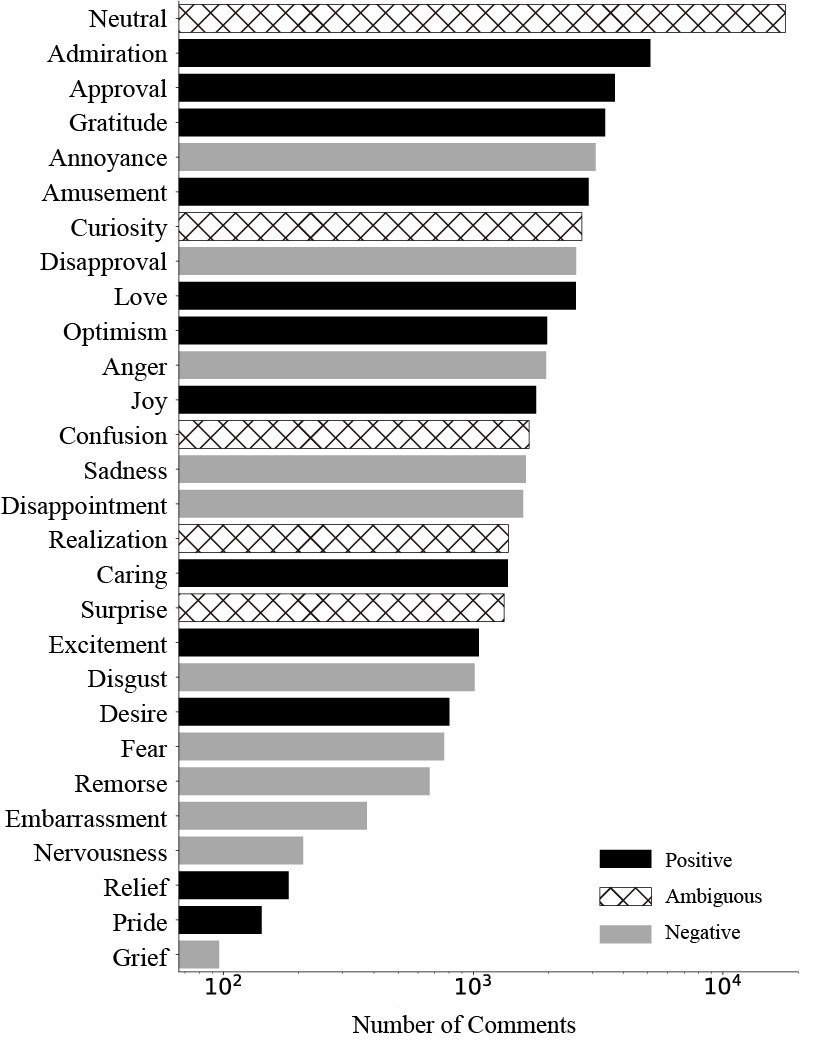
**Appendix A – Emotion Frequencies in GoEmotions (Redrawn from Demszky et al., 2020)**

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**Appendix B – Correlation Table of Topic Probabilities**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Topic1** | **Topic2** | **Topic3** | **Topic4** | **Topic5** | **Topic6** | **Topic7** | **Topic8** | **Topic9** | **Topic10** | **Topic11** | **Topic12** | **Topic13** | **Topic14** | **Topic15** |
| **Topic1** | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Topic2** | 0.04\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Topic3** | -0.16\*\*\* | -0.23\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| **Topic4** | -0.16\*\*\* | -0.12\*\*\* | -0.22\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| **Topic5** | -0.06\*\*\* | -0.19\*\*\* | 0.01 | -0.16\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |
| **Topic6** | -0.09\*\*\* | -0.22\*\*\* | -0.07\*\*\* | -0.03\*\*\* | -0.11\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |
| **Topic7** | 0.11\*\*\* | -0.16\*\*\* | 0.04\*\*\* | -0.13\*\*\* | 0.08\*\*\* | 0.02\*\*\* | 1.00 |  |  |  |  |  |  |  |  |
| **Topic8** | -0.13\*\*\* | -0.10\*\*\* | -0.02\*\* | -0.05\*\*\* | 0.04\*\*\* | -0.13\*\*\* | -0.17\*\*\* | 1.00 |  |  |  |  |  |  |  |
| **Topic9** | 0.06\*\*\* | -0.01\* | -0.21\*\*\* | -0.07\*\*\* | 0.03\*\*\* | -0.05\*\*\* | -0.07\*\*\* | -0.06\*\*\* | 1.00 |  |  |  |  |  |  |
| **Topic10** | -0.04\*\*\* | -0.15\*\*\* | 0.17\*\*\* | -0.17\*\*\* | -0.15\*\*\* | 0.04\*\*\* | 0.06\*\*\* | -0.13\*\*\* | -0.26\*\*\* | 1.00 |  |  |  |  |  |
| **Topic11** | -0.04\*\*\* | 0.06\*\*\* | -0.16\*\*\* | -0.01\* | -0.18\*\*\* | -0.09\*\*\* | -0.12\*\*\* | -0.14\*\*\* | -0.10\*\*\* | -0.03\*\*\* | 1.00 |  |  |  |  |
| **Topic12** | -0.10\*\*\* | -0.12\*\*\* | -0.08\*\*\* | -0.07\*\*\* | -0.09\*\*\* | 0.03\*\*\* | -0.07\*\*\* | -0.04\*\*\* | -0.12\*\*\* | -0.05\*\*\* | -0.04\*\*\* | 1.00 |  |  |  |
| **Topic13** | 0.12\*\*\* | -0.07\*\*\* | -0.15\*\*\* | -0.10\*\*\* | 0.08\*\*\* | -0.01 | 0.11\*\*\* | -0.12\*\*\* | 0.13\*\*\* | -0.15\*\*\* | -0.18\*\*\* | -0.04\*\*\* | 1.00 |  |  |
| **Topic14** | -0.08\*\*\* | 0.03\*\*\* | -0.08\*\*\* | -0.04\*\*\* | -0.14\*\*\* | -0.13\*\*\* | -0.17\*\*\* | 0.08\*\*\* | -0.05\*\*\* | -0.13\*\*\* | -0.02\*\*\* | -0.12\*\*\* | -0.05\*\*\* | 1.00 |  |
