Abstract: A popular social media topic for researchers, practitioners, educators, students from various disciplines is the use of microblogging in academic research. This paper analyses ways in which educators relate to this new web2.0 tool in the research activities they carry out. The methodology puts forward an exploratory approach of the universe of microblogging as a social media tool used for scholarly communications practices and techniques by different academic circles. The method chosen for investigating this aspect was an online survey. We hope the results of this study will be a useful guide for any specialist in education, and we aim to find out what works and what should be avoided when using this technology while researching.

Keywords: microblogging, research, scholars, university, higher education.

I. INTRODUCTION

This work is part of a broader approach of the authors regarding how researchers consume social media in general and microblogging in particular. The overall aspects to be investigated are: social media impact on scholarly communications and on researchers workflows; attitudes towards social media as a research tool/technology and patterns of adoption; challenges, opportunities and trends as well as limits and barriers of/to adoption and research good practices, techniques and policies. In this paper we focus on ways in which academics relate to the microblogging technology in the research activities they carry out.

II. LITERATURE REVIEW

The role of using microblogging for educational purposes (in teaching and learning processes or during different scientific events etc.) has been explored by numerous scholars (see authors previous papers [11], [12]). However, there is little consensus within academic community that they could benefit from adopting the microblogging simplicity, easy-to-use and functionality for scholarly purposes [2]. Thus, although the majority of the scientists avoid to use microblogging in their research activities (University College London and Emerald Group study from 2010 indicated a 9.2 percent of academics that include microblogging in their research), there are some who have found value in it [1].

However, recent studies ([14], [18]) suggest that microblogging as “part of the new reality media landscape” [9] has the potential to change the way researchers work, communicate and collaborate. Furthermore, through microblogging they have a possibility to disseminate their findings “more rapidly, broadly and effectively than ever before” [16], to use it for “more serious tasks”, “often highly productive” and near to their academic/scientific profile/specialization or position [17].

An example of microblogging role in all the phases of the research lifecycle is the CIBER report [5]. Their findings suggest that microblogging supports “from identifying research opportunities to disseminating findings at the end”, with greater impact on information sharing and dissemination.
Popular microblogging services used in research are: Twitter, Friendfeed, Cirip or ScienceFeed (http://www.sciencefeed.com). The last one is a microblogging platform dedicated to the online scientific community acting as a “bridge between online scientific networking platforms, scientific databases” and scientists from all over the world.

At the question of Mayernik and Pepe [14] “Can micro-blogging be used for field research?” we noticed in the literature some answers of the most frequent uses for different research contexts such as the following:

- a new form of scholarly communication [6]: “answer other people’s questions” or “ask questions relevant to your practice” [7], [8], getting in touch with science journalists, science organizations or doctoral students, get advice on how to improve research;
- a new form of authoring, publishing, researching [10];
- a tool for disseminating scientific information, including the own results [15];
- a social collection to manage [2]:
  - people (e.g. to follow list of researchers on Twitter);
  - messages (favorite notes, to resend/to comment - @ / RT; D for scholarship authority or supporting critical discussions);
  - hashtags (social news, following scientific events) etc.
- a data repository to collect [6]:
  - information from science newsfeeds and from various individuals/institutions;
  - links to other valuable resources.
- a search tool “more appropriate for capturing hypercurrent information” [16];
- an outreach tool aimed at promoting public awareness (and understanding) of science and making informal contributions to science education;
- a platform for social micro-interactions to connect people (building personal relationship with other researchers, co-workers) and also to engage in conversations with an active community of scientists ([9], [17]);
- a way to track trends-in-time like natural disasters or political events, mentioned in messages [4];
- a micro-peer method for learning, reviews, feedback etc.

Other studies suggest that the researchers’ behavior changed due to the social participatory process in micro-sphere [19] stressing the need to create an online research profile on microblogging, what we called a scholarly identity 2.0.

III. ROMANIAN CONTEXT

Even if Twitter has recently celebrated five years, in Romania microblogging started to attract users interest three years ago, only 15% of the accounts of the Romanian Twittosphere being older than two years [24]. Since 2008, studies on microblogging were published, projects related to this technology were implemented, also Cirip.eu - oriented on education - and other microblogging platforms were launched [11, 12].

For the purpose of this paper, we tried to estimate the size of the Romanian edu-microsphere, evaluating the total number of accounts and the number of educational accounts on the most used microblogging platforms.

