences. It was studied the external, internal factors influencing the behavior of donors (Aldamiz-Echevarria and Aguirre-Garcia, 2014), the role of fear, and the reference group for individual propensity to donate blood (Barboza and da Costa, 2014).

It was analyzed the factors that are important for donors who have not donated blood for 2 years (Godin et al., 2014), the factors influencing participation in blood donation among Italian nursing students (Cicolini et al., 2019), the causal relationship between perceptions of blood donation and expectations of bank services by demographics (Saha and Chandra, 2016).

It was analyzed what contributes to blood donation and collaboration between nurses and donors (Dupin et al., 2019).

Many scientists has been studied what motivates people to donate blood: the relationship between motivational factors as altruism, selfish interest and response to direct appeal and social capital (Goncalez et al., 2013), the internal motives of donors (France et al., 2017), motives for blood donation and assessed the ability of current donors to motivate others (Martín-Santana and Beerli-Palacio, 2013). what influences donor motivation and self-motivation (Tan and Yong, 2011), the perception of quality for satisfaction and intention to return (Martín-Santana and Beerli-Palacio, 2012), and the role of altruism among students (Henriques and Quintal, 2019).

It was studied motivational online interviews (Livitz et al., 2019) and the effectiveness of a personal motivational interview to increase internal motivation and intentions to donate blood (Livitz et al., 2017).

It was investigated the motivation of certain groups of the population, such as youth and young men.

It was identified demotivating young men to be donors (Ohrner et al., 2018), the effect of temporary withdrawal from the donation, and the experience of donation on the return to donation (Spekman et al., 2019).

Cluster 3: Decision-making about donation. This cluster consists of 9 articles about implementing marketing programs in the blood service and 9 articles about the application of various strategies and arguments in advertising campaigns.

It was described the experience of promoting blood donation in Serbia (Srzentic et al., 2015), strategies and techniques in the field of blood donation in France (Pesavento and Begue, 2011), voluntary blood donation programs in Trinidad and Tobago (Charles et al., 2019), the strategies of marketing companies in Brazil (Shigaki et al., 2019), tools for attracting and retaining donors in China and Canadian clinics (Smith et al., 2013)

It was proposed strategies for agencies involved in promoting blood donation. It was studied strategies for attracting new donors (Giacomini et al., 2010), current strategies for attracting and retaining blood donors(Carter et al., 2011), the application of the concept of social marketing in the service of blood (Agrawal, 2016).

It was investigated the effect of emergencies in direct marketing campaigns (Shehu et al., 2013), culturally oriented online interventions to stimulate blood donation in blacks (Robbins et al., 2015).

Content analysis and visualization. The third task of the research is content analysis and visualization of scientific literature on marketing activities in the blood service. The authors applied content analysis to the annotations of 262 articles.

The study describes twenty years as appropriate for understanding the changes taking place in the literature. The content analysis helps identify unstructured ontologies and conceptual representations using words in a selected set of articles.

Thus, the data were divided into four time periods: 2000–2004 (11 articles), 2005–2009 (49 articles), 2010–2014 (83 articles), 2015–2019 (118 articles). This analysis helps to identify the main trends in marketing in the blood service.

2000–2004: understanding donor behavior to develop engagement and retention strategies. During this period, only 11 works about marketing in the blood service were published. The most works in that period focused on recruitment and retention of donors, managing behavior, gifts, altruism, promotion strategies. In 5 articles, it focuses on the marketing approach used in the blood service to recruit and retain donors (Schaffler et al., 2003; Kong, 2004). Other authors analyze what affects the donor and motivate blood donation (Figure 4).
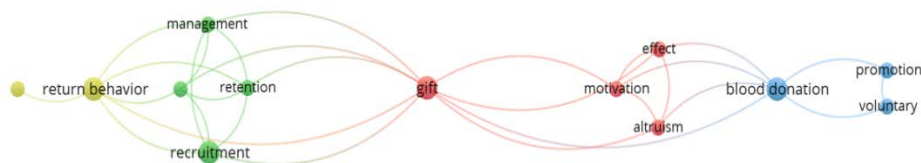

Figure 4. Areas of research in 2000–2004
Sources: developed by the authors.