| **Topic15** | -0.15\*\*\* | -0.00 | 0.13\*\*\* | -0.12\*\*\* | -0.03\*\*\* | -0.19\*\*\* | -0.20\*\*\* | 0.01 | -0.18\*\*\* | -0.01\* | 0.10\*\*\* | -0.06\*\*\* | -0.28\*\*\* | -0.04\*\*\* | 1.00 |
| \* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001. | | |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Appendix C – Output of Ordered Logistic Regression for “Rating Level”**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| Topic1 | 20.91\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 6.28\*\*\* | 3.52\* | 3.57\* |
|  | (14.86) |  |  |  |  |  |  |  |  |  |  |  |  |  |  | (4.08) | (2.29) | (2.44) |
| Topic2 |  | 0.20 |  |  |  |  |  |  |  |  |  |  |  |  |  | 3.15\* |  |  |
|  |  | (0.21) |  |  |  |  |  |  |  |  |  |  |  |  |  | (2.57) |  |  |
| Topic3 |  |  | -10.00\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  | -2.17 | -4.96\*\*\* | -4.66\*\*\* |
|  |  |  | (-12.72) |  |  |  |  |  |  |  |  |  |  |  |  | (-1.83) | (-4.63) | (-5.14) |
| Topic4 |  |  |  | 4.96\*\*\* |  |  |  |  |  |  |  |  |  |  |  | 6.45\*\*\* | 3.70\*\* | 3.86\*\*\* |
|  |  |  |  | (4.66) |  |  |  |  |  |  |  |  |  |  |  | (5.38) | (3.22) | (3.73) |
| Topic5 |  |  |  |  | 33.24\*\*\* |  |  |  |  |  |  |  |  |  |  | 17.41\*\*\* | 14.67\*\*\* | 14.87\*\*\* |
|  |  |  |  |  | (19.69) |  |  |  |  |  |  |  |  |  |  | (10.41) | (9.31) | (9.87) |
| Topic6 |  |  |  |  |  | 19.72\*\*\* |  |  |  |  |  |  |  |  |  | 9.72\*\*\* | 6.92\*\*\* | 7.24\*\*\* |
|  |  |  |  |  |  | (13.68) |  |  |  |  |  |  |  |  |  | (6.89) | (4.86) | (5.42) |
| Topic7 |  |  |  |  |  |  | 20.87\*\*\* |  |  |  |  |  |  |  |  | 2.21 | -0.51 |  |
|  |  |  |  |  |  |  | (14.70) |  |  |  |  |  |  |  |  | (1.44) | (-0.33) |  |
| Topic8 |  |  |  |  |  |  |  | -12.52\*\*\* |  |  |  |  |  |  |  | -4.21\*\*\* | -6.96\*\*\* | -6.72\*\*\* |
|  |  |  |  |  |  |  |  | (-17.04) |  |  |  |  |  |  |  | (-3.74) | (-7.10) | (-8.01) |
| Topic9 |  |  |  |  |  |  |  |  | 27.52\*\*\* |  |  |  |  |  |  | 16.19\*\*\* | 13.51\*\*\* | 13.69\*\*\* |
|  |  |  |  |  |  |  |  |  | (18.46) |  |  |  |  |  |  | (10.80) | (9.46) | (10.08) |
| Topic10 |  |  |  |  |  |  |  |  |  | -0.19 |  |  |  |  |  | 2.30 |  |  |
