Benefits of evaluating electronic information sources for librarians and users in the research process: Challenges and Results
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Abstract: This paper introduces a conceptual understanding of online information sources evaluation and argues why these sources should be evaluated. The aim of this article is to present the benefits of evaluation of online sources for users, librarians, and libraries. The article first discusses the importance of critical evaluation regarding the technical upgrade of online sources. It then presents how the evaluation of online sources may help users to accomplish higher levels of knowledge, and improve their critical thinking skills when they locate information relevant to a specific research topic and have to decide what kind of information is needed. Lastly, regarding libraries, the implementation of evaluation may assist them with improving their electronic resources and services, and achieve success in fulfilling their goals and policies.

1. Introduction

Given the lack of accessing information during the previous decades, the amount of information that can be accessed has rapidly increased (Wright, 2014: 9, 15). Users today may have access to a huge amount of sources on various scientific topics, due to the information explosion. Access to information may now be available from smart and mobile devices, such as smartphones. In the information age, anyone can post information on the Internet and, of course, it is easier to find and access published information. As a result, an ever-increasing number of researchers/users are turning to the internet to acquire more and more information. Online resources can offer efficient teaching at every level of education and can be influential learning tools for life-long learning (Ugwu and Nkem, 2017).

Nevertheless, the information found on the internet must be evaluated cautiously. For example, a scientific journal article is usually subjected to a review/evaluation by scientific reviewers before being accepted for publication. The same also applies to books, where expert judges evaluate its' scientific quality. Similarly, a user needs to have a discreet sense of online valid material and has to look for accurate information and criteria-based validation of the sources. The Internet has not significantly changed the skills required assessing the reliability of sources; it has changed the need of people to know when and how to make use of these skills. As technology continues to evolve, the challenge of teaching users how to maintain a well-updated profile of up-to-date online sources is a huge challenge for librarians (Wright, 2014: 9, 15). In a period teeming with an immense stock of information and overflowing with access to a number of data, it becomes quite vital for every user to know what evaluation is, and estimate safely and efficiently the retrieved sources before using them to complete a research task.

Therefore, the aim of this article is to highlight the key role of evaluation of online sources and especially its impact and contribution in both of these related categories, librarians, libraries and users.

This approach will provide evidence to support the effectiveness of evaluation for encouraging and developing users' critical thinking. Lastly, it will bring information experts into full focus and increase the utilization of skills and abilities about evaluation of online sources and meet users' needs. The study offers a set of benefits with regard to the evaluation of information credibility, and the findings are enlightening.

1.1 Concept of Evaluation

Evaluation is a process, which aims to assist the user with the effective application of his/her scientific research. According to Hjørland (2012) 'the focus of evaluation […] is on whether or not a given source is reliable for use in a scholarly argument'. Ahmad and Ayub (2019) point out that the evaluation of online quality information sources is based on several qualitative criteria such as credibility, reliability, accuracy, and truthfulness, each user is employing according to his/her discretion for the intended analysis of his/her research (Ahmad& Ayub, 2019: 354). These criteria are presented in forms of questioning, evoke critical thinking, and contribute to the establishing of information reliability (Ripoll& Matos, 2020: 91) It is widely believed that the evaluation of information sources is a point of reference for both information centers and researcher-users, as both categories are actively involved in the process of accessing a large number of online information sources. In addition, evaluation involves the methodical and appropriate examination of ideas for the purpose of planning and also forming a view on a research topic.