<table>
<thead>
<tr>
<th>Romanian EDU-Microsphere</th>
<th>Platform</th>
<th>Total number of users</th>
<th>Teachers / Researchers</th>
<th>Doctoral / Master students</th>
<th>Estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Table: Platform statistics, educational microblogs, groups for conferences / workshops / courses for Master students / teachers.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Total Accounts</th>
<th>Average Tweets</th>
<th>Monthly Followers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twitter</td>
<td>50000</td>
<td>400</td>
<td>3000</td>
</tr>
<tr>
<td>Cirip</td>
<td>18000</td>
<td>250</td>
<td>600</td>
</tr>
<tr>
<td>Edmodo</td>
<td>200</td>
<td>30</td>
<td>140</td>
</tr>
<tr>
<td>Yammer</td>
<td>200</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Plurk</td>
<td>500</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Google Buzz</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Identi.ca</td>
<td>500</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Jaiku</td>
<td>200</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Twiducate</td>
<td>150</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Total accounts: 70000
Average tweets: 1000
Monthly followers: 4000
Approximation by rounding

IV. STUDY: background, results and discussions

4.1. Methodology

For collecting the necessary information, we conducted a survey distributed online through our blogs, also tweets, private messages and messages to groups on microblogging platforms (Twitter, Cirip, Identi.ca), messages on social networks (Facebook, LinkedIn), also via email academic lists from different universities and professional groups. Our approach for the survey invitation was for education in general and not specifically for research area, in order to avoid an over-representation in the sample of the researchers a priori more interested in this technology. Thus, the target population consists of faculty members, academic decision makers, administrative staff, technical community, teachers, trainers and PhD candidates and master students from universities, educational and other research institutions.

Data collecting was performed between 7 and 15 March 2011. A sample of 233 persons resulted after validation, the value representing a percentage of 4.66% of the total of 5000 educational accounts, as resulted from the above estimation.

4.2. Findings

4.2.1. Respondents Profile

Based on the findings obtained from the sample group we’ll begin with a brief profile of respondents. Who are they? By gender 123 are male (53%) and 110 female (47%). By age, as authors anticipated, the higher percent is allocated to the young population - almost two thirds (74%) having less than 35 years. On junior positions in academia there are 21 percent and PhD candidates / master students around 51 percent.

Respondents Demographic Data by Age

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25</td>
<td>118</td>
<td>51%</td>
</tr>
<tr>
<td>26-35 years</td>
<td>48</td>
<td>21%</td>
</tr>
<tr>
<td>36-45 years</td>
<td>42</td>
<td>18%</td>
</tr>
</tbody>
</table>
21 (9%) are between 46-55 years and only 2 of them were older than 55.

The predominant positions in academic community that are using microblogging platforms in their research belong to:

- **staff teaching**: professor (associate, assistant), lecturer (senior, junior);
- **researchers**: fellow, assistant, contract, seniors;
- **students**: doctoral (PhD candidates), master;
- **faculty staff**: librarians, administrators, trainers (online programs, adult education etc.);
- **others**: experts, decision makers etc.

Microblogging seems to be more popular for master (41% of responders) and doctoral students (10%), researchers (9%), teachers (8%), and teaching assistants (8%).

Regarding the microblogging uses in research by discipline (percentages by area of specializations), the dominated voice belongs to 52% of the respondents having a science background education (math, physics, biology, computers, engineering etc.). Although the percent of respondents from the humanity field and economics is less than 15%, together with social sciences responders are a small, but very influential audience.

The results obtained confirmed the findings of the RIN study [18]: how researchers communicate their work varies in different subjects or disciplines.

This section highlighted only some descriptive statistics. Although demographic correlations observed on demographic data base (such as “a greater degree of adoption is positively associated with younger age groups and with more junior positions” or “the older age group is more associated with quality of being a scientist”) are shaping the demand for microblogging as a research tool, these issues will be addressed and detailed in a future research.

### 4.2.2. Microblogging Accounts Profile

A second group of questions collected data about the moment the responders started to microblog, on which platforms, how often they post, how large are the networks developed, and their presence on other social media.

The question “How long have you been microblogging?” is in closed relationship with understanding the microblogging research community. Thus, the data obtained about microblogging adoption behavior follow (in a certain way) the percentages of Rogers’ innovation types: 7% are innovators, 12% are early adopters (opinion leaders), 35% early majority, 28% late majority and only 9% are laggards.

The findings for the question “What microblogging platforms do you use?” show that Twitter, Cirip and Buzz from Google are the most popular. However there are several academics that have more than one microblogging account. Pairs Twitter-Cirip and Twitter-Buzz are the most dynamic, which is according with RoTwitterSurvey2010 statistics [24]: 78% of the respondents don’t use other platforms.