2005–2009: finding ways to attract new donors. In the period 2005-2009, 49 articles were published. They focused on people's behavior to engage in donation, decision-making to retain them, motivation, and behavioral factors to attract new donors.

Twenty-seven works are devoted to the analysis of recruitment of new donors, maintenance of existing, separate marketing tools in strategies of the advancement of donation. In 22 articles, the behavior

of potential and existing donors, their motivation, knowledge, and attitude to donation is studied, a portrait of the donor is made. The largest number of highly cited articles (more than 50 citations) was devoted to analyzing donor behavior. It was identified which motivational and socio-demographic factors are essential for a voluntary unpaid blood donor (Misje et al., 2005), analyzed the beliefs and motivations of Canadian blood donors (Hupfer et al., 2005; Newman et al., 2006). It was identified as the main intention to become a blood donor among students, including self-efficacy, attitude, personal morality for blood donation, and subjective norm (Lemmens et al., 2005). It was studied attitudes toward blood donation in several groups in the city of Western China (Zaller et al., 2005).

It was identified factors that motivate different racial and ethnic groups to donate and what is crucial for donor recruitment and retention (Glynn et al., 2006). It was identified factors that ensure blood donation among experienced and new donors (Godin et al., 2007). It was reviewed the scientific literature on the recruitment and retention of blood donors with an emphasis on theory, intervention, and integration (Ferguson et al., 2007). It was examined public perceptions of the risks of donation and identified factors that would motivate more people in Greece to donate blood regularly (Marantidou et al., 2007). It was analyzed what is best used to create altruistic behavior, empathy, and assess the motivation for social responsibility for each donor (Steele et al., 2008). It was studied the motives for donating blood, as well as the difficulties and obstacles associated with donating blood, as perceived by the donors themselves (Sojka and Sojka, 2008), analyzed the behavior of donors (Schlumpf et al., 2008), and examined the demographic profile of former active donors compared to random donors (Veldhuizen et al., 2009).

2010–2014: marketing tools for working with donors. In the period 2010–2014, 83 articles were published. They focus on using various marketing communication tools, the experience of successful marketing campaigns, and analysis of the behavior and motivation of donors.

The works of various authors analyze the tools of marketing communications used in the blood service: the influence of questionnaires (van Dongen et al., 2013), gifts (Garbarino et al., 2013), text messages (Saleem et al., 2014), television recruitment (Agrawal and Tiwari, 2014). Also describe the experience of successful recruitment of donors in India (Siromani et al., 2012), other authors consider the use of emergencies in donor engagement strategies (Shehu et al., 2013), analyze the role of communications and social networks in the blood service of Canada (Smith et al., 2013), study tools for donor involvement and retention in China.

Donor segmentation studies are emerging for the first time.

2015–2019: focus on donor retention and the use of modern marketing communication tools. Most of the articles are devoted to modern marketing tools in the service of blood (Figure 5): Internet media (Aravindakshan et al., 2015), mobile applications (Yuan et al., 2016), interpersonal communications (**Abril**, 2016), motivational interview (France et al., 2017), e-mail (Bachegowda et al., 2017), Donor Day (Kranenburg et al., 2017), social networks (Sumnig et al., 2018), radio (Sumnig et al., 2018), mobile melodies (Appiah et al., 2018), motivational interview (France and France, 2018), WhatsApp (Rodrigues et al., 2019), text messages (Gemelli, 2018; Moussaoui et al., 2019), loyalty programs (Greffin, 2018), tools for attracting new donors (Senaldi, 2019) and retaining existing ones (Leipnitz et al., 2018; Hashemi et al., 2019).
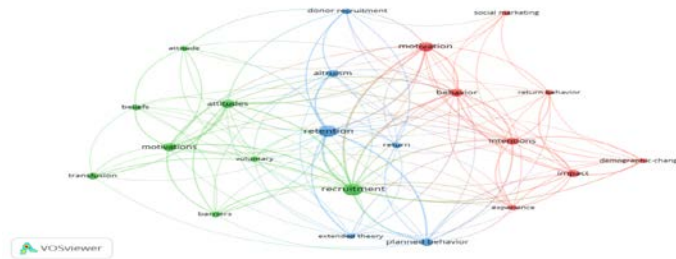
Figure 5. Areas of research in 2015–2019
Sources: developed by the authors.