|  |  |  |  |  |  |  |  |  |  | (-0.19) |  |  |  |  |  | (1.86) |  |  |
| Topic11 |  |  |  |  |  |  |  |  |  |  | -6.14\*\*\* |  |  |  |  | 0.93 | -1.81 |  |
|  |  |  |  |  |  |  |  |  |  |  | (-6.78) |  |  |  |  | (0.72) | (-1.60) |  |
| Topic12 |  |  |  |  |  |  |  |  |  |  |  | 8.04\*\*\* |  |  |  | 4.83\*\*\* | 2.08 |  |
|  |  |  |  |  |  |  |  |  |  |  |  | (6.17) |  |  |  | (3.49) | (1.56) |  |
| Topic13 |  |  |  |  |  |  |  |  |  |  |  |  | 34.79\*\*\* |  |  | 18.77\*\*\* | 16.05\*\*\* | 16.38\*\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  | (22.52) |  |  | (11.50) | (9.56) | (10.23) |
| Topic14 |  |  |  |  |  |  |  |  |  |  |  |  |  | -29.26\*\*\* |  | -21.20\*\*\* | -23.91\*\*\* | -23.91\*\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | (-41.08) |  | (-20.26) | (-24.99) | (-29.58) |
| Topic15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -10.39\*\*\* | 0.00 | -2.73\*\* | -2.79\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | (-14.17) | (.) | (-2.67) | (-3.09) |
| Business\_1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|  | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) |
| Business\_2 | 0.68\*\*\* | 0.66\*\*\* | 1.22\*\*\* | 0.69\*\*\* | 0.54\*\*\* | 1.13\*\*\* | 0.55\*\*\* | 0.67\*\*\* | 0.69\*\*\* | 0.65\*\*\* | 0.59\*\*\* | 0.66\*\*\* | 0.66\*\*\* | 0.50\*\* | 0.92\*\*\* | 1.08\*\*\* | 1.09\*\*\* | 1.10\*\*\* |
|  | (4.36) | (4.26) | (7.39) | (4.45) | (3.50) | (7.15) | (3.54) | (4.32) | (4.43) | (4.20) | (3.77) | (4.28) | (4.24) | (3.12) | (5.89) | (5.97) | (6.04) | (6.19) |
| Business\_3 | 1.13\*\*\* | 1.09\*\*\* | 0.94\*\*\* | 0.69\*\*\* | 1.04\*\*\* | 1.54\*\*\* | 1.20\*\*\* | 1.12\*\*\* | 1.00\*\*\* | 1.08\*\*\* | 1.06\*\*\* | 1.15\*\*\* | 1.01\*\*\* | 1.11\*\*\* | 1.05\*\*\* | 0.66\*\*\* | 0.68\*\*\* | 0.67\*\*\* |
|  | (7.26) | (7.04) | (6.06) | (3.95) | (6.67) | (9.73) | (7.68) | (7.20) | (6.40) | (6.83) | (6.81) | (7.39) | (6.46) | (6.87) | (6.77) | (3.47) | (3.56) | (3.55) |
| Business\_4 | 1.13\*\*\* | 1.33\*\*\* | 1.30\*\*\* | 1.34\*\*\* | 1.22\*\*\* | 1.09\*\*\* | 1.12\*\*\* | 1.21\*\*\* | 1.12\*\*\* | 1.33\*\*\* | 1.31\*\*\* | 1.37\*\*\* | 1.18\*\*\* | 1.00\*\*\* | 1.27\*\*\* | 0.60\*\*\* | 0.61\*\*\* | 0.60\*\*\* |
|  | (6.60) | (7.80) | (7.61) | (7.85) | (7.12) | (6.34) | (6.55) | (7.08) | (6.52) | (7.75) | (7.68) | (8.02) | (6.86) | (5.73) | (7.44) | (3.37) | (3.42) | (3.35) |
