The role of libraries in the fake news era: a survey of information scientists and library science students in Greece

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Abstract

Purpose – Currently, knowing where to seek for reliable information may be one of the most important human skills. Data reliability is a matter of debate. The online dissemination of information has been a field for the reproduction of fake news. International Federation of Library Associations and Institutions (IFLA) states that libraries are part of the answer to this ever-increasing problem. The purpose of the study is to investigate libraries’ role in combating the fake news phenomenon.

Design/methodology/approach – The study was designed to record attitudes of professionals and students of library science on the libraries’ role in the battle against misinformation. The study was conducted through an online survey using a questionnaire consisted of closed-ended, seven-point Likert scale questions. The data collected were subjected to a descriptive statistical analysis. The median was used to present the results. In order to perform analysis between genders, as well as age groups, the non-parametric criteria Mann–Whitney U and Kruskal–Wallis were applied to determine the existence of differences in participants’ beliefs. Spearman’s rank correlation test was used in order to examine whether participants’ replies were interrelated.

Findings – Responses by 434 individuals were obtained. Participants highlighted primarily the educational role of libraries and agreed that the fake news phenomenon is an opportunity to promote the libraries’ role in society. No clear direction was recorded in the participants’ beliefs about the plethora of information and fake news as a potential threat to libraries. The respondents partly agreed that the plethora of information caused work-related emotional disorders and feeling that the respondents were not able to keep track of developments in the field. Finally, the study depicted the participants’ need for training on combating fake news, information sources evaluation and recognizing predatory journals.

Originality/value – The study’s significance lies in the following: the study contributes to the recording of professionals’ as well as students of library science views about (1) libraries’ role, (2) working environment and (3) training needs, concerning fake news and the overabundance of information in the digital era.

Keywords Digital era, Library science, Misinformation, Disinformation, Information technology

Paper type Research paper

Introduction

Currently, the globalization and the innovative digital technologies of communication have essentially changed the way people interact with each other. The available amount of information has increased tremendously (Kotelenets and Barabash, 2019) and it is important to address concerns about the wealth of information that is readily available. In the new digital era, knowing where to seek for reliable information may be one of the most important human skills. Nowadays, libraries play a no less critical role than in the past, helping users
navigate to an ever-increasing amount of information, where it is particularly difficult to
distinguish the facts from fiction (Holmes, 2018).

A library is a collection of resources, an information bank where the spiritual experiences of
all times and all cultures are gathered in a variety of formats, such as manuscripts, books,
newspapers and video, organized by information professionals, with the mission of educating,
informing or entertaining various user groups and aiming to improve individual learning and
the development of society in general. Moreover, libraries are places of information offering
individuals free access to a wealth of information (ALA., 2019) and helping users think critically
about the information they seek (IFLA., 2020). Data reliability is a matter of debate, as
information can be easily shared but hardly verified, while the online dissemination of
information has been a field for the reproduction of fake news (Kumar et al., 2016).

Fake news is an important issue with no easy solutions and libraries should be part of the
answer to this ever-increasing problem. Information scientists have the opportunity to
contribute to combat the phenomenon of misinformation through the dissemination of
information and digital literacy (Alvarez, 2017). As Hashim and Mokhtar (2012) stated,
information scientists with new acquired skills can play an important and leading role. They
will be the guardian of digital information and their role will be advisory to users on their
navigation in the digital world of information.

In the modern digital environment which is characterized by the highly expanded and
rapid dissemination of information, the problem of inaccurate information has intensely
emerged. To the best of our knowledge, no relevant research has been conducted in Greece
concerning the role of libraries in the fake news era. The present study aims to fill the gap in
the literature in this field. This paper was designed to investigate libraries’ role that are called
to play in combating the fake news phenomenon, by recording information scientists’ and
library science students’ beliefs and attitudes about this role, as well as to explore their views
concerning the impact of the overabundance of information on their duties (Skarpa, 2020).

**Literature review**

Fake news is an old phenomenon, with countless examples over the centuries and often
appears and reappears after technological innovations such as the printing press, radio,
television, media and now the Internet and social media (Buschman, 2019).

Various terms such as, misinformation, disinformation, incomplete information, incorrect
information, inaccurate information and lies are used to define fake news. All these terms are
interrelated. What is worrying is the speed, accuracy and potential for news creation that has
increased dramatically with modern audio and image editing technology (Oltmann et al.,
2018). Fake news is a complex phenomenon with many definitions. In an attempt to
summarize the various definitions of fake news in literature, Gelfert (2018) proposed the
following as a definition: “Fake news is the deliberate presentation of (typically) false or
misleading claims as news, where the claims are misleading by design.” In other words, for a
claim which is presented as news, in order to be regarded as an instance of fake news, it is not
sufficient to be misleading, but misleading by design, which reflects its systematic dimension.

In the new digital age where information is spread at high speed and reaching a wide
audience over the Internet, fake news is difficult to distinguish from the real one (Sadiku et al.,
2018). While information was once the solution, currently it may be the problem, especially for
individuals who need to use information critical for either their private or public lives at the
decision-making level. In a time where people do not know how to seek for credible and valid
information, what is challenging is how to develop skills of evaluating information sources
(Barclay, 2018).

Society has to address the fake news problem as well as the huge amount of information
and its credibility, given that the consequences of the disinformation for communities are
serious, such as spreading of contagious diseases, beginning of wars and risking citizens’ lives. The fact that the discussion of these issues is constantly up to date provides an excellent opportunity for libraries to be promoted in society potentially as the most important places of knowledge and education at the same time (Eva and Shea, 2018).

