

Reporting Errors, Repairing Knowledge: Inside Wikipedia's Public Knowledge Quality Assurance

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Abstract: This article examines Wikipedia's user-facing "Report an error" pages as a publicly accessible mechanism of management of knowledge repair and quality assurance. Focusing on selected language versions, the study treats error reports as observable traces of maintenance work: they capture how readers identify errors in articles, how they are articulated, and how the community resolves them. Methodologically, the paper relies on information available on the reporting pages themselves (including the discussions, visible status markers, categories, and archives). The content analysis combines quantitative and qualitative approaches. Resolution outcomes (e.g., fixed, rejected, no action) were measured to approximate the effectiveness of quality work. Qualitatively, the paper analyzed structure of the "Report an error" webpages in different versions, readability of the webpage, the structure of the suggested reports and responses to reports. Comparative analysis across language versions assessed what was the size and composition of the webpage content, and the responsiveness of editors through time-to-first-response and time-to-closure estimated from visible timestamps and status changes. By treating "Report an error" webpages as a tractable lens on knowledge repair, the study contributes an empirically grounded account of how Wikipedia's quality assurance is enacted in practice, and provides a methodology for evaluating the efficiency of error correcting processes in collaborative knowledge systems.

Keywords: Knowledge quality, Reporting errors, Wikipedia, Virtual communities of practice, Knowledge management

1. Introduction

Internet-based digital media have created new forms of collaboration, enabling people to work on projects that are much larger and complex than previously possible. Kiniti and Standing (2013) describe wikis as knowledge management system (KMS) alternatives addressing limitations of traditional systems, while also requiring clear purpose, usability, and governance. Similarly Roxburgh, N. et al. (2022) shows that wikis can be understood as collaborative knowledge management tools, allowing users to create, edit, organise, update, and review knowledge through a technological platform. One of these projects is Wikipedia, frequently described as a global encyclopedia. It focuses less on the creation of new knowledge than on knowledge storage, sharing, and quality assurance; in these respects, it can be compared with other KMS. In practice, it operates as a constellation of language versions built upon a shared technological infrastructure of MediaWiki. While all versions share core mechanisms of transparency, reversibility, and discussion, significant differences exist in quality assurance and quality control. They are not solely technical, they reflect variations in governance culture, moderation philosophy, automation practices, and knowledge-creating norms. Drawing on peer-reviewed research and Wikimedia sources, the article analyzes cross-language differences in Wikipedia's systems of reporting, correction, automation, and verifiability. By investigating quality assurance in Wikipedia as a knowledge management system, this article may also contribute to the development of quality assurance systems in other virtual, community-based knowledge environments.

Some quality assurance tools are universally available (MediaWiki core), while others are implemented selectively. Many comparative studies have analyzed cross-linguistic differences between Wikipedias in areas such as pre-publication moderation, revert practices and edit wars, vandalism detection systems, bot operations and automation, verifiability and citation ecosystems, while also governance and content creation policies (Yasseri et al., 2012; Halfaker et al., 2013; Tsvetkova et al., 2017; Azeroual, Lewoniewski 2020).

At the infrastructural level, all Wikipedia language versions run with the use of MediaWiki core software. This guarantees the universal presence of such tools as: revision history, talk pages, undo/revert functionality, rollback permissions, logging systems, user blocks and page protection mechanisms. The revision history ensures full auditability of changes as every edit remains constantly traceable and reversible. Talk pages provide a structured discussion namespace for identifying and debating errors. The revert and rollback functions facilitate the fast correction of vandalism or disputed changes. Page protection and user blocks serve as containment and sanctioning mechanisms. As these features are part of MediaWiki core, they are present in every Wikipedia version. Thus, the minimal architecture of error correction, which are transparency and reversibility, is globally standardized. However, while the tools are uniform, their use is not. Research consistently shows that patterns of conflict, reversion, and moderation vary across language communities (Yasseri et al., 2012).

