The Usage of Reference Management Software (RMS) in an Academic Environment: A Survey at Tallinn University

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Abstract :*This paper presents an online survey taken in may 2011 at Tallinn University (TLU), Estonia, aiming to measure the usage of Reference Management Software (RMS) in an academic environment. The sample embraces the whole corpus of TLU scholars: phd students, researchers, teachers. A descriptive survey, based on a constructivist approach, has been conducted through an online questionnaire. RMS seem to suffer a low spread among scholars; a general awareness is present, but more information and stronger support needs to be provided by libraries. The data collected can be used as background for a deeper qualitative case study, and should also be compared to similar analysis performed in different academic institutions through the rest of Europe. This survey is the first quantitative study made on the subject.*

Keywords: *Reference management software, Citation managers, Academic libraries, Bibliography,*

I. INTRODUCTION AND BACKGROUND

In order to help authors manage large sets of references, and to produce citations and references in a consistent style, a range of software packages is available. This type of software is often called 'Reference Management Software', but 'Citation managers', 'Bibliographic management softwares', 'Bibliographic softwares', or CGC (Computer Generated Citation) are also used: common examples are EndNote, RefWorks, Zotero.

I will use the term "Reference Management Software" (from now on, RMS), defined as "a tool which enables an author to build a library of references by entering the details of each reference in a structured format. They usually support mechanisms for organizing sets of references by tagging, and will generate references, citations or bibliographies in a range of referencing styles" (Jisc, 2010).

To summarize, RMS have two main functions:
1. building a database of citations, useful for keeping track of and organize the documents useful for one's research
2. formatting bibliographies and citations when writing papers

This last function is recently integrated in the latest version of the well-known text editors Microsoft Word or OpenOffice.org/LibreOffice; this feature basically makes less important the availability of a dedicated software to manage the coherence of references in a text.

On the other hand, as RMS have become more sophisticated, their functionality has extended beyond the basic use for producing references in a consistent style, and they may also offer tools for managing related documents (e.g. PDFs of the original paper you cite), or social networking tools, that allow, for example, to build, share and discuss collections of documents and citations among colleagues.

II. LITERATURE REVIEW

Although the nature and functions of RMS is quite considered by the disciplinary literature, there are few previous researches about the effective usage of these tools.

Martin (2009) and McMinn (2011) confirm two main trends in the literature on RMS: training and technical issues. The second one focuses mostly on the specific tools and technical aspects: features, tutorials and how-to's, quality, reliabaility, comparison and evaluation (Dell'Orso, Fitzgibbons & Meert, 2010, Francese, 2011, "Innovations in Reference Management 1," 2010, "Innovations in Reference Management 2," 2010). Steele (2008) focuses on the accuracy of the use of citations in research papers, providing usueful hints for those who have to make decision about adoption of these softwares.

The second main trend consists in interesting informations about training initiatives that involved library staff (East, 2001, Siegler & Simboli, 2002). Olle & Borrego (2010) talk about scholars' behaviour, and the importance of using a RMS to manage the increasing amount of electronic references. Martin (2009) writes about accuracy and pedagogical concerns, even though he addresses tutors and instructors more than researchers.

Despite this wide interest for RMS distribution in libraries, there are almost no studies about the connection between RMS and their usage.

A lot of effort is put in training and promotion, but few datas are provided circa the actual use and distribution. For example, Steele (2008) claims that "citation management softwares exist since 1980 and are widely used today", but doesn't provide any reference for that. Kiernan (2006) provide only marketing statements from the vendors, without a cross-check among clients.

The only survey about the usage of RMS seems to be the one made by Cibarelli in 1995 (Cibbarelli, 1995); her findings however must be considered out

of date, since 16 years are a big leap in software development. A more recent study by McGrath (2006) launches a new investigation, but his focus is stricly on students and solely related to RefWorks.

The role of libraries in providing support to scholars is something which requires attention. According to East (2001) "in many institutions the library has come to be seen as the main centre of expertise in matters related to personal bibliographic softwares" (East, 2001)⬜.

Kessler and Van Ullen (2005) also point at the role of libraries, and reference librarians in particular, in providing information and support on managing bibliographies and citations. Their focus on the less-expert scholars (undergraduate students) brings them to state that a cautious approach must be used when suggesting and promoting the use of RMS tools, since they are not easy and require some expertise in citation management.

