EDITORS' NOTE

A New Start

Professor dr. eng., dr. in marketing
Angela REPANOVICI
Transilvania University of Brasov,
Faculty of Product Design and Environment
President of Information Literacy Section,
Romanian Library Association

Lecturer dr.
Robert CORAVU
University of Bucharest, Faculty of Letters,
Communication Sciences Department
Secretary of Information Literacy Section,
Romanian Library Association

E-mail: editors@rrbsi.ro

The Romanian Library Association started publishing *Revista Română de Biblioteconomie şi Ştiinţa Informării / Romanian Journal of Library and Information Science* (*RRBSI*) in 2005, as a quarterly journal, with thematic issues. Since then, *RRBSI* has been one of the main academic journals in the field of library and information science, in the Romanian publishing landscape. Looking to extend its addressability and to increase the number of potential readers, in 2010 *RRBSI* became bilingual, all articles being published both in Romanian and English. The editorial board was also extended, including specialists from other countries.

With this issue, the first of 2017, the *Romanian Journal of Library and Information Science* enters a new era. There are some major changes that we want to share to our readers.

Firstly, *RRBSI* will no longer appear in print, as a subscription-based journal. For economical reasons, but also in order to open the access to the papers published in our journal, from now on it will be free to read by all those interested. To this end, we are using Open Journal Systems as solution for providing our content in electronic format and to facilitate the papers' quality assessment through the peer review process. Also, the archive of the journal from the first issue till now has been made available on its new website, at http://www.rrbsi.ro.

Another major change is that we will publish articles in English only.

The number of journal's issues will remain the same (four per year), but we will publish thematic issues only in exceptional occasions. We will seek to publish up-to-date, high-quality and original research papers on all aspects of library and

information science, but also review articles, perspectives, opinions, commentaries and book reviews, without trying by all means to circumscribe them to one particular topic.

Given the similarities regarding the history and development of South-East European libraries, the journal will focus on publishing studies regarding the theory and practice of librarianship in the countries pertaining to this geographical area. In order to support this new direction, the Editorial Board now includes professors and specialists in our field of interest from Romania, Bulgaria, Croatia, Greece, Hungary, Moldavia, Turkey, but also from France and Spain. However, this approach centred on South-East European experiences is not exclusive and other topics may be covered.

Another goal we have set is to continually increase the quality of our journal and by doing so, to determine its indexing in well-known scientific databases. At this time, *RRBSI* is indexed only in the EBSCO Library & Information Science Source database (starting with iss. 4, 2010).

We kindly invite you, our contributors and readers from Romania and from all over the world to continue to stay close to us. Also, we invite the specialists in the field to register at http://www.rrbsi.ro/index.php/rrbsi/user/register and even to submit their papers or to act as reviewers, thus bringing their input to the development and success of our journal.

Best wishes and thank you in advance for your contribution to the *Romanian Journal of Library and Information Science* in this new format.

The good, the bad and the ugly: what bibliometrics tells us about Romanian research

Mihai Constantinescu
PhDc, University of Bucharest, Faculty of Letters
E-mail constantin.mihai.escu@gmail.com

This study uses bibliometric indicators to show the evolution of Romanian research in the 2007-2015 interval. It focuses on the number of published citable items, citations received by these items and the relationship between these two indicators in order to highlight the trends that define Romanian research.

Keywords: *bibliometrics; citations; Romania; research*

1. Introduction

Bibliometrics has been used in research evaluation for several decades. Although it is not a full proof method and only takes into account quantitative aspects of research, it remains an important method of evaluating research. Different bibliometric indicators have been used in evaluating universities, researchers, academia, journals, publishing houses and national research performance.

This paper aims to analyse the evolution of Romanian scientific output during the first eight years after joining the European Union (2007-2015). For the purpose of this study, we will focus on three main aspects, the first two being the total number of citable items published and total number of citations received. During our research, we came across interesting data showing a strong correlation between the number of papers published in certain journals and the total number of papers published in the field of those journals. This will constitute the third aspect analysed in our paper.

We have found a surprisingly small number of published similar studies. Although bibliometric studies regarding (among other issues) Romanian research have been published (Kozak et al 2015), we have not found any regarding the 2007-2015 interval, nor have we found studies focusing on the same subjects as the present study.

2. Methodology

The data used in this study was extracted from the *Science Citation Index (S.C.I.)*, *Social Sciences Citation Index* (*S.S.C.I)* and *Arts and Humanities Index* (*A.H.I.)* from the *Web of Science Core Collection* database in December 2016. The interval for which the data was extracted is between 2007 and 2015. Only documents defined as citable items (articles and reviews) have been taken into account.

Because of the nature of the databases (continuously updated), the data extracted here will almost certainly differ from data extracted in a different moment, especially for the last year of the analysis.

All the analyses presented here have been conducted within the above specified databases, therefore this paper should not be viewed as an image of the Romanian research in its entirety, but as an image of the research indexed in the specified databases. This study is subject to all the known issues regarding the *Web of Science* database, including, for example, the irreproducibility of data (Rossner et al 2007).

3. Results

3.1 Total citable items

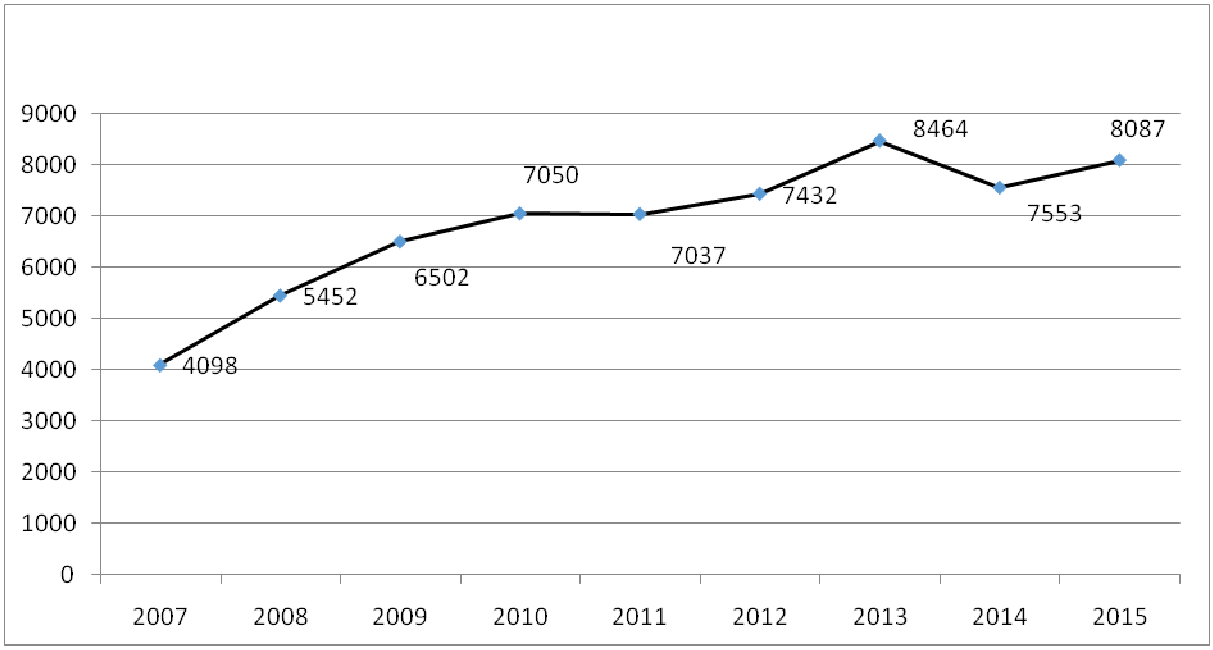

Fig. 1 *Total citable items*

Between 2007 and 2015, 61675 articles indexed in *Web of Science* have been published by the Romanian researchers (see Appendix 1). The number of articles increased from 4098 in 2007 to about 8000 in recent years (see Fig.1). The most significant increase occurred at the beginning of the reviewed interval, between 2007 and 2008, and represented a 33.04% increase compared to the previous year (1354 articles). We can also observe two periods of decrease in the number of articles, in 2011 compared to 2010 (a decrease of 13 articles) and in the year 2014 compared to 2013 (a decrease of 911 articles).