The article's aim is to explore through a comparative lens one of the less studied mechanisms of quality assurance which is the "Report an error" webpage through the activity of their co-editors. Moreover, the article provides a proposition of methodology for evaluating the efficiency of error correcting processes in collaborative knowledge systems such as Wikipedia.

2. Literature Review

The Wikipedia community demonstrates that high-quality knowledge work can be produced not only within formal organizations, but also through broad, voluntary collaboration based on shared standards and technical infrastructure. The quality of work on Wikipedia is shaped by a specific combination of openness and control, in which everyone can contribute, yet these contributions are constantly negotiated by the community.

There are numerous mechanisms of quality assurance and control. The main mechanisms are the talk pages, providing a standardized namespace for dispute articulation, and error reporting (Forte et al., 2009; Jemielniak, 2014). Revision history ensures that every change is constantly recorded. Rollback rights facilitate the reversion of vandalism. This produces fundamental transparency as no edit is irrecoverable. (Yasseri, Sumi, Kertész 2012) The tool of FlaggedRevs (reviewed versions of articles) requires edits of inexperienced editors to be reviewed before becoming the stable article. It is enabled in chosen versions: German, Polish, Russian Wikipedia and others (Halfaker et al. 2013).

The following table shows the mechanisms of the core of MediaWiki, present in all language editions of Wikipedia:

Table 1: Quality assurance mechanisms and their function

Mechanism	Function
Revision history	Full transparency and auditability of edits
Talk pages	Primary reporting channel
Undo/revert	Instant correction
Rollback	Rapid removal of vandalism
Logging register	Administrative responsibility
Page protection	Restricts editing during conflict
User blocks	Sanctioning mechanism
Action API	Enables automation and monitoring

Source: Wikimedia (2026) *Help History*; Wikimedia (2026) *Help Log*; Wikimedia (2026) *Help Reverting*; Wikimedia (2026) *Help Talk pages*; Wikimedia (2026) *Help Protected pages*; Wikimedia (2026) *Help Blocking users*.

These mechanisms ensure the following: structured discussion spaces, full edit transparency, and immediate reversibility. Thus, the basic infrastructure for error correction is globally standardized in Wikipedia.

Empirical research demonstrates that cross-language differences are observable in conflict dynamics (Yasseri et al., 2012), bot governance (Tsvetkova et al., 2017), pre-publication moderation systems (Halfaker et al., 2013), machine-learning transferability (Heindorf et al., 2016; Wulczyn et al., 2017), and institutional governance structures (Forte, Larko and Bruckman., 2009; Jemielniak, 2014).

All language edits use talk pages to report issues. However, research on governance indicates that deliberative practices differ significantly between languages (Forte, Larco and Bruckman 2009; Jemielniak 2014). Researchers indicate that the English Wikipedia emphasizes the formalization of rules and the German Wikipedia institutionalizes moderation before publication. The Polish version of Wikipedia is based more on informal hierarchies. Forte, Larco, and Bruckman (2009) describe Wikipedia governance as decentralized, yet shaped and driven by cultural norms. Jemielniak (2014) highlights the differences between English and Polish Wikipedias in terms of hierarchy, decision-making, and rule enforcement.

One of the mechanisms of quality control is also ORES (Objective Revision Evaluation Service), which has been deployed to score edits for likely vandalism or quality concerns. Wulczyn et al. (2017) show the limited transferability of the models between languages as they turned out to be language-specific. Heindorf et al. (2016) also demonstrate that the effectiveness of vandalism detection depends on the language. There is a

limited transferability of machine-learning models across linguistic settings, since linguistic features and patterns of community behaviour differ between Wikipedias.

Also the dynamics of reverts differ substantially between versions. The so-called edit wars can be defined as disputes over the content of certain articles. Yasseri, Sumi, and Kertész (2012) examined edit wars across Wikipedias. The analysis of the conflicts' dynamic showed the differences among nations. They found that conflict patterns vary: the German Wikipedia tends to exhibit shorter, more structured conflicts, whereas the English Wikipedia displays more prolonged edit wars. These differences suggest that triage, the process by which problematic edits are identified and evaluated, is shaped by cultural norms (Yasseri, Sumi, Kertész 2012).

