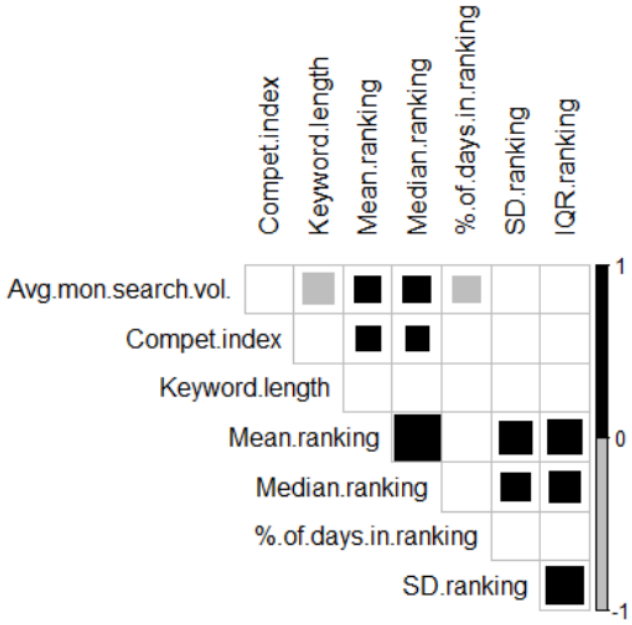
4 Keyword Boundary Conditions

In this section, we investigate possible keyword boundary conditions (e.g., keyword length, competition levels, etc.) on the revised content machine search engine ranking performance using the data and keywords reported in Tables W2.1 (IT service sector) and W3.1 (education sector).

Figure W4 contains a series of Kendall's tau b correlations in which we try to ascertain if factors such as keyword length, search volume, or competition have an effect on the search engine ranking performance of the revised machine content. Figure W4 shows that the machine-generated content does not perform as well (i.e., higher values of mean and median search engine ranking positions) for more popular search terms (higher average monthly search volume and more competition). In addition, a higher average monthly search volume is also associated with a lower percentage of days for which machine-generated content is ranked in the search engine over our observation period. The keyword length does not play an important role.

Figure W4: Keyword Boundary Conditions on Search Engine Ranking Performance



Kendall's tau b correlations: ■ = positive correlation, ■ = negative correlation, □ = statistically non significant correlation (at a 0.05 alpha level), a bigger square represents a higher correlation coefficient;

Appendix References

Baayen RH, Shafaei-Bajestan E (2019) Analyzing linguistic data: A practical introduction to statistics. Package 'languageR'. Version 1.5.0. *CRAN*. Accessed May 20, 2019, https://cran.r-project.org/web/packages/languageR/languageR.pdf

Benoit K, Watanabe K, Wang H, Nulty P, Obeng A, Müller S, Matsuo A, (2018) "quanteda: An R package for the quantitative analysis of textual data." *Journal of Open Source Software*. 3(30). https://doi.org/10.21105/joss.00774

Berger J, Sherman G, Ungar L (2020b) TextAnalyzer. Accessed November 11, 2020, http://textanalyzer.org

Bronnenberg BJ, Kim JB, Mela CF (2016) Zooming in on choice: How do consumers search for cameras online? *Marketing Science*. 35(5):693-712.

Danaher PJ, Mullarkey GW, Essegaier S (2006) Factors affecting website visit duration: A cross-domain analysis. *Journal of Marketing Research*. 43(2):182-194.

Edelman B, Zhenyu L (2016) Design of search engine services: Channel interdependence in search engine results. *Journal of Marketing Research*. 53(6):881-900.

Flanigan, AJ, Metzger, MJ (2007) The role of site features, user attribtues, and information verification behaviors on the perceived credibility of web-based information. *New Media & Society*. 9(2):319-342. https://doi.org/10.1177/1461444807075015

Jerath K, Ma L, Park YH (2014) Consumer click behavior at a search engine: The role of keyword popularity. *Journal of Marketing Research*. 51(4):480-486.

Kamoen N, Holleman B, Bergh H (2013) Positive, negative, and bipolar questions: The effect of question polarity on ratings of text readability. *Survey Research Methods*. 7(3):181-189.

Liu J, Toubia O (2018) A semantic approach for estimating consumer content preferences from online search queries. *Marketing Science*. 37(6):930-952.

Maechler M, Rousseeuw P, Croux C, Todorov V, Ruckstuhl A, Salibian-Barrera M, Verbeke T, Koller M, Conceicao ELT, Palma MA (2020) Basic robust statistics. Package 'robustbase'. Version 0.93-6. *CRAN*. Accessed May 20, 2020, https://cran.r-project.org/web/packages/robustbase/robustbase.pdf

Pennebaker JW, Booth RJ, Boyd RL, Francis ME (2015) Linguistic inquiry and word count: LIWC2015. Austin, TX: Pennebaker Conglomerates. Accessed November 1, 2020, www.LIWC.net.

Pitler E, Nenkova A (2008) Revisiting Readability: A unified framework for predicting text quality. *Proceedings of the 2008 Conference on Empirical Methods in Natural Language Processing*. 186-195.

Radford A, Narasimhan K, Salimans T, Sutskever I (2018) Improving language understanding by generative pre-training. OpenAI.

Roberts C (2010) Correlations among variables in message and messenger credibility scales. *American Behavioral Scientist*. 54(1):43-56.

Rocklage MD, Rucker DD, Nordgren LF (2018) Persuasion, emotion and language: the intent to persuade transforms language via emotionality. *Psychological Science*. 29(5):749-760.

Vaswani A, Shazeer N, Parmar N, Uszkoreit J, Jones L, Gomze AN, Kaiser L, Polosukhin I (2017) Attention is all you need. *31st Conference on Neural Information Processing Systems (NIPS 2017)*. 1-15.