

# Electronic Encyclopaedia Slavica Sanctorum: Report on the Tendencies of Use

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**Abstract.** The article offers an annual report on the activities of the users of the electronic Encyclopaedia Slavica Sanctorum (<http://www.eslavsanct.net>), an online multimedia digital library of Bulgarian written, oral, and visual materials concerning the Orthodox Christian calendar and sainthood. The report is based on statistical data about the actions of the library users and outlines the main tendencies in the use of the database.

**Keywords:** Digital Libraries, Electronic Encyclopaedia, Christian Calendar, Saints, Machine-Generated Traffic.

## 1 Introduction

The electronic Encyclopaedia Slavica Sanctorum (henceforth – e-ESS) has been available online at <http://www.eslavsanct.net> since June 2011 (see [1], [5], [6], [7]). This platform is a calendar-oriented multimedia resource aiming at representing the reception of the Christian saints' cults and the Orthodox Christian tradition among Bulgarians since the Middle Ages to the present day. It was developed within the frames of the joint research project Saints and Holy Places in Bulgaria: Encyclopaedia Slavica Sanctorum (in Electronic and Gutenberg Versions) between St Kliment Ohridski University of Sofia (Faculty of Slavic Philologies) and the Institute of Literature, Bulgarian Academy of Sciences (Department of Old Bulgarian Literature), supported by the Bulgarian Science Fund (project DDVU 02/68 (2010)). The e-ESS hosts highly-structured information supplied with various search options (see [1], [5], [6]). It is addressed to a wide range of users: specialists in mediaeval studies and theology, specialists in folk studies and anthropology, museum research staff and curators, librarians, academic staff and students, Christian believers, and the general public.

Currently, the e-ESS contains a concourse of 992 Christian calendar entries (also called commemorations or sanctoremes): 96 names of feasts and 896 names of a saint or of a group of saints commemorated on a particular date. These commemorations are collected from 67 mediaeval Slavonic manuscripts and printed books. So far, 64 of these entries have been supplied with scholarly articles on the cults' history. As a

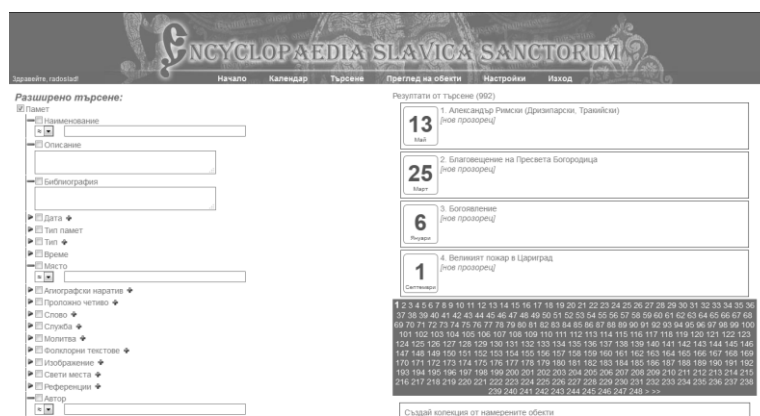
rule, each article is supplemented by texts of primary sources in downloadable files of doc- or pdf-format. These include literary works in Old Bulgarian or in Modern Bulgarian translation (19 vitae, 44 synaxarion readings, 9 homilies, 49 services, and 1 prayer), as well as 161 deciphered records of folklore materials (for more details on the anthology contents and sources, see [1], [5], and [6]). Some articles contain photographs of corresponding art or architectural objects. In addition, the e-ESS has been gradually interconnected with the Bulgarian Iconographical Digital Library (<http://bidl.cc.bas.bg>) as the both libraries share a common knowledge domain and are built up according to an identical model of a multimedia digital library of cultural heritage (see [2], [3], [4], [8]).

**Fig. 1.** General view of an e-ESS article (SS Cyprian and Justina, commemorated on the 2nd of October and on the 26th of September)