Libraries are at the forefront of efforts to ensure that people have access to quality information irrespectively of where they live, their educational status, income and religion background. When individuals are unaware of the real facts about important issues like investment opportunities, medical treatments or political candidates, serious emotional, financial, social and even physical harm can be caused (Fallis, 2009). The recent global health crisis of coronavirus disease-2019 (COVID-19) pandemic is a prime example of the overabundance of information (trustworthy or not) flooding the average citizen. During the pandemic outbreak, misinformation was widespread to the detriment of credible sources of information (Hua and Shaw, 2020; Mian and Khan, 2020). According to the World Health Organization, the phenomenon of infodemic was escalated to a level that required a coordinated response (World Health Organization, 2020). Libraries during this public health crisis responded to the challenging situation by shifting their services to provide remote access to credible information (Ladan et al., 2020; Yu and Mani, 2020). The role of libraries in combating the wealth of information during COVID-19 infodemic was focused on communicating quality and trustworthy information about the disease and the precautionary measures, raising awareness concerning the risks from misinformation, providing reliable information and media literacy guidance and developing collections on fake news (Bangani, 2021).

Given the vast amount of information available today, the major and the most difficult challenge in the history of libraries is how to teach people those techniques and tools to avoid inaccurate and misleading sources of information (Berry, 2016). Libraries have an institutional and ethical commitment to offer users access to reliable and credible information. Currently, fake news is an ever-increasing phenomenon and this role is becoming more important than ever (I.F.L.A., 2018). The sudden explosion of inaccurate, misleading and unverified information underlines precisely the need that libraries have to provide access to reliable information sources. There are many tools that offer users significant help in obtaining reliable information and limiting search results, but they cannot completely eliminate the need to evaluate information sources (Rose-Wiles, 2018). According to the American Library Association (A.L.A., 2017), basic services such as teaching information literacy, access to accurate information for all and assistance to users of all ages are now the most important elements than ever (Rosa, 2017; Oltomann et al., 2018).

Information literacy is one of librarians’ efforts to help and teach users think critically about what they read, hear and see. Information literacy is a much more complex subject than ever before when almost all information was in print (Barclay, 2018; Lachal et al., 2018). Inaccurate information will not cease to exist, but it can be addressed through the widespread dissemination of information literacy (Rochlin, 2017; I.F.L.A., 2018).

In an ever-changing landscape in which people interact with each other, create, share, consume and use information, the concept of information literacy is being extended by the concept of “meta-literacy.” “Meta-literacy” is based on essential computer knowledge and its main purpose is to develop skills in all aspects of the creation and use of information (LaPierre and Kitzie, 2019).

The importance of media literacy is justified by the vital role that information and news play in the democracy and communities by the active participation and self-expression of citizens in them. Media literacy has been defined as the ability to access the media, to understand and to critically evaluate different aspects of the media and media content and to create communications in a variety of contexts (Koltay, 2011).

Digital technologies have dramatically changed the people’s lives. It is important for everyone to have the necessary knowledge, thinking skills, attitudes and behaviors, which
are the key components of digital literacy. This concerns the ability to understand and use information from a wide range of digital sources (Bawden, 2008). Using information in an effective and correct way and the need for lifelong learning are becoming increasingly important aspects in modern society (Koltay, 2011).

We live in a completely different informational landscape in the post-truth era in which people believe more in information that aimed at appealing emotions or existing personal beliefs than in seeking objective facts and valid information (LaPierre and Kitzie, 2019).

The role of the information scientist
In modern society, information scientists should be the leaders in the light of the huge volume of information. As this amount of information continues to increase due to advancements in information technology, the quality of information is the key element. Information scientists have a responsibility to highlight the “epidemic” of fake news as a central issue in society. They have the tools and the skills, but also above all the obligation to promote the cultivation of creative and critical thinking (Montgomery and Gray, 2017; Rochlin, 2017).

Barclay (2019) suggests that libraries and information scientists should take advantage of the opportunity presented by the fake news phenomenon for an effective intervention, namely libraries have to undertake a carefully coordinated campaign so as to be a kind of brand name for the correct, valid and objective information.

Information scientists’ duties are constantly being adapted to the digital age in order to serve users’ new habits in obtaining information. Currently, everyone has access to information through social media and in a variety of news sources and the importance of evaluating information is more urgent than ever. Information scientists have an extra motivation and perhaps more opportunities to promote critical thinking and instructions on information literacy so that users are properly informed and able to distinguish valid information from fake one (Batchelor, 2017).

Librarians should teach information literacy to students, users of any educational level and age and help them with the information and news they encounter daily in printed sources, digital media and the Internet. It is important to focus on empowering people about the skills they need to find, evaluate, use and share information. Libraries provide free access to information in welcoming environments, where individuals of all ages can learn, produce and distribute information (I.F.L.A., 2017; Negi, 2018). A positive effect of the great amount of fake news could be the widely recognized need for information literacy as a key skill in identifying reliable information on the Internet and in the traditional media. Information literacy allows users both to find the accurate information and to use it effectively and ethically (Negi, 2018).

The basic skills, which are traditionally associated with information scientists, such as cataloging, classification, indexing and user education, are all still relevant in the digital environment. For instance, cataloging and classification skills can be used to retrieve information online. Creating meaningful metadata files based on cataloging principles can help users find all the information they are looking for and can ensure the access, credibility, reliability and validity of online resources (Hashim and Mokhtar, 2012).