2. Methodology

The methodology used in this article is mainly qualitative. This article aims to present at a theoretical level the importance of evaluating online information sources. A systematic literature review was conducted. Searches were conducted using a variety of combinations of the thematic terms evaluation, credibility, online sources, libraries, users, and their

variants in four multi-disciplinary and library-oriented databases. The rest of studies which did not satisfy the above terms were not included. Studies selected were published in English from 1994 onwards presenting the views of information experts regarding the value of the evaluation process. Studies in the final dataset fell into 3 categories: (1) those using evaluation or credibility in technical upgrade of online information sources, (2) those using evaluation, or credibility of online information sources and library users, and (3) studies regarding the role of evaluation of online sources in libraries and librarians. In terms of structure, I then argue critically and methodically the scientific and social benefits of evaluation for the technical upgrade of the online system information sources, for libraries as well as for users. By saying 'libraries' I refer both to academic and public ones, as these two types incorporate evaluation in their main tasks of information training for the users. The same also applies to library users, i.e those who seek the services of a library in colleges and universities, in cities and towns of all types.

3. Literature Review

There are a number of experts that have stated the problems regarding the lack of information evaluation practices by users and point out at the same time the importance and prominent role of evaluating online information sources. To start with, December (1994) argued that even the best websites would not be effective if the Internet continues to be full of poor quality, redundant, and misleading information. In his study, he points out that without the tools and the proper methodologies for collecting, evaluating, managing, and presenting information, the value of the World Wide Web as a source of knowledge can be lost. In a similar vein, Notess (1998) considers that the major problem concerning the evaluation of information on the Internet is that search engines are often linked to ephemeral web pages, which simply move, disappear, or change after the database is updated. It is important to note that most databases are not updated daily. Kovacs et al. (1994) emphasized the need to evaluate information on the Internet. In their study they use the terms 'good material' and 'bad

material'. Good material is any information related to the needs of the researcher-user and fulfills the basic standards of information quality. King (1997) argued that no prior evaluation can be done for online sources, as there will always be the need to evaluate them. He suggested that it is necessary for researchers-users to be taught the evaluation techniques in such a way as to make them useful and relevant.

Brandt (1996), evaluating the information existed in various search engines (i.e. Yahoo, Lycos and Magellan), pointed out that web search engines did not prioritize resources based on the objectivity and subjectivity of the information. He argued that users need to ask questions such as: Is there biographical information of the creators of the sources? Are there any other online works by the author? How does it compare to other sources? Are there online reports that evaluate the content and purpose of the source? (Kaushik, 2012: 63). Fidel et al. (1999) pointed out that the potential use of the World Wide Web as a tool for collecting information is enormous and much of it has not yet been implemented (Kaushik, 2012: 63). Similarly, Fritch and Cromwell state that '[...] information on the Internet can be published by anyone', '[...] there is no information filtering on the Internet'. They also point out that most online sources lack credibility and authority, as anyone can post almost anything on the internet. Finally, they emphasize the fact that there is little or no evaluation of material and there are no official experts or any supervisory evaluation process (Fritch and Cromwell, 2001: 500). William Katz in his study (2002) states: 'A librarian knows if a reference source is good-trusted, bad or indifferent... A good reference source is the one that answers questions and a bad-indifferent reference source is the one that does not'.

In turn, Kaushik emphasised that the abundance of raw information on the Internet is not evaluated by expert critics (Kaushik, 2012: 62-63). Nyström and Sjögren stated that the need to change direction in their research and the selection of new sources is a necessary skill for the researcher-users, and also a challenge (Nyström and Sjögren, 2012: xi-xii). Mandalios in her article for example stated that the lack of 'quality control' on the Internet is a

significant risk (Mandalios, 2013: 471). Adeniran's study argued that the use of electronic resources has a great impact on the academic performances of students. Nonetheless, the need to acquire more skills in the use of online sources is more than significant (Adeniran, 2013: 319). According to Kriscautzky and Ferreiro, users today simply type a search term into a search engine, copy and paste the first result of the web source in an uncontrollable manner without studying the information or considering any questions about the validity of the obtained information. This behavior is inadvertently adopted by the users themselves, because they cannot deal with issues of validity and reliability of online sources (Kriscautzky and Ferreiro, 2014: 915). Although a lot of information is available on the Internet, there is not any way to assess the authenticity of the sources. The above action hides serious risks that may arise when selecting the content of the source. Thus, validity is what should concern the researcher/user to the greatest extent, as its incomplete evaluation can be research dangerous.