**Fig. 2.** General view of the e-ESS in its 'calendar' search model

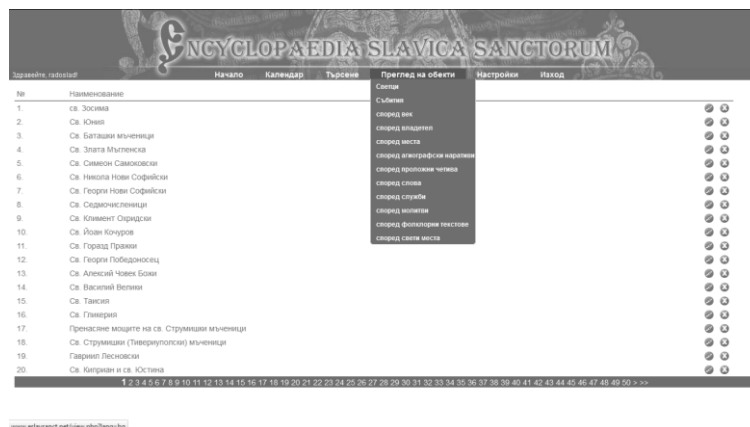
The anthology of articles and of written primary sources has being compiled by a team of philologists, mainly from the University of Sofia and from the Institute of Literature, and the folklore materials have being supplied by the archives of the Ongal Association of Anthropology, Ethnology and Folklore Studies (<http://www.ongal.net/>). The project team was also responsible for the specification of the data structures, while the very software architecture of the database was developed by a team of specialist from the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences. The platform is built up by means of the technologies PHP, MySQL and HTML, JavaScript, and the client-side CSS (see [1]).

The e-ESS offers three different ways of search: by date ('calendar' mode, Fig.2), by parameter or combination of parameters ('view object' mode, Fig.3), and by ready-made list of objects ('view objects' mode, Fig.4).



**Fig. 3.** General view of the e-ESS in its 'view object' search mode

The heterogeneous nature of this multimedia product which represents in critical scholarly light both, the written and the oral tradition of Bulgarian reception of the Christian sainthood, together with the offered online searchability, make it differ from the other Internet available resources covering the same field (see [1] and [5]). Thus, it is much more advanced and richer than the experimental Hagiology and Pagan Believes database (<http://slovo-aso.cl.bas.bg/hagiology/start.html>) developed previously by members of the e-ESS research team (within the frames of the project No. OXH 1305/2003, supported by the Bulgarian Science Fund). On the other hand, the e-ESS definitely complements web portals of religious contents, such as the Bulgarian Orthodox Internet Catalog Provoslaviето.com (<http://www.pravoslaviето.com/1/calendar.htm>), and, beyond doubt, it is much more reliable as an authoritative provider of information than some popular Internet reference resources, like the free-content Wiki encyclopaedias – for instance, the Dveri Encyclopaedia (<http://bg.orthodoxwiki.org/>), which is the Bulgarian portal within the OrthodoxWiki network (<http://orthodoxwiki.org/>).

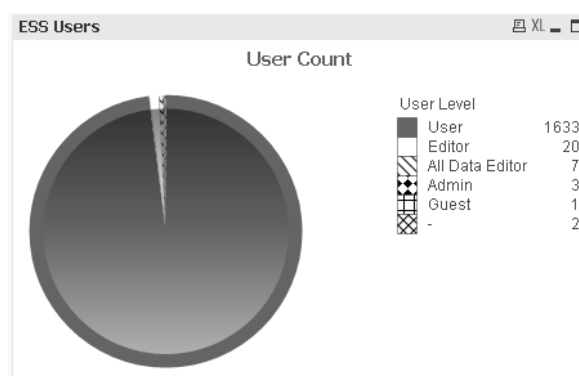


**Fig. 4.** General view of the e-ESS in its 'view objects' search mode

The present paper offers the third in a roll annual report on the e-ESS use based on statistical data collected by means of the QlikView, a business intelligence software for content and access analysis (see the previous reports in [6] and [7]).

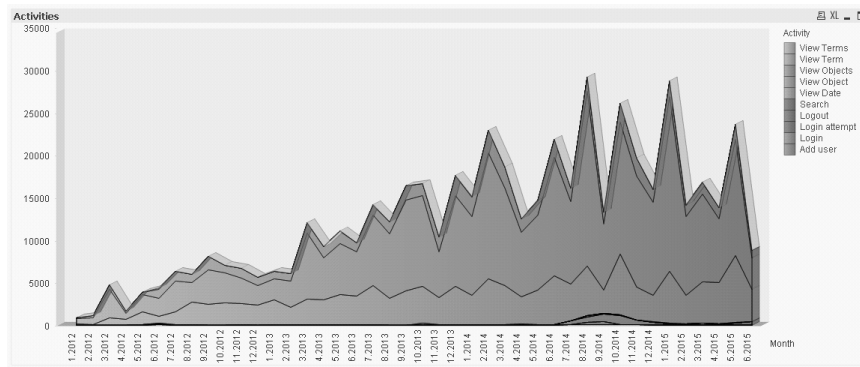
## 2 Users and User Activities

There are two types of e-ESS users: 1) guests who can only browse the database in 'calendar' and 'view objects' mode and have no access to the files of the primary sources and the images, and 2) registered users who can explore the whole available material and to use all the search options. The current number of the latter group is 1633 (see Fig.5) and it is a significant figure considering the fact that the product is more sophisticated than the rest of the online reference resources in the same field and that it is meant for Bulgarian speaking audience only. Moreover, the statistics reveals a substantial increase in the interest towards the database, as the user count for the same time in the previous year shows 471 registrations (see [7]).