The role of the information scientist is now becoming more important than in the past. The ability to understand the information’s architecture, the navigation of complex and numerous datasets, the ability to search for information, the relevant answer to a specific question and especially the ability to guide non-specialist users are key elements of the information scientist toolbox in the light of digital literacy. Information scientists compose the needed skills to distinguish the accurate information from the disinformation in a world flooded with fake news (Lachal et al., 2018). Given that libraries are open access spaces, they should be the cornerstone of a global strategy to combat social inequality, enabling everyone to be well informed in making decisions on issues relevant to their interests. In a context where information science and digital education skills of the information scientist are not often
found in society, librarians have a responsibility to contribute to the transformation of society and the alleviation of inequalities around the world (Lachal et al., 2018).

Providing more and better information, developing critical thinking and promoting information literacy are the solutions to limit the dissemination of fake news according to Oltomann et al. (2018). Information scientists have already recognized that by highlighting the problem of inaccurate information, as the importance of being able to evaluate information is at the forefront (Barclay, 2019).

Methodology
This study was conducted through a web-based survey. The data collection was facilitated by the use of questionnaire posted on Google Forms platform (https://www.google.com/forms/). The survey questionnaire was sent by email, through Facebook’s Messenger application and through the Viber application to about 900 recipients, information scientists and students of library science, in Greece. Through the duration of the survey, 434 completed questionnaires were obtained, which is a survey response rate of approximately 48%.

The study, undertaken between April 13 and May 15, 2020 aimed to investigate the attitudes of professionals and students of library science on the library’s role today, the abundance of information in the digital age and the contribution of libraries to combating the fake news phenomenon and the difficulties they may face in carrying out their duties as a result of the huge amount of information on the Internet.

The questionnaire was divided into two sections: (1) socio-demographic data and (2) respondents’ beliefs.

The questionnaire included seven-point Likert-scale closed questions. The 7-point Likert-scale closed questions ranged as follows: 1 = strongly disagree, 2 = disagree, 3 = partly disagree, 4 = neither disagree/nor agree, 5 = partly agree, 6 = agree and 7 = strongly agree.

The seven-point Likert scale was considered to be the most appropriate for capturing participants’ perceptions, as it allows the direction and neutrality to be measured, as well as the estimation of the intensity of beliefs, on three levels, thus providing more useful information. Using more response categories enables more accurate and reliable recording of respondents’ views (Alwin, 1997; Joshi et al., 2015).

In order to describe the characteristics of the sample and to present the results of the survey, the survey data were subjected to descriptive statistical analysis and the results presented in tables. The median was used to present the results of the questionnaire, as it is considered a more appropriate central tendency measure for ordinal data (Jamieson, 2004; Manikandan, 2011; Sullivan and Artino, 2013; Weaver et al., 2017). Also for the purposes of this work, the results of the questionnaire are interpreted according to the median of the distributions of survey responses as a central tendency measure of the participants’ perceptions according to Skarpa and Garoufallou (2021).

The Cronbach’s alpha reliability coefficient of internal consistency for the scale (Gliem and Gliem, 2003; Leung, 2011) was calculated and reported.

The survey data constitute ordinal scale (Sullivan and Artino, 2013; Weaver et al., 2017), and normality assumption is violated under the Shapiro–Wilk criterion and data distribution is strongly skewed due to the seven-point Likert scale used. For the above reasons, the analysis of the data was carried out using non-parametric methods as recommended in the literature (Jamieson, 2004; De Winter and Dodou, 2010; Sullivan and Artino, 2013).

Further analysis between genders was performed. For this purpose, the non-parametric criterion Mann–Whitney–Wilcoxon (Mann–Whitney U) was used, which compares two independent samples (Dancey and Reidy, 2017; Weaver et al., 2017) and is suitable for data with strongly skewed distribution, such as those derived from the seven-point Likert scale used in this survey (De Winter and Dodou, 2010; Sullivan and Artino, 2013).
In cases where analysis between age groups was required, the non-parametric criterion Kruskal–Wallis was applied, which controls differences between independent variables and is not affected by outliers and the existence of skewed distributions (Dancey and Reidy, 2017; Weaver et al., 2017). In the case of a statistically significant difference being found under the Kruskal–Wallis criterion, the Dunn post-hoc test was applied for further analysis in order to determine the existence of specific differences between variables (Goss-Sampson, 2019).

Furthermore, correlation analysis was conducted in order to test whether participants’ replies were interrelated, as regards different statements concerning libraries’ role in the digital era. Spearman’s rank-correlation test was used, which is a non-parametric procedure used to test hypotheses regarding the association between two ordinal variables (Jamieson, 2004; Sullivan and Artino, 2013; Goss-Sampson, 2019). It does not require normality assumptions, it can be used to analyze non-linear monotonic relationships and it is relatively robust against outliers (Schober et al., 2018). Interpretation of correlation coefficients was made according to Schober et al. (2018).

The analyses were performed using the open source statistical analysis software Jasp 0.14.1 (University of Amsterdam) (Goss-Sampson, 2019).

**Results**

*Characteristics of survey participants*

A total of 434 people participated in this study, mostly from academic, public and medical libraries. Most of the participants were female (79.3%), professional information scientists (53.0%) who worked in academic libraries (21.4%) and participants holding bachelor’s degree (38.2%). The age distribution of the participants included 58.5% who were ages 18–30, 29.5% who were ages 31–50 and 12.0% who were ages ≥51 (Table 1).

