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ANALYSIS OF WIKIPEDIA SURVEY DATA

Topic: Quality of Wikipedia content

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Introduction

The quality of any product is highly dependent on the skills, interests, motivations, and expertise of the people that develop it. This also applies to Wikipedia. We start this analysis with a closer look at the Wikipedia contributors and their expertise, before we examine the respondents' assessment of the quality of the online encyclopedia directly.

Thematic patterns of contributors

Wikipedia enables its contributors to freely choose which topics and thematic fields they want to contribute to. Each language version provides an overview of thematic fields to which articles can be allocated. For this survey we used the classification in the English Wikipedia, because it is the version with the largest user base.¹ Respondents who classified themselves as contributors (i.e. individuals who add or edit content; N = 54,034) were asked to which topics they had contributed and provided the following options (multiple responses possible):

1. Library & Information Science
2. Culture & the Arts
3. Geography & Places
4. Health & Fitness
5. History & Events
6. Mathematics & Logic
7. Natural & Physical Sciences
8. People & Self
9. Philosophy & Thinking
10. Religion & Belief Systems
11. Society & Social Sciences
12. Technology & Applied Sciences

Table 1 illustrates the relative share of each of these thematic fields. There is no specific field that dominates the interests of the Wikipedia contributors. Instead, we find a broad mix of interests, led by culture & the arts, technology & applied sciences, history & events, and geography & places. The least popular thematic fields are health & fitness, philosophy & thinking, and religion & belief systems. It must be noted that Table 1 contains multiple responses. Therefore, the "total" row at the bottom of the table does not represent the sum of respondents in the categories above but the overall number of contributors.

¹ Since it was impossible to take into account all the specifics of the different language versions of Wikipedia for the survey we decided to use the classification scheme of the largest Wikipedia edition, translated into each language in which the survey was conducted. Respondents who use a different language version might have had some difficulties to allocate their activities to to the listed categories.

Thematic field	N	% of respondents	% of responses
Culture & the Arts	20,394	37.7%	14.2%
Technology & Applied Sciences	16,235	30.0%	11.3%
History & Events	15,798	29.2%	11.0%
Geography & Places	15,167	28.1%	10.6%
People & Self	13,621	25.2%	9.5%
Natural & Physical Sciences	11,155	20.6%	7.8%
General Reference	8,969	16.6%	6.3%
Society & Social Sciences	8,009	14.8%	5.6%
Mathematics & Logic	6,366	11.8%	4.4%
Religion & Belief Systems	6,001	11.1%	4.2%
Philosophy & Thinking	5,569	10.3%	3.9%
Health & Fitness	4,730	8.8%	3.3%
Don't know / Didn't answer	11,303	20.9%	7.9%
Total	54,034		100.0%

Table 1: Wikipedia contributors by thematic field

Roughly half of the respondents contribute to either one (29%) or two (23%) thematic fields (see Table 2). More than 25% of the contributors are contributing to three or four thematic fields, and approximately another 20% even provide input to five to twelve thematic fields. On average, those who were able to allocate their contributions to one of the twelve fields contribute to 3.1 different ones (std. dev.: 2.3). There are some notable differences between different language editions. Taking into account only the five largest sub-samples in our survey, we see that the Russian respondents show higher shares of contributors focusing on one or two fields, whereas the English and German respondents tend to spread their contributions on more fields.

Number of thematic fields contributed to	N	All %	RU %	EN %	DE %	ES %	NL %
1	12442	29.1%	40.92	25.64	22.17	31.59	30.09
2	9618	22.5%	25.33	21.37	23.69	21.79	23.51
3	7227	16.9%	15.23	16.14	20.71	16.84	17.32
4	4632	10.8%	7.91	11.36	13.17	10.16	11.14
5	3013	7.1%	4.72	7.84	7.81	6.72	6.02
6	2007	4.7%	2.43	5.59	4.78	5.00	4.33
7	1258	2.9%	1.39	3.71	2.94	2.48	3.15
8	859	2.0%	0.75	2.75	1.67	2.07	1.35
9	551	1.3%	0.56	1.69	1.25	1.12	1.12
10	348	0.8%	0.25	1.18	0.62	0.79	0.45
11	258	0.6%	0.16	0.88	0.45	0.55	0.28
12	502	1.2%	0.36	1.83	0.75	0.90	1.24
Total	42715	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 2: Contributors by number of thematic fields they have contributed to