![Microblogging platforms used by responders](image-url)
How often do you post notes/write on microblog?

The most active users write daily (16%), but almost half of the respondents (45%) say they seldom send a note / message. However, it seems important for us to underline the fact that 23% post weekly, which can reveal a lot about a possible habit of using the microblogging technology. We hope that the rest of the respondents will become more engaged over time.

![Figure 2. Followed users and followers]

Analyzing the responses for the questions How many microblogging accounts do you monitor? and How many followers do you have?, we observed that more than half of the respondents follow and are followed by less than 50 users, which can suggest both a rigorous selection of sources of information/communication, and a judicious use of time spent on microblogging platforms. The close percentages for the number of followed users and of followers show a balance of networks, which means that for the vast majority of respondents the networks consist of mutual relations. The fact that 11% of responders are followed by more than 500 users demonstrates that a significant number of educational actors have imposed as strong voices in microspheres, each one acting as “indicator of social capital than followers count” [9].

How researchers are making use of languages

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only in Romanian</td>
<td>34</td>
<td>26%</td>
</tr>
<tr>
<td>Only in English</td>
<td>12</td>
<td>9%</td>
</tr>
<tr>
<td>Both in Romanian and English</td>
<td>82</td>
<td>62%</td>
</tr>
<tr>
<td>In other languages (including Romanian)</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>Only in other languages</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>

62 percent of the respondents prefer to write both in Romanian and in English, 26% only in Romanian and 9% in English. We can assume that the quarter who write only in Romanian are those responders who use microblogging only to work with the community inside their institutions or from other Romanian institutions. Moreover, only a quarter said they use microblogging to collaborate with colleagues abroad and for personal research, which is justifies writing in languages other than Romanian.

Did you get familiar with microblogging during a course / workshop or project?

The number of persons (53%) who declared themselves as self-taught about the microblogging technology is just a little bit higher than those of who participated in different training social media programme (46%), such as university courses, dedicated workshops etc. Most of the latest are teachers and master students who participated in courses and workshops facilitated by the authors on Cirip, microblogging being a topic in very few Romanian formal or informal courses.

Social media experience

<table>
<thead>
<tr>
<th>Social Media Applications / Networks</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blog (any type of platform / Blogger, WordPress, weblog.ro etc.)</td>
<td>58</td>
<td>44%</td>
</tr>
</tbody>
</table>
Miniblog (Tumblr, Posterous) 12 9%
Social Networks (Facebook, LinkedIn etc.) 115 86%
Image sharing (Flickr, deviantART etc.) 61 46%
Video-Sharing (Youtube, Triluliu etc.) 92 69%
Audio-Sharing (Blip.fm, Eok.ro etc.) 21 16%
Social Bookmarking (delicious, diigo etc.) 62 47%
Others 18 14%

Of all of respondents 86% have a networking presence in sites like social networks (Facebook) or professional networks (LinkedIn) and almost half (46%) have a blog (networks and blogs being also important channels for research). We also tried to find out the correlation of using microblogging with other social media tools by the same person. The data show that the most frequent pairs are blogging - microblogging and social networking - microblogging and the least used is microblogging - social bookmarking. Those academics who microblog are more likely to engage in blogging and social networking activities.

4.2.3. Practices and reasons for microblogging usage in research

A breakdown of educational actors’ awareness of using microblogging by educational actors in different activities is shown in the following table.

How do you use microblogging for the following activities?

<table>
<thead>
<tr>
<th>Activities</th>
<th>Yes – I have used</th>
<th>Not yet, but I’m aware of it</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>didactical activities</td>
<td>41</td>
<td>22</td>
<td>36</td>
</tr>
<tr>
<td>research activities</td>
<td>28</td>
<td>27</td>
<td>44</td>
</tr>
<tr>
<td>professional development</td>
<td>55</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>personal development</td>
<td>67</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

The greatest and smallest percentages are for “personal development”, with 67 percent of academics actively using microblogging in their own practice and 16% of the mainstream faculty and academic decision makers who do not understand its purposes. Thus, awareness of using microblogging for scholarly purposes confirm the authors’ expectations - no significant difference between those who already used it for research (28%) and those who foresee themselves using microblogging in the future. However, the survey showed there is still a large group of educators (44%) who believe that microblogging has no place in research: quite a few respondents expressed a willingness to give microblogging a try (27%).

We analyzed deeper the interest for using microblogging in research by different didactic profiles, the result being represented as a spider diagram. The highest percentages are registered by
associated professors and lectures (100%), also by doctoral students (94%), while the lowest interest is from master students (35%) and librarians (0%).