*Participants’ perceptions about libraries and fake news*

In this section, participants were invited to express their views on the role that libraries play today, their beliefs about libraries’ contribution to encounter the phenomenon of fake news

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>344</td>
<td>79.3</td>
</tr>
<tr>
<td>Male</td>
<td>90</td>
<td>20.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–30</td>
<td>254</td>
<td>58.5</td>
</tr>
<tr>
<td>31–50</td>
<td>128</td>
<td>29.5</td>
</tr>
<tr>
<td>≥51</td>
<td>52</td>
<td>12.0</td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information scientists</td>
<td>230</td>
<td>53.0</td>
</tr>
<tr>
<td>Students</td>
<td>204</td>
<td>47.0</td>
</tr>
<tr>
<td>Education level of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>166</td>
<td>38.2</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>61</td>
<td>14.1</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td>University student</td>
<td>204</td>
<td>47.0</td>
</tr>
<tr>
<td>Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic library</td>
<td>93</td>
<td>21.4</td>
</tr>
<tr>
<td>Public library</td>
<td>59</td>
<td>13.6</td>
</tr>
<tr>
<td>Medical library</td>
<td>22</td>
<td>5.1</td>
</tr>
<tr>
<td>Special library</td>
<td>22</td>
<td>5.1</td>
</tr>
<tr>
<td>School library</td>
<td>12</td>
<td>2.8</td>
</tr>
<tr>
<td>Unemployed</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>Students</td>
<td>155</td>
<td>35.7</td>
</tr>
<tr>
<td>Working students</td>
<td>49</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Table 1. Socio-demographic characteristics of the respondents (N = 434)
and the impact of the huge amount of information and misinformation on libraries’ environment.

Participants were asked to share their beliefs on the general role of the libraries today. The Cronbach’s alpha reliability coefficient of the query items is 0.853. The findings did illustrate clearly that in central tendency terms, participants strongly agreed (median = 7) that the libraries’ role today is first and foremost educational (94.7% partly to strongly agreed) and they agreed (median = 6) that libraries also play cultural (91.8% partly to strongly agreed), social (91.5% partly to strongly agreed) and informational (91.2% partly to strongly agreed) roles today.

Participants were asked to express their views about how users benefit by visiting libraries as a source of valid information on important issues that they are interested in. The Cronbach’s alpha reliability coefficient of the query items is 0.851. Data analysis revealed that respondents agreed that users utilize libraries for important issues of their concern such as education [median = 6 and Interquartile range (IQR): 2] and society (median = 6 and IQR: 1). Furthermore, they partly agreed that libraries are used as sources of valid information on health (median = 5 and IQR: 2), environment (median = 5 and IQR: 1.75), economy (median = 5 and IQR: 2) and policy (median = 5 and IQR: 2).

After the Mann–Whitney U criterion was applied, significant differences were found between information scientists and students concerning their beliefs, with the former expressing greater degree of agreement to the statement that users visit libraries as valid information sources for educational ($W = 32,593.0$ and $p < 0.001$), economic ($W = 29,896.0$ and $p < 0.001$), political ($W = 26,698.5$ and $p = 0.010$), societal ($W = 26,293.0$ and $p < 0.023$) and environmental issues ($W = 26,052.5$ and $p < 0.040$) of their concern.

The frequency results of the answers to the questionnaire concerning how to promote the library in society are presented in Table 2. The Cronbach’s alpha reliability coefficient is 0.882. The data analysis showed that at the level of central tendency, participants agreed (median = 6) with all the offered statements about library promotion methods such as lifelong educational programs, websites and social-networks.

Participants’ beliefs about the impact of the plethora of information and fake news on libraries are presented in Table 3. The Cronbach’s alpha reliability coefficient is 0.739. The analysis of the data showed that respondents agreed (median = 6) that the fake news phenomenon is an opportunity to highlight the role of the library in society and in addition to consolidate the role of the librarian as an information scientist. Also, participants partly agree (median = 5) that in today’s digital era with the electronic production of information, searching for reliable information on the Internet is easy for the average user. However, neutrality (median = 4) was recorded about the view that libraries have primarily the character of storing and preserving information in the Internet era. Finally, neutrality was also recorded in their beliefs about the plethora of information and fake news as potential threats to libraries.

Further analysis using the Kruskal–Wallis test showed that there was statistically significant differences among the three age groups concerning their beliefs about the statements that the huge volume of digital information poses a threat to libraries ($H = 57.325$ and $p < 0.001$). The younger participants (18–30 years old) seemed to have greater intensity of agreement compared to the older ones (31–50 and ≥51 years old) (Dunn’s post-hoc test and $p < 0.001$). Similarly, participants in the age group 31–50 years seemed to express greater intensity of agreement than those in the age group ≥51 years old ($p = 0.039$). Concerning the view that in the Internet era, libraries’ character is mainly of storing and preserving information significant differences were also recorded among age groups (Kruskal–Wallis, $H = 57.545$ and $p = < 0.001$). The younger participants (18–30 years old) seem to have higher degree of agreement with the statement compared to the older ones (31–50 and ≥51 years old) ($p < 0.001$, respectively). Similarly, participants in the age group 31–50 years seemed to also express greater intensity of agreement than those in the age group ≥51 years old ($p = 0.030$).
Table 2. Participants response frequencies of the seven-level Likert scale question about how to promote the library in society (N = 434) (IQR: Interquartile range).