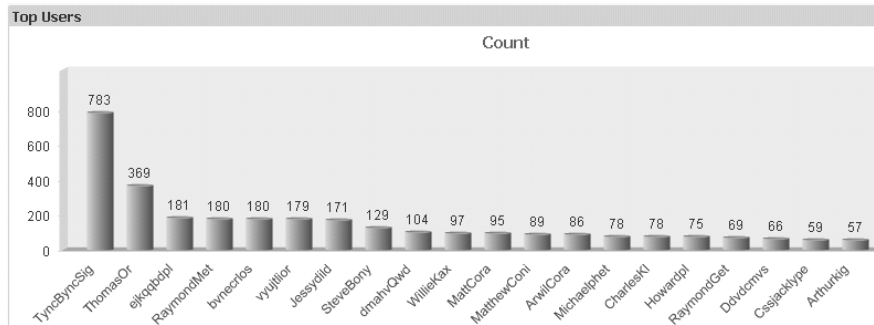
**Fig. 5.** Registered users by June 2015

The tendency of steady increase in the database use from January 2012 to June 2015 is confirmed by the count of user activity represented by the diagram on Fig.6. One could conclude that the diagram peaks coincide with the months in which the greater Christian feasts took place and that, therefore, the demand for information was brisk due to the activity of casual visitors rather than the activity of regular registered users.



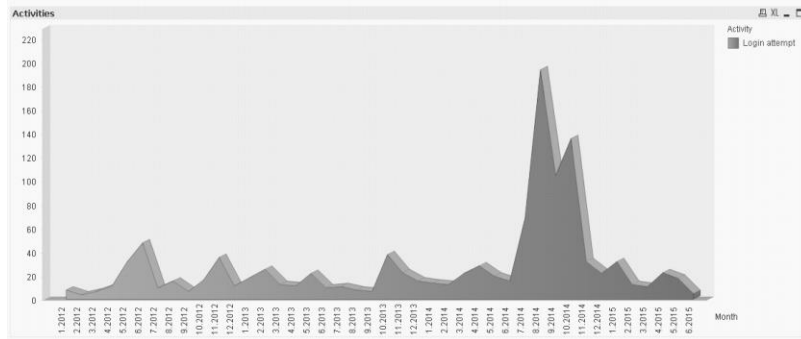
**Fig. 6.** User activity by month, from January 2012 to June 2015

Yet another interesting tendency is that the e-ESS has become attractive to numerous web robots, most common of which are shown by the following diagram (Fig.7).

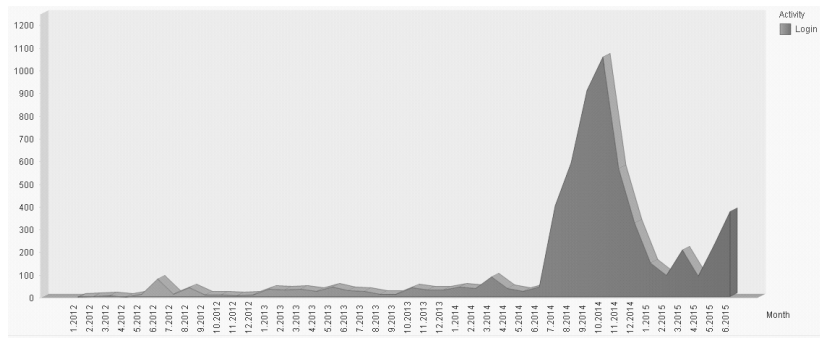


**Fig. 7.** Most common web robots that have entered the e-ESS

The analysis of the machine-generated traffic reveals that the most massive attacks happened between June 2014 and December 2014 (Fig.8 and Fig.9). The peaks in the activity of robots that attempted to enter the e-ESS were in August 2014 and November 2014 (Fig. 8) and the greatest number of successful logons by robots was again in November 2014 (1100 visits in total, see Fig. 9). While the latter number does not influence the count of the real registered users (see Fig. 5), the data about the robot activity affects the statistics of the actual overall traffic and should be taken in account, especially for the peak of November 2014.