| Business\_5 | 0.29\* | 0.37\*\* | 0.25 | 0.30\* | 0.36\* | 0.85\*\*\* | 0.50\*\*\* | 0.30\* | 0.16 | 0.37\* | 0.46\*\* | 0.42\*\* | 0.28\* | 1.23\*\*\* | 0.43\*\* | 1.02\*\*\* | 1.04\*\*\* | 1.00\*\*\* |
|  | (2.08) | (2.65) | (1.79) | (2.16) | (2.54) | (5.88) | (3.55) | (2.13) | (1.13) | (2.57) | (3.29) | (3.02) | (1.99) | (7.78) | (3.08) | (5.91) | (6.12) | (5.96) |
| Business\_6 | 0.87\*\*\* | 0.90\*\*\* | 0.82\*\*\* | 0.93\*\*\* | 0.94\*\*\* | 1.35\*\*\* | 1.09\*\*\* | 0.90\*\*\* | 0.84\*\*\* | 0.90\*\*\* | 0.91\*\*\* | 0.46\* | 0.81\*\*\* | 0.90\*\*\* | 0.93\*\*\* | 0.86\*\*\* | 0.88\*\*\* | 1.04\*\*\* |
|  | (4.36) | (4.56) | (4.11) | (4.68) | (4.70) | (6.70) | (5.46) | (4.49) | (4.19) | (4.47) | (4.59) | (2.19) | (4.05) | (4.32) | (4.66) | (3.67) | (3.79) | (4.79) |
| Business\_7 | 0.10 | 0.18 | 0.36\*\* | 0.20 | 0.13 | 0.68\*\*\* | 0.07 | 0.09 | 0.26\* | 0.19 | 0.15 | 0.23 | 0.23 | -0.04 | 0.35\*\* | 0.35\* | 0.34\* | 0.34\* |
|  | (0.80) | (1.45) | (2.82) | (1.57) | (1.04) | (5.23) | (0.53) | (0.72) | (2.09) | (1.45) | (1.20) | (1.83) | (1.80) | (-0.29) | (2.75) | (2.46) | (2.40) | (2.45) |
| Business\_8 | 1.10\*\*\* | 1.11\*\*\* | 1.26\*\*\* | 1.14\*\*\* | -0.08 | 1.60\*\*\* | 0.97\*\*\* | 1.14\*\*\* | 1.03\*\*\* | 1.10\*\*\* | 1.01\*\*\* | 1.19\*\*\* | 0.86\*\*\* | 1.18\*\*\* | 1.25\*\*\* | 0.65\*\*\* | 0.66\*\*\* | 0.65\*\*\* |
|  | (7.90) | (7.98) | (9.02) | (8.21) | (-0.53) | (11.22) | (6.99) | (8.17) | (7.37) | (7.75) | (7.25) | (8.52) | (6.17) | (8.19) | (8.92) | (3.86) | (3.94) | (3.95) |
| Business\_9 | 1.07\*\*\* | 1.03\*\*\* | 1.65\*\*\* | 1.05\*\*\* | 0.92\*\*\* | 1.42\*\*\* | 0.77\*\*\* | 1.04\*\*\* | 1.05\*\*\* | 1.02\*\*\* | 0.95\*\*\* | 1.10\*\*\* | 0.97\*\*\* | 0.82\*\*\* | 1.12\*\*\* | 1.35\*\*\* | 1.36\*\*\* | 1.34\*\*\* |
|  | (6.57) | (6.34) | (9.54) | (6.51) | (5.65) | (8.67) | (4.74) | (6.39) | (6.45) | (6.30) | (5.88) | (6.76) | (5.94) | (4.94) | (6.88) | (7.31) | (7.35) | (7.36) |
| Business\_10 | 0.92\*\*\* | 1.02\*\*\* | 0.93\*\*\* | 1.07\*\*\* | 1.13\*\*\* | 1.67\*\*\* | 1.21\*\*\* | 1.07\*\*\* | 0.96\*\*\* | 1.03\*\*\* | 1.03\*\*\* | 1.11\*\*\* | 1.10\*\*\* | 1.50\*\*\* | 1.15\*\*\* | 1.72\*\*\* | 1.77\*\*\* | 1.77\*\*\* |
