

GLAM Wikiprojects as a Form of Organizational Cooperation Between Wikipedia and Cultural Institutions

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Abstract. The development of new communication technologies enabled the digitalization of the knowledge resources of cultural institutions all over the world and made them available to a wider audience. This was possible through the cooperation of cultural institutions with Wikipedia's WikiProjects and engagement of the users from numerous countries. It seems important to recognize if this form of cooperation between Wikipedians and institutions is effective and attracts enough participants. The article takes up the subject of the character and effects of this cooperation. The aim of the paper is to study the activity of Wikipedians, including newcomers, in GLAM (Galleries, Libraries, Archives, and Museums) WikiProjects in several language versions of Wikipedia as an open knowledge project. The research questions concerned the characteristics of the activity of Wikipedians in GLAM WikiProjects and the differences between the behaviour of Wikipedians in GLAM WikiProjects in different language versions. The method used in the research is the content analysis, which includes quantitative tools. The author acquired and calculated the data on the activity of GLAM Wikiprojects participants thanks to the Wikipedia *xTools* tool. The calculations were made on participants of GLAM WikiProjects from five language versions of Wikipedia. The main conclusion from the research is that the results of this kind of organization of work, especially in terms of newcomers, are not satisfactory. The most effective participants are the coordinators of the projects or/and the Wikipedians with the highest seniority. Newly acquired participants most often do not continue their activity for long time. However, there are some differences in different language versions of Wikipedia. English one has better results in retaining and engaging new users. What is interesting is that despite the wide popularization and engagement of the GLAM institutions in the collaboration with Wikipedia, there is a relatively low interest of new Wikipedians in GLAM Wikiprojects. In order to reach a successful cooperation, it is significant to improve the effectiveness of welcoming, engaging, and retaining newcomers in the projects. The results may be of use to the practitioners of the virtual communities of practice which focus on creating and sharing knowledge.

Keywords: Cooperation, Knowledge management, Cultural institutions, Online Open source project, Organization

1. Introduction

The tremendous advances in information and communication technologies in recent years have enabled the development of the phenomena of online groups and collectives, which are generally referred to as online communities. Many of these communities have developed their separate cultures, with their own norms and codes of behaviour. A term that is often applied to them, namely, "community of practice", denotes a group of like-minded people (often professionals) whose purpose is to support, learn from and promote mutual understanding through collaboration amongst the electronic group (Wenger 1998). Such a community was formed around the idea of open knowledge resources, i.e. Wikimedia. Wikipedia and its related projects of Wikimedia are one of the public document repositories (PDRs), which are essential resources made available on the Internet. They are maintained by voluntary contributions from readers and users who are not remunerated for their activity in the project (Peddibhotla and Subramani, 2007).

In Wikipedia, the online global encyclopaedia, the creation of articles is organized, among others, in the form of WikiProjects. These are Wikipedia pages (different from article pages) that enable collaboration by providing access to the tools, tasks and goals of the project, as well as discussions focused on coordinating group work. WikiProject user groups operate through the afore-mentioned sites by using various coordination mechanisms to motivate and structure member contributions to create and improve articles related to specific topics (Gilbert et al., 2013, p. 1). WikiProject pages "provide a centralized repository of design tools, tasks, and goals, while also discussion for explicit group coordination" (Gilbert et al., 2013, p. 1). These tools enable the creation of shared awareness of members and non-members by editing articles relevant to the project. WikiProject members, working on a narrow specialization, may perceive themselves as experts in their field, which provides them with the identification and motivation to be active in Wikipedia.

Lessig (2009) indicates that there is great creative potential in virtual communities actively involved in the creation of a global culture. Likewise, the amount of digital data created and collected by cultural heritage institutions such as museums, galleries, libraries and archives is constantly growing; many repositories publish data as raw dumps, but often without any structure and semantics, which limits the ability of users to put this information into context. Many institutions also face technical challenges related to the digitalization and

sharing of resources (Nishanbaev et al., 2019, p. 1471). One of the ways of sharing resources in more structured way is the cooperation of cultural institutions with the community centred around Wikimedia.