<table>
<thead>
<tr>
<th>Likert Scale</th>
<th>1 Strongly disagree</th>
<th>2 Disagree</th>
<th>3 Partly disagree</th>
<th>4 Neither disagree/nor agree</th>
<th>5 Partly agree</th>
<th>6 Agree</th>
<th>7 Strongly agree</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Via website</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>15</td>
<td>50</td>
<td>163</td>
<td>196</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>With announcements/articles in the local media</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>37</td>
<td>85</td>
<td>194</td>
<td>105</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Organizing events</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>19</td>
<td>52</td>
<td>181</td>
<td>175</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>With education/lifelong learning programmes</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>18</td>
<td>55</td>
<td>173</td>
<td>182</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>With print editions</td>
<td>8</td>
<td>10</td>
<td>20</td>
<td>76</td>
<td>93</td>
<td>147</td>
<td>80</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Through social networks</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>17</td>
<td>47</td>
<td>166</td>
<td>195</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Through librarians</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>27</td>
<td>58</td>
<td>181</td>
<td>156</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Through library friends or other organizations/clubs</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>31</td>
<td>64</td>
<td>196</td>
<td>132</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>
The huge volume of digital information poses a threat to libraries

The phenomenon of fake news threatens libraries because they can no longer control the volume of reliable information

In the Internet era libraries have mainly the character of storing and preserving information

By digitizing knowledge, searching for reliable information on the Internet is now easy for the average user

With digital/electronic production of information searching for reliable information on the Internet is now easy for the average user

The fake news phenomenon of is an opportunity for libraries' role to be promoted in society

Libraries can help tackling fake news

The fake news phenomenon is an opportunity for the librarian to consolidate his role as an information scientist

<table>
<thead>
<tr>
<th>Likert scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>41</td>
<td>93</td>
<td>33</td>
<td>75</td>
<td>123</td>
<td>42</td>
<td>27</td>
</tr>
<tr>
<td>Disagree</td>
<td>21</td>
<td>58</td>
<td>53</td>
<td>65</td>
<td>102</td>
<td>105</td>
<td>30</td>
</tr>
<tr>
<td>Partly disagree</td>
<td>47</td>
<td>101</td>
<td>56</td>
<td>57</td>
<td>91</td>
<td>64</td>
<td>18</td>
</tr>
<tr>
<td>Neither disagree/or agree</td>
<td>27</td>
<td>55</td>
<td>41</td>
<td>52</td>
<td>105</td>
<td>116</td>
<td>38</td>
</tr>
<tr>
<td>Partly agree</td>
<td>25</td>
<td>60</td>
<td>48</td>
<td>59</td>
<td>108</td>
<td>99</td>
<td>35</td>
</tr>
<tr>
<td>Agree</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>62</td>
<td>90</td>
<td>158</td>
<td>85</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>33</td>
<td>84</td>
<td>187</td>
<td>112</td>
</tr>
<tr>
<td>Median IQR</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>46</td>
<td>74</td>
<td>175</td>
<td>115</td>
</tr>
</tbody>
</table>

Table 3. Participants' response frequencies of the seven-level Likert scale question about the impact of the plethora of information and the fake news on libraries' role in fake news era (N = 434 IQR = Interquartile range)
Following the Mann–Whitney U criterion revealed that students expressed a significantly higher intensity of agreement, as they partly agreed with the statements that the **plethora of digital information poses a threat to libraries** \((W = 16,425.0 ~ \text{and} ~ p < 0.001)\) and that **libraries’ character is mainly of storing and preserving information in the Internet era** \((W = 17,537.5 ~ \text{and} ~ p < 0.001)\) compared to information scientists who were neutral or partly agreed, respectively.

Participants were asked to express their beliefs about **libraries’ contribution to the battle against fake news**. The Cronbach’s alpha reliability coefficient is 0.878. The data analysis showed that most respondents partly to strongly agreed that the libraries could contribute to the battle against fake news with offering **source evaluation instructions** (97.0%), **information literacy programs** (94.3%), **lifelong learning programs** (92.7%) and **general training programs** (92.1%).

The frequency distribution of the responses concerning the participants’ views regarding the **impact that the Internet and the plethora of digital information may cause on libraries** are presented in Table 4. The Cronbach’s alpha reliability coefficient is 0.737. Data analysis showed that in level of central tendency participants expressed neutrality concerning the view that **the spread of the Internet and social media “threatens” the existence of libraries** (median = 4). They partly disagree with the statement that **the Internet offers satisfactory answers to users so that they do not have to visit libraries** (median = 3). Finally, they partly agree that **the abundance of information in modern times causes problems to information scientists during the performance of their duties** (median = 5).

The Kruskal–Wallis test showed statistically significant differences among age groups \((W = 82,572 ~ \text{and} ~ p < 0.001)\), regarding the statement that **the spread of the Internet and social media “threatens” the existence of libraries**. Pairwise comparisons (Dunn’s post-hoc test) revealed that participants in the younger age-group (18–30 years old) expressed higher intensity of agreement with the position compared to the older ones (31–50 and ≥51 years old) (Dunn’s post-hoc test and \(p < 0.001\)). Between the age groups 31–50 and ≥51 years old no difference was observed \((p = 0.225)\). Likewise, significant differences were found about the statements that **the Internet offers satisfactory answers to users so that they do not have to visit libraries** \((W = 41,792 ~ \text{and} ~ p < 0.001)\) and that **the abundance of information in modern times causes problems to information scientists during the performance of their duties** \((W = 49,028 ~ \text{and} ~ p < 0.001)\). Participants in the younger age group (18–30 years old) expressed higher intensity of agreement with both of the statements compared to the older ones (31–50 and ≥51 years old) \((p < 0.001, \text{respectively})\). Similarly, participants in the age group 31–50 years seemed to have higher intensity of agreement compared to those in the age group ≥51 years old \((p = 0.046 ~ \text{and} ~ p = 0.025, \text{respectively})\).