Moreover, Ugwu and Nkem in their research on the use of online information resources by undergraduate students revealed that a number of the latter made little or no use of electronic provided resources of their institute although the high cost of these resources. The attitude of the students seemed to be indifferent, as they appear to have several challenges such as lack of browsing skills, low internet bandwidth, insufficient ICT infrastructure, absence of online assignments, and lack of motivation to use online information resources. Although users can find information to a larger extent than in the previous decades, they still need supervision and guidance in the learning process as most of online information sources are not peer reviewed (Ugwu & Nkem, 2017). Even in most imminent studies the findings continue to be the same as the quality of the information is not being examined and this can be risky. Ahmad and Ayub's research show that the real challenge '… *is how to judge the credibility of information. This situation demands consistent revision of the methods used by the researchers and organization in the production of information related products and services*, *and to effectively respond to*

complexity and volume' (Ahmad& Ayub, 2019: 353). According to the recent study of Hahnel et al. (2018) when evaluating online information, specialist users are able to appraise their web resources more efficiently than the less specialised ones. This process will help users to be able to evaluate and select valid sources, which will respond with their information needs. The continuous evaluation procedures minimize the risk of significant errors. This requires of course re-evaluating the objectives. Ongoing evaluation will allow researcher-users to decide if their work is moving in the right direction and is committed to the goal of their research.

Similarly, recent studies continue to indicate that users are either ineffective in evaluating information, or inattentive to it. Keshavarz et al. (2020), studying the information credibility shown by students when evaluating scientific websites, point out that the components related to the structure and concept of the credibility of web information still remain unfamiliar. They believe that the criteria of evaluation among users are not clear and access to serious research demands higher knowledge of evaluation skills or, as very rightly state, even adjust of user's information attitude (Keshavarz et al., 2020: 1-2). In the same vein, Gale and Doug's article (2020) exploring the process of evaluation among students as users of online information resources claim that in post-truth era the need for critical evaluation of online information is imperative. Nowadays, students-users are not able to manage this rapid explosion of disinformation and are still struggling to find what is true. The latter are becoming more aware that they cannot show any trust to everything that they read, and online information must be checked for its authenticity (Gale& Doug, 2020: 120). Ripoll and Matos state alike that information is spread rapidly so there is a need to search for reliable information paths and sources. What matters the most is 'to identify and combat misinformation as it becomes survival necessity in the contemporary cultural environment' (Ripoll& Matos, 2020: 81).

Faix in her study presented that source evaluation skills through checklists is problematic. She argued that through searching 'results are created by complex algorithms and do not automatically

recommend credible sources'. Thus, students [i.e users] not having any understanding on how internet search engines work, they may not comprehend that these search engines are not necessarily returning the most credible results during their research (Faix, 2021). The research paper of Kyung-Sun, Sei-Ching and Eun-Young has shown that the use of social media has also exacerbated the evaluation problems. Through the social media the content of information being disseminated habitually by unknown individuals is highly dubious and substantiated. Thus, the scholars deem that it is imperative IL trainings for users (Kyung-Sun, Sei-Ching& Eun-Young, 2021).

Taking the above scholars' views into consideration, most studies have focused on the challenging use of source evaluation and have not explicitly studied the reasons why librarians and users should evaluate online sources. No research so far has been made as to why online sources of information have to be evaluated. This paper contributes to the discourse on this subject and offers a point of reference for librarians, users to assist them in formulating skills and developing practices that would in turn, encourage them how to effectively manage and to increase the usage of sources. In order to better appreciate the role of evaluation for the online sources, it is important to highlight its benefits for the technical upgrade of the website, and also for users, libraries, and information specialists, who are directly related with the evaluation, as I argue below.