Relationships between cultural heritage organizations and the Wikimedia communities working on Wikimedia projects date back to the beginning of cooperation with museums and archives, for example with the British Museum in 2010. They are designed to encourage GLAM organizations (Galleries, Libraries, Archives and Museums) to participate in Wikimedia communities of which WikiProjects in Wikipedia are a part. Early GLAM-Wiki partnerships focused on uploading digital content to Wikimedia Commons, placing Wikimedia-appointed experts called Wikipedians in Residence and organizing editathons, namely, collaborative editing actions with experts on Wikipedia (Stinson, 2018, p. 1).

In recent years, partnerships with cultural heritage institutions have been changing. For example, libraries are collaborating with Wikimedia communities as part of sharing their digitized resources, which are either in the public domain or made available under an open licence. At the same time, partnerships with specific cultural institutions are being formed around WikiProject pages. The aim of this article is to examine the activity of Internet users within WikiProjects focused around cultural institutions - GLAMs (Galleries, Libraries, Archives and Museums) in five language versions of Wikipedia: Polish, English, Swedish, Italian and French. The research may be of interest to the theoreticians and practitioners specializing in virtual communities creating and sharing knowledge.

2. Literature Review

The development of the Internet and new communication technologies has enabled people to collaborate on an unprecedented scale, but the effectiveness rules for organizing such extensive cooperation between people from different cultural backgrounds are not clearly established. Wikipedia is a very effective example of such large-scale, decentralized collaboration. One cannot generalize the terms and conditions of operating from offline to online groups (Choi et al., 2010, p. 1). Therefore, examining the successes and failures of the particular forms of organizing online group collaboration is a particularly important research topic, especially the recruitment and retention of new members for community tasks.

One of the forms of work organization in Wikipedia is that of WikiProjects. In compliance with the approach used by researchers on the subject, one can define WikiProjects as "collections of pages that enable persistent group collaboration around particular subject matter domains or editing tasks" (Morgan et al., 2013, p. 1), collections which have their own code of conduct. Each WikiProject has a dedicated page that exists in a namespace separately from the article content. Participants can join a project by adding their name or nickname to the list of members on the site. WikiProjects provide mechanisms for the self-identification of members - they can place project banners on their user pages. This identification appears to have a positive effect on their level of motivation and editing activity. After joining a WikiProject, editors dedicate most of their work to creating articles for the project (Kittur et al., 2009).

The GLAM WikiProjects were created in order to coordinate cooperation between cultural institutions and Wikimedia. Cooperation with Wikimedia can take place on several levels. As part of Wikipedia, they may provide resources to help those writing articles and assist with research. Under Wikimedia Commons (free media repository), they may contribute images, video, and other media, as well as meta-data and media descriptions. In cooperation with Wikisource (library of primary sources), the institutions may provide manuscripts for scanning and uploading, while in terms of Wikidata they can integrate Wikidata into existing meta-data projects and donate openly licensed data to Wikidata ([https://outreach.wikimedia.org/wiki/GLAM/Get started](https://outreach.wikimedia.org/wiki/GLAM/Get_started)).

Thanks to these projects, the Wikimedia community expands the sources of knowledge, learns from GLAM specialists in the field of structuring and protection of knowledge (the so-called Wikipedians in Residence) and gain new editors. On the other hand, the representatives of institutions gain experience in the area of the openness of resources and open cooperation, while also extend their influence on domain-specific knowledge. Residents work with the institution's employees on the digitization and organization of resources that can be made available in Wikipedia, while also organizing events and teaching employees how to cooperate with Wikipedia (Stinson, 2018, p. 17). On a global scale, Wikipedians in residence played formal roles in almost 200 institutions (Wikimedian in residence, 2023). An example of successful cooperation in the Polish version of Wikipedia is a project created with the National Ethnographic Museum that is aimed at documenting the culture of the Carpathian region. The project required in-depth training for the volunteers, and close supervision of the museum staff to ensure that the knowledge of the communities documented was gathered

accurately (Szafran-Kozakowska, Pędzich, and Moraczewska 2016). Skolik (2017) examined in more detail the institutionalization processes in Wikimedia projects in Central-Eastern Europe.