The first four years are characterized by a rapid increase in the number of published papers (an increase of almost 3,000 articles between 2007 and 2010), while the second period is characterized by a slower growth, registering an increase of only 1,000 articles during the 2010 - 2015 period. During this interval, the highest number of articles published is reached - 8464 - in 2013, but also the steepest decline in number of published articles - 10.76% decrease in 2014.

At a closer look, we can see that about 75% of the total increase in number of articles (for the 2007-2015 interval) occurred in the first three years, while the last five accounted for the rest.

3.2 Citations and self-citations

Fig. 2 shows that the number of citations received by articles published by Romanian researchers register a positive trend in the 2007-2012 interval, followed by a steep decline.

Although it is probable that the number of citations for the 2012-2015 interval will increase, we have to take into consideration the fact that, especially in the sciences, the novelty of the information is an important criterion, therefore the increase in number of citations for the 2013 – 2015 period will probably not be significant enough to stop the decline.

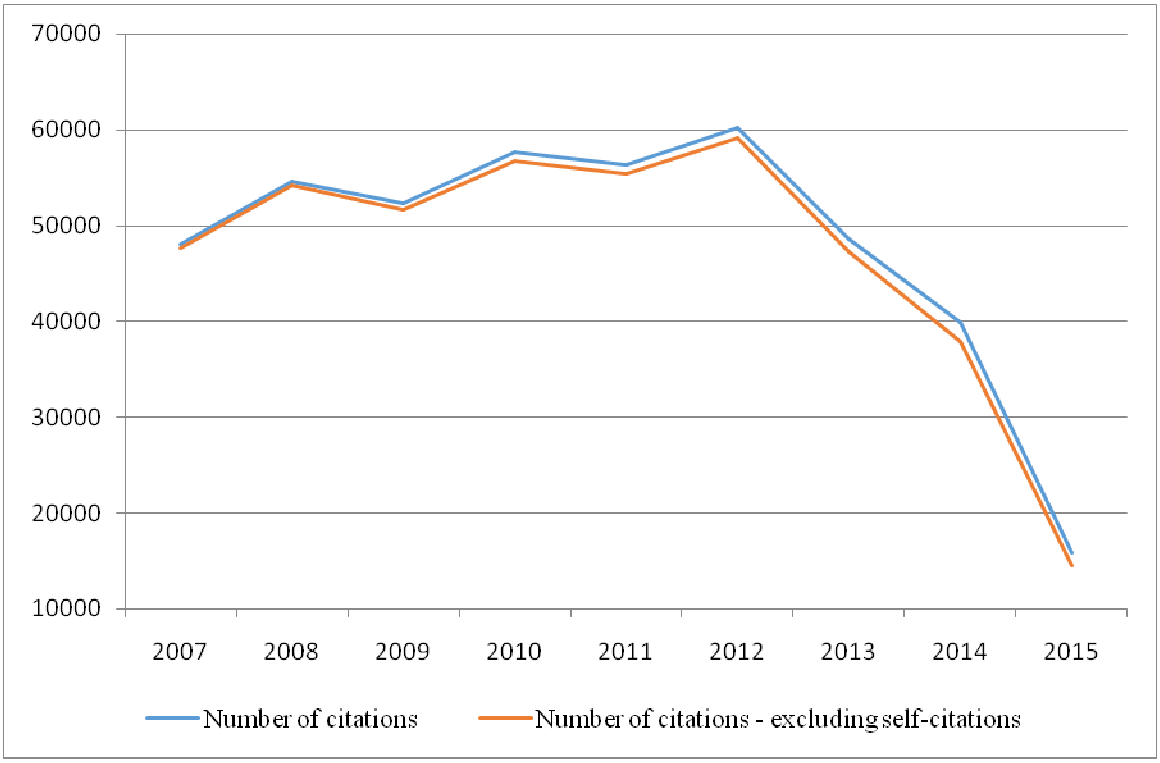

Fig. 2 *Citations and self-citations*

The significant increase in the number of citations (up to 2012) is a positive aspect of Romanian research, proving that the impact of scientific literature is growing. However, in order to have an accurate picture of the state of Romanian scientific literature, we have to compare the number of citations received to the number of published articles.

The graph above also shows the increase in the proportion of self-citations (as evidenced by the increasing space between total citations and number of citations without self-citations). This signals a potential quality issue regarding the Romanian scientific literature, but should be considered only as an indication and not irrefutable proof, as self-citations are not necessarily an indicative of low quality research.

3.3 Citations per citable item

When analysing the citation per citable item ratio (Fig. 3) we observe three stages: a decline from 2007 to 2009, a stagnation from 2009 to 2012, and a new phase of decline since 2013. Although new citations will be added for the latter period, especially for 2015, where we can expect a significant increase, there remains a decline of 3.6 citations per item up to 2012 (when the citations per item ratio is only 69.25% of the 2007 ratio).

This highlights the fact that, although the total number of citations has increased, the increase was not proportional to the increase in the total number of articles published by researchers from Romania.

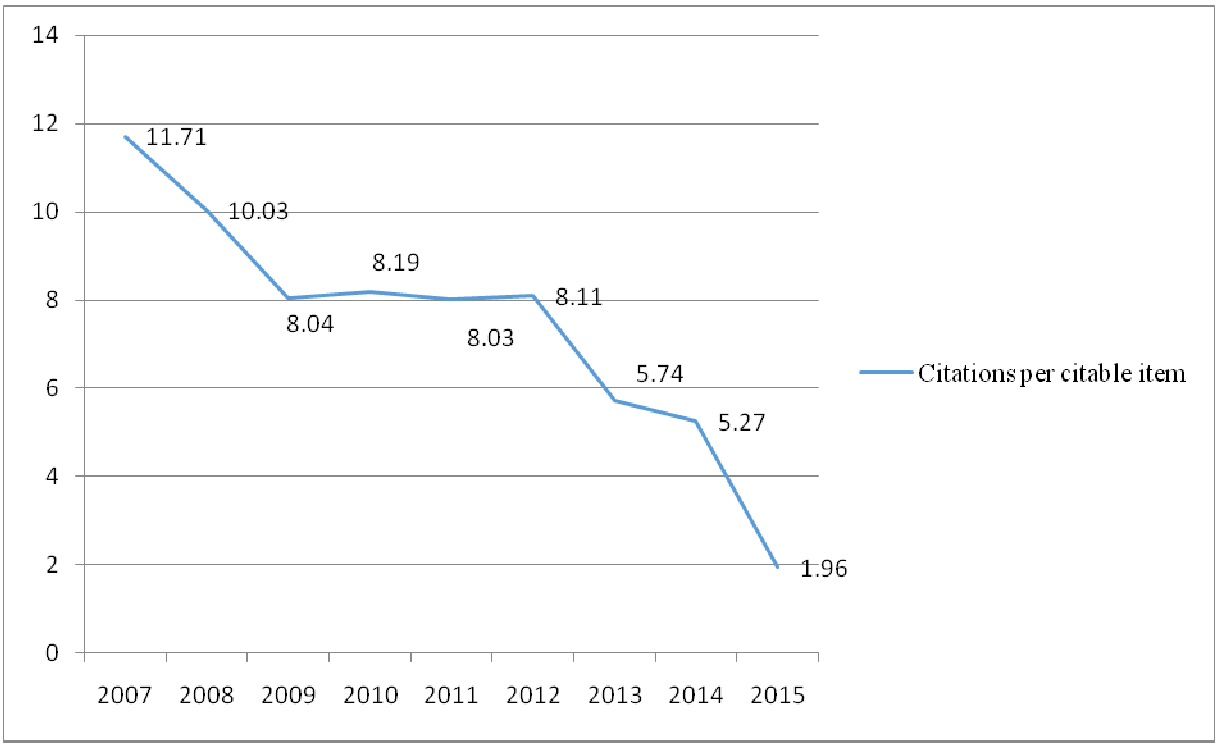

Fig. 3 *Citations per citable item*

3.4 Journal - Scientific field correlation

When analysing the evolution of the top Romanian scientific fields and journals (Appendix 2 and 3) we observed a strong correlation between the performance of two journals and the performance of the entire scientific fields of those journals. This is the case of the *Journal of Optoelectronics and Advanced Materials* (and the field *Optics*) and of *Metalurgia Internațional* (in *Metallurgy, Metallurgical engineering*).