Students expressed significantly greater degree of agreement compared to information scientists with respect to the positions that **the spread of the Internet and social media “threatens” the existence of libraries** (Mann–Whitney U test, \(H = 14,730.0 ~ \text{and} ~ p < 0.001\), that **the Internet offers satisfactory answers to users so that they do not have to visit libraries** \((H = 17,467.0 ~ \text{and} ~ p < 0.001)\) and that **the abundance of information causes problems to information scientists during the performance of their duties** \((H = 16,618.5 ~ \text{and} ~ p < 0.001)\).

Participants were asked to declare their views concerning the **impact of the plethora of digital information on their working environment**. The results are presented in Table 5. The Cronbach’s alpha reliability coefficient is 0.878. Data analysis revealed that participants partly agreed with the views that the sizable amount of information causes them **work-related stress, insecurity, confusion and feelings of being unable to keep track of developments in their field** (median = 5).

The Kruskal–Wallis test revealed significant differences in the intensity of participants’ beliefs among age groups about the wealth of digital information as a reason related to **working stress** \((H = 47.188 ~ \text{and} ~ p < 0.001)\). Pairwise comparisons (Dunn’s post-hoc test) showed that younger participants (18–30 year old) reported significantly higher intensity of...
The spread of the Internet and social media "threatens" the existence of libraries

The Internet offers satisfactory answers to users so that they do not have to visit libraries

The plethora of information in modern times creates problems for information scientists when serving users

<table>
<thead>
<tr>
<th>Likert scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>46</td>
<td>87</td>
<td>51</td>
<td>62</td>
<td>99</td>
<td>56</td>
<td>33</td>
</tr>
<tr>
<td>Disagree</td>
<td>54</td>
<td>102</td>
<td>91</td>
<td>51</td>
<td>80</td>
<td>43</td>
<td>13</td>
</tr>
<tr>
<td>Partly disagree</td>
<td>27</td>
<td>52</td>
<td>49</td>
<td>70</td>
<td>124</td>
<td>82</td>
<td>30</td>
</tr>
<tr>
<td>Neither disagree/nor agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median IQR</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4. Participants' response frequencies of the seven-level Likert scale question about the impact of the Internet and the plethora of digital information on libraries (N = 434) (IQR: interquartile range)
<table>
<thead>
<tr>
<th>Likert scale</th>
<th>1: Strongly disagree</th>
<th>2: Disagree</th>
<th>3: Partly disagree</th>
<th>4: Neither disagree/nor agree</th>
<th>5: Partly agree</th>
<th>6: Agree</th>
<th>7: Strongly agree</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>The plethora of information in modern times causes you work-related stress</td>
<td>15</td>
<td>63</td>
<td>31</td>
<td>56</td>
<td>134</td>
<td>99</td>
<td>36</td>
<td>5</td>
<td>2.75</td>
</tr>
<tr>
<td>The plethora of information in modern times causes you feelings of insecure</td>
<td>16</td>
<td>77</td>
<td>32</td>
<td>68</td>
<td>116</td>
<td>84</td>
<td>41</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>The plethora of information in modern times causes you confusion</td>
<td>16</td>
<td>59</td>
<td>30</td>
<td>64</td>
<td>129</td>
<td>95</td>
<td>41</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Do you feel that you are not catching up with developments in your field in the information age?</td>
<td>14</td>
<td>53</td>
<td>37</td>
<td>86</td>
<td>113</td>
<td>91</td>
<td>40</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>You feel insecure about your skills and knowledge in dealing with the phenomenon of fake news</td>
<td>24</td>
<td>74</td>
<td>36</td>
<td>94</td>
<td>110</td>
<td>66</td>
<td>30</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>You feel that your working status is at risk from the prevalence of Google, Amazon, Facebook etc</td>
<td>46</td>
<td>94</td>
<td>41</td>
<td>91</td>
<td>75</td>
<td>55</td>
<td>32</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>You feel secure about the reliability of the information you provide to users</td>
<td>5</td>
<td>15</td>
<td>14</td>
<td>61</td>
<td>131</td>
<td>161</td>
<td>47</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>You feel insecure with your skills and knowledge to deal with everyday life at work</td>
<td>24</td>
<td>102</td>
<td>37</td>
<td>92</td>
<td>96</td>
<td>58</td>
<td>25</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 5. Participants' response frequencies of the seven-level Likert scale question about the impact of the plethora of information in the libraries' working environment (N = 434)
work-related stress compared to the age groups 31–50 years ($p < 0.001$) and ≥51 years ($p < 0.001$). Participants in the age groups 31–50 year had also reported higher work-related stress than those aged ≥51 years old ($p = 0.039$). Similarly, significant differences were found concerning the view that they felt their working status was at risk due to the prevalence of large information companies like Google and Amazon ($H = 59.988$ and $p < 0.001$). Participants 18–30 years old expressed greater degree of agreement compared to the age groups 31–50 years ($p < 0.001$) and ≥51 years ($p < 0.001$). No difference was observed between participants in the age groups 31–50 and ≥51 years old ($p = 0.096$).

The Mann–Whitney U criterion revealed that there were statistically significant differences in the intensity of beliefs between information scientists and university students. Students declared higher intensity of agreement regarding the statements that the plethora of digital information causes working stress ($W = 16,140.5$ and $p < 0.001$), insecurity ($W = 16,388.0$ and $p < 0.001$) and confusion ($W = 16,590.0$ and $p < 0.001$), that they were not able to track the changes in their field in the information age ($W = 20,402.0$ and $p = 0.017$) and that they felt insecure about their skills and knowledge in dealing with the fake news phenomenon ($W = 19,651.0$ and $p < 0.003$).

### Training and support needs

In this section, participants were asked to answer questions about their training needs. Cronbach’s alpha reliability coefficient is 0.867. The results showed that in central tendency level, participants agreed with statements such as that they need training for combating fake news (median = 6 and IQR = 2), information sources evaluation (median = 6 and IQR = 1) and recognizing predatory journals (median = 6 and IQR = 2).