Levels of expertise among contributors

The level of expertise of contributors influences the quality of Wikipedia content.² Concerns about an encyclopedia that “anyone” can edit, often imply that “anyone” *might actually be editing* it, and do so without the required expertise to contribute to the content of an encyclopedia. The survey therefore asked if contributors had expertise in the thematic fields they contribute to. Since expertise can be achieved in various ways, the survey allowed respondents to distinguish between general subject matter expertise (like hobbyists may have), formal expertise (e.g. through studies), and expertise gained through work.³

We start our examination with a look at the distribution of “expert” contributors across the different thematic fields (Table 3). The share of experts is high, more than 70% in all but one fields, which contradicts the assumption that an online encyclopedia attracts laymen rather than people with (self-described) expert knowledge as contributors. The highest shares of contributors with some form of expertise are found in the technical thematic fields (mathematics & logic, technology & applied sciences and natural & physical sciences). The lowest share of expertise is found for topics in the field of people and self, which might be explained by the fact that formal training or expertise through work experience are less likely in this field.

Thematic field	N of contributors	N of experts	% of experts
Mathematics & Logic	6366	5758	90.45
Technology & Applied Sciences	16235	14537	89.54
Natural & Physical Sciences	11155	9644	86.45
Society & Social Sciences	8009	6237	77.87
Philosophy & Thinking	5569	4332	77.79
Religion & Belief Systems	6001	4619	76.97
History & Events	15798	12152	76.92
Culture & The Arts	20394	15071	73.90
Geography & Places	15167	11064	72.95
Health & Fitness	4730	3396	71.80
General Reference	8969	6382	71.16
People & Self	13621	9114	66.91

Table 3: Share of experts in thematic fields

2 Note: All expertise levels are self-reported. Further tests could be used to assess the reliability of self-reported expertise (e.g. through verification of age to see if reported work or education level is feasible).

3 It must be noted that "subject matter expertise" is a general term and may have been checked by respondents in addition to formal and / or work expertise. It is therefore not possible to distinguish clearly all hobbyists from contributors with formal or on-the-job training. However, this problem applies only to a sub-group of those who have checked "subject matter expertise" .

Tables 4 and 5 provide an overview of the number of fields in which respondents show different types of expertise. Table 5 shows how many thematic areas the respondents have expertise in based on formal training and Table 4 shows expertise based on work experience.

In both expertise categories, the share of those with expertise in one thematic field amounts to approximately one third. The share of those with formal experience in 4-12 thematic areas is 8%; the share of those with work experience in 4-12 fields is 4%.

Number of fields with formal expertise	N	%
0 fields	12880	34,2%
1 field	11942	31,7%
2 fields	6420	17,1%
3 fields	3252	8,6%
4-12 fields	3123	8,3%
Total	37617	100,0%

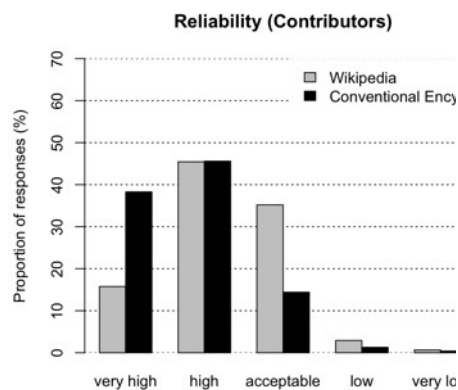
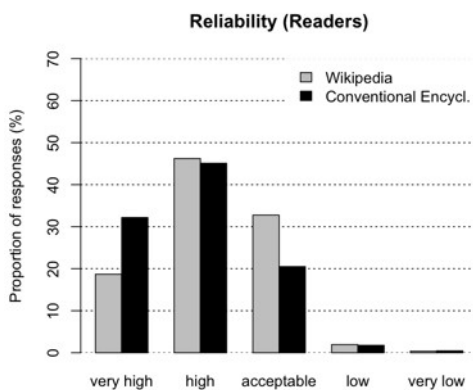
Table 5: Wikipedia contributors by number of fields in which they have formal training