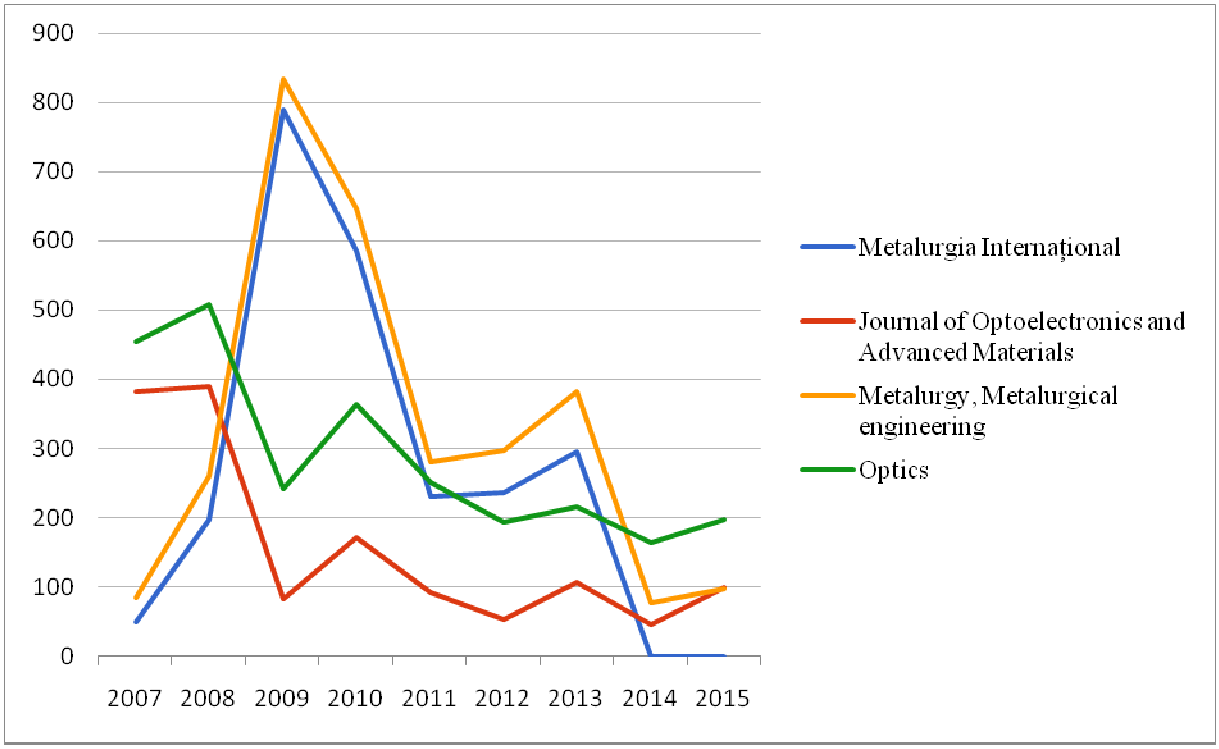

Fig. 4 *Journal - scientific field correlation*

As can be observed in Fig. 4, both journal-field pairs show a strong correlation when comparing number of articles published. This relationship between the scientific field and the scientific output of one single journal warrants, in our opinion, further investigation. In both cases, we can observe a significant decrease in the number of published articles. The decrease from 508 articles published in the field *Optics* in 2008 to 241 in 2009 is hardly explainable, especially if we consider that this decline continues even further in the following years, albeit at a slower pace, reaching 198 published articles in 2015 (43.61% of the articles published in 2007 and only 38.97% of 2008). The *Journal of Optoelectronics and Advanced Materials* registers a corresponding decline from a maximum of 390 articles in 2008 to 82 in 2009, reaching 99 articles in 2015.

We can observe a similar issue in the case of *Metallurgy, Metallurgical engineering*: here, the number of articles decreases from 834 items in 2009 to 97 articles in 2015, thus totalling in the last year of our interval only 11.63% of the articles published in the year with the highest scientific output (2009). This steep decline (and also the steep increase in number of articles from 2007 to 2009 – a 1004.8% increase) poses serious questions about the quality of articles published in this area and cannot be explained by a natural decrease in interest in the field. Similarly, the journal *Metalurgia Internațional* has an increase in articles published from 49 in 2007 to 789 in 2009 - a 1610.2% increase - followed by a steep decline that culminated with the exclusion of the journal from the *Science Citation Index* after it was proven that *Metalurgia Internațional* did not perform peer review (Weber-Wulff 2013).

We consider this dependence of the Romanian scientific fields to the performances of single journals to be a possible indicator of problems regarding the quality of articles published in those fields. If research in these areas would have been competitive, the sharp drop in the number of articles published in these journals would have not affected the national scientific production, as researchers should have been able to publish elsewhere. This indicates the possibility that researchers did not manage to get their works published in other journals.

4. Conclusions

The role of bibliometrics is no longer limited to that of document selection, but has transformed into one of research evaluation for journals, researchers, academics or research projects. However, no current bibliometric indicator provides qualitative information. What they provide are quantitative information (primarily about number of documents and citations), that is interpreted as an indicator of quality. Moreover, these quantitative methods of evaluation have variable applicability depending on the scientific field and results vary depending on the indicator and bibliometric database used. Furthermore, the ever-increasing importance given to bibliometric indicators has also led to the emergence of numerous means of manipulating the indicators (Martin 2016).

Romanian research has made substantial progress, but the data we have indicates that those improvements are quantitative and not qualitative. We have observed important increases in both the number of articles published (about twice as many per year) and citations received (up to 2012). However, the increase in citations received is not proportional to the increase in the total number of articles. Relative to the number of papers published, citations received by Romanian researchers have been in decline, the number of citations per item in 2014 reaching only half ofthat registered in 2007. The usage of quantitative criteria (such as number of articles published) in academia evaluation may have led to an inflation of works that count towards fulfilling academic performance criteria but have a smaller impact in the scientific world.

A particularly problematic aspect regarding the evolution of the Romanian research in this period is the importance that certain journals seem to have on Romanian research in its entirety. For example, *Metalurgia Internațional* publishes, in 2009, 12.13% of all Romanian articles (see Appendix 1 and 3). We consider this to be an extremely high percentage, especially given the

known issues regarding the journal. Although it has been excluded from the *Science Citation Index*, all the articles published until its exclusion are still indexed, despite the unnatural growth in number of articles - 1610.2% in two years - that should have warranted a further investigation into the publishing history of this journal.

Further investigation seems also necessary when looking upon fields such as *Optics*, where the variation of published articles per year - from 508 to 241 in one year - is not justifiable by a normal decrease of interest in that field.

The last two examples show us a different usage for bibliometrics, one not oriented towards classifying articles, journals or research but towards identifying patterns in research publication. These patterns can be used as an early warning system that will enable us to identify issues much faster than we currently do.

Despite the evidence shown here, we stress the fact that using bibliometric indicators is only one of the necessary steps in evaluating research.

The aspects studied in this paper show that Romanian research is, from a quantitative point of view, on a positive trend. However, the research seems to be oriented more towards publishing papers and less towards making an impact. The possibility that entire fields of research are heavily influenced by only one journal casts a shadow of doubt that needs to be addressed. We believe that a shift towards encouraging the impact of research more than the publishing of articles should take place in order to ensure a positive future for the Romanian research.

References

Kozak, M., Bornmann, L. and Leydesdorff, L. (2014) How have the Eastern European countries of the former Warsaw Pact developed since 1990? A bibliometric study, *Scientometrics*, 102(2), pp.1101-1117 available: https://link.springer.com/article/10.1007/s11192-014-1439-8 [accessed 20 March 2017].

Martin B.R. (2016) Editors' JIF-boosting stratagems - Which are appropriate and which not?, *Research Policy*, 45(1), pp. 1-7 available: http://dx.doi.org/10.1016/j.respol.2015.09.001 [accessed 20 March 2017].

National Science Foundation (2016). *Science and Engineering indicators*, Arlington, VA: National Science Foundation.