4. The importance of Critical Evaluation for the technical upgrade of online Information Sources

To begin with, the process of evaluating online information sources is happening for technical reasons. Through the evaluation, the improvement of the website, the measurement of its performance, and the refinement of its design may be achieved to a better degree. Through the technical upgrade of a website, designers will need to know the characteristics of modern websites and have a satisfactory technical knowledge for the development, utilisation, management, maintenance, and publication of websites and content (sources of information).

According to Tomaél, Alcará and Silva, due to constant changes in the web, the parameters should always be revised, re-adjusted and therefore serve as a method of reflection rather than a complete and ready evaluation tool (Tomaél, Alcará and Silva, 2008). There is a consensus that website design, interactive features, clear layout, and the authority of the owner have a positive effect on credibility. With regard to content features, authority of the author, ease of use, and content have a positive effect on credibility formation (Kyung-Sun, Sei-Ching& Eun-Young, 2021).

By checking the usability, the operation, the retrieval functionality, the security of the source, and the navigation of a website, website designers may improve various functions of the technical and audiovisual design of the webpage, such as the text font, more attractive colours, use of multimedia-multilingualism, proper images, pop up box on screen, truncation, browsing, search history, exporting and downloading (Ripollo and Matos 2020: 90). Both 'the credibility of an author in a particular area, or the identification of a site as academic or governmental, determine the reliability of a source' (Tomaél, Alcará and Silva, 2008). As the technical dimension responds to the 'how to present the sources', during this process, the design specifications given by the website designers are checked and evaluated, in order to approve, modify, reject the website, or redesign it anew (Bentil, Liew, & Chawner, 2021). Therefore, the evaluation helps to flag up relevant technical problems, questions, requirements, and impact on the user, which were not identified during its initial design.

5. The Importance of Critical Evaluation of Online information sources for users

Evaluation of online sources information by users and librarians offers the possibility for feedback on the content of the sources. According to Metzger and Flanagin (2013) the criteria that must be followed for the reliability of a source is the accuracy, which refers to the case when a site or a source is error-free and the information can be verified offline. The credibility of a website can be measured by noting who compiles

the information, what the credentials and qualifications of the creator are, and whether the website is recommended by another trusted one. The credibility also refers to the creators' purpose who provides the information and if the information is a fact or an opinion, or a commercial one or there is conflict of interest. Finally, the validity of the website refers to how the information is updated. These recommendations require a number of user activities (Metzger and Flanagin, 2013: 214).

The information material has to be evaluated by its aim, contents, methodology, covering the needs of the users. The central points on which the evaluation of online sources has to be focus are the structure of the text, the relevance, the appropriateness, the visual appearance, and the date of the most recent update (Aggarwal et al., 2014: 2) (Garoufallou et al., 2013: 18-19). The credibility of a website is related to 1) its nature, i.e. whether it is educational, research site, encyclopedic, blog, journal, or commercial 2) to the identity (author, site creator, support institution) 3) the date of its publication 4) the presence or absence of ads, images or multimedia elements, along with typographic features such as color, size, font type (Kriscautzky and Ferreiro, 2014: 916, 918). Therefore, one can conclude that the evaluation focuses mainly on the qualitative characteristics of information sources.

Based on the above, the evaluation of online information sources may help the users to avoid plagiarism. According to studies the diffusion of a variety of online information sources has unfortunately facilitated the spread of plagiarism in research papers (Holbeck et al., 2015: 202-203 and Pertile et al., 2016: 2511-2512, Low, 2017). The process of learning how to evaluate online information sources may assist users to develop strong critical thinking strategies, it helps to set off the standards of proper writing of scientific studies as well as the learning methods of avoiding plagiarism and simultaneously to prevent copying (Holbeck et al., 2015: 207). Through evaluation the importance of academic ethics is upheld. Users need to meet the quality requirements in order to reduce ignorance, carelessness, copying writing, or paraphrasing of a text, which are directly related to cases of plagiarism.