|  | (6.03) | (6.06) | (6.10) | (6.97) | (7.36) | (10.52) | (7.89) | (6.97) | (6.26) | (6.64) | (6.71) | (7.25) | (7.11) | (9.04) | (7.48) | (8.80) | (9.78) | (10.03) |
| Busines\_11 | 0.79\*\*\* | 0.95\*\*\* | 0.81\*\*\* | 1.01\*\*\* | 1.07\*\*\* | 1.58\*\*\* | 1.15\*\*\* | 0.97\*\*\* | 0.86\*\*\* | 0.96\*\*\* | 0.98\*\*\* | 1.04\*\*\* | 0.96\*\*\* | 1.27\*\*\* | 1.10\*\*\* | 1.46\*\*\* | 1.51\*\*\* | 1.50\*\*\* |
|  | (5.68) | (6.11) | (5.82) | (7.28) | (7.72) | (10.93) | (8.26) | (7.00) | (6.22) | (6.78) | (7.09) | (7.54) | (6.90) | (8.71) | (7.91) | (7.89) | (9.13) | (9.36) |
| Business\_12 | 1.28\*\*\* | 1.39\*\*\* | 1.41\*\*\* | 1.40\*\*\* | 1.28\*\*\* | 1.80\*\*\* | 1.14\*\*\* | 1.40\*\*\* | 1.33\*\*\* | 1.39\*\*\* | 1.37\*\*\* | 1.38\*\*\* | 1.36\*\*\* | 1.19\*\*\* | 1.40\*\*\* | 1.28\*\*\* | 1.28\*\*\* | 1.29\*\*\* |
|  | (7.28) | (7.91) | (7.98) | (7.94) | (7.23) | (10.09) | (6.43) | (7.93) | (7.53) | (7.91) | (7.80) | (7.83) | (7.69) | (6.65) | (7.97) | (6.90) | (6.89) | (6.99) |
| Business\_13 | 0.52\*\*\* | 0.57\*\*\* | 0.43\*\* | 0.53\*\*\* | 0.52\*\*\* | 1.07\*\*\* | 0.66\*\*\* | 0.48\*\* | -0.29 | 0.57\*\*\* | 0.63\*\*\* | 0.63\*\*\* | 0.61\*\*\* | 0.47\*\* | 0.65\*\*\* | 0.10 | 0.12 | 0.09 |
|  | (3.57) | (3.85) | (2.91) | (3.59) | (3.49) | (7.11) | (4.47) | (3.28) | (-1.90) | (3.76) | (4.31) | (4.32) | (4.14) | (3.06) | (4.41) | (0.55) | (0.71) | (0.52) |
| Business\_14 | 0.93\*\*\* | 1.02\*\*\* | 0.93\*\*\* | 1.02\*\*\* | 1.11\*\*\* | 1.44\*\*\* | 1.17\*\*\* | 0.97\*\*\* | 0.73\*\* | 1.03\*\*\* | 1.04\*\*\* | 1.07\*\*\* | 0.93\*\*\* | 1.51\*\*\* | 1.06\*\*\* | 1.41\*\*\* | 1.45\*\*\* | 1.43\*\*\* |
|  | (3.87) | (4.20) | (3.88) | (4.26) | (4.60) | (5.95) | (4.87) | (4.06) | (3.01) | (4.25) | (4.34) | (4.45) | (3.86) | (5.60) | (4.41) | (4.90) | (5.15) | (5.13) |
| Business\_15 | 1.35\*\*\* | 1.26\*\*\* | 1.20\*\*\* | 1.21\*\*\* | 1.28\*\*\* | 0.94\*\*\* | 1.33\*\*\* | 1.28\*\*\* | 1.36\*\*\* | 1.25\*\*\* | 1.21\*\*\* | 1.13\*\*\* | 1.31\*\*\* | 1.31\*\*\* | 1.33\*\*\* | 1.06\*\*\* | 1.07\*\*\* | 1.13\*\*\* |
|  | (7.76) | (7.25) | (6.90) | (7.00) | (7.35) | (5.36) | (7.67) | (7.37) | (7.81) | (7.13) | (7.00) | (6.51) | (7.48) | (7.23) | (7.65) | (5.55) | (5.64) | (6.04) |