Rossner, M., Van Epps, H. and Hill, E. (2007) Show me the data, *Journal of Cell Biology*, 179(6), pp. 1091–1092 available: https://dx.doi.org/10.1083%2Fjcb.200711140 [accessed 20 March 2017].

Weber-Wulff, D. (2013) Junk Journal "Metalurgia International", *Copy, Shake, and Paste: A blog about plagiarism and scientific misconduct* [online], December 30, available at: https://copy-shake-paste.blogspot.ro/2013/12/junk-journal-metalurgia-international.html [accessed 20 March 2017].

Appendix 1

Year	Number of citable items
2007	4098
2008	5452
2009	6502
2010	7050
2011	7037
2012	7432
2013	8464
2014	7553
2015	8087

Appendix 2

Field/ Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
Physics	1136	1333	997	1115	1200	1231	1352	1104	1269
Chemistry	905	961	1095	1072	1096	1175	1314	1220	1462
Materials science	894	916	648	863	858	813	955	844	992
Engineering	549	650	715	763	692	807	893	833	955
Mathematics	455	665	797	794	776	767	877	798	807
Environment	159	206	366	359	410	519	441	414	501
Metallurgy, metallurgical engineering	83	260	834	647	280	296	381	76	97
Optics	454	508	241	364	251	193	216	164	198
Science Technology Other Topics	106	119	124	184	279	300	359	353	399
Computer science	132	197	200	228	225	204	240	239	224

Appendix 3

Journal /Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
REVISTA DE CHIMIE	278	271	271	252	223	244	274	295	420
METALURGIA INTERNATIONAL	49	198	789	585	231	236	296	0	0
JOURNAL OF OPTOELECTRONICS AND ADVANCED MATERIALS	382	390	82	172	92	52	107	45	99
ENVIRONMENTAL ENGINEERING AND MANAGEMENT JOURNAL	50	84	199	180	146	190	153	125	127
ROMANIAN JOURNAL OF MORPHOLOGY AND EMBRYOLOGY	0	64	87	92	179	143	153	190	193
REVUE ROUMAINE DE CHIMIE	132	123	118	128	127	110	78	97	84
JOURNAL OF ENVIRONMENTAL PROTECTION AND ECOLOGY	42	56	48	67	135	182	106	81	111
ROMANIAN REPORTS IN PHYSICS	50	86	61	78	102	110	99	76	92
ROMANIAN BIOTECHNOLOGICAL LETTERS	47	73	75	128	109	55	79	96	89
MATERIALE PLASTICE	75	78	84	98	58	50	68	99	128

The importance of security for people and collections in libraries

Andra Manuela Botez
PhDc, *Transilvania* University of Brasov
E-mail andra.manu@ymail.com
Angela Repanovici
Professor, PhD, *Transilvania* University of Brasov
E-mail arepanovici@unitbv.ro

The security of collections and people in a library embraces a large number of responsibilities. The costs of maintaining, processing, and acquiring collections are high. If they are stolen or damaged, it can be difficult, if not impossible, to replace. Also, in recent years, personal security is a problem due to numerous terrorist attacks. This article highlights the importance of security in libraries and the view of librarians about the implementation of a security system based on facial recognition in the library in which they operate.

Keywords: *library security; collections security; personal security; library access; facial recognition*

1. Introduction

The fact that security has become a key topic of criminological analysis, of particular importance, reflects the uncertainty of twenty-first century society (Zedner 2014).

In an attempt to understand the concept of security, Brooks (2009) mentions that exposure to terrorist attacks in many parts of the world (London, 2005; Jakarta, 2004; Spain, 2004; Bali, 2002 and New York, 2001) has raised social concern over the ability of governments to protect its citizens. According to Zedner (2014), new crime prevention techniques and community safety initiatives combine to create a security concern among local authorities, partnerships between agencies, voluntary groups, as well as private citizens.

A number of studies have approached the issue of collections security, as well as the personal security of visitors and library staff. Also, various studies have described how security breaches and incidents can affect the provision of library services to users (Maidabino & Zainab 2012). Thus, Latuszek (2002) mentions that although many libraries are still in predominantly quiet locations in terms of noise and crime, it is not difficult to notice a pattern of unease steadily increasing at public and academic libraries.

Zedner (2014) believes that security is a promiscuous concept, being implemented in many areas (social security, financial security, environmental security, health and safety, human security, international relations and peacekeeping, etc.). Thus, security is the state of "being protected against threats" - either by neutralizing them, by avoiding, or by not risking.

Maidabino and Zainab (2012) mention in their study that the purpose of libraries is to provide access to information resources in both print and non-print formats. They believe that balancing access and security in libraries is difficult but at the same time a necessary task. Even if the library focuses on popular reading materials, or reference books, the cost of replacing these materials, when they have been stolen or damaged can become prohibitive. So, libraries should be able to use

the resources they have, not to replace items, but to build new and used collections. (Kahn 2007) Some libraries have attempted to reduce the amount of damage and destruction (especially breakage of pages) done to their print materials by reducing photocopying costs and by offering the possibility to print two pages at the same time. Others have extended their borrowing periods to four weeks, with additional renewal periods, allowing people to have the materials in their possession until they finished reading a book or watching a movie. Renewal from home, online or by phone also makes it easier for patrons to bring their books back and renew them. However, there are still those patrons who pull the books out of the covers or who don't bother to return them (Kahn 2007).

Latuszek (2002) made a review of articles describing incidents due to library visitors to highlight the importance of security plans. Through this article, the author wishes to outline increased security awareness in libraries, highlighting technological questions and policy concerns.

Maidabino and Zainab (2012) proposed a tool to evaluate the implementation of collections security in university libraries. This tool encompasses five factors: managing collections security, operations and processes, people's issues, physical and technical aspects of collections security, and security culture in libraries.

Harris and DiMarco (2010) present a perspective on how Mansfield University, Pennsylvania, addressed the issue of personal security, specifically in the library. The purpose of this article is to help libraries in planning for the worst scenarios, covered issues including self-locking, planning, policies and procedures, physical security, visitor issues, secure places in the library, etc.

Westenkirchner (2008) offers in his article instructions for libraries wishing to acquire an integrated digital video surveillance system based on the experience of the Auburn University Library. The article covers the technical aspects of closed circuit television (CCTV) and Internet Protocol (IP) integrated video surveillance systems, providing a brief explanation of how the equipment works.

2. Methodology

To improve the security of individuals, as well as collections in a library, we are proposing the implementation of a system for facial recognition of users. There are security systems for collections, but in the context of terrorism, we are interested in having people of good faith who have access inside the library

Face recognition is a technology that uses the computer to analyze face images and extract features for recognizing the subject's identity (Yang et al 2002). According to the literature, the facial recognition process comprises the following steps (Data Protection Working Party 2012):

a) Image acquisition: the process of capturing an image representing a person's face;

b) Face detection: the process of detecting the presence of faces in the image and marking the area where they appear;

c) Extraction of features: the process of isolating and transferring the repeatable and distinctive features of a person's digital image;

d) Comparison: the process of measuring the similarity between a set of characteristics (the sample) and another series already entered in the system. The main objectives of the comparison are identification and authentication /verification;

e) Finding the pair elements: determine whether the scores obtained in step four are large enough to declare a match between the generated and the recorded template. Rules governing the level at which a match between the two templates can be declared are often configurable by the end-user

so that it can determine the level of security that the system needs to function according to utility. (Woodward et al 2003).

The statistical research aimed to determine the views of librarians, both with executive and management functions, on security systems in libraries, as well as on the implementation of a system for facial recognition of users.

The following assumptions of research have been formulated:

1. Librarians concerned with the security of individuals, in the context of terrorism, are eager to implement a facial recognition system in the library in which they operate.

2. Librarians who believe that the most appropriate biometric recognition system for security of collections and individuals is facial recognition, would agree to implement such a system in the library in which they operate.

3. Librarians who have confidence in facial recognition systems agree to implement such a system in the library in which they operate.

4. Librarians who work in large libraries agree to implement a facial recognition system.

5. The higher the level of education of librarians, the more they are willing to implement a facial recognition system in their library.

6. Librarians with a leading position are more likely to implement a facial recognition system in their library.

7. Librarians with work experience of more than 31 years are more likely to implement a facial recognition system in the library in which they work.