Table 2: Socio-technical differences among language versions

Dimension	English WP	German WP	Polish WP
Pre-publication review	Limited use	Extensive use	Widely used
Conflict cycle	Longer	Shorter	Moderate
Style of governance	Procedural	Formal; structured	Semi-hierarchical
Density of bot conflict	Moderate	Lower	Variable

Sources: Yasseri et al. (2012); Halfaker et al. (2013); Tsvetkova et al. (2017); Jemielniak (2014)

Governance differences among Wikipedias shape the following: reporting intensity, triage speed, sanctioning, or automation acceptance. Quality control therefore is not fully centralized/decentralized. It is of a hybrid nature: global in an infrastructural sense and local with respect to the norms of operation (Potthast et al. 2008; Forte, Larco, Bruckman 2009).

Kitter and Kraut (2008) showed that quality assurance should also have proper coordination. A larger number of editors improves article quality only when their work is organized in a way that prevents chaos, conflict, or inconsistency. Without it, many editors may repeat the same tasks, disagree over content, or make the article less coherent. Hence, the "wisdom of crowds" works only when collective editing is supported by effective coordination.

The "Report an error" webpage is available in 15 versions of Wikipedia, allowing users to signal errors, while other contributors decide whether they should be corrected, rejected, or moved to a discussion page. Quality is produced not only by direct editing but also by reporting, discussion, and community-based decision-making. The evidence from comparative studies shows that quality control is shaped by both technical aspects and socio-cultural norms. Wikipedia is best understood as a federation of knowledge-creating systems rather than a unified global entity. While the literature of the subject provides numerous comparative studies of many quality assurance tools, the "Report error" pages were not investigated closely, especially comparing different Wikipedia versions. In the conducted study, this gap is addressed particularly with respect to the Polish, Russian and Spanish versions. The main research question was the following: How is Wikipedia's quality assurance enacted in practice among different chosen versions of the Wikipedia "Report an error" webpage?

3. Methodology

The method used in the study was a content analysis of data available on the reporting error pages (including discussions, visible status markers, categories). The analysis combined quantitative and qualitative approach. Quantitatively, it was an analysis of system workload, composition of the report content, and the responsiveness of editors. Qualitatively, it analyzed readability of the page, the structure of the suggested reports and responses to reports.

Comparative analysis across language versions assessed the differences in the chosen characteristics of the "Report error" page and norms of answering to reporting. Three chosen Wikipedia versions using this page were compared, namely: Russian, Polish and Spanish. The choice of the versions was dictated by the criterium of the activity on these pages, the size of a given version and language accessibility to the researcher.

In order to measure the engagement in the quality assurance a few different indicators were counted, taking into consideration: the size of the community of editors in a given Wikipedia version and the size of the content of Wikipedia measured by the articles total number.

The data concerning temporal engagement were extracted from the accessible statistics concerning visits on pages. The time of the first reaction to a report and time for settling the case were counted for 100 reports for each chosen version. Moreover, to investigate the quality assurance process, the analysis of the share of different stages/types of dealing with suggested mistakes in the overall amount of 100 reports in each of the three chosen versions were conducted. The possible stages in which the reports of errors can be as follows: The rejected suggestions of errors; Fixed errors; Clarified to the submitter/moved to discussion page; In progress/under discussion; No activity/waiting for reaction. Some additional categories are present in the Polish version, however, they were not highly represented and for the purposes of comparison with other versions they were combined into a larger category (e.g. “moved into the waiting room” and “moved into discussion pages” were joined into one). Categories “in progress” and “under discussion” were joined into one, and “waiting for correction” were treated as “not dealt with”. Categories were grouped according to whether they produced similar results. Moreover, chosen characteristics of editors activity were extracted from Wikimedia pages to investigate the distribution of the quality work. The respective share of unregistered users, the top 10 most active editors and the most active editor in overall engaged editors no. were counted.