Data analysis using the Mann–Whitney U criterion showed that university students seem to express a greater degree of agreement compared to information scientists concerning their perceived needs for training to evaluate information sources ($W = 21,748.5$ and $p = 0.040$), as well as seeking information in digital environment ($W = 20,237.5$ and $p = 0.011$) and digital libraries and institutional repositories ($W = 19,466.5$ and $p = 0.002$).

Participants were also offered statements concerning supporting needs to their duties. Scale reliability Cronbach’s alpha = 0.852. The data analysis showed that participants agreed that the fake news phenomenon strengthens the role of information scientist (median = 6 and IQR = 1). They partly agreed in central tendency level that the information scientists’ professional skills meet the growing demands of users’ information needs. They also partly agreed that the library science departments offer support to their duties through lifelong learning programs (median = 5 and IQR = 2). In addition, regarding the statements that the library science departments provide relevant courses on fake news, as well as information scientists have received appropriate training to combat fake news neutrality was recorded (median = 4 and IQR = 2).

Spearman’s rank correlation analysis was used to assess the association between participants’ views on different statements regarding the role of libraries in the digital era and the training needs of information scientists. Specifically, the analysis revealed a significantly strong correlation [$\rho = 0.716$ (95% Confidence Interval (CI): 0.666–0.759) and $p < 0.001$] between responses to the statements that libraries can help combat fake news and the phenomenon of fake news is an opportunity for the information scientist to consolidate her/his role. A strong correlation coefficient was also recorded between responses to the training needs statements on fighting fake news and information sources evaluation [$\rho = 0.699$ (95% CI: 0.647–0.744) and $p < 0.001$]. Furthermore, moderate correlation coefficients have been found between responses concerning the statements about training needs on identifying fake news online and recognizing falsified photos and videos [$\rho = 0.699$ (95% CI: 0.647–0.744) and $p < 0.001$], as well as the spread of the Internet and social media “threatens” the libraries’ existence and feelings that the working status is at risk from the prevalence of Google, Amazon,
Facebook etc. \(\rho = 0.645\) (95\% CI: 0.586–0.697), and \(p < 0.001\). Finally, responses to the statements concerning feeling unable catching up with developments in their field in the information age and insecure about their skills and knowledge in combating the phenomenon of fake news \(\rho = 0.640\) (95\% CI: 0.581–0.693) and \(p < 0.001\).

**Discussion**

The growing importance of the libraries’ educational role has been acknowledged internationally by both the International Federation of Library Associations and Institutions (IFLA)/United Nations Education Scientific and Cultural Organization (UNESCO) Public Library Manifesto (I.F.L.A., 1994) and the IFLA/UNESCO Guidelines for Development (I.F.L.A., 2001). Libraries make freely available to all individuals the material in their possession which highlights their societal role (Larsen, 2018). Our findings are in line with the above views given that the respondents to the present study, information scientists and library science students consider that libraries’ role is primarily educational and then cultural, social and informational. This is also in consistence with participants’ replies about the reason why users visit libraries, which is mainly related to educational and societal issues according to our findings. These results highlight the important role that libraries play in education in our society. Currently, libraries are called upon to be active in promoting their information and educational profile, and the effectiveness they can have in a challenging environment of ever-increasing information, the development of technological means of communication and a strong demand for successful access to information.

The majority of respondents partly to strongly agreed that libraries should be actively promoted in society, especially by organizing education/lifelong learning programs. It seems to be an action that is agreed upon by the majority of both information scientists and students, a feature which in combination with the high rates of agreement among the participants regarding the educational role of the library, which indicates once more the importance that library holds in the education field. The role of lifelong learning programs aimed at creating informative individuals is becoming increasingly important. Developing effective training programs will help users to handle information today and in the future so that they can become independent individuals. The above findings are in agreement with others who stated that in the new digital era, the professional profiles of information scientists, highlighting their roles as educators and network navigators, is combined with their role in providing literacies’ educational programs, such as information, media and digital literacy to the users (Sherman, 2007; Bawden, 2008; Negi, 2018), teaching them the appropriate skills to be able to access information resources (Sun et al., 2011; Oltmann et al., 2018; Rose-Wiles, 2018).

The largest number of the respondents in our study (76.7\%) partly agreed or agreed that the phenomenon of fake news is an opportunity to highlight the role of the library in society. They also believed that it poses a challenge to consolidate the librarian’s role as an information scientist (83.9\%). These findings agree with Barclay (2019) who stated that the phenomenon of fake news represents an opportunity for the library community to take a leading role and, despite the difficulties of modern challenges, to provide meaningful and effective help to people to be more informed users of information.

It has been argued that although the Internet offers only limited access to high quality information, however, it provides high enough quality to meet most users’ needs quite adequately (Anderson, 2005; Lankes, 2008). Participants in this study partly agreed that in today’s digital age with the digitization of knowledge, searching for reliable information on the Internet is easy for the average user. The older the participants, the lower intensity of agreement was recorded concerning the statement that libraries have mainly the character of storing and preserving information in the age of the Internet. This outcome is attributed to the
fact that students partly agreed with this view, while on the contrary, information professionals partly disagreed. The noticeable difference between a library and a storehouse of information is the human presence, as the library is a place where people search for information and at the same time a place where people meet each other. This result could perhaps be accredited to the low level of relevant professional experience of students.