The working methodology used, relevant for identifying respondents' views on the security of collections and individuals, was the application of an online questionnaire, consisting of 16 questions. Respondents were notified before filling in the questionnaires on the confidentiality regime of the collected data. The questionnaire was designed on the basis of the concept's operationalization, starting from the definition of security in the library.

The survey comprised 177 respondents, both in Romania and abroad, and was conducted in February / March 2017. Data processing was performed using the SPSS (Statistical Package for Social Sciences) and the Excel program. The questionnaires have been distributed in as many countries as possible for better representativeness. Among these are: Romania, Moldova, Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Greece, Ireland, Montenegro, Norway, United Kingdom, Russia, Serbia, Turkey, Hungary. Most respondents are from Romania and Moldova. Out of a total of 177, 93 respondents are from Romania and 50 from Moldova.

The results of this study will be used in the design and implementation of the facial recognition system to be used for users entering libraries.

3. Results

For data analysis we used the SPSS program, command Analyze-Descriptive Statistics-Frequencies, which shows how often a response occurs within a variable, and the graphs were created in Excel to be able to view the data more easily.

From a total of 145 librarians in Romania and Moldova, 61.4% would agree with the implementation of a facial recognition system in the library in which they operate, 12.4% disagree, and a percentage of 23.4% did not express their opinion on this approach (Fig.1).

As for the respondents from abroad, out of a total of 32, 13 agreed to the implementation of a facial recognition system, 11 disagreed and 8 did not express their opinion (Table 1).

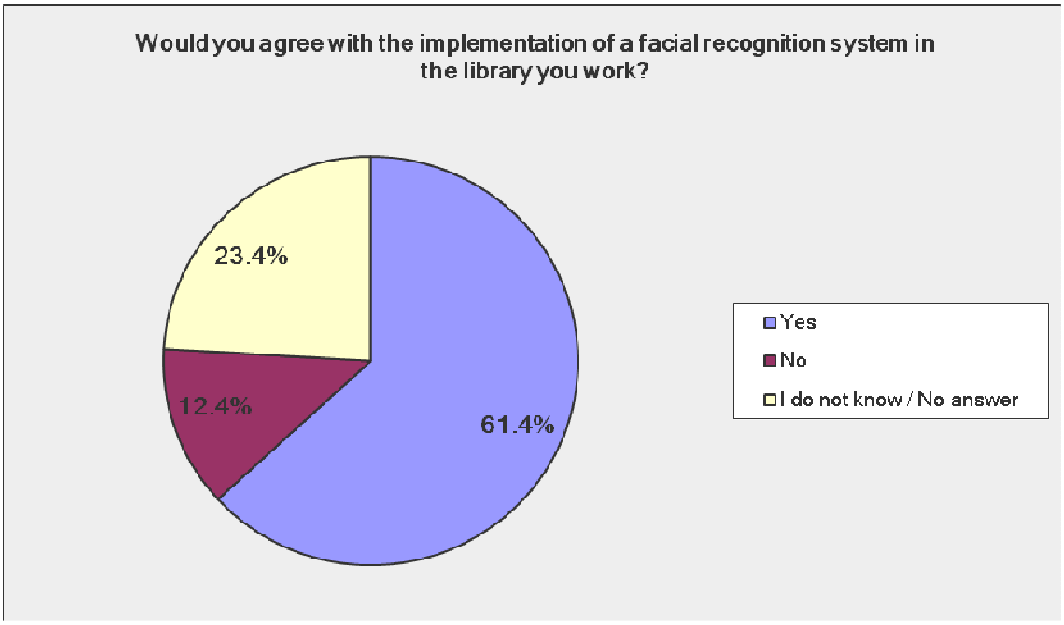

Figure 1. *The agreement of librarians in Romania and Moldova to implement a facial recognition system*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	40.6	40.6	40.6
	No	11	34.4	34.4	75.0
	I do not know / No answer	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

Table 1. *The agreement of librarians abroad to implement a facial recognition system*

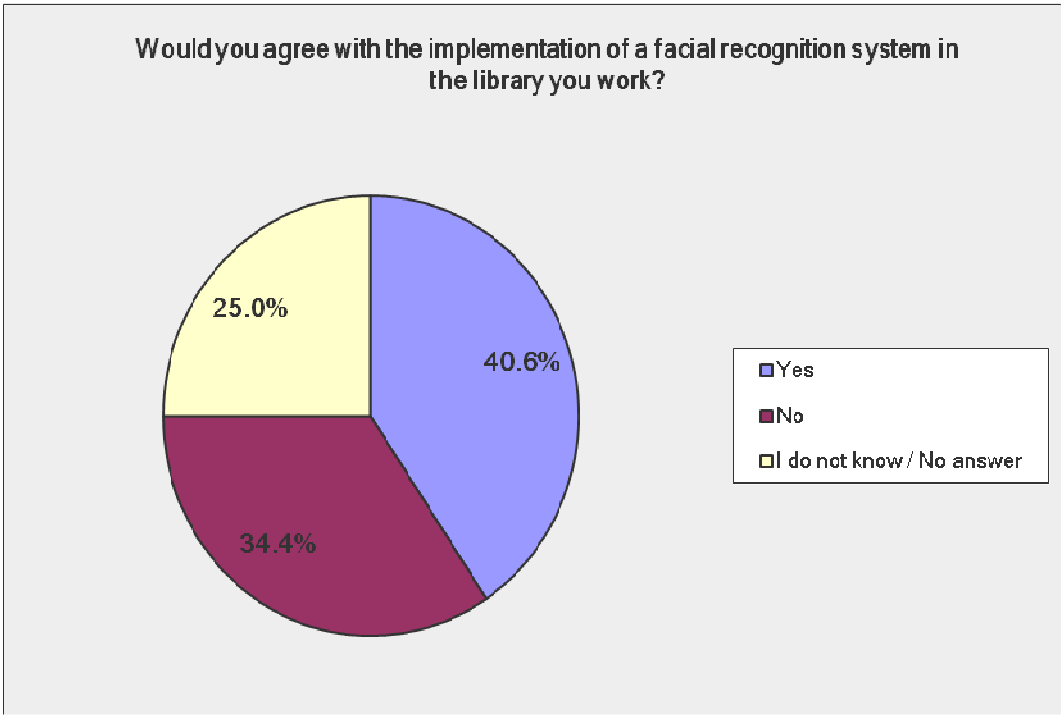

Figure 2. *The agreement of librarians abroad to implement a facial recognition system*

It has been proven that librarians in Romania and Moldova have confidence in facial recognition systems. Thus, 38.6% are fairly confident, 9% have a lot of confidence and 18.6% neither much nor a little (Fig.3).

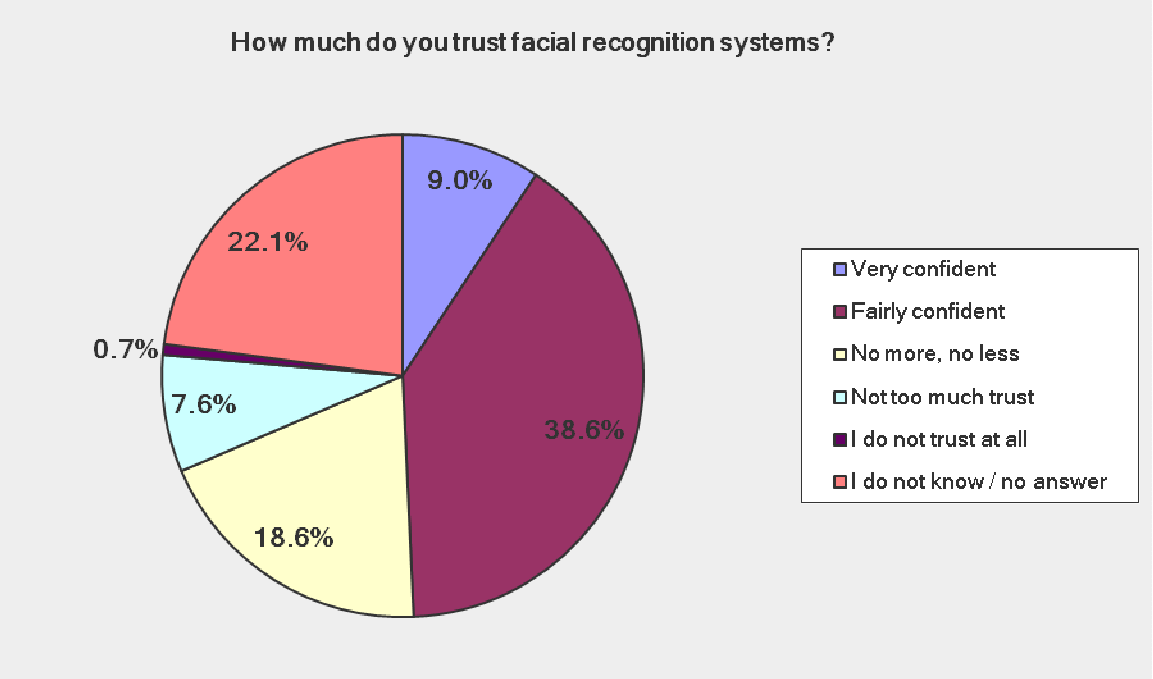

Figure 3. *Confidence of respondents in Romania and Moldova on facial recognition systems*