McMinn (2011) also stresses the importance of library role. His survey about usage and distribution of RMS takes as starting point the library support and training, so he questioned the libraries rather than addressing directly the users. His findings related to ARL libraries show a good commitment by library institutions in promoting, licensing and providing training on RMS: "there are significant levels of support for bibliographic management tools in major academic libraries as determined by the number of libraries providing licensing, the level of instruction, and the creation of instructional materials and tutorials" (McMinn, 2011).

III. AIMS AND METHODOLOGY

The aim of this research is to gather practical informations about the awareness and usage of RMS among scholars. Moving from the literature exposed above, and from my personal experience and area of interests, I formulated the following research questions:
1) to which extent RMS tools are known and used by academics?
2) which softwares are mainly used?
3) is the library seen by scholars as a potential support in the usage of RMS?

Collected objective data about the distribution and the variety of approaches to the tool will be the first step to understand the actual impact of RMS in scholars' behaviour. McMinn explains quite convincingly the importance of this enquiry: "There are a number of reasons why it is important to examine the different approaches research libraries take in providing similar services: ensuring that the services provided are consistent with those of peer institutions; determining how services have been tailored to meet the unique needs of different institutions; determining the level of support and optimum allocation of resources" (McMinn, 2011.

The research was conducted during the spring semester of the International Master Program in Digital Library and Learning (DILL), taken place at the Tallinna Ülikool (TLU) in Tallinn, Estonia. For this reason, I chose to address the specific closed community constituted by the TLU. This reason is motivated by the proximity of access to the sample population and by the crucial help of a key-informant (my professor at TLU).

Given the low amount of similar studies, the approach aims to be basic: I believe that a quantitative analysis is the first step to take to get a clear glance of the phenomenon. For this reason a survey, made through an online questionnaire, was the chosen method. This choice can be supported by Pickard, when she explains that through a questionnaire "you can reach a large and geographically dispersed community at relatively low cost, you can harvest data from a larger sample [...] and anonymity can be offered as well as confidentiality" (Pickard, 2007, p.183); another reason is the relative speed granted by this technique: due to the limited time of my permanence at TLU, a widebroad and extensive data collection technique was necessary, although I was very aware of its intrinsic limitations: "the lack of opportunity to talk directly to respondents" and the "notorious low response rate" (Pickard, 2007, p. 183).

Finally, I wanted to measure also the impact of the library in the usage of RMS, so it was helpful to refer to a community referring a single library (Tallinna Ülikooli Akadeemiline Raamatukogu), rather than a larger institution composed of several libraries.

IV. SAMPLE AND DATA COLLECTION

The questionnaire was sent to a list of 754 members of TLU, comprising PhD students, Researchers, Professors. Due to the nature of TLU, the sample mostly represents the areas of humanities and social sciences: it is to take in account the fact that TLU doesn't have faculties of medicine, natural sciences and economics, so considerations related to the disciplinary background can not be performed.

The descriptive approach just aims not to provide deep analysis, rathen than to provide background for further enquiry. Most of the questions were conceived as multiple dichotomous questions; only three open-ended questions were presented, with the purpose of adding some descriptive informations to integer the answers obtained overall. Being mostly a quantitative study, the research doesn't go deep into the reasons for usage or non usage, or the different approaches.

A first pilot was administered to 8 scholars of TLU; the answers received allowed me to test the validity of the questionnaire and perform some minor tweaks. The tool adopted for the questionnaire was the Form function provided by Google Docs, which proved to be the best combination between cost (the tool is free) and easiness of use. The final questionnaire was then made available online from 30 april to 30 may 2011; the respondents were reached by an email sent by the library to a list of TLU scholars who joined the ETIS network (Estonian Research Information System); to

highten the attention of the recipients and encourage participation, the library suggested to write the letter both in estonian and in english. A reminder was sent on the 17th of may.

The data were collected anonimously, without any connection to the respondents. However an optional field was provided allowing respondents to leave their contact if they wished to be part of further enquiries. The high number of volounteers for this (29% of respondents) witnesses the general interest of scholars in helping with matters related to their bibliographic practice, and gives good hope for a further study which would go on a deeper qualitative analysis of their behaviour.

V. DATA ANALYSIS

Population

The questionnaire got 58 responses, which constitute the 7.7% of the sample. Low rate responses to online surveys are quite predictable (Pickard, 2007, p. 184); yet this result can be interpreted as a first hint of a certain lack of interest or knowledge about the subject. It is more likely that a person who doesn't know anything about RMS is not encouraged or inclined to take part in such a survey.