Successful prevention of plagiarism contributes to the protection of the intellectual property on the Internet (Konstantinidis et al., 2013: 215-216; Gulam & Naved, 2021: 208-209). Users have to understand the economic, legal, and social issues regarding the use of information, and access and use it ethically and legally (American Library Association, 2000). As Khan, Richardson and Izhar have argued in their research integrity is quite imperative in academic organizations at which user-researchers undertake their studies (Khan, Richardson& Izhar, 2021).

Critical evaluation of information sources may contribute to the avoidance of prejudices and stereotypes of a scientific study. Bias is ubiquitous in every scientific field and can unquestionably maximize the misinterpretation and misuse of data. Bias may arise when a site or a researcher/user refers to specific sources over other source types. A biased study or source may also confuse and overlap the research process. The use of bias can easily distort the reliability and validity of sources. Using trustworthy sources to support an argument gives credibility to a research and promotes access to quality of information. This is an ethical responsibility when working with information and diffusion of knowledge (Noor, Yunus, Ahmad, 2017:806). To ensure diversity and credibility, a researcher/user must use information from a diverse set of sources. The greater the number of sources used by a researcher, the more likely they are to present an idea truthfully (Ahmad& Ayub, 2019:354). Users need to distinguish, question, and consider critically online sources in order to determine its bias and whether or not it contains misinformation or other misleading statements. The development of the online environment will be constant, so helping users developing critical thinking skills will (Faix, 2021). Users have to be trained to find out if the source informs, educates, or tries to persuade. Outlining and checking potential sources of bias allows better critical assessment of the research findings and conclusions.

Corroborating the above argument, the proper implementation of the evaluation may contribute to an author's reputation. When a well written paper has been accepted for scholarly publication by an author this shows that the academic paper is based on reliable

citation analysis and references. Besides, the evaluation of information sources is a critical part of a research process. The authority, accuracy, objectivity, currency, and coverage of an academic paper assure that its context has gone through critical review and evaluation and thus the paper is considered more trustworthy for the final reader. Renowned publishers usually apply severe criteria that authors have to adhere to in order for a paper to get published. The proper use of credibility by the author is certainly going to help him publish his/her work in prestigious publication houses and journals. Hence, one may note here that the merit of the appropriate evaluation of sources becomes quite significant for an author and the latter generates a scientific process for future publications (Ahmad& Ayub, 2019: 354).

In addition, the evaluation of sources can contribute to the development and strengthening researcher/user's critical thinking. The clarification of the term 'critical thinking' indicates the complexity and variety of skills involved, such as analysis and decision making, problem solving, evaluation, examination and outcome. Users have to collect proper information, assess its value and authority, as well as its applicability and importance to the research topic at hand. Questions regarding the authorship, the source, the content, the context, and the replication exercise critical thinking. The questions act as a guide to an important verification path that a user should follow. Moreover, the concept of evaluation is closely connected to critical thinking (Carmichael and Farrell, 2012: 2). The latter helps users identify reliable sources of information and to distinguish between data and interpretation, possible and doubtful information, what is true and false, what is possible and not (Bougatzeli, Soulioti, Togia, 2015: 24-25). Yet, users who seek to practice critical thinking gain a broader understanding of the way they think. They can access multiple options when searching for sources, and also achieve greater fulfillment of their personal and social needs. It would be beneficial if librarians start teaching their users critical thinking skills in lieu teaching checklist approaches. This would help the latter able to identify when information is fake, to understand which kind of sources to select and use for their research and information needs (Faix, 2021). By

broadening their intellectual horizons, users significantly improve their performance and organise methodically their thoughts (Marques, 2012: 93). Hence, one may conclude that critical thinking and evaluation of information are tightly intertwined and share many common goals.

