2.3.4 Additional Keywords Performance

In this section, we assess the content machine's performance for additional keywords in the IT service sector experiment, which were not included in our original study, bringing the keyword count for all experimental groups to 30 keywords. Due to technical issues with the company's website that were beyond our control, we were unable to put the generated content online to evaluate search engine rankings. Nonetheless, we report the quality scores for the machine and human made content.

Table W2.3.4 depicts the additional keywords for which content was generated. Consistent with our previously reported findings, Table W2.3.5 illustrates that the raw and revised machine content substantially outperforms all competing human content producing groups including the SEO experts, similar to the results depicted in Table W2.3.1.

Table W2.3.4: Additional Keywords for the IT Service Field Experiment

Field Study	Keyword	Avg. monthly search volume	Competition	Competition index	Keyword length
		Descriptives			
IT service	SLA contract	10	low	0	2
	SLA ITIL	10	low	14	2
	service level agreement best practices	10	low	0	5
	IT security services	10	-	-	3
	ITIL incident	20	low	11	2
	ITIL ITSM	10	low	32	2
	IT maintenance contract	10	-	-	3
	IT project management	40	low	18	3
	IT scalability	10	low	0	2
	IT performance management	10	low	26	3
	Server maintenance	20	low	0	2

Entries that display "-" mean that the search engine keyword tool did not provide specific information.

Table W2.3.5: Quality Score Components Group Comparisons to Top 10 Ranked Websites (Keyword Count Increased to 30 Keywords)

Quality Score Component	Group	Descriptives				Wilcoxon rank sum[1]			
		Median (IQR)		Min	Max	W	z	r	p
Topic (s_a)	**Top 10**	**.38**	**(.23)**	**.21**	**.69**				
	Revised machine	.49	(.22)	.35	.71	253	2.91	.38	.004**
	Raw Machine	.50	(.19)	.28	.77	260	2.84	.37	.004**
	Real SEO Experts	.40	(.19)	.30	.72	302	2.01	.26	.043*
	Quasi Experts	.41	(.19)	.10	.68	381	.81	.10	.420
	Novices	.33	(.16)	.17	.64	490	-1.08	-.14	.281
	Worst 10	.18	(.07)	.09	.28	870	-7.23	-.93	.000**
Keywords (s_k)	**Top 10**	**.38**	**(.26)**	**.14**	**.77**				
	Revised machine	.52	(.28)	.32	.81	250	2.95	.38	.003**
	Raw Machine	.55	(.23)	.29	.85	260	2.84	.37	.004**
	Real SEO Experts	.46	(.21)	.16	.79	318	1.77	.23	.077
	Quasi Experts	.43	(.21)	.01	.77	382	.79	.10	.429
	Novices	.33	(.25)	.05	.72	498	-1.20	-.16	.230
	Worst 10	.15	(.10)	.03	.26	853	-6.77	-.87	.000**
Uniqueness (s_d)	**Top 10**	**.92**	**(.09)**	**.72**	**.99**				
	Revised Machine	.91	(.13)	.74	1.00	418	.47	.09	.641
	Raw Machine	.81	(.12)	.52	.97	694	-3.70	-.48	.000**
	Real SEO Experts	.97	(.06)	.68	1.00	203	3.51	.46	.000**
	Quasi Experts	.99	(.03)	.87	1.00	101	5.07	.66	.000**
	Novices	.99	(.04)	.79	1.00	161	4.02	.53	.000**
	Worst 10	.94	(.05)	.85	.99	323	1.87	.24	.061
Readability similarity (s_r)	**Top 10**	**.56**	**(.08)**	**.48**	**.74**				
	Revised Machine	.82	(.19)	.26	1.00	104	5.11	.66	.000**
	Raw Machine	.95	(.14)	.70	1.00	6	6.57	.85	.000**
	Real SEO Experts	.70	(.53)	.02	1.00	343	1.39	.18	.165
	Quasi Experts	.49	(.43)	.04	1.00	520	-1.28	-.17	.200
	Novices	.53	(.45)	.02	.96	497	-1.19	-.16	.234
	Worst 10	.43	(.17)	.12	.68	827.5	-5.57	-.72	.000**
Naturality similarity (s_n)	**Top 10**	**.56**	**(.06)**	**.50**	**.65**				
	Revised Machine	.67	(.40)	.17	1.00	384	.97	.13	.332
	Raw Machine	.75	(.42)	.33	1.00	227.5	3.29	.43	.000**
	Real SEO Experts	.67	(.33)	.08	1.00	346.5	1.34	.17	.181
	Quasi Experts	.50	(.33)	.17	.83	448.5	-.20	-.03	.843
	Novices	.54	(.44)	.00	1.00	453.5	-.51	-.07	.607
	Worst 10	.30	(.15)	.08	.53	896	-6.59	-.85	.000**

[1]Two-tailed tests; statistical significance codes: *0.05 level, **0.01 level;

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.