Due to the nature of the TLU, the answers came mostly from humanities. The Estonian Institute of Humanities provided the highest rate (19%), followed by the Insitute of Education (11%); minor rates occurred in scientific areas (mathematics and informatics 9%, psychology 7%, ecology 11%). The general response rate ranges from 0 to 10%.

Responses have a good distribution among academic roles: the most part are researchers (53%), but also teachers and phd students are well represented. We must be aware that this question was open to multiple replies: it is infact evident that roles can be overlapping in an academic research.

Age doesn't seem to be a factor in usage: the answers "I don't use any RMS" are equally distributed among every age range.

Awareness and usage

The first evidence is given by the disproportion between the awareness and the usage. Respondents claim a general awareness of the existance of RMS: only 25% declare to know nothing about this type of tools. The effective non-usage, though, is high: 44% say that they don't use these instruments at all. Among the effective users, almost the half is working with RMS since less than 1 year. The number of citations collected, also in seldom high: 26% is below the number of 50.

At this point is very important to state that the academic library at TLU provides support to RefWorks. All TLU students, faculty, staff and alumni have free access to RefWorks. Considered this, it is quite interesting to note how low are the responses concerning RefWorks: the 43% knows about its existence, yet only the 7% uses it.

Endnote by Thomson confirms to be the most widely known instrument: the 70% of respondents knows about its existance, even though only 21% actually uses it. It's interesting to compare the usage of Endnote and Zotero. Though the former is more known than the latter, the percentage of usage is the same: 21%. This can suggest how a good free-of-cost alternative may often be preferred to high-quality and high-expensive tools.

The social features of the RMS seem scarcely considered: only around 9% use RMS to share references among colleagues, or for discovery. The most common usage is the managing of lists of references and their editing according to citation styles. The tools, when used, are still perceived on their basic functionality: the more modern social and web oriented approach seems to be not known, desired or pursued.

When questioned about the reasons for non use, respondents claimed lack of knowledge and awareness (8 respondents), lack of skills and training (10), lack of interest, need and/or time (6). Some are basically anaware, but showed to be interested in knowing more, or to need just a little more support. An overall yet very fuzzy awareness is confirmed by the comments provided: people don't seem to capture the potential of the instruments, and a general confusion seems to be present ("I didn't understand clearly, how to use RMS"; "It seems complicated for me"; " they don't seem to integrate well with the way I work"). Finally, more than one respondents commented that they never heard about the instrument.

Role of library

A question about the role of libraries was made in order to give answer to one of the main research questions, as inspired by the previous research literature discussed above.

The 11% says to get support from library; among those who didn't, the reasons vary: people can see RMS as quite easy to understand or consider the online learning materials sufficient, others just complain about the lack of time. Nevertheless, a consistent part (25%) admit that they didn't actually ask for support; so the relationship between library and users must be reconsidered. One respondent stated that no assistance was given in his case, but the library is always realiable. Judgement about the libraries can be biased by the fact that the survey came from the library staff. In any case, it seems that the library is seen as a realiable institute, but the support and assistence are subjected more to the willingness of the individual scholar than to the ability or commitment of the library staff itself.

VI. FURTHER RESEARCH

The study consititutes only a preliminary glance at the usage of RMS in academic environment. To obtain a merely numeric analysis was useful in a situation which seems to lack enough literature about it. These numeric analysis should be completed by a deeper enquiry which explores more qualitative aspects of the users'

behaviour. Also it would be useful to widen the field of research to different disciplines, since this survey embraces only the scientific areas covered by TLU: the articles considered above, and the literature they review (see for example Lawrence & Ashwell, 1993) show that particular attention on RMS is given by the health-sciences community and libraries.

VII. CONCLUSIONS

Despite the tools adopted, the situation described by the survey is one of shallow awareness.

The data collected show that RMS usage is low and not well supported by a proper knowledge. Scholars of every role and age don't seem to be enough aware of the potential of these tools neither they have a good knowledge of their features and mechanism. The approach to it seems casual: despite the license and support provided on RefWorks by the library, only a small percentage of respondents uses this tool. This means that the impact of library's communication is somehow limited, although the library is generally acknowledged of doing a good job in promoting and providing assistence. To get the maximum efficiency by the library competencies, more official and continuous intiatives of literacy, information and training should be taken on a regulare basis, and would constitute a good investment by libraries.

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