When it comes to choosing the safest security system, librarians have chosen biometric recognition systems in a proportion of 62%, in the detriment of RFID (Radio-Frequency Identification) system (Fig.4).

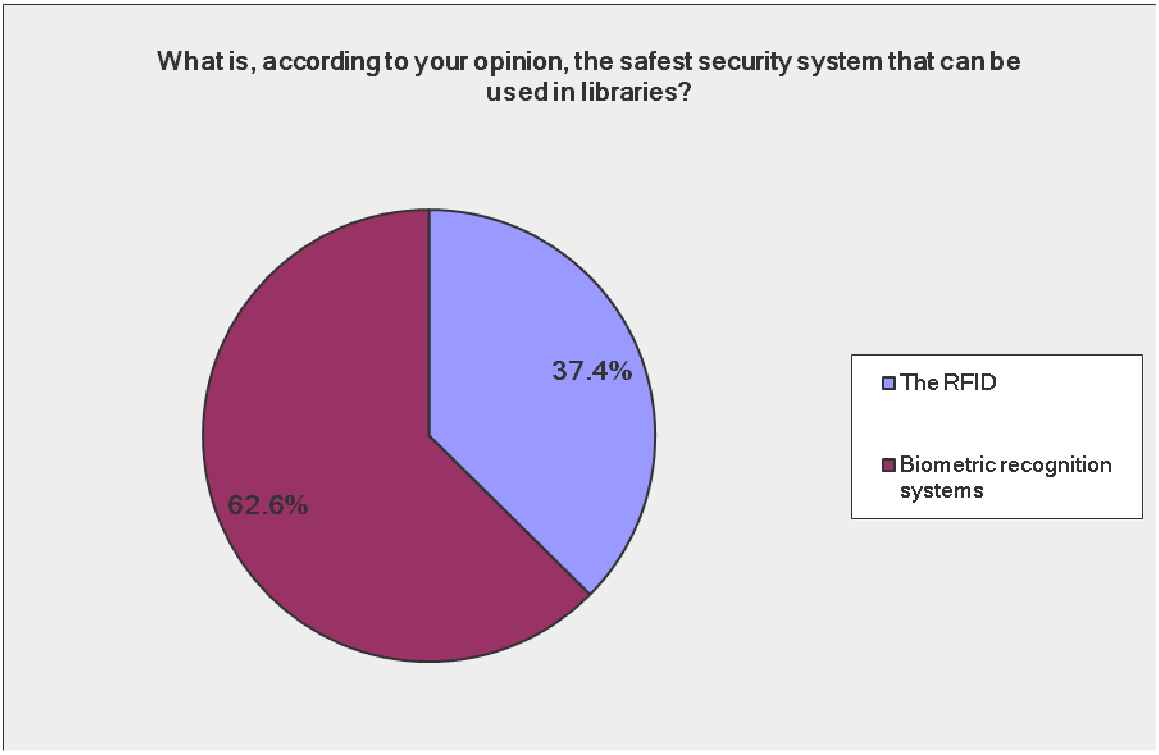

Figure 4. *The safest security system, in the opinion of the respondents in Romania and Moldova*

4. Statistical hypothesis testing

Hypothesis 1. Librarians concerned with the security of individuals, in the context of terrorism, are eager to implement a facial recognition system in the library in which they operate.

Next, we will formulate two hypotheses, the null hypothesis (H0) referring to the worst case and the alternative hypothesis (H1), the opposite of the null.

H0 - there is no correlation between the librarians' desire to take action on the security of individuals and the agreement of librarians to implement a facial recognition system;

H1 - there is a correlation between librarians' desire to take action on people's security and the agreement of librarians to implement a facial recognition system;

The probability of guaranteeing the results is 95%, the 5% error margin is the probability of error and under these conditions, the probability of testing the null hypothesis (p) will be 0.05.

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, and p = 0.05.

According to the Pearson index, the variable measuring librarians' willingness to take action on the security of individuals in the context of terrorism is correlated to the level of 0.203, with the variable expressing the agreement of librarians to implement a facial recognition system. Sig = 0.008 is less than p = 0.05, hence it results that the null hypothesis is rejected and there is correlation between the librarians' desire to take action on the security of individuals and the agreement of librarians to implement a facial recognition system. Sig=0.008, p<0.01 indicating a strong link between the two variables. Thus, the more librarians are concerned with the security of individuals in the context of terrorism, the more they are willing to implement a facial recognition system, and vice versa.

The hypothesis that librarians concerned with the security of individuals in the context of terrorism are eager to implement a facial recognition system in the library in which they work is confirmed.

Hypothesis 2. Librarians who believe that the most appropriate biometric recognition system for security of collections and individuals is facial recognition would agree to implement such a system in the library in which they operate.

Next, we will formulate two hypotheses, the null hypothesis (H0) referring to the worst case and the alternative hypothesis (H1), the opposite of the null.

H0 - There is no correlation between librarians' opinion on the most appropriate biometric recognition system for the security of collections and individuals in a library and the agreement of librarians to implement a facial recognition system;

H1 - there is a correlation between librarians' opinion on the most appropriate biometric recognition system for the security of collections and individuals in a library, and the agreement of librarians to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar p = 0.05.

According to the Pearson index, the variable that describes librarians' opinion of the most appropriate biometric recognition system for the security of collections and people in a library is correlated to 0.335, with the variable expressing the agreement of librarians to implement a facial recognition system.

Sig=0 is less than p=0.05 hence it results that the null hypothesis is rejected and there is correlation between librarians' opinion about the most appropriate biometric recognition system for the security of collections and individuals in a library and the agreement of librarians to implement a

facial recognition system. Sig = 0, p <0.01 indicating a strong link between the two variables. Thus, the more librarians think the most appropriate biometric recognition system for the security of collections and individuals is facial recognition, the more they are willing to implement a facial recognition system, and vice versa.

The hypothesis that librarians who believe that the most appropriate biometric recognition system for the security of collections and individuals is facial recognition would agree with the implementation of such a system in the library in which it operates is confirmed.

Hypothesis 3. Librarians who have confidence in facial recognition systems agree to implement such a system in the library in which they operate.

Formulation of the null hypothesis (H0) and the alternative one (H1):

H0 - there is no correlation between librarians' confidence in facial recognition systems and the agreement of librarians to implement a facial recognition system;

H1 - there is a correlation between librarians' confidence in facial recognition systems and the agreement of librarians to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar p = 0.05.

According to the Pearson index, the variable that measures the confidence of librarians in facial recognition systems is correlated to the 0.352 level, with the variable expressing the agreement of librarians to implement a facial recognition system.

Sig = 0 is less than p = 0.05, resulting in the rejection of the H0 null hypothesis, according to which there is no correlation between librarians' confidence in facial recognition systems and the agreement of librarians to implement a facial recognition system. Sig = 0, p <0.01 indicating a strong link between the two variables. Thus, the more librarians have confidence in facial recognition systems, the more they are willing to implement a facial recognition system, and vice versa.

The hypothesis that librarians who trust the facial recognition systems agree with the implementation of such a system in the activating library is confirmed.