Tharani (2021, p. 1) points out that libraries have started to cooperate with Wikidata, e.g. through WikiProjects, to improve global access to their collections of knowledge. Wikidata has great potential to become a repository for data disambiguation and merging in terms of its sustainable integration with library operations, which remains a huge challenge. McKenna et al. (2018, p. 7) conducted a survey among 185 information professionals from various cultural institutions. The results show that there is a number of usability challenges with Linked Data tools that create barriers for professionals working around Linked Data. Specialized LD tools designed for work and expertise of information professionals can help overcome these problems.

WikiProjects are a specific form of coordination of online collaboration. Morgan et al. (2013, p. 1) analysed the content of 788 discussions related to working on 138 WikiProjects to recognize the role that WikiProjects play in cooperation with Wikipedia. Their results indicate that WikiProject collaboration is more open and less structured than in other virtual teams, while WikiProjects function more like FLOSS (Free/Libre/Open Source Software) projects than traditional ones. Some WikiProjects are not formally structured and usually consist of a few contributors maintaining project communication who support the work activities of a large number of peripheral contributors (often non-members). Project coordinators are largely self-assigned and their activities are carried out independently (Morgan et al., 2013, p. 9).

Kittur et al. (2008) showed the existence of a relationship between a high level of activity on article talk pages and the quality level of articles in the initial stages of their creation. Viegas et al. (2007) and Schneider et al. (2010) found that discussions on article talk pages focus mainly on coordinating editing individual articles (Morgan et al., 2013). However, the research does not provide clear conclusions regarding the relationship between the coordination work and the quality of articles created. Ung and Dalle (2010) investigated 644 French WikiProjects in terms of the relationship between discussion activity on the project's talk page and editing activity and concluded that the most active discussion participants were not the most active editors. In most cases, a small group of active discussion participants played a major role in organizing the work of a wider group of peripheral members rather than being involved in the larger article content production. These smaller groups of project members may function as a hub acting as facilitators and technical support by answering questions, providing feedback etc. (Morgan et al., 2013, p. 8).

Although encyclopaedia articles are the most noticeable product of the work of Wikipedia editors, they spend a great deal of their time on organizational activities not directly related to extending or writing new articles (Kittur et al. 2007). Their meta-work is very important for supporting the editorial community and maintaining the quality of Wikipedia (Wilkinson and Huberman, 2007). These include activities related to maintenance, administration and quality assurance, such as the prevention of vandalism, mentoring, new user onboarding and conflict resolution (Morgan et al., 2013, p. 1). Usually this work is undertaken voluntarily by more experienced users, whose activity does not require controlling.

Maintaining the efficiency of editorial work is important for the implementation of community tasks. Platt & Romero (2018) analysed the relationship between the structural properties of WikiProject's editor networks and their effectiveness. Their results suggest the potential benefits of decentralized collaboration in smaller, tightly-knit teams.

An insightful study conducted on the users of Amazon.com resources showed the relationship between the type of motivation of the user and the contribution to the discussion on the article. "Self-oriented motives are positively related to the amount of input, while other oriented motives are positively related to the quality of the input" (Peddibhotla and Subramani, 2007, p. 22). Individual motivation includes: self-expression, personal development and personal satisfaction. Other oriented motivations include the following: social affiliation, reciprocity or altruism. The authors suggest that similar patterns occur in other online repositories such as Wikipedia. In turn, Choi et al. (2010, p.115) examined the impact of various socialization tactics on the involvement of newcomers in projects. In the study of online groups, in contrast with studies of offline groups (...), standardized tactics (uniform for all) were negatively associated with the input of a new user, while more personalized tactics were positively associated with it. These results are significant for Wikipedia community striving to acquire and retain new users for its projects.