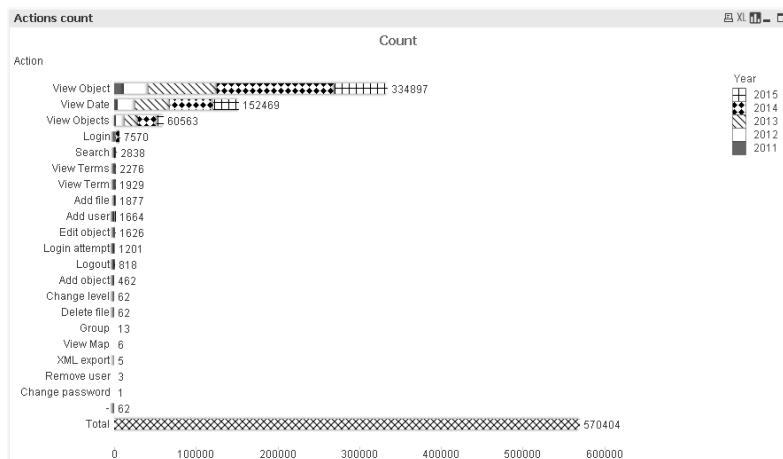


**Fig. 8.** Web robots' failed attempts at entering the e-ESS and at registration as users from January 2012 to June 2015



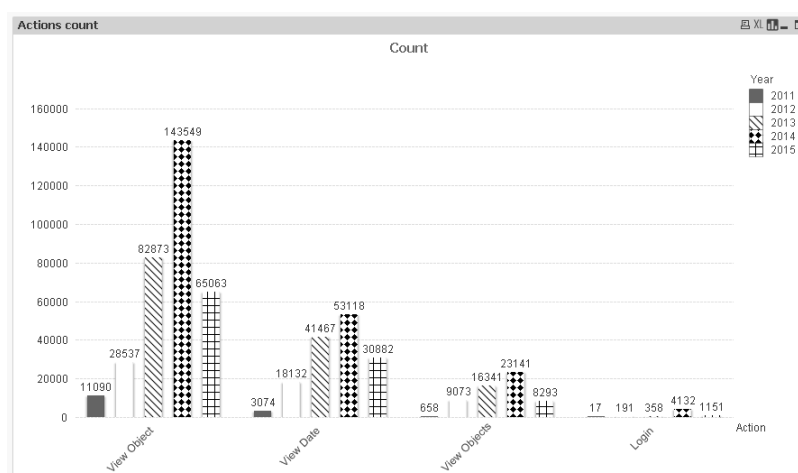
**Fig. 9.** Activity of web robots that entered the e-ESS from January 2012 to June 2015

### 3 Most Common Actions



**Fig. 10.** Frequency of actions

The statistics on the whole range of actions that have been conducted within the e-ESS since its release in 2011 (see Fig. 10) presents an acute prevalence of single question enquires (see actions ‘view object,’ ‘view date,’ and ‘view objects’) and, together with the data on the log-on activity, suggests that the predominant user profile is the one of an ordinary non-professional guest who seeks information about a particular Christian saint or about a particular date.



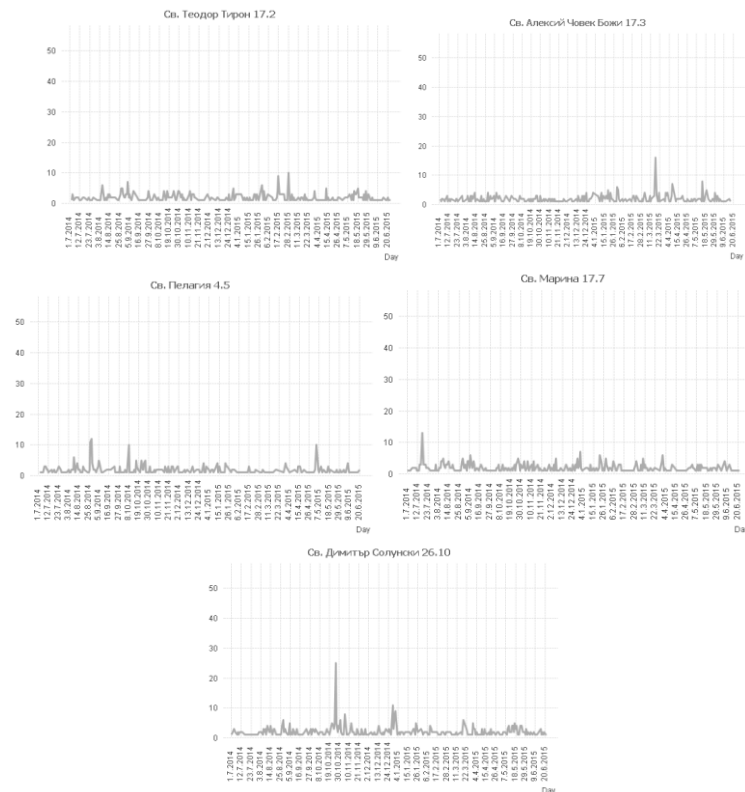
**Fig. 11.** Diagram of most common actions by year