Evaluation may help users to become aware of information literacy and be able to self-evaluate. According to the American Library Association the information literacy is closely linked to lifelong learning. The latter also helps learners to take greater control over their own learning and become more self-directed (American Library Association, 2000: 2). In addition, according to the Australian and New Zealand information literacy framework (2004): *Information literacy is an intellectual framework for recognizing the need for, understanding, finding, evaluating, and using information. These are activities which may be supported in part by fluency with information technology, in part by sound investigative methods, but most importantly through critical discernment and reasoning. Information literacy initiates, systems, and extends lifelong learning through abilities that may use technologies but are ultimately independent of them.* During this process, users may learn how to acquire good practice for defining their topic, and how to write a research paper, adopt skills of analysis, synthesis, and evaluation. They also trained in research methods, and methods for evaluating academic content in an online environment (Borrelli and Covey, 2012: 176-177).

Based on the above, the user must regularly update his/her knowledge and skills regarding the identification of valuable sources of information. He/she needs to be informed about the information and sources, and to decide if any of them are related to his scientific interests. He/she must carefully research the sources and decide how to adapt and adopt them in his research (Horton, 2014: 5-6). Users benefit significantly from these critical thinking skills, as they will become able to extract data from sources, to convincingly express their arguments and opinions in his research, to subject them to critical analysis and scrutiny, to assess whether they are valid and reliable, to examine their content, and puzzle on their interpretations (Leeder, 2014: 140, Meletiou,

2011:190-191). Thus, they will be able to use the sources to formulate conceptual hypotheses and create new arguments and interpretations.

Lastly, one may argue that both the critical evaluation and the search for online information sources is a kind of 'intellectual-game' for user-researchers. Pursuing critical evaluation, the latter do not hold a passive attitude towards receiving information, instead they examine in depth every source of information. Moreover, the retrieval of valuable information is a demanding process, which requires constant search and training. Users are puzzling about the sources they are examining in order to obtain the essential part of the information. Stimulating constantly mental thinking may seem a complex, intricate task, but it actually enhances reasoning, creative and research ability, boosts critical thinking to the maximum and bolsters creative problem solving. Consequently, evaluation requires users to establish an appropriate question and arguments, set related information, assess it, apply it to their question, and communicate the research results.

6. The Importance of Critical Evaluation for Information Specialists and Libraries

Fundamentally, the evaluation of online information sources enhances the library's educational work in improving its educational online programs. The process of the evaluation by the library is crucial, as all those people involved in the educational process are actively participate, i.e. librarians, trainees/users, and researcher/users. As a body of knowledge, the library plays an advisory role and performs an important educational task indicating the procedures that users need for their research by pursuing effective interactive IL courses and workshops (Soltani, and Nikou, 2020: 636, 640). These courses may expand user focus and maintain a high degree of curiosity, developing new skills, transiting to a lifelong learning framework. They can act proactively in order to improve their training skills. Yet, they may be keen to adapt and keep up with the ever-changing technological environments (Bentil, Liew, & Chawner, 2021). In addition, the evaluation may

develop interaction between learners and instructors-librarians, where the former may enhance the teaching and learning experience. Evaluation could also promote the "lifelong-learning" concept of a library, developing learning equity, and enhancing the competence of the librarians. As Lenker has suggested librarians should teach students [users] to place more value on sources that give them 'opportunity to learn something that significantly develops [their] perspective on the question at hand' (Lenker, 2017: 721). According to Armah and Cobblah's study information literacy should be an ongoing instruction and definitely can facilitate students [i.e. users] in accessing electronic information resources by students. (Armah & Cobblah, 2021:79). Therefore, libraries are viewed as valuable agents in developing information literacy and promoting their educational teaching.