There are a number of studies on the effectiveness of work within WikiProjects and the retention of new users involved in projects, but that type of research does not focus specifically on the effectiveness of GLAM

WikiProjects. On the other hand, the existing research mainly concerns problems and technical barriers related to library and Wikimedia databases (McKenna et al., 2018; Tharani, 2021). Thus, there is a research gap that this article attempts to fill by examining the activity of Internet users with different language backgrounds within GLAM WikiProjects.

3. Methodology

The aim of the conducted research was to study the activity of Internet users within WikiProjects focused around cultural institutions - GLAMs in five language versions of Wikipedia: English, French, Italian, Polish and Swedish. The research questions asked in the research process were as follows:

Q1: What are the characteristics of the activity of Wikipedians in GLAM WikiProjects?

Q2: Are there any differences between the activity of Wikipedians in GLAM WikiProjects in different language versions?

The method used in the research is the content analysis method, which included quantitative tools. The calculations were made on a random sample of 406 users – the participants of GLAM WikiProjects - from five language versions of Wikipedia. At the first stage of the research, the candidates were chosen from randomly selected WikiProjects of five language versions. Then, the *xTools* tool was used to generate the data about the activity of selected participants. *XTools* collects statistical data for each registered account on Wikipedia and its related projects. The collected data included the following:

- the number of the articles created by the user in the space of Wikipedia,
- the number of deleted articles created by the user,
- the number of all editions made by the user in Wikipedia,
- the number of editions on the user page discussion (a page discussing the particular user’s activity in Wikipedia),
- the number of editions in the “talk” space (discussing the content and quality of articles; interaction with others),
- the number of editions in the “meta” space (discussing the organization of work on Wikipedia),
- date of registration of the user,
- date of last activity of the user,
- ID number assigned to the user while registering,
- number of times thanks was expressed to the user for his input,
- number of times thanks was expressed by the user to other users.

At the second stage of the research, the data was collected and statistically analysed using Statistica software. The ratios of the chosen data was counted as follows: talk editions of a user to all editions of a user and meta editions of a user to all editions of a user to obtain respectively the indicators of the social activity and organizational activity of a user. The seniority of a user was determined by calculating the difference between his first and last edition (in terms of years and days). The Rho-Spearman statistical measure of correlation between variables was used (with the adopted $p < 0.05$). Descriptive statistics were also used to investigate the main trends in the behaviour of Wikipedians in GLAM WikiProjects and the differences in their behaviour in different WikiProject language versions.

4. Research Results

In order to answer the research questions, the descriptive statistics concerning the studied variables were counted and analysed. The median and quartiles of the number of created articles were determined. As results from the calculations, a huge number of participants did not create any articles in GLAM WikiProjects or Wikipedia. The details are included in Table 1.

Table 1: Descriptive Statistics of a Variable: Number of Created Articles

	Descriptive statistics					
	N	Median	Minimum	Maximum	Upper quartile	Lower quartile
number of created articles	406	1.0	0.0	11336.0	0.0	22.0

The median of created articles in Wikipedia was only 1. Around 75% of participants created up to 20 articles, including 66% with no more than 6 articles. Almost half of the participants did not create any articles (43%). The results are presented in Figure 1.