Hypothesis 4. Librarians who work in large libraries agree to implement a facial recognition system.

Next, we will formulate the two hypotheses (null, alternative):

H0 - there is no correlation between the size of the library in which they work and the agreement of librarians to implement a facial recognition system;

H1 - there is a correlation between the size of the library in which they work and the agreement of librarians to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar p = 0.05.

In the presented situation, the Pearson coefficient is -0.074, which is a very poor correlation between the size of the library in which it works and the agreement of librarians to implement a facial recognition system. Sig = 0.337 is higher than p = 0.05 where it follows that the assumption of null H0 is accepted, according to which there is no correlation between the size of the library in which it works and the agreement of the librarians to implement a facial recognition system.

The hypothesis that librarians working in large libraries agree to implement a facial recognition system is rejected because there is no significant statistical association between the two variables.

Hypothesis 5. The higher the level of education of librarians, the more they are willing to implement a facial recognition system in their library.

Next, we will formulate the two hypotheses (null, alternative):

H0 - there is no correlation between the level of librarians' education and their agreement to implement a facial recognition system;

H1 - there is a correlation between the level of librarians' education and the agreement of librarians to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar $p = 0.05$.

The Pearson coefficient is -0,071, which is a very poor correlation between librarians 'level of education and their agreement to implement a facial recognition system.

Sig = 0.353 is higher than p = 0.05 where it follows that the assumption of null H0 is accepted, according to which there is no correlation between the level of librarians' education and their agreement to implement a facial recognition system.

The hypothesis according to which the higher the level of librarians' education, the more they are willing to implement a facial recognition system in the library in which they work is rejected, because there is no significant statistical association between the two variables.

Hypothesis 6. Librarians with a leading position are more likely to implement a facial recognition system in their library.

Formulation of the null hypothesis (H0) and the alternative one (H1):

H0 - there is no correlation between the function of librarians and their agreement to implement a facial recognition system;

H1 - there is a correlation between the function of librarians and their agreement to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar $p = 0.05$.

The Pearson coefficient is -0,011, which is a very poor correlation between librarians' function and their agreement to implement a facial recognition system. Sig = 0.884 is higher than p = 0.05, therefore it follows that the hypothesis of null H0 is accepted, according to which there is no correlation between the function of librarians and their agreement to implement a facial recognition system.

The hypothesis that librarians with a leading function are more willing to implement a facial recognition system in the library in which they work is rejected because there is no significant statistical association between the two variables.

Hypothesis 7. Librarians with work experience of more than 31 years are more likely to implement a facial recognition system in the library in which they work.

Formulation of the null hypothesis (H0) and the alternative one (H1):

H0 - there is no correlation between workplace experience and librarians' agreement to implement a facial recognition system;

H1 - there is a correlation between workplace experience and librarians' agreement to implement a facial recognition system;

The general rule of test for a 95% probability of guaranteeing results: $x_{calculated} < x_{critic} \Rightarrow$ rejects the hypothesis of null H0. Where: $x_{calculated} = p_{calculated}$ (Sig.) and $x_{critic} = p$, iar $p = 0.05$.

The Pearson coefficient is -0,032, which is a very poor correlation between workplace experience and librarians' agreement to implement a facial recognition system.

Sig = 0.676 is higher than p = 0.05, resulting that the hypothesis of null H0 is accepted, according to which there is no correlation between workplace experience and librarians' agreement to implement a facial recognition system.

The hypothesis that librarians with work experience of more than 31 years are more likely to implement a facial recognition system in the library in which they work is rejected because there is no significant statistical association between the two variables.

5. Conclusions

As a result of our research, we can specify that most librarians would agree to implement a facial recognition system in the library in which they work to increase security. It was noticed that respondents from abroad were more aware of this approach, compared to those in Romania and Moldova.

Librarians concerned with personal security, in the context of terrorism, are eager to implement a facial recognition system in their library. Also, librarians who believe that the most appropriate biometric recognition system for collections and the security of people is facial recognition, would agree with the implementation of such a system. The degree of trust in facial recognition systems plays an important role in the decision of librarians to increase the security of the library by installing the new system. From the data analyzed, the size of the library, the librarian's function, or the experience of over 31 years in the workplace does not interfere with the decision of librarians to implement the new facial recognition system. Also, the librarian's level of training does not interfere with this decision, perhaps because most have more than average education.

References

Brooks, D.J (2009) What is security: Definition through knowledge categorization, *Security Journal*, 23(3), pp.225-239.

Data Protection Working Party (2012) *Opinion 02/2012 on facial recognition in online and mobile services, 00727/12/EN WP 192* [online], available: http://ec.europa.eu/justice/data-protection/article-29/documentation/opinion-recommendation/files/2012/wp192_en.pdf [accessed 5 March 2017].

Harris, J.L. & DiMarco, S.R. (2010) Locking Down a University Library: How to Keep People Safe in a Crisis: A Mansfield University of Pennsylvania Perspective, *Library & Archival Security*, 23(1), pp.27-36.

Kahn, MB. (2007) *Library Security and Safety Guide to Prevention, Planning, and Response*,

University of Bergen Library [online], available: https://ebookcentral-proquest-com.pva.uib.no/lib/bergen-ebooks/reader.action?docID=474203&ppg=1 [accessed 5 March 2017].

Latuszek Jr., T. (2002) Library Security: A Growing Awareness, *Library & Archival Security*, 15 (2), pp.3-7.

Maidabino, A.A. & Zainab, A.N. (2012) A holistic approach to collection security implementation in university libraries, *Library Collections, Acquisition and Technical Services*, 36(3-4), pp.107-120.

Westenkirchner, S. (2008) Integrated Library Security Systems, *Library & Archival Security*, 21 (2), p.159.

Woodward, J.D., Horn, C., Gatune, J. and Thomas A. (2003) *Biometrics.A Look at Facial Recognition, Prepared for the Virginia State Crime Commission*, Santa Monica, CA: RAND Public Safety and Justice, ISBN: 0-8330-3302-6.

Yang, M.H., Kriegman, D.J. and Ahuja N. (2002) Detecting faces in images: a survey*, IEEE Transactions on Pattern Analysis and Machine Intelligence*, 24 (1), pp. 34-58.

Zedner, L. (2014) *Security*, University of Bergen Library [online], available https://ebookcentral-proquest-com.pva.uib.no/lib/bergen-ebooks/detail.action?docID=425617 [accessed 5 March 2017].

Aspects regarding the implementation of information security standards in organizations

Mihai Bârsan
PhDc, *Transilvania* University of Brasov
E-mail mihai_c_barsan@yahoo.com

Information security is one of the major challenges of the information and knowledge based society. The preoccupation of organizations to ensure the security of information in the digital environment has led to the emergence of specific standards in the field. Thus, ISO 27000 brings together reference standards in the field. Starting from ISO 27001, which summarizes policies and procedures on physical, legal and technological security risks, this paper looks at the steps the organization must undertake to implement the standards.

Keywords: *ISO 27001; information security; databases; security policy*

1. Introduction

Information security has become an important concern in organizations that store information in digital archives.

In a study on Creating an Information Systems Security Culture through an Integrated Model of Employee Compliance (Ajaj et al 2014), and using a mixed-method approach, a group of managers shared knowledge of awareness, advocacy behaviors and challenges that influence their involvement in information security advocacy (Giraldo 2014).

The perception of human resources managers about the use of information security policy (Jobi 2012) shows that at that time there was much attitude towards the implementation of a security system within organizations.

ISO 27001 is an international standard published by the International Organization for Standardization (ISO), which describes the methodologies of information security management in an organization. The first review of the standard was published in 2005 and was developed on the basis of British Standard BS 7799-2. The latest revision of this standard was in 2013, resulting in ISO / IEC 27001: 2013.

The ISO 27001 standard can be implemented in any type of organization, whether public or private, irrespective of the field of activity, and is recommended for all entities managing a large amount of data stored in digital format.

By implementing ISO 27001, an independent certification body confirms that an organization complies with ISO 27001 information security procedures.

Organizations that choose to implement information security management standards need to go through a series of precursory steps and carry out a self-assessment of meeting minimum requirements.