The number of studies has increased and focused on the analysis of factors influencing donors. Donor motivation is described in 9 publications, 7 articles consider marketing strategies in the blood service, the number of articles on donor segmentation has increased, 2 studies in Brazil examine the focus of donation campaigns.

In summary, this period demonstrates maturity in the thematic area. It focuses on increasing the effectiveness of marketing tools using in the blood service and understanding donor behavior.

Research directions. One of the key objectives of this study was to identify areas for future research. 118 articles were published from 2015 to 2019. They show current research on marketing in the blood service. One hundred eighteen articles published in the last five years, compared to 83 articles in the last 5 years, offer a broader perspective. There are three main areas of research: the use of modern marketing communication tools in the blood service and increase their effectiveness, analysis of donor's behavior and motivation, segmentation, and work with individual target segments. It indicates a more in-depth study of the topics. The most important direction in the research articles has identified modern marketing communication tools in the blood service. It is studied how to use it effectively the modern tools to attract new and retain existing donors: social networks, ringtones on mobile phones, messengers, mobile applications, and traditional tools: radio, brochures, videos, SMS-messages, motivational interviews, and loyalty programs.

It is analyzed donor's behavior and motivation to understand what influencing tools are best to use for potential and existing donors, how to interact with donors to be loyal, how to increase blood donation and blood safety. Another area that is gradually evolving is the segmentation of donors and the improvement of work with individual target segments. The authors of the articles propose to segment donors and non-donors according to specific characteristics and to develop a differentiated marketing complex for each target group.

Conclusions. The purpose of this work was to research marketing activity in the blood service. It is the first study that has provided a broad and comprehensive review of the literature on this introduction.

The authors reviewed the relevant literature published from 2000 to 2019 using citation analysis, hierarchical cluster analysis, and textual content analysis in chronology. Four main conclusions are made.

First, the influence of authors, articles about marketing activities in the blood service was determined. The most popular journals are «Transfusion», «Vox Sanguinis» and «Transfusion Medicine Reviews». The most popular authors of articles are Wakefield M.A., Gillespie T.W., Glynn S.A., Lemmens K.P.H., Bednall T.C., Sojka B.N., Masser B.M. Also, it was determined that most of the articles were published by researchers from the USA, Australia, the Netherlands, England and Canada. At the same time, in some regions, including Ukraine, this topic is poorly studied.

Second, this study identified 3 key marketing clusters in the service of blood using hierarchical cluster analysis: recruitment and retention strategies, influence, and incentives for planned behavior, decision-

making about donation). These clusters are the basis for promoting the idea of free voluntary blood donation through marketing tools. This category requires a more detailed review of the literature on the subject.

Third, this study analyzes the texts of articles in chronology over 20 years, each five-year study of the following issues: understanding donor behavior to develop engagement and retention strategies, finding ways to attract new donors, marketing tools for working with donors, focus on donor retention and the use of modern marketing communication tools.

Literature published in the first period covers the behavior of donors. Most research focuses on donor engagement and retention, behavior management, gift, altruism, and promotion strategies.

The literature of the next period focuses on finding ways to attract new donors. In the works of this period, much attention is focused on the people's behavior to attract donors, decision-making for their use, motivation, and behavioral factors to attract new donors.

Later, marketing tools for working with donors, experience in conducting successful marketing campaigns, and analysis of donor behavior and motivation began to be studied in more detail.