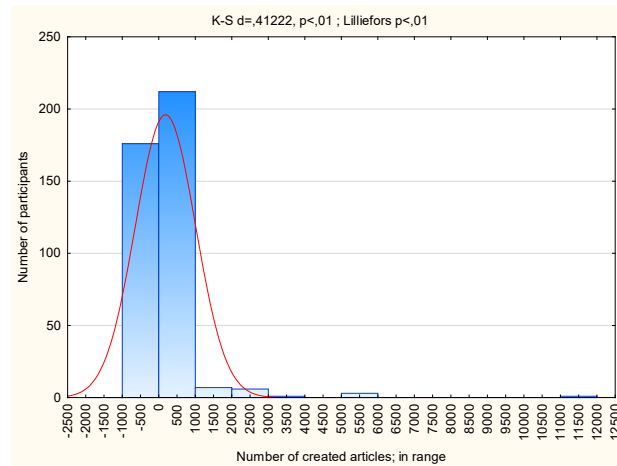


Figure 1: Number of Participants who Created a Particular Number Articles (in ranges)

A similar situation occurred in various language versions of Wikipedia, however there were small differences between them. They are presented in Table 2.

Table 2: Descriptive Statistics of a Variable: Number of Created Articles in Different Language Versions of Wikipedia

	Descriptive statistics					
	N	Median	Minimum	Maximum	Upper	Lower
number of created articles in English	68	9.0	0.0	5938.0	0.0	179.5
number of created articles in French	112	5.5	0.0	11336.0	0.0	98.0
number of created articles in Italian	92	0.0	0.0	2256.0	0.0	3.0
number of created articles in Polish	77	0.0	0.0	5694.0	0.0	6.0
number of created articles in Swedish	58	1.0	0.0	113.0	0.0	3.0

A small amount of articles created for a significant number of users was characteristic for all of the researched language versions. Yet, the median of articles created in English language version was 9, whereas 5.5 in French, while in Italian, Polish and Swedish it was 0. The English language version stood out positively from the rest of the researched versions.

As a second aspect of the trends in activity of Wikipedians in WikiProjects, the seniority and the amount of articles were studied. It turned out that 20% of the most experienced users created 73% of articles. (Table 3).

Table 3: Descriptive Statistics of a Variable: Number of Created Articles in Different Language Versions of Wikipedia

Cumulative percentage of the oldest users	Cumulative percentage of created articles
5%	27.1%
10%	41.9%
15%	56.8%
20%	72.7%
50%	80.0%

The length of activity of a participant in Wikipedia was most often 1.6 years. Only a small number of participants represented the higher ranges of seniority in Wikipedia activity. This trend may be observed in Figure 2.

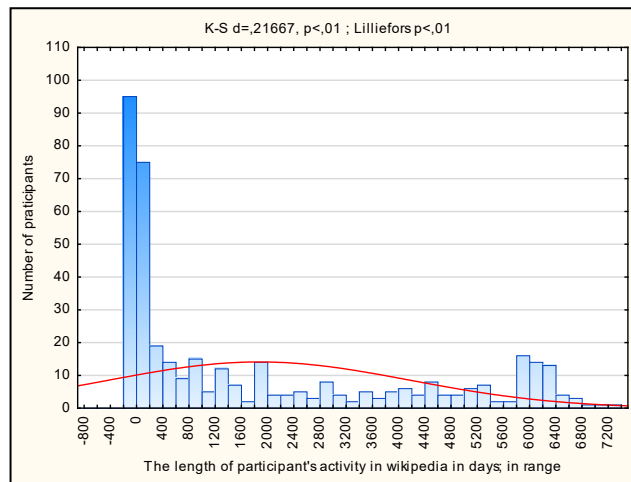


Figure 2: The Length of a Participant’s Activity in Wikipedia in Terms Of Days

Moreover, the length of the activity of a participant in different language versions was counted. The differences between versions were noted and are shown in Figure 3.