| Business\_16 | 1.06\*\*\* | 1.12\*\*\* | 1.04\*\*\* | 1.11\*\*\* | 1.05\*\*\* | 0.97\*\*\* | 1.06\*\*\* | 1.12\*\*\* | 1.02\*\*\* | 1.12\*\*\* | 1.09\*\*\* | 1.10\*\*\* | 1.12\*\*\* | 0.85\*\*\* | 1.09\*\*\* | 0.61\*\* | 0.62\*\*\* | 0.62\*\*\* |
|  | (5.97) | (6.34) | (5.90) | (6.31) | (5.93) | (5.42) | (6.01) | (6.30) | (5.77) | (6.31) | (6.16) | (6.25) | (6.29) | (4.71) | (6.14) | (3.29) | (3.34) | (3.38) |
| Business\_17 | 0.48\*\*\* | 0.64\*\*\* | 0.62\*\*\* | 0.66\*\*\* | 0.59\*\*\* | 1.06\*\*\* | 0.66\*\*\* | 0.54\*\*\* | 0.63\*\*\* | 0.64\*\*\* | 0.65\*\*\* | 0.70\*\*\* | 0.56\*\*\* | 0.74\*\*\* | 0.70\*\*\* | 0.81\*\*\* | 0.80\*\*\* | 0.78\*\*\* |
|  | (3.59) | (4.78) | (4.64) | (4.93) | (4.40) | (7.74) | (4.92) | (4.01) | (4.72) | (4.73) | (4.89) | (5.25) | (4.14) | (5.31) | (5.21) | (5.39) | (5.37) | (5.33) |
| Business\_18 | 0.62\*\*\* | 0.78\*\*\* | 0.87\*\*\* | 0.80\*\*\* | 0.44\*\* | 1.23\*\*\* | 0.68\*\*\* | 0.79\*\*\* | 0.33\* | 0.78\*\*\* | 0.73\*\*\* | 0.80\*\*\* | 0.59\*\*\* | 0.54\*\*\* | 0.83\*\*\* | 0.22 | 0.23 | 0.24 |
|  | (4.48) | (5.68) | (6.29) | (5.81) | (3.18) | (8.75) | (4.93) | (5.72) | (2.36) | (5.57) | (5.32) | (5.82) | (4.24) | (3.83) | (6.02) | (1.46) | (1.52) | (1.56) |
| Business\_19 | -0.17 | 0.47\*\*\* | 0.38\*\* | 0.46\*\*\* | 0.36\*\* | 1.01\*\*\* | 0.56\*\*\* | 0.64\*\*\* | 0.32\* | 0.47\*\*\* | 0.43\*\* | 0.51\*\*\* | 0.42\*\* | 0.55\*\*\* | 0.57\*\*\* | 0.56\*\*\* | 0.58\*\*\* | 0.58\*\*\* |
|  | (-1.23) | (3.54) | (2.85) | (3.48) | (2.65) | (7.33) | (4.17) | (4.76) | (2.40) | (3.45) | (3.26) | (3.85) | (3.15) | (3.93) | (4.24) | (3.41) | (3.56) | (3.60) |
| Business\_20 | 0.75\*\*\* | 0.64\*\*\* | 0.46\*\*\* | 0.19 | 0.78\*\*\* | 1.01\*\*\* | 0.80\*\*\* | 0.66\*\*\* | 0.55\*\*\* | 0.63\*\*\* | 0.60\*\*\* | 0.69\*\*\* | 0.72\*\*\* | 0.79\*\*\* | 0.60\*\*\* | 0.49\*\* | 0.51\*\* | 0.50\*\* |
|  | (5.49) | (4.72) | (3.41) | (1.20) | (5.71) | (7.35) | (5.86) | (4.88) | (4.02) | (4.49) | (4.47) | (5.10) | (5.25) | (5.54) | (4.42) | (2.59) | (2.70) | (2.69) |
| Business\_21 | 0.72\*\*\* | 0.76\*\*\* | 0.77\*\*\* | 0.78\*\*\* | 0.52\*\*\* | 0.51\*\*\* | 0.76\*\*\* | 0.75\*\*\* | 0.51\*\*\* | 0.76\*\*\* | 0.71\*\*\* | 0.80\*\*\* | 0.61\*\*\* | 0.69\*\*\* | 0.73\*\*\* | 0.23 | 0.24 | 0.24 |
|  | (4.93) | (5.21) | (5.28) | (5.35) | (3.54) | (3.41) | (5.17) | (5.12) | (3.42) | (5.11) | (4.83) | (5.44) | (4.11) | (4.56) | (4.98) | (1.44) | (1.50) | (1.49) |