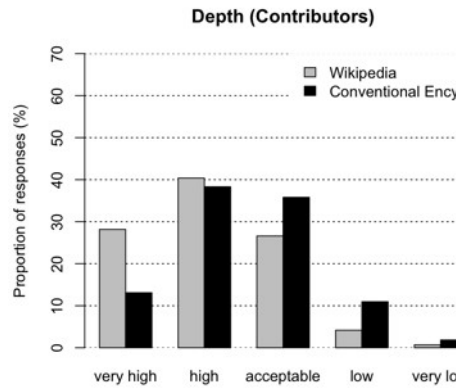
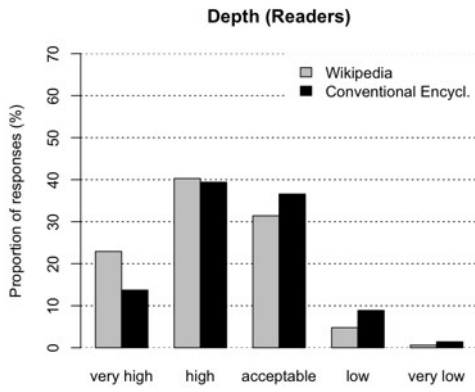
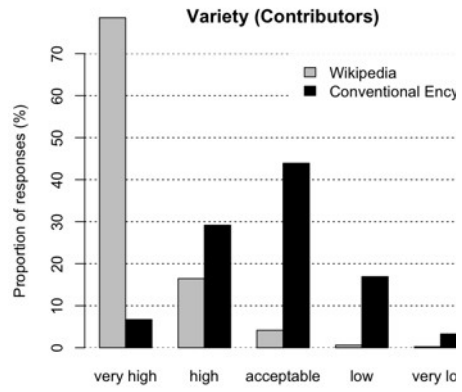
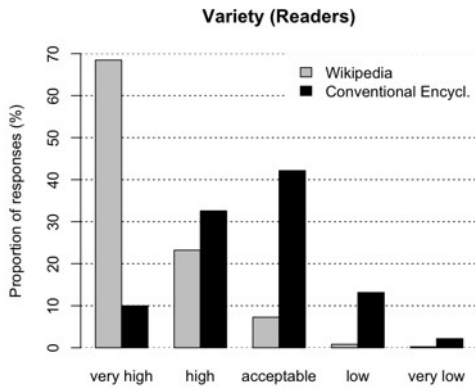
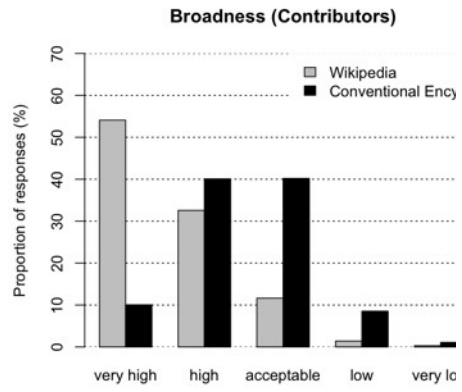
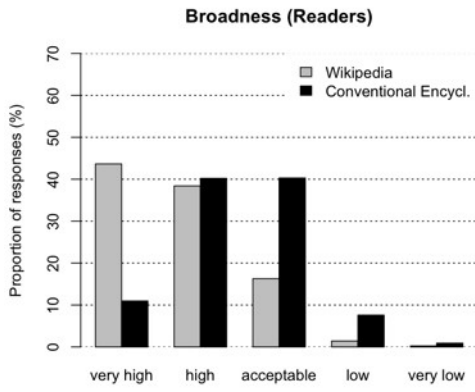
Number of fields with work expertise	N	%
0 fields	16952	45.1%
1 field	12320	32.8%
2 fields	4824	12.8%
3 fields	1905	5.1%
4-12 fields	1616	4.3%
Total	37617	100.0%

Table 4: Wikipedia contributors by number of fields in which they have work expertise

Quality rating of Wikipedia

The quality of Wikipedia can be assessed by comparing different quality dimensions of Wikipedia's content to those of a conventional encyclopedia. The following charts show how Wikipedia quality is rated by contributors and (non-contributing) readers. Contributors and readers largely agree in their perceptions. Conventional encyclopedias still have an edge over Wikipedia with regard to reliability (being more likely than Wikipedia to be seen as having “very high” reliability) but on every other measure of quality, Wikipedia is seen as better especially with regard to variety, timeliness, and broadness of coverage. Readers have slightly higher opinions of reliability and understandability of Wikipedia than do contributors, and contributors give slightly higher scores on the other quality dimensions.