A more detailed analysis on the three most common actions undertaken by guest users and by registered users (‘view object,’ ‘view date,’ and ‘view objects’) manifests that the number of actions doubles each year (see Fig.11). The significant dynamics in this particular area of search once again proves the necessity of the e-ESS and of other similar products and shows that such specialised resources, that can equally serve professionals as well as broader Bulgarian speaking audience, are on great demand.

This tendency is confirmed by data from an interrogation on the visit frequency for the period of July 2014 – June 2015 concerning the e-ESS information on randomly selected saints (see Fig.12). The query includes: 1) some most popular saints, such as St Theodore Teron who is commemorated on the 17th of February and St Demetrios of Thessaloniki who is commemorated on the 26th of October, 2) saints who are less popular, such as St Alexios the Man of God (commemorated on the 17th of March) and St Pelagia (commemorated on the 4th of May), as well as 3) St Marina/Margaret who is commemorated on the 17th of July and whose cult has proven to be very popular in Bulgarian oral tradition, despite the fact that her commemoration has never been of a high rank in the official calendar of the Church.

The sequence of diagrams in Fig. 12 reveals clearly that the time of search coincided with the date of the commemorated saint. Especially interesting is the case of the search on St Theodore Teron. The diagram has two peaks: on the 17th of February, which is the fixed date of his commemoration, as well as on the 28th of the same month when the movable feast of the saint happened to fall in 2015. The latter always

coincides with the great movable feast of the First Saturday of the Holy Lent and has always been very popular in the folklore tradition. It is widely known as Todorovden ('the Feast of Todor') when Bulgarians who bear names that are derivatives of Teodor/Todor celebrate their so-called 'name day', or as Konski velikden ('Hourse Easter') called like this because of the usual horse racings that take place as part of the folk festival on that day. The great popularity of this festive day allows for the conclusion that the e-ESS users are in need of gaining more information on this kind of feasts.



**Fig. 12.** Search frequency concerning the e-ESS information about some popular saints and about some less popular saints (July 2014 – June 2014)

### 3.1 Most frequently viewed/read articles

Similar trend in the e-ESS user predispositions in searching of extraneous information on popular Christian cults that are otherwise scarcely described in the known online reference sources is demonstrated by the diagrams of the most-viewed e-ESS articles over the past two years (Fig.13 and 14).