4. Research Results and Discussion

There are fifteen language versions that use “Report an error” page: Polish, Belarussian, Belarussian (Taraskievica), Russian, Silesian, Bashkir, Chechen, Spanish, Portugal, Kazakh, Latvian, Uzbekh, Georgian, Vietnamese, and Hebrew.

For better work coordination, the page in the Polish version implemented a special template: reporting status. It shows with colour-marked tabs which stage the reporting currently is (it is also used in the Kazakh and Latvian versions). The stages are, among others, the following: new, under discussion, under realization, in the waiting room, withdrawn, doubled, done.

trwa, w trakcie	Status: w trakcie	Zadanie w trakcie realizacji.
zakończony, zrobiony, wykonany, ok, +	Status: wykonane	Wykonane zadanie lub rozwiązany problem.
poczekalnia, del, DNU, dnu	Status: poczekalnia	Zgłoszenie przeniesione do Poczekalni .

Source: Wikipedia (2026) *Status of report*.

Figure 1: Status template in Polish (in Eng. from the top: *in progress*; *done*; *in the waiting room*) Columns from the left present: *Parameter, Result, Description*

A simplified category set for comparison between other versions’ categories was adopted as follows: in progress/under discussion; no activity/awaiting reaction, rejected; fixed errors; clarified to the submitter/moved to discussion page.

Source: Wikipedia (2026) *Report an error*.

Figure 2: The website “Report an error” in Polish version

More qualitative content analysis of the three versions concerned the readability of the page and the presence of professional responses suggested to the editors dealing with reports. Readability of the webpage for the inexperienced editors, less oriented in the structure of the Wikipedia spaces, varied. In Spanish version some options were hidden in a drop-down menu, while in the Polish version the content was more complex and present in the main view of the page. The Russian version of the page is also complex, but puts emphasis particularly on what not to do when reporting a mistake. The Polish and Spanish versions suggested a structure of the report message, but Spanish got notably detailed propositions of possible answers to editors reporting errors, making the responses more consistent and polite.

The important elements for the users were the presence of report structures or possible schematic answers. The suggested structure of report makes the quality work more accurate (e.g. providing reliable sources) and was present in each of the versions. The main difference was noted in terms of professional, polite in tone responses provided for and used by the editors fixing reported errors. The Spanish version stood out favourably in this respect compared to the Polish and Russian ones.

Table 3: Activity metrics and other characteristics of versions of “Report an error” pages