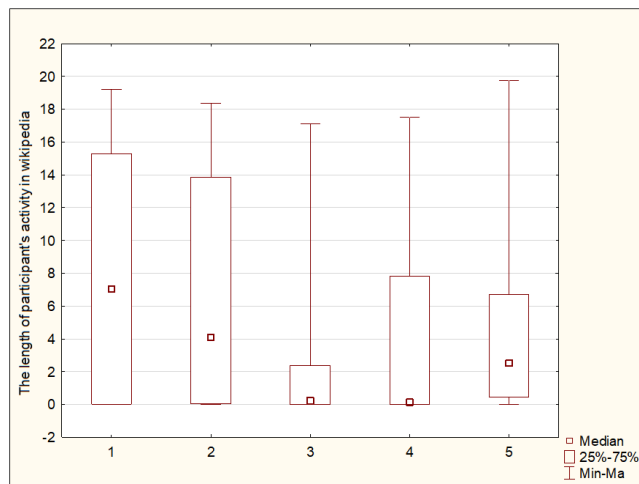


Figure 3: The Length of a Participant’s Activity in Years in Different Language Versions of Wikipedia (1- English; 2- French; 3- Italian; 4- Polish; 5- Swedish)

The English language version stands out positively from other versions. The median there is around 7.

Subsequently, the correlations between some variables describing activity in the creation of content and activity in “quality control” space and organizational (meta) space in Wikipedia were calculated and the results are presented in Table 4.

Table 4: Seniority of the Wikipedians and Their Activity in Creating the Content and in the social Spaces of Wikipedia

	ratio of talk editions/all editions	ratio of meta editions/all editions
seniority in years	0.493	0.438

The more experienced a user is, the more he/she controls the quality of the content and organizationally active he is in the space of Wikipedia. With the rise of experience, the self-confidence of the user may rise and the number of interactions with other members of the community increases. In WikiProjects, usually the most engaged participants are those who organized the project and encouraged others to join.

Another analysed variables related to thanks expressed to a user and thanks expressed by the user to other users. They were correlated with the level of activity of a user represented by the number of all his/her editions. The details are included in Table 5.

Table 5: Relations Between the Size of Editions in the Wikipedia and the Numbers of Thanks Expressed and Received by the User

	thanks expressed to the user	thanks expressed by the user
number of all editions	0.685	0.357

Together with the input of the user, thanks expressed to others and by him/her are rising. He/she can feel appreciated and this can enhance him/her to do more work for the community.

The following investigated issue was the relations between the activity in creating articles and the number of deleted articles by users and the activity of a user in “talk” space and “meta” space in Wikipedia, representing “quality control” and the organizational activity of a user (Table 6).

Table 6: Relations Between the Amount of Created Articles and Deleted Articles and the Number of Editions in the “Meta” and “Talk” Space in Wikipedia

	number of editions in the Wikipedia “talk” space	number of editions in the Wikipedia “meta” space
number of created articles	0.845	0.766
number of deleted articles	0.732	0.709

The more created articles the user gets, the more activity both in the meta and talk space is shown. The more articles the user creates, the more activity beyond the content creation he/she develops. Likewise, the more deleted editions the user has, the more activity in the “meta” and “talk” space he/she shows. One of the explanations may be that the deleted amount of articles could provoke discussion about the reasons and legitimacy of this decision on the talk pages.

5. Discussion

According to the findings of conducted research concerning characteristics of participants activity in GLAMs, around 75% of participants created up to 20 articles including 66% with no more than 6 articles. Moreover, almost half of the participants did not create any articles (43%). It appears that one of the aims of the GLAM WikiProjects, which is to engage members of cultural institutions in the edition of articles, is only realized to a small extent. Additionally, the participants do not stay in the projects for long – 40% only register and do not show any activity. The length of activity of participants in Wikipedia was most often 1.6 years (median). Only a small number of participants represent more seniority in Wikipedia activity. As Choi points out (2010, p. 1), generally most new users in Wikipedia have made fewer edits over time, but declines in editions have slowed or reversed for those greeted with welcoming messages, offered help, and constructive criticism. Perhaps the way newcomers are invited and treated at the beginning of their activity in GLAM WikiProjects should be analysed and organized in a new way.