The Information Security Management System (ISMS) should include specific interfaces for each internal department of the organization as well as for external users: beneficiaries, customers, partners, suppliers.

2. Methodology for implementation in organizations

2.1. Setting the Scope

The organization's internal structures involved in information management must carry out a risk assessment of all other internal departments to identify whether there is a risk to the information for which it is responsible.

In the assessment, the independent certification body must certify that the organization under review is able to handle the information safely, by checking the responsible department.

A first condition for implementing the standards is the clear delimitation of assets used by the department responsible for information security management: physical space used by department employees, local network, logistics facilities. For example, if the IT network used by the target department is also used by employees of other departments of the same organization (without segregation), there is no way to control only the flow of information within the domain.

Unfortunately, narrowing the scope of the ISMS Information Security Management System is sometimes impossible. Therefore, it is often necessary to extend the scope to the entire organization. This measure is especially recommended for small organizations operating in a single location.

In the case of large organizations, where the ISMS Information Management System at the level of the entire organization would generate huge costs, the scope will be limited to an independent organizational unit that interacts with the other departments exclusively on the basis of pre-established internal policies and procedures.

2.2 The ISMS policy

Another important step in the implementation of ISO 27001 standards is the drafting of an internal policy.

The ISMS policy is the most important document underlying the Information Security Management System. Like a Constitution, the document should include the basic information security aspects of the organization under review. Organization management must set a number of objectives in the field, as well as specific control mechanisms.

Numerous organizations chose to draft far too detailed policies, in the desire to regulate procedures specific to each possible situation, including in the ISMS Policy both the strategic objectives in the field of information security and the detailing of procedures applicable at the level of each department. Often, such overly detailed documents are not strictly enforced, as they cannot be fully understood by all responsible actors.

For this reason, ISO 27001, the main security standard for information, defines several levels of information security policies:

- High-level Policies (ISMS Policy) - are policies that define the organization's principles, goals and strategy;

- Detailed Policies - are policies that describe in detail an area of information security, regulating procedures, responsibilities and precise control mechanisms.

ISO 27001 sets out a number of minimum requirements regarding the content of the Information Security Management System (ISMS) policy:

- Setting goals;

- Analysis of the current context;

- Criteria for risk assessment.

The detailed policies, as mentioned above, are intended for operational use and should focus on a narrower range of specific activities. Such policies are:

- Classification policy;
- Policy regarding the use of information;
- Access control policy;
- Password policy;
- Network usage policy;
- Cryptographic control policy, etc.

ISO 27001 does not require the implementation of all these policies, the decision whether or not to act in a certain direction is taken following a process of risk assessment for the databases managed by the organization.

Detailed policies should regulate every aspect of the problem, so they have a much wider content.

Information security is a complex issue that cannot be defined by a single policy. Thus, ISMS will be a set of policies that will regulate access to information for each category of beneficiaries, aiming to cover all the risks identified by the evaluation process.

Any policy must be drafted with the sole purpose of reducing risks. The effectiveness of policies adopted by an organization can be seen over time, being proven by reducing the number of security incidents.

2.3. Risk Assessment Methodology

The security risk assessment is the most complex stage in the implementation of ISO 27001 standards. Based on the results of the evaluation, the main directions and the policies to be developed will be identified.

The main purpose is to identify the vulnerabilities, threats, risks and dangers to which an archive is exposed and to define acceptable risk levels.

If the evaluation process is not implemented correctly, there is a risk that the measures which will subsequently be taken, will not lead to the results assumed through the management system policy.

2.4 Risk Assessment and Treatment

At this stage, organizations that are in the process of implementing ISO 27001 standards will focus on correlating the identified risks with specific measures to reduce them. The measures must be applicable to the organization, taking into consideration the existing logistical facilities.

The purpose of the evaluation process is to outline a broad picture of the information security risks faced by the organization.

The purpose of the risk management process is to reduce or even eliminate risks that are not acceptable in relation to specific standards, by planning the use of the controls in Annex A.

In this context, a risk assessment report should be drawn up, including all the measures taken during the assessment and treatment processes.

2.5. Statement of applicability

Annex A of ISO 27001 includes a total of 114 controls on risk assessment and treatment. It is unlikely that an organization will have to apply all of these and for this reason it is necessary to determine those controls which are absolutely necessary in relation to the results of the evaluation.

An attempt to implement all controls could lead to bureaucratic procedures that are difficult to apply and will generate unnecessary costs within the organization.

At this stage, the Statement of Applicability (SoA) will be drawn up as a document listing all the controls and defining which are applicable and which are not, as well as the reasons for such a decision.

The document will also refer to the objectives to be achieved by using controls and will describe how to implement them.

The Statement of Applicability (SoA) is the document required to obtain the management authorization for the ISMS implementation.

2.6. Risk Treatment Plan

The risk treatment plan is an operative document, which defines how the SoA controls will be implemented, the responsible actors, the internal procedures, and the budget.

Basically, this document is the implementation plan of the Information Security Management System, and it is necessary in order to coordinate the whole process.

2.7. How to measure the effectiveness of controls

In order to measure the achievement of the objectives set for both the whole ISMS and for each applicable control, the organization will define specific modalities. These modalities must allow a clear measurement of the progress made at the organization level.

2.8 Implementation of mandatory procedures

At this stage, the four mandatory procedures and the applicable controls in Annex A will be implemented.

This process involves implementing a new behavior in the organization.

It is often necessary to apply new technologies or new policies and procedures that the responsible actors have to follow.

Most times people are reluctant to change, which is why the organization will pay special attention to the process of training and training.

2.9. Human resource training

Regardless of how effective the documented procedures are and how efficient the technology is, the most important factor in the implementation of the Information Security Management System remains the human resource.

Organization staff must be informed about new policies and procedures and must understand the need to apply them. At the same time, staff training activities involved in ISMS implementation must be organized.

2.10. ISMS Operation

Following the implementation of ISMS and human resources training, ISO 27001 becomes an ordinary routine in the organization.

The operation of the Information Security Management System requires recording (recordings) of the operating parameters, which have the role of contributing to the monitoring of compliance by the personnel and the external factors.

2.11. ISMS monitoring and internal audit

As part of the monitoring process, it will be checked whether the results achieve the objectives set. The incidents will be analyzed and it will be determined whether the procedures have been performed correctly.

Following the monitoring, corrective and / or preventive actions can be taken. If the existing or potential problems that may be harmful to the organization are not known, an internal audit must be carried out to find such things.

2.12. Management review

Management needs to know what is happening in ISMS, if the staff has performed its tasks, and if ISMS achieves the set goals. In this respect, management has to make essential decisions to correct deficiencies.

2.13. Corrective and preventive actions

The purpose of the ISMS management system is to ensure that all non-conformities are corrected, or even hindered. Thus, ISO 27001 requires that corrective and preventive actions will be carried out systematically, starting from the identification of the main cause of nonconformity, which will then be resolved and verified.

3. Final considerations and conclusions

The preoccupation of organizations to ensure the security of information in the digital environment has led to the improvement of specific standards and to the development of procedures designed to make the implementation of ISO 27001 easier.

The steps presented are the essential and binding steps to be followed for any organization, whether public or private, regardless of size or subject matter. Of course, in some cases, the procedure may be more complex, but this aspect depends on the specifics of the organization.

The correct and systematic implementation of the basic steps is essential to achieving the objectives of the Information Security Management System.

In practice, it was found that the absence of staff training, misconstruction of objectives and the choice of inadequate controls are the most common reasons for the failure of the ISO 27001 project.

References

Tapomoy, K., Shounak, G. and Shameek, G. (2015) Trends & Emerging Areas in Merchant Acquiring Industry, *International Journal of Economics and Finance*, 7(1), pp. 229-240, available: http://ccsenet.org/journal/index.php/ijef/article/view/41346/23870.

Giraldo, G. (2014). *Motivating Information Security Awareness (ISA): an Action Research Study*, dissertation, Syracuse University.

Jobi, O. (2012). *Human Resources Managers' Perception of Utilization and Adoption of Information Security Policy*, dissertation, Capella University.

(ISO 27001): *Information Security Management System* (2013), Geneva: International Organization for Standardization.

(ISO 27001): *Information Security Management System - Annex A* (2013), Geneva: International Organization for Standardization.