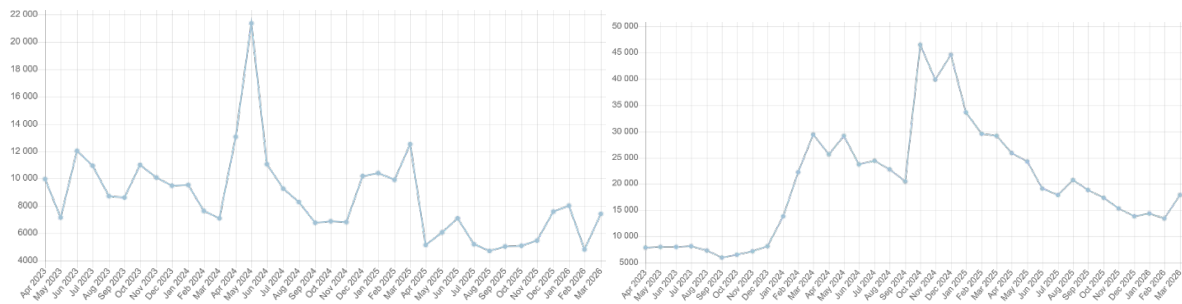
	Language	Articles Total No. (ATN)	Editors Total No. (ETN)	Overall activity ATN/ETN ratio	Visits on “Report an error” (daily)	Indicator 1: mean of daily visits on “Report” page /editors no ratio (*10 ⁴ , for better legibility)	Indicator 2: editors no./editors total no. ratio	Indicator 3: edits of “Report” page no. /year of existence ratio	Indicator 4: edits of “Report” page no. /articles Total no.ratio
1	Russian	2093308	3896557	0.54	506	1.2985	0.0046	16170.4	0.1341
2	Polish	1689909	1529449	1.10	224	1.4645	0.0068	12576.3	0.1434
3	Spanish	2104391	7845034	0.27	197	0.2511	0.0019	15678.2	0.1176
4	Hebru	393659	1298779	0.30	94	0.7237	0.0126	12072.2	0.3825
5	Vietnam.	1299582	1046333	1.24	33	0.3153	0.0005	110.6	0.0009
6	Portug.	1168057	3386776	0.34	30	0.0885	0.0049	2901.4	0.0378
7	Belaruss.-Tarask.	90751	95898	0.95	15	1.5641	0.0009	10.7	0.0019
8	Kazakh	242923	175682	1.38	11	0.6261	0.0033	72.4	0.0043
9	Belaruss.	262475	164211	1.60	11	0.6698	0.0002	14.1	0.0003
10	Uzbekh	336292	252900	1.33	10	0.3954	0.0011	53.9	0.0019
11	Latvian	141911	142380	1.00	9	0.6321	0.0007	24.5	0.0019
12	Silesian	60054	29238	2.05	4	1.3680	0.0011	5.0	0.0015
13	Chechen	856480	45198	18.95	1	0.2212	0.0006	2.9	0.0001
14	Bashkir	63943	47030	1.36	1	0.2126	0.0001	0.5	0.0001
15	Georgian	192660	179182	1.08	1	0.0558	0.0000	1.4	0.0001

Source: Self-analysis based on data from: Wikipedia (2026) *List of Wikipedias*; Wikimedia (2026) *Pageviews (1)*.

Table 3 presents data characterizing the size of the content and the community of versions and indicators of editors' activity in “Report” pages. The ratio of articles per number of editors presents the level of *overall activity* of editors. The most active editors characterize smaller sizes of Wikipedias: Chechen, Silesian, Belarussian, Bashkir, Uzbekh, and Kazakh. The low effectiveness of work measured by the content created per person does not however mean that the number of visits on the “Report” page is also low. The engagement in quality work through the page can be specified by a few indicators. The first of these indicators of *engagement in quality assurance* was created by calculating the proportion of daily visits with regard to the number of editors per website. The higher the indicator is, the higher the engagement in quality work is. Very active on this page were the editors of versions: Russian, Polish, Hebrew, Belarussian-Taraskevica (pre-Soviet, more classical standard of orthography), and Silesian.

A specific case of Wikipedia version is the Silesian one. Silesia is Polish region with unique cultural and linguistic distinctiveness from the national culture. Due to the specific role of Wikipedia in maintaining cultural identity, the proportion of articles per user is quite high, but the activity on the reporting page is rather low.

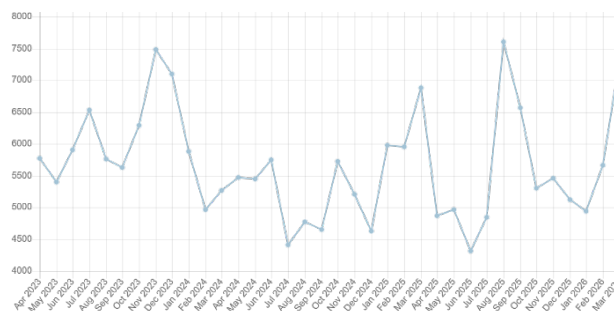
Another indicator of engagement (no. 2) was counted as a proportion of the number of “Report” page editors/total editors’ number. It showed the highest engagement for Hebrew, Portuguese, Polish and Russian versions. The other indicators (no. 3, 4) were counted as a proportion of edits of “Report” page to characteristics of their Wikipedia versions. Indicator 3 counted reporting website edits for each year of its existence (which better represent engagement because they were set up in different years). The highest indicator 3 characterize the Russian, Spanish, Polish and Hebrew versions. Indicator 4 assesses quality work considering the size of the content undergoing a quality check. It was the highest in Hebrew, Polish, Russian, Spanish version. Engagement in quality assurance vary in time, presenting the fluctuation of interest in reporting activity over the years. Statistics placed on Wikipedia pages enable temporal analysis and comparison of the editors’ engagement (Figure 3-5).