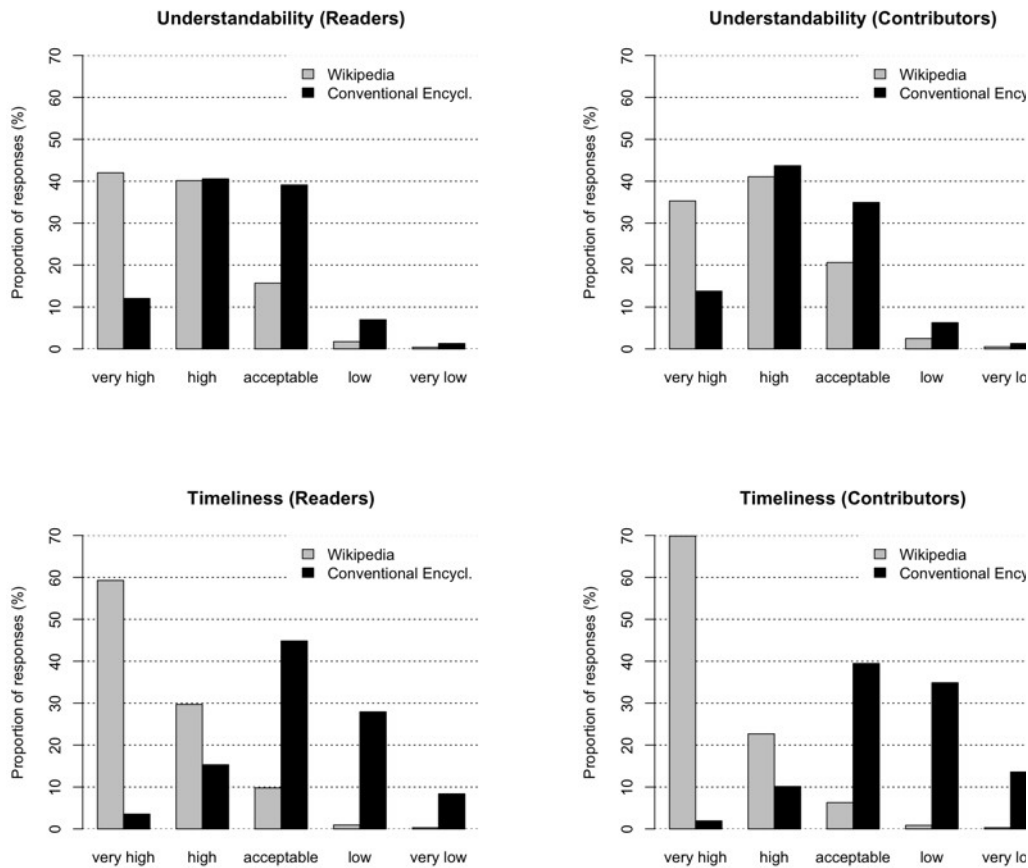


Table 6: Quality dimensions of Wikipedia

Finally, the responses of the Wikipedia contributors and readers have been transformed in a scale ranging from -2 ("very low quality") to 2 ("very high quality"); "acceptable quality" has been translated into 0 as a neutral value. Based on this transformation it was possible to compare the answers of readers and contributors by comparing the arithmetic means of both groups (Table 7).⁴

As illustrated in tables -6-8, readers show, by and large the same rating pattern as contributors. Readers' responses tend to be close to the mean, in contrast to contributors, so the difference between readers' ratings of Wikipedia and conventional encyclopedias are smaller. The most interesting result of this comparison (Table 8) is that contributors are more critical towards the understandability of Wikipedia content than readers. This difference is also visible in the charts showing the detailed quality ratings from contributors and readers (Table 6).

4 It must be noted that the differentials between the values (e.g. between "very low quality" and "low quality") are not metric, which is a precondition for using the arithmetic mean. The Mann-Whitney-test is appropriate to examine whether or not group differences are statistically significant but does not allow to interpret these differences in an ordinal way. It is therefore widespread practice to treat such ordinal variables as metric variables in order to compare the group differences with regard to the scale the respondents had to use. Nevertheless, the reader should be aware that the results of this part of the analysis represent tendencies, not hard quantitative facts.

Wikipedia			Quality Dimension	Conventional Encyclopedia			Mean Diff
N	Mean	Std Dev		N	Mean	Std Dev	
113,866	0.81	0.77	Reliability	106,860	1.07	0.80	-0.26
113,002	1.24	0.79	Broadness	106,050	0.53	0.82	0.71
112,449	0.80	0.87	Depth	105,494	0.55	0.89	0.25
111,961	1.59	0.68	Variety	105,018	0.35	0.91	1.24
112,391	1.22	0.80	Understandability	105,424	0.55	0.84	0.67
112,631	1.47	0.73	Timeliness	105,643	-0.22	0.93	1.69

Table 7: Quality dimensions of wikipedia and conventional encyclopedia

Quality Dimension	Readers (Mean)	Contributors (Mean)	Difference
Reliability	0.81	0.73	0.08
Broadness	1.24	1.39	-0.15
Depth	0.80	0.91	-0.11
Variety	1.59	1.72	-0.13
Understandability	1.22	1.08	0.14
Timeliness	1.47	1.61	-0.14

Table 8: Quality ratings of Wikipedia comparing contributors and readers