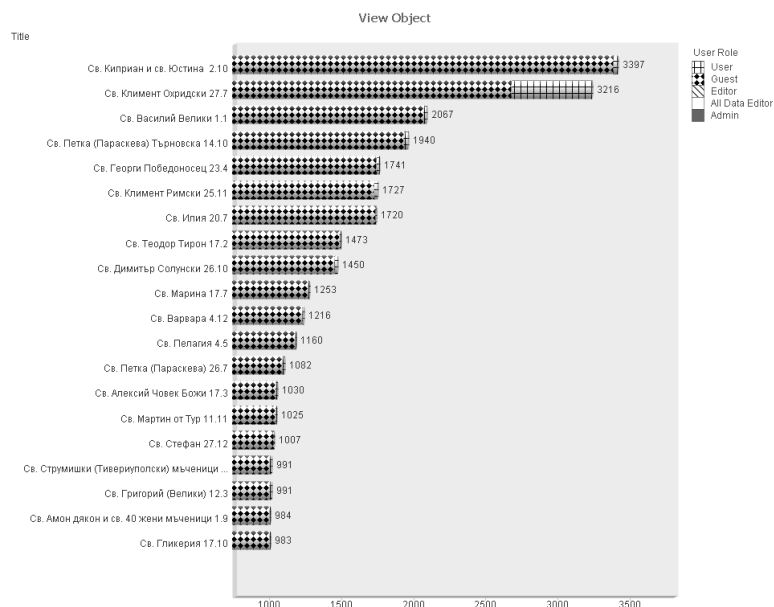


Fig. 13. Most viewed articles for the period of July 2014 – June 2015

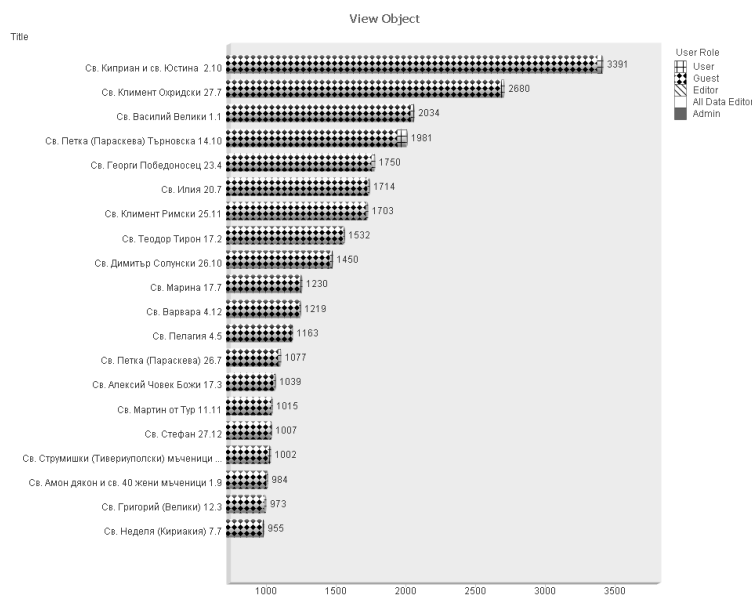


Fig. 14. Most viewed articles for the period of July 2013 – June 2014

One can observe that the article on the cult of SS Cyprian and Justina (2 November) gains with a striking steadiness the first place during the both studied periods thanks to the interest shown by the e-ESS guests' side. And it is surprising enough for these

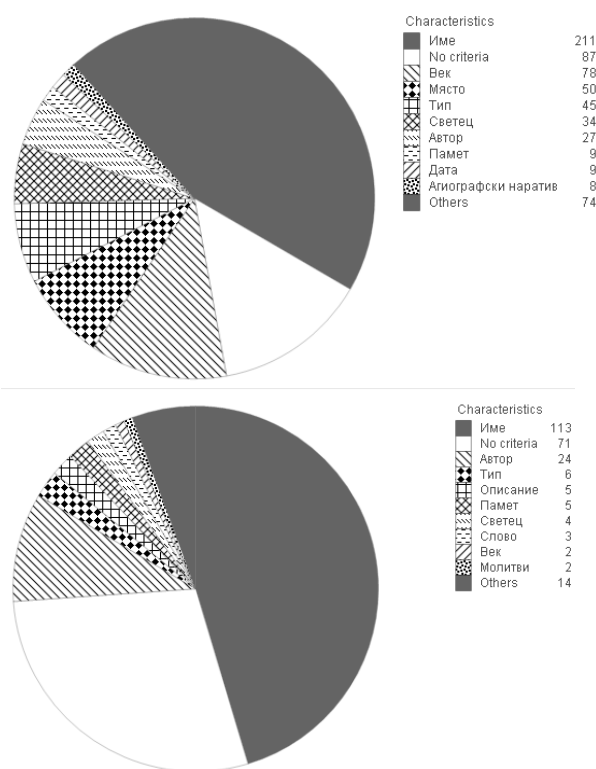
two saints are not as popular as the saints who immediately follow them down the diagrams: such as St Kliment of Okhrid known as Bulgarian enlightener and wonderworker, St Paraskeve (Petka) of Tŭrnovo, a wonderworker who is one of the saint patrons of Bulgarians, or such as St Basil the Great, St George, St Theodore Teron, St Demetrios of Thessaloniki, and St Elijah who are among the most venerated saints in the Orthodox Christianity and whose names are most common with Bulgarians. The unusual popularity of SS Cyprian and Justina among the e-ESS guest users, together with the great interest towards the article for St Basil the Great which was the second popular till June 2014, could indeed be explained by the saints' reputation of being protectors against evil spirits (see [7]). In addition to this explanation it could be also said that the unusual interest in St Cyprian and Justina may be due to the fact that there is a widespread ritual of Reading the Prayers of St Cyprian against the evil of the magic and against evil eyes, which rite is conducted in numerous Orthodox churches in Bulgaria and attracts many believers. The very text of the rite is not included in the official Prayer books and contains some prayers of quasi-canonical nature. However, the widespread practice of its execution implies that the Bulgarian Orthodox Church tolerates it in attempt to deal with the traditionally strong superstitions spread among the parish people and to prevent Orthodox Christians from addressing the services of various fortune-tellers, healers, magicians, etc. Similar explanation could be given to the great interest shown by the e-ESS users towards the article on the St Basil the Great, for his name is also associated with exorcismal prayers against demons. These prayers are also very popular, although they are prescribed for reading by a priest over a believer when appropriate, while the rite of St Cyprian's prayers is conducted on a fixed week day and could be attended by a group of believers. In any case, the coincidence between the great popularity of exorcism practices involving the names of St. Cyprian and St. Basil the Grate and the high rate of visits to the e-ESS articles about these saints allow the assumption that the e-ESS has been sought by members of the wider public as a possible authoritative reference source.