Source: Wikimedia (2026) *Pageviews* (3), (4).

Figure 3 & 4: Process time analysis of Polish and Russian page views

The popularity of the Polish page (Figure 3, on the left) slowly declined over the last three years with some short periods of peak interest as on May 2024. The popularity of the Russian version (Figure 4) slowly increased at the turn of the years 2003/20024 and after the peak on the turn of the years 2024/2025 it stayed stable over the last year.



Source: Wikimedia (2026) *Pageviews* (2).

Figure 5: Process time analysis of Spanish page views

The popularity of Spanish version over the last three years varies with periodic peaks of interest for two-three months. This version stood out from the rest in terms of professional, even-toned responses and quick closure of the deal (Table 4). These aspects may have a positive impact on maintaining constant interest in this page.

Another aspect of engagement of the editors is the time of the first response and the time to closing the deal (Table 4).

Table 4: Time of dealing with reported errors in chosen Wikipedias (format: h:mm:ss; a higher median of time of the first response than settling the case is due to the fact that cases in progress were also taken into account; both times were counted only for the cases with at least one reaction to the report)

Median	of time to first response	of time to settling a case
Polish	18:00:00	14:50:00
Spanish	2:45:30	0:32:30
Russian	09:28:00	05:03:00

Source: Own study

The studied versions differed in respect of time-efficiency, in both types of measured times. The most efficient in both aspects was the Spanish version, whereas the most discursive and extended over time was dealing with errors in the Polish version.

The subsequent part of the study investigated the proportions of different types of responses to reported errors, and the number of different stages of reports' processing (Table 5).

Table 5: Analysis of share of different stages/types of dealing with suggested errors in overall amount of reports

Stage		Rejected reports	Fixed errors	Clarified to the submitter/moved to discussion page	In progress/ under discussion	No activity/ waiting
Polish	number	2	12	8	24	54
	percent	2%	12%	8%	24%	54 %
Spanish	number	32	36	7	10	10
	percent	32%	36%	12%	10%	10%
Russian	number	18	12	1	12	56
	percent	18%	12%	1%	13%	56%

Source: Own study

The most effective in dealing with/closing reported cases, whether corrected or rejected, was the Spanish page (32% of content were rejected cases; 36% fixed errors). The number of reports waiting was the highest in the Polish and Russian pages (54% and 56 % respectively). The Polish version was characterized by the high proportion of the reports under discussion, waiting to be concluded and agreed on/fixed (24%). Thus, the quality assurance was achieved through a process of consensus-building, compared to a rather authoritative process reflected in high percentage of rejections in the Spanish and Russian versions.

Table 6: Characteristics of "Report an error" page

Language	Percentage of edits made by non-registered users	Percentage of edits made by the top 10 editors	Percentage of edits of the most active editor	Year of creation of page	Number of page visits in last 30 days
Russian	43.4%	33%	21%	2008	15059
Polish	38.2%	33.1%	55.7%	2007	6028
Spanish	28.4%	21.3%	26.3%	2010	7864

Source: Self-analysis based on Wikimedia (2026) *Pageviews* (2), (3), (4).