Critical evaluation of information sources can contribute to the improvement, development, and effectiveness of librarians' skills. Due to the explosion of information today, librarians have expanded their roles and have launched ambitious training programs for users in evaluating information sources. Continuous education of library users is an integral part of librarians. The later are considered advisors and knowledge guides, as they help users to meet their learning needs (Colepicolo, 2015: 651). This is happening obviously because librarians are aware of their users' needs for their professional and scientific guidance using the information sources as the main research tools (Kyung-Sun, Sei-Ching& Eun-Young, 2021). Also, due to the heterogeneity of information quality, librarians are those who organize, categorize digital information, and can create techniques of evaluating information (Okeji, Clement C. et al. 2020: 38). They can encourage them to take an active role in research activities, where scientific knowledge is not provided, but is created through actions of critical analysis of information. They will often get feedback from their users to set up new guidelines and this will probably improve both the value-based services and information products of their libraries (Machendranath, 2021). As a result, the evaluation process helps to create a wholesome and interactive environment between educators/librarians and

learners/users, eliminating the previously sterile knowledge offered by the former (Okeji, Clement C. et al. 2020: 35, 41).

With regard to the avoidance of prejudices and stereotypes in scientific studies as mentioned above by the users, the role of libraries here is more crucial. When libraries evaluate the quality of a source, it is good to provide details and evidence for comments. They have to consider each information query to be of equal merit irrespective the age, gender, ethnicity, disability, sexual preference and, English language proficiency (Kappor, 33). During the evaluation of sources prejudices, distortions, generalizations, deletions of sources and derogatory judgments against other people or cultural and social groups must be checked and avoided by librarians. The latter have always been education and cultural places contributing to the development of democracy knowledge (Vranes& Markovic, 2015: 904). The learning process of evaluation information sources may enhance librarians' morale. The task of evaluation gives a sense of fullness of their mission, as librarians may feel satisfied with their professional activity. Therefore, the aim of evaluation of sources by the libraries is to promote attitudes, values, perceptions, and movements that enjoy global acceptance such as plurality, diversity, justice, peace, freedom, gender equality, and multiculturalism.

Finally, the evaluation of online information sources by librarians may contribute to the framing of a new library information policy. In particular, the evaluation will form the framework within which decisions and priorities will be made for the development of information sources within the library. It may encompass the design of a process for acquiring new quality information sources to meet the changing needs, goal, objectives, and priorities of a library in a way that fulfill the users' needs (Sanjay, 2016: 67; Machendranath, 2021). In other words, the goals of the library will be reshaped as libraries will develop a comprehensive policy for selecting their sources of information. This will result in better communication between the library and the users as the former will respond significantly to the information needs of the latter (Mwilongo et al., 2020: 10-11). It can also improve its professional profile as

librarians can act as knowledge management reformers and mediators of scientific development, creating and maintaining good professional relations with their users.

7. Discussion

Several outcomes can be drawn from the findings presented in the above sections on the subject of benefits of online source evaluation. First the paper examined the benefits of the technical upgrade of the online sources and it identified the factors related to the system, the context, and the design of the information management. Indeed, the technical upgrade of online information sources validates the expected function of the site, as well as the overall success of the initial requirements for its use. Furthermore, as Ripollo and Matos aptly stated above 'the evaluation of information by technical criteria appears to result in a relatively mechanical and automated way of evaluating information' (Ripollo and Matos 2020: 92).

Next, the argumentation shows that for users and libraries the common benefits of evaluation of networked sources are prejudices and stereotypes. The latter may occur in the planning, data collection, analysis, and publication phases of a research topic. Vranes and Markovic, Noor, Yunus, and Ahmad supported this assertion by claiming that understanding research bias allows users to critically and autonomously assess the scientific literature and avoid treatments which are suboptimal or risky. A meticulous understanding of bias and how it affects study results is essential for users and librarians in research process. Ripoll and Matos (2020) in their study above pointed out that nowadays the quality of information has been a challenge since the internet expansion.