The second most read article during the both periods of study is the one on St Kliment of Okhrid. In contrast to the case of the most popular encyclopaedia entry as well as to the rest of the studied entries, this one is associated with a growth in the interest towards it among the registered users. The phenomenon could be explained by variety of reasons, including casual events, like forthcoming scholarly conferences dedicated to the saint, or an increasing use of the e-ESS as a recommended reference source within the academic circles, as he is among the prominent mediaeval writers whose works are studied in main university courses. Whatever the explanation may be, the case proves the fact that the e-ESS is considered to be a reliable information provider by users with special interests in the field.

### **3.2 Most preferred search criteria**

In general, the diagrams of Fig. 13 and Fig. 14 demonstrate that the dynamics in viewing/reading particular articles does not change significantly and that the range of consulted encyclopaedia entries in fact remains one and the same. However, that is not the case with the dynamics which is observed in the user search preferences (Fig.

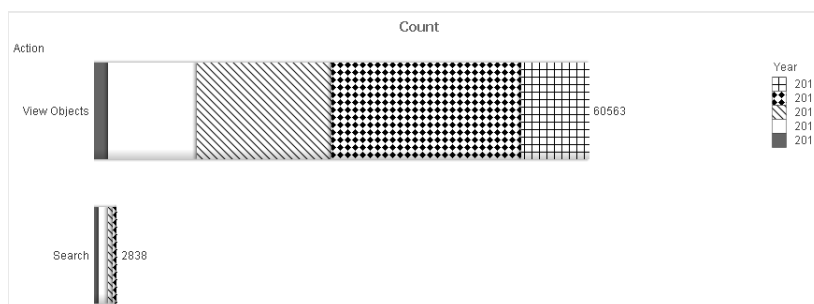
15). A comparison between the two diagrams, representing the browsing activity in the periods of July 2013 – June 2014 and of July 2014 – June 2015, respectively, clearly shows that there was a tangible increase in the percentage of the search ‘by name’ and ‘by date’ (or with ‘no criteria’, i.e. in the ‘calendar’ search mode) and a decrease in the search ‘by century,’ ‘by saint,’ and ‘by type.’ In other words, over the last couple of years there have been a significant growth in the percentage of the single question enquiries and a reciprocal decrease in the complex and more specialised search. This conclusion, once again, suggests that the e-ESS gains in popularity with non-specialist in the field of hagiology.



**Fig. 15.** Most common search criteria

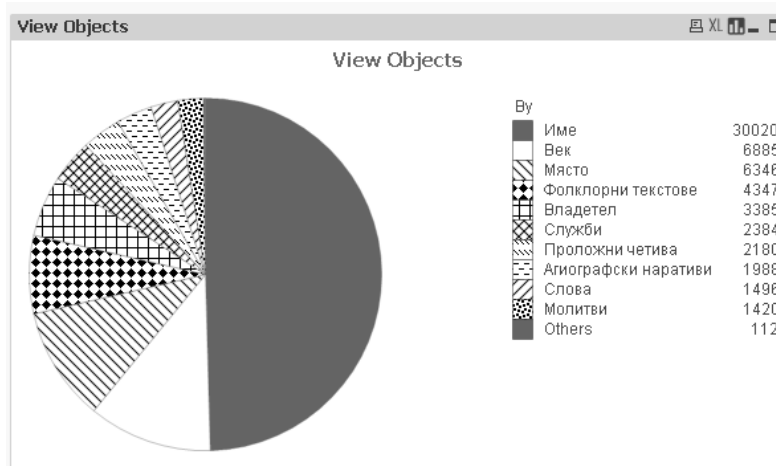
The same tendency is in a way confirmed by the research on the profile by type of browsing (Fig.16), which represents the correlation between the activities in ‘view objects’ search mode (available to both, guest users and registered users) and the ‘view object’ search mode (available to registered users only). The acute prevalence of the actions ‘view objects’ (60583 in total) over the complex search actions (2838 in total) leads to the conclusion that the browsing by means of readily available lists of

preferences is preferred by the e-ESS users and meets their specific interests in the field.