Which one of the following options best described your style of research working?

Regarding the mode of research work we see that there is a tendency to work with colleagues outside the institution and even from abroad, as confirmed by the previous fact that a high percentage of responders write in another language than Romanian.

Mode of research work

<table>
<thead>
<tr>
<th>I work with …</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborators in different institutions from Romania</td>
<td>45</td>
<td>34%</td>
</tr>
<tr>
<td>Collaborators in different institutions from other countries</td>
<td>36</td>
<td>27%</td>
</tr>
<tr>
<td>Colleagues/peers across my department/faculty/university/institutions</td>
<td>30</td>
<td>23%</td>
</tr>
<tr>
<td>Students of my own department/faculty/university</td>
<td>59</td>
<td>44%</td>
</tr>
<tr>
<td>I work on my own research or scholarship</td>
<td>31</td>
<td>23%</td>
</tr>
<tr>
<td>Others</td>
<td>41</td>
<td>31%</td>
</tr>
</tbody>
</table>

Which of the following activities do you use in conjunction with microblogging?

The most common types of uses of microblogging by scholarly community that have been revealed by our findings are included in the following table.

Contextual conditions in which scholars use microblogging

<table>
<thead>
<tr>
<th>Activities</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Searching</td>
<td>132</td>
<td>57%</td>
</tr>
<tr>
<td>Dissemination</td>
<td>110</td>
<td>47%</td>
</tr>
<tr>
<td>Inquiring</td>
<td>55</td>
<td>24%</td>
</tr>
<tr>
<td>Personal/Professional Communication/Collaboration</td>
<td>171</td>
<td>74%</td>
</tr>
<tr>
<td>Networking for professional development</td>
<td>93</td>
<td>40%</td>
</tr>
<tr>
<td>Building a community of practice</td>
<td>43</td>
<td>19</td>
</tr>
<tr>
<td>Building a learning community with students enrolled in formal courses</td>
<td>56</td>
<td>24%</td>
</tr>
<tr>
<td>Learning from the stream (following a specific hashtag) - participating/ following different scientific events (as a real time news-source)</td>
<td>104</td>
<td>45%</td>
</tr>
<tr>
<td>Others</td>
<td>54</td>
<td>23%</td>
</tr>
</tbody>
</table>

A higher percentage of microblogging users (74%) manage and share certain personal information with others, look for expertise on very specific questions or to support and be supported by peers, while less than 20% were practice community building oriented.

Overall, the findings indicate that microblogging is used by academics in different ways:

1. The search for scholarly content remains a favorite activity, 57% of academics are looking to discover new information, ideas or practices. By looking for specific ideas the researcher can scan easily the stream for news other than academic papers, science magazines, data bases, scientific discoveries etc.

2. It seems that the use of microblogging as a dissemination channel for promoting of own results/articles/projects or studies/formal products has a greater importance for 47% of respondents.

3. 24 percent say that microblogging is an important tool for reviewing the literature, collecting and analyzing research data, “for listening what other researchers are going to say” [9].

4. Talking and sharing experiences online, communicating scholarly ideas, collaboration between colleagues, networks of stakeholders, and other contacts are favorite activities for 74% of academics.

5. Building a network of contacts for research opportunities, finding sponsors, reaching fellow specialists was indicated by 40% of the responders. Thus the development of a Personal Research Network (PRN) is appropriate not only for “establishing professional expertise” but also for “professional identity construction” [9].
6. Only 19% of the respondents believe in the power of sharing, skills development or knowledge creation by building a “social scholarship” ([10], [7], [8]) in communities of practice.

7. A 24% percent shows a low participation within learning academic community, student centered. Thus we can say faculty members are (still) unprepared to deal with incorporating microblogging technologies into their courses.

8. Nowadays following conferences and posting from scientific events (with a special hashtag) is a common practice. Thus, the usage for monitoring scientific events is encountered at 45% of the respondents and may fall in one of the following categories: communication before, during and after the event, using microblogging as official, quasi-official or unofficial back-channel, for collaborative keynotes, feedback etc.

9. An important percent (23%) say that they use microblogging for scholarly publishing and capturing contextual information [14].

The survey also included two open-ended questions, asking respondents to identify the benefits and the most important barriers (and constraints) to uptake when using microblogging for research activities; while more than half signaled advantages (52%), only 39% listed disadvantages.