The findings did not show distinct participants’ perception with regard to whether the abundance of information and fake news constitutes a potential threat to libraries. However, students seemed that they partly agreed with this view, which is consistent with their partial agreement also with the statement that the huge volume of digital information poses a threat to libraries, unlike information scientists who expressed neutrality. Besides, students expressed significantly higher intensity of agreement with the statement that the spread of the Internet and social media threatens the existence of libraries compared to the information professionals. This outcome could probably be attributed to the fact that students are currently particularly familiar with the use of information technology (Anderson, 2001; Pempek et al., 2009). We assume that they often face a wealth of information in their daily use of digital technology and probably for that reason their views differentiate compared to the older participants.

The quality of decisions or reasoning individuals make correlates positively with the amount of information they receive up to a certain point. If further information is provided beyond this point, it will no longer be integrated into the decision making process and the result will be information overload (Chewning and Harrell, 1990; Eppler and Mengis, 2008). The findings of the present study showed that the overabundance of information that exists in modern times may cause to information scientists and students feelings of anxiety, insecurity and confusion in their working environment, which is in accordance with Eppler and Mengis (2008) who stated that when a considerable amount of information cannot be managed, it may cause psychological disorders. Also, concerns arise from the findings of the present study, as more than half of the participants (56.2%) perceived that the new digital age cause them problems in following developments in their field. This could suggest the existence of information overload that is related among other things with conditions in which individuals are not able to keep up with the literature of their own subject (Bawden and Robinson, 2009).

According to our findings, neutrality was recorded among respondents’ views concerning the statement that the participants’ working status is endangered by the spread of the big companies like Google, Amazon, Facebook, etc. This outcome is because that beliefs differ among younger age groups compared to the older ones. Younger people are more concerned about the future of their working life compared to the older individuals. Anderson (2005) expressed concerns about the future of libraries in a radically changing environment. Digital technologies are useful tools in every library operation and service; however, there are librarians who express concerns, worries and even fear for the future of their professional field (Grazia Melchionda, 2007).

Our findings indicated that the vast majority of participants felt the need for training in combating fake news, evaluating information sources and recognizing predatory journals. Continuous training of information scientists is considered necessary, as the spread of information and communication technologies have formed a new reality in the field of libraries. This finding is in accordance to previous studies that have emphasized the need for training and continuing education of librarians (Grazia Melchionda, 2007), given that updating of knowledge and skills on several topics has been recorded to be the most important reason for information scientists’ training (Tsalapatan) and Kalogeraki, 2010).

Currently, librarians are almost unanimous in their beliefs that they have a central role to play in the fight against fake news (ALA, 2017; Finley et al., 2017). The responses in our study indicated that participants agreed with the view that libraries can help combating fake news. Their replies showed that in the battle against fake news, libraries can primarily promote guidelines for the evaluation of sources, information literacy programs and educational and
lifelong learning programs. However, Dempsey (2017) concludes that librarians have the potential to help combat fake news but they are not at the forefront of the struggle, while others argue that the implementation of information literacy programs has not been successful (Johnson, 2017; Boyd, 2017; Barclay, 2019). According to Sullivan (2019), librarians believe that they can actively participate in the fight against fake news providing information literacy programs. However, the questions that arise relate to what skills are needed to successfully deal with fake news and whether information scientists are able to teach these skills (Sullivan, 2019). These concerns are confirmed by our findings, as information scientists seem to face difficulties following the developments in their field. Also, an important outcome that emerged is that participants consider necessary to attend training projects in combating the fake news phenomenon and misinformation and in relation to the relevant digital technologies. Moreover, no clear indication was found about participants’ beliefs on the statements that they had received the appropriate training during their studies to combat fake news and that the library science departments provide relevant courses on fake news and misinformation. The above indicate the urgent need to make decisions toward continuing education and training of information scientists so that they are able to adapt effectively, with modern and up-to-date skills, in view of the social change that takes place through the digitization of knowledge.

On the whole, there are no easy solutions or antidotes to fake news. Fake news is an ever-increasing, persistent and complex problem in society, but it is not insurmountable. Currently, information scientists have several tools at their disposal to counter fake news, with the primary task of providing reliable information to citizens (Montgomery and Gray, 2017; Lor, 2018) and thus contributing to the battle against misinformation.

Conclusions and recommendations
The aim of this study was to record the information scientists’ and Library Science students’ views and attitudes about the role of libraries in the fake news era. The importance of libraries’ role is now greater than ever in combating the ever-increasing phenomenon of fake news. Libraries, should make important decisions about their role in society due to the changing conditions prevailing in the digital age and also highlight its educational, social, cultural and informational role. The evolution of societies in the age of fake news encounters serious new challenges and libraries are obliged to respond carefully to these challenges in order to meet their role that are called upon to play.

Based on our findings, in order to highlight the libraries’ role in combating the fake news phenomenon, some recommendations should be taken into account. First, we consider important offering relevant courses in the departments of library science on how to spot and combat the fake news and second, centrally organized and coordinated ongoing training of information scientists is needed, in areas of information technology, such as the evaluation of information sources, identification of falsified photos and videos and information seeking in the digital environment. On the whole, libraries’ promotion in the local community and on the Internet are considered important, especially their active participation in social media platforms, given that social networking sites are now used as public’s information sources.

Understanding the complexity of the fake news phenomenon is considered the primary stage in solving the problem. In the light of the influence of emotions, personal beliefs and the psychological and social dimension of the phenomenon, it is important to establish an interdisciplinary, experimental approach in investigating the appropriate way of displaying and debunking disinformation. There is a need for future research in the areas of psychology, sociology, information science, journalism and education to investigate the adequate ways of encountering such a multi-factorial phenomenon that impacts society.
References


Further reading


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