The origins of this page date back to 2007. Other versions adopted the page later. The percentage of edits of the most active editor may be an indicator of the concentration of engaged users in a smaller group rather than distributing work among many editors. In the Polish version, this percentage of edits equaled 56%, compared with 21-26% in the case of the Russian and Spanish Wikipedia. A significant number of edits was done by non-registered users, but in the Spanish version it was 28%. These could be interpreted as signs of broader distribution of quality work. Coordination of quality work may look differently in different versions of

Wikipedia (Kittur, Kraut 2008). Here it was reflected both in engaged editors number, and in the proportion of more and less experienced editors.

In Wikipedia quality problems are debated in public spaces, which makes reporting a social, well-documented process (Stvilia 2005). This is reflected in the reporting webpages, where reports and answers are visible. It may be a more approachable tool to non-registered users, engaging them in editing work in the future. In order not to discourage them from future activity (Halfaker et al. 2013), it is worth considering the structure and tone of responses. As shown in this research, the tone and structure of popular responses differed in the studied versions (Spanish version had more polite and encouraging suggested response than in others). The study on Teahouses suggests, that the politeness and supportive type of communication play an important role in newcomers' retention (Morgan et al. 2013).

Similar significance for quality work have social and cultural competence of the wikipedians. Cultures differ in power distance, individualism, collectivism, and discourse orientation. (Hofstede et al. 2010). The appropriate wording change how people react to criticism, hence how correction is conveyed matters (Geiger et al. 2012). The examined page versions also differed in first response time and case resolution time. E.g., the Polish wikipedians took longer time to deal with error cases. A high number of cases were in progress or under discussion. One should be cautious while drawing premature conclusions about the low effectiveness of quality work, focusing only on the temporal dimension of this work.

The size of the Wikipedia version content, accessibility of sources influence the corrective work (Lewoniewski, Azeroual 2020) - the Russian version, having internet problems, may lag behind in quality work. This article's findings showed that a high number of the reports on the Russian reporting page were not dealt with. Moreover, some may have been omitted due to political reasons (particularly in terms of controversial articles).

The character of knowledge creation was confirmed to be of social nature, as some differences in the share of possible reactions to reports occurred, and in the responses' tone or politeness. In Spanish version the answers were polite, friendly in tone, which may have a meaning in newcomers' retention. Impersonal or passive messages may discourage newcomers instead of helping them (Geiger et al. 2012).

A concluding observation is that one may measure the effectiveness of quality work through the use of various indicators. The aspects to consider are: the size of the knowledge set to search errors in or the size of community of editors of a body of knowledge. The edits number and engaged editors' number shown in relation to those aspects can better represent the engagement level in more comparable terms.

5. Conclusions

The efficiency of error correcting processes in knowledge systems may be created taking into account e.g. the time of the first reaction to a report or the time of dealing with the case. These aspects may be crucial in maintaining the level of engagement of the new editors of knowledge databases or knowledge creation systems. Not only the time of the response, but also the emotional tone and professional nature of the response may be very significant in engaging new users, especially in spaces such as report error websites, where a substantial proportion of participants are unregistered users. Creating Wikipedia content in different language versions should be understood not only as the technical process of editing, but also as a practice influenced by social norms, expectations and local cultural norms. Contributors negotiate what is considered relevant, reliable, and well-presented, while also ensuring reader interest and trust. This can sometimes discourage less experienced contributors from participation, especially if their proposals are quickly rejected in a formal manner. Such mechanisms can also reflect the community's desire to protect quality and accuracy. Quality is guaranteed by interaction among contributors, mutual recognition, discussion, while also the ability to constructively solve disputes. An editorial culture based on courtesy, dignity and openness can help maintain the authors' interest and support more effective knowledge creation.

The findings may be of use not only to the editors of different versions of Wikipedia, but also for other knowledge-intensive environments of virtual communities of practice. However, it is important to note that the article has some limitations in terms of extrapolation of the conclusions to a wider population. It has investigated only three out of numerous versions of Wikipedia, hence, the findings should be interpreted with caution and cannot be automatically generalized to all Wikipedia communities.

Ethical Declaration: Ethical clearance was not required for the research.

AI Declaration: AI language tools were used for proper English translation before native speaker proof-reading

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