The benefits expressed by participants can be clustered in the following types:

- **Collective Intelligence**: communication; collaboration with a wider audience of specialists, sharing ideas and perspective, interdisciplinary research; collecting/surveying/ filtering data and resources.
- **Ambient Intelligence**: visibility and validation of projects, results, professional portfolio, recognition.
- **Extension of the PRN – Personal Research Network**: building and engaging (in) a relevant community of scholars/of practice, beyond geographical, cultural and linguistic barriers; mentoring colleagues; transfer of knowledge between researchers; help in problem solving; build networks to support research (and researchers’ career); access to OERs and collaborative applications.
- **Managing the researchers’ projects**: research publishing; tagging contents; getting notified using RSS feeds.
- **Developing as a researcher**: improving digital and professional skills and competencies, help for academic career.

Of the 233 respondents, 39% added comments highlighting disadvantages, barriers or limits of integrated microblogging in education. Based on these responses, it appears that academics are less open to trying Twitter or other microblogging platform in their research workflow. Overall, most of the comments can be included into one of these categories:

- **Ethical dilemmas**: authority; coping with a large amount of information [6]; the level of acceptability to collect, archive and analyze data from the stream [23]; “authenticity of crowd sourced information” [5]; intellectual property rights; new forms of peer review and approval, such as retweeting (for e.g. resending messages without giving credit); social citation sharing; trust (“scientists are hesitant to use the open Web as an incubator for ideas and would rather rely on a tight circle of trusted individuals” [20]) etc.

- **Concerns about Quality**: quality of ideas/information/assurance (poor studies, no substantial academic /scientific values; banality); drain on resources; too time consuming; reliability and expertise of microbloggers; disorganized information (sometimes a chaotic stream); common language (the human chemistry is all adrift); poor linguistic conventions (for e.g. difficulty of writing a math formula); limited communication options (short messages - only the length of a SMS); week feedback etc.

- **Security and Privacy Concerns**: information overload; noise; spam; juxtaposition with the personal life; confusing in following too many interactions [2]; uncertainty of the identity of sender; plagiarism, lack of a code of microblogging ethics [21] etc.
4.3. Lessons learned

The authors intend to re-apply this survey according to some lessons learned. Thus, next studies could include questions and issues which were not present in the current survey, in order to establish a more specific edu-microblogger profile, such as:

- the account is personal or official (an institution, a project, an educational marketing campaign etc.);
- public or private accounts;
- region or country of researcher (if part of the diaspora);
- which information are included in the online profile (name, institution, blog, how username was chosen);
- duration of work in higher education;
- how microblogging platforms are accessed (online, by mobile devices, using mashups or third-party applications) and where from (home, institution);
- number of messages, percentages which contain links, are addressed to other users or are retweeted etc.

In near future we plan to examine closely various categories of educational microblogs and to interview their authors on the following directions:

- profile of the PLN members, what percentage belongs to educational, scientific domains;
- how the type and relevancy of posted information/resources influence the network size;
- which platforms are mostly used for research and why (patterns of adoption).

We also intend to collect case studies on using microblogging in research by actors in different academic positions. Thus, after formalizing them as scenarios in the Learning Design Group on Cirrip, a guide of best practices could be obtained.

Completion period was extremely low, of only 10 days - maybe a longer period could lead to more relevant results.

V. CONCLUSIONS

This is the first study trying to show if and how Romanian academics use microblogging for research purposes and it is a part of an ongoing research of the authors about the impact of the use of social media by academics for scholarly activities. The survey of Romanian education professionals found that more than half of the 233 respondents who completed the survey in March 2011 use or intend to use microblogging platforms for research. The sample cannot be used to generalize the findings to the entire academics population (see lessons learned from above), but it can be a starting point for future studies. However, being a relative new technology in the field of social media, we expect that in the next 1-2 years the percentage of microblogging usage to grow in the research lifecycle of academics. The authors believe firmly that microblogging can help to promote/support both teaching-learning process and research. The information sharing, professional interaction (discussions, collaboration, peer feedback, support and participation), visibility, recognition, public and community engagement transform scholarly communication in new and provocative ways.

Key findings

The role of microblogging technology in supporting Romanian research and researchers’ careers (identify researchers’ needs, using habits) is slowly increasing, but on an upward curve. Even this new technology is seen for a large number of participants in our study as a new form of scholarly communication, we can’t say it broadly reshaped the social/scientific interactions within scholarly community. There is still a concern in adopting microblogging and other Web2.0 tools (such as blogs and wikis) to communicate ideas and projects, some educational actors believing they are dangerous or a waste of time. However, the key findings of the survey indicate that the microblogging technology has a real chance to become a representative tool for the Romanian research workflow and to be used for many types of research activities.
Acknowledgements

We are grateful to all our colleagues, to doctoral and master students who contributed to the survey in such a short time.

References