**Fig. 16.** Actions' profile by type of browsing

A closer look at the profile of the actions in the 'view objects' search mode (see Fig.17) conducted over the 5-year period of the e-ESS online availability reveals an expected range of the top most common preferences in browsing— by 'name,' by 'century,' and by 'place'. The interesting fact in this diagram is the fourth place for the 'view by folklore texts,' which proves that the decision to compile the e-ESS as a unique online anthology that was to combine written primary sources and folklore materials (see [5]) was strategically proper and has met the project aim of building up an online encyclopaedia that could be equally useful to specialists and to non-specialists.



**Fig. 17.** Actions' profile by type of searched objects

## 4 Links to the Bulgarian Iconographical Digital Library

The last two diagrams (Fig. 18 and Fig. 19) illustrate the usage of the experimental links that the e-ESS has to the Bulgarian Iconographical Digital Library. Regardless of the small number of these links (8 in total), their intensive use suggests that there is a demand for more relations between the two libraries.

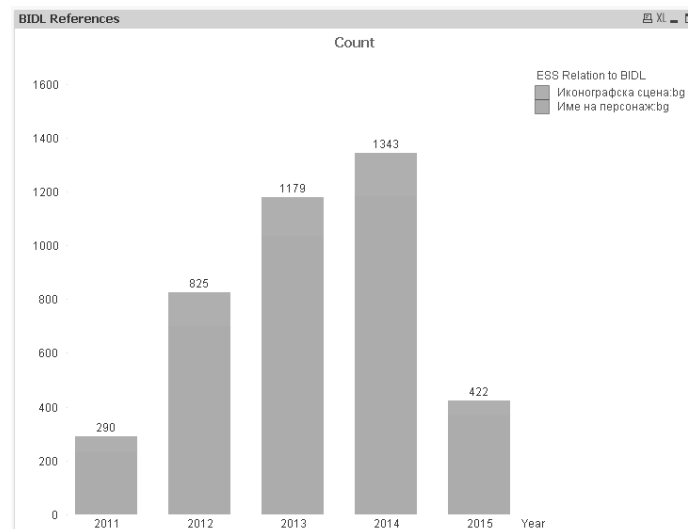


Fig. 18. References from the e-ESS to the BIDL by year

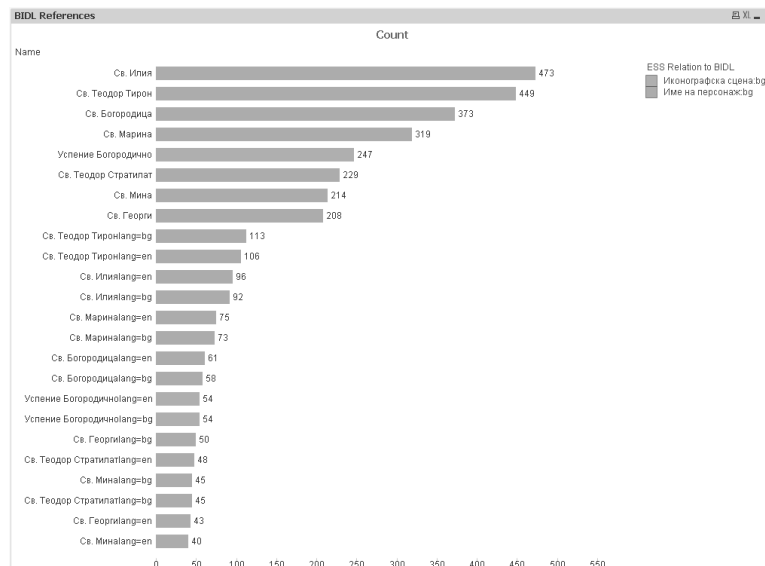


Fig. 19. References from the e-ESS to the BIDL by name

## 5 Conclusion

The statistical data discussed in the article reveal a few distinct tendencies in the use of the e-ESS. The first obvious tendency is that of a steady increase in the database usage, due to the tripling of the number of registered users within a year and mainly because of the frequent visits of casual guests seeking information about the Christian saints and feasts, usually around the date of commemoration. Along with the expected demand on receiving information about the most venerated saints, the statistical analyses on the most common actions, on the most-read articles, and on the most preferred search criteria substantiate: 1) a trend towards browsing by the ready-made list of objects, 2) preferences towards accomplishment of enquires of a single question, and 3) a particular interest into cults in which the Christian features one way or another blend with pre-Christian believes. Yet another peculiarity is the steady interest shown towards the materials presenting the oral tradition of the cults, which materials make the e-ESS a unique Internet resource in the field of Christian hagiology. What stands behind all these tendencies is a growing popularity of the Encyclopaedia among the non-specialists and this fact should be accepted as a prove about the demand for professionally compiled online reference resources that could successfully serve the research and the education, as well as the general public.

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