In the last 5 years, the focus has shifted to donor retention and modern marketing communication tools. In summary, this period demonstrates maturity in the thematic area. It focuses on increasing the effectiveness of marketing tools using in the blood service and understanding donor behavior. Some articles focus on specific segments of donors and differentiated marketing strategies for working with them.

Finally, future directions of research were determined by analyzing the texts of 118 articles published during the period from 2015 to 2019: the use of modern marketing communication tools in the blood service and increase their effectiveness, analysis of donor's behavior and motivation, segmentation, and work with individual target segments. It is advisable to focus on using modern marketing communication tools (messengers, mobile applications, etc.), analyze donor's behavior and motivation, donor's segmentation, and improvement of work with individual target segments. The authors hope that the article will become an impetus for further research in this area.

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Аналіз маркетингової діяльності в служі крові: бібліометричний аналіз

Стаття узагальнює аргументи та контраргументи в рамках наукової дискусії з питання маркетингової діяльності в служі крові протягом останніх 20 років. Основною метою проведеного дослідження є зрозуміти зміст та особливості існуючих досліджень у галузі маркетингу служби крові, щоб визначити напрямок майбутніх досліджень як для вчених, так і для практиків. Систематизація літературних джерел та підходів до вирішення проблеми маркетингу в служі крові свідчить про те, що велика кількість досліджень у цій галузі за останні 20 років потребує синтезу існуючих досліджень. Актуальність вирішення цієї наукової проблеми полягає в тому, що одним із критеріїв рівня здоров'я населення країни є наявність достатньої кількості донорів крові. Маркетингова діяльність служби крові дозволяє залучити та утримати необхідну кількість донорів та отримати від них достатню кількість крові та її компонентів. Дослідження теми маркетингової діяльності служби крові в статті проводиться в такій логічній послідовності: було визначено вплив авторів, журналів та статей щодо маркетингової діяльності в служі крові, вивчено та виявлено маркетингові кластери в служі крові, проведено аналіз змісту та представлено візуалізацію наукової літератури щодо маркетингової діяльності у служі крові. До уваги брався часовий проміжок 2000-2019 рр. Об'єктом дослідження обрані 262 статті, опубліковані в 25 журналах упродовж 2000–2019 рр., оскільки саме вони пояснюють суть маркетингової діяльності у закладах служби крові. У статті представлені результати емпіричного аналізу публікацій про маркетинг у служі крові впродовж останніх 20 років, які показали, що найбільш впливовими журналами були Transfusion, Vox Sanguinis та Transfusion Medicine Reviews. Найпопулярнішими є автори Wakefield M.A., Gillespie T.W., Glynn S.A., Lemmens K.P.H., Bednall T.C., Sojka B.N., Masser B.M. Класифіковано літературу з маркетингу в служі крові за такими напрямками: стратегії залучення та утримання, фактори впливу на стимулювання донорів, ухвалення рішень щодо донорства. Кожен п'ятирічний період охоплює дослідження у таких сферах: розуміння поведінки донорів для розроблення стратегій залучення та утримання, пошук шляхів залучення нових донорів, маркетингові інструменти для роботи з донорами, фокус на утриманні донорів та використанні сучасних інструментів маркетингових комунікацій. Дослідження емпірично підтверджує та теоретично доводить, що доцільно зосередити увагу на впровадженні сучасних інструментів маркетингових комунікацій (месенджерів, мобільних додатків, мелодій на мобільні телефони, соціальних мереж) у

поєднанні з традиційними (радіо, брошури, відео, SMS-повідомлення, мотиваційні інтерв'ю та програми лояльності). Також рекомендується зосереджувати увагу на формуванні лояльності існуючих донорів, щоб збільшити кількість зданої крові не за рахунок збільшення кількості донорів, а шляхом підвищення якості донорів та безпеки крові. Результати дослідження можуть бути корисними для служб крові та компаній, які займаються просуванням безоплатного добровільного донорства.

Ключові слова: донор крові, залучення, маркетинг, маркетингова діяльність, мотивація, просування, служба крові, утримання.