For obvious reasons, there is a distinct difference between users' and libraries' benefits during the evaluation process, in terms of the selection of online sources. Concerning users, these benefits represent an important aspect of the information behaviour, as they possibly influence the way users explore and employ information in various contexts and help them to understand why they seek

information and how they should apply it. Studies found that the quality and reliability of information are decisive factors when selecting information sources (Metzger and Flanagin 2013). Through evaluation they may access the needed sources efficiently and critically, and use information effectively to accomplish a specific research purpose enhancing at the same time clarity and comprehension. More importantly, the role of evaluation is crucial, because it contributes to the quality learning of knowledge and skills (Meletiou, 2011:195). In this way users can better control information, as through evaluation an additional opportunity is given to them to achieve higher levels of knowledge and ultimately leading users to an educational upgrade. Lastly, the implementation of the evaluation may certainly increase users' self-confident in the information search process, and boost their shrewdness and practical knowledge as well the ability to make good judgements.

With regard to libraries, the implementation of the evaluation policy contributes to its further organization of the library itself and increases its efficiency in organising competent educational programs for its public. Also, the evaluation of information sources by librarians is a control measure for the realization of the goals of the library. In order for libraries to continue to exist and fulfill their mission, there must be a demand for what they offer, as well as users who are interested in consuming the services and products that are offered. Library's aim to provide its users updated sources has immeasurable value. The above benefits offer valuable guidelines and provide with an overall view of the users' thoughts processes, when writing a research topic and libraries' decision making when choosing online sources. Lastly, the benefits may enhance the degree of media and information literacy of librarians who can definitely instruct and train their users and the wider public in this direction. Doing that, librarians could achieve greater competence in exploring data and overall circulation of information and knowledge to users. Library staff is becoming keen to adapt to changing environments and maintain the desire to co-operate constructively and develop good relations with the users. They could also maintain user focus as well

as healthy skepticism of technology and develop new skills, transit of users to a lifelong learning framework.

8. Limitations and implications

There is considerable scope for further research. In the present study there are some concerns regarding the generalization of the findings since it was only based on the current bibliography. Secondly, the above argumentation was based on the author's experience as a librarian, lecturer in adult education and researcher in the science of the history of Information. Therefore, the outcome of this study to some extent may have been subjective. More research would be of interest to map the overall benefits of evaluation for librarians and users regarding their competencies and skills. On the other hand, considering the findings of the present study, one may point out that they offer some advantages, for example, its validation and innovational nature. For this reason, the validation nature of the study offers the possibility to be used as for other related studies in the future. To the best of my knowledge, the current argumentation has not been thoroughly studied before and no other study so far has been developed in the literature reviewing the evaluation of information sources. Accordingly, the present article is conducted to investigate that concept, to develop such a conceptual framework and enhance the related body of literature.

9. Conclusions

Having taken account of the above, one may conclude that the evaluation of information sources leads to many different aspects of development for both users and librarians. With regard to the former, the establishment of specific evaluation criteria and their objective application can decisively improve users' fruitful utilisation of internet sources. The process of evaluation will certainly lead the researcher-user to an ethical and critical use of the information, communicate their research results thus helping him/her to successfully develop a lifelong learning at the same time. This view is based on a mechanistic

approach, which comes in full agreement with the development of critical thinking and in the reduction of information ignorance respectively. Lastly, evaluation should commonly be referenced as a growingly vital skill for users needed in today's research process and in life-long learning in general.

With regard to the libraries, they are an educational environment, whose aim is to encourage users to search for the most up-to-date knowledge, when conducting independent research. The main principle of libraries is to help users to develop critical thinking skills and to manage information in a creative and significant way as users increasingly turn to electronic sources for information. Information experts are responsible for informing users about the negative consequences and helping them to avoid misleading, manipulating and misinformation in the Internet age. They can create appropriate environments for users' informational needs by offering practical advice regarding the use of criteria, provide instructions and search advice, ask questions and solve user's questions as well as providing access to information in different forms. Lastly, the evaluation will help librarians to be motivated and develop the provision of online information sources by improving their aims, services, and policies.

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