Morgan et al. (2013, p. 9) suggest that community builders and coordinators wishing to support WikiProjects or other similar self-organizing volunteer projects in open collaboration systems should provide coordination mechanisms that work not only for large, well-organized groups, but also for smaller, more open and less formal groups. In particular, new users in communities such as Wikipedia face social and technical barriers that hinder the acquisition of knowledge and may discourage them from engaging in a project (Halfaker et al. 2013).

What is interesting in terms of activity of participants from different cultures, among the five studied language versions of Wikipedia, the English version stood out positively in terms of the median of created articles and length of participation time in Wikipedia. It is a popular and well-developed language version, which is edited by people from different cultures and has a long tradition of engaging newcomers. It is worth analysing the practices of English Wikipedia in a qualitative study in order to draw conclusions on what determines its effectiveness in this respect. From the point of view of the retention of new users, it is important to provide various types of means related to navigation in the working environment and provide support in using them. Newcomers may feel overwhelmed by the rules of article creation or the software used (Preece, 2001). The way of expressing criticism and communication style during the quality control process of articles plays a role in the retention of newcomers. Choi et al (2010, p. 107) distinguished seven useful tactics that may increase

the engagement of newcomers: offers of assistance, invitations to join, welcoming messages, requests to work on tasks, constructive criticism, positive feedback, as well as personally related comments.

Another analysed aspect of the activity of WikiProject participants was editing the activity of different types of users – more and less experienced ones. The data indicates that 20% of the most experienced users create 73% of articles. The results are in accordance with the critical mass theory. The critical mass is "a small segment of the population that chooses to make a big contribution to the collective action, while the majority do little or nothing. These few individuals are precisely those who diverge most from the average" (Oliver, Marwell and Teixeira, 1985, p. 524). These disproportions are reflected in subject-related literature. Some studies claim that even 88% of the content is created in Wikipedia by 3% of users (Wikipedia Statistics English, 2023).

In WikiProjects, coordination work and content creation are loosely connected, while editors do most of their work independently of each other (Morgan et al., 2013, p. 8). As correlations calculated in the conducted research shows, the more experienced a user is, the more he/she controls the quality of the content and organizationally active he/she is in the space of Wikipedia (0.493). What is more, the more articles the user creates, the more activity beyond the content creation he/she develops ("meta" space in Wikipedia) (0.766), regardless of the criticism he/she faces (deleted articles). Likewise, the appreciation in terms of thanks expressed for the user's activity is a useful tool that may enhance the motivation for editing (0.685).

Success in online cooperation may be aided by greater decentralization or conformity-based decision-making, while also closer collaboration between smaller teams (Platt and Romero, 2018, p. 10). Hence, the GLAM WikiProjects are a good place in the space of Wikipedia to reach this success, provided some of the problematic aspects of motivating and retention of new users are addressed.

6. Conclusion

The considerations undertaken in this article may make a contribution in recognizing the conditions for engaging new participants in GLAM WikiProjects. The findings of the research indicate that the engagement and retention of new participants is not satisfactory (around 40% do not create content nor stay in the project) and the majority of the content is created by a small percentage of the more experienced users. It seems that the more experience a user gains, the more active in the organizational sphere he/she becomes, while also the more appreciation he/she receives and more motivated he/she becomes.

However, the partnerships between Wikipedia and cultural institutions have brought numerous advantages for both sides, especially in the sphere of sharing resources and expanding mutual knowledge of both sides of the working environment, which is a good start for future cooperation. The limitation of this research concerns the limited scope of language versions of Wikipedia. The future study might expand the number of language versions as well as participants of WikiProjects as well as include qualitative data for more in-depth conclusions.

As McKenna indicates (2018, p. 16), in today's world where the Internet is the first and most often the main place where users look for information, it is essential that cultural institutions make data resources available online. Partnerships with Wikipedia's GLAM WikiProjects play an important role in this process, so it is worth improving the effectiveness of welcoming, engaging, and retaining newcomers in the projects.

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