| Business\_22 | 0.99\*\*\* | 0.98\*\*\* | 1.30\*\*\* | 1.01\*\*\* | 0.73\*\*\* | 1.33\*\*\* | 0.93\*\*\* | 1.05\*\*\* | 0.90\*\*\* | 0.98\*\*\* | 0.93\*\*\* | 0.98\*\*\* | 0.91\*\*\* | 0.85\*\*\* | 1.01\*\*\* | 0.98\*\*\* | 0.98\*\*\* | 0.99\*\*\* |
|  | (4.86) | (4.83) | (6.31) | (4.96) | (3.56) | (6.49) | (4.55) | (5.13) | (4.41) | (4.81) | (4.56) | (4.83) | (4.43) | (4.04) | (4.98) | (4.44) | (4.46) | (4.51) |
| Business\_23 | -0.14 | -0.19 | -0.13 | -0.19 | -0.20 | 0.22 | -0.09 | -0.09 | -0.64\*\* | -0.19 | -0.10 | -0.18 | -0.19 | -0.29 | -0.22 | -0.34 | -0.32 | -0.34 |
|  | (-0.66) | (-0.89) | (-0.62) | (-0.92) | (-0.95) | (1.03) | (-0.44) | (-0.44) | (-2.97) | (-0.89) | (-0.46) | (-0.87) | (-0.89) | (-1.32) | (-1.07) | (-1.48) | (-1.41) | (-1.48) |
| Business\_24 | 1.36\*\*\* | 1.35\*\*\* | 1.60\*\*\* | 1.38\*\*\* | 0.81\*\*\* | 1.78\*\*\* | 1.27\*\*\* | 1.45\*\*\* | 0.95\*\*\* | 1.35\*\*\* | 1.28\*\*\* | 1.41\*\*\* | 1.06\*\*\* | 1.18\*\*\* | 1.36\*\*\* | 0.87\*\*\* | 0.88\*\*\* | 0.88\*\*\* |
|  | (7.84) | (7.81) | (9.12) | (7.96) | (4.64) | (10.15) | (7.34) | (8.35) | (5.43) | (7.69) | (7.37) | (8.13) | (6.05) | (6.63) | (7.86) | (4.56) | (4.62) | (4.61) |
| Business\_25 | 0.61\*\*\* | 0.52\*\*\* | 0.47\*\*\* | 0.53\*\*\* | 0.36\* | 0.98\*\*\* | 0.67\*\*\* | 0.60\*\*\* | 0.58\*\*\* | 0.52\*\*\* | 0.45\*\* | 0.06 | 0.47\*\*\* | 0.59\*\*\* | 0.53\*\*\* | 0.49\*\* | 0.50\*\* | 0.71\*\*\* |
|  | (4.36) | (3.77) | (3.35) | (3.82) | (2.56) | (6.91) | (4.76) | (4.27) | (4.14) | (3.67) | (3.27) | (0.39) | (3.31) | (4.00) | (3.82) | (2.67) | (2.73) | (4.57) |
| cut1 | -4.26\*\*\* | -5.50\*\*\* | -6.19\*\*\* | -5.22\*\*\* | -3.66\*\*\* | -3.95\*\*\* | -4.18\*\*\* | -6.40\*\*\* | -3.98\*\*\* | -5.53\*\*\* | -5.95\*\*\* | -4.99\*\*\* | -3.46\*\*\* | -7.94\*\*\* | -6.18\*\*\* | -2.44\*\* | -5.17\*\*\* | -5.02\*\*\* |
|  | (-24.31) | (-33.19) | (-37.56) | (-31.34) | (-20.37) | (-20.94) | (-23.48) | (-38.74) | (-22.83) | (-31.04) | (-35.21) | (-28.30) | (-19.47) | (-45.77) | (-37.96) | (-3.16) | (-8.06) | (-12.58) |
| cut2 | -3.63\*\*\* | -4.86\*\*\* | -5.56\*\*\* | -4.59\*\*\* | -3.03\*\*\* | -3.32\*\*\* | -3.55\*\*\* | -5.77\*\*\* | -3.35\*\*\* | -4.89\*\*\* | -5.32\*\*\* | -4.35\*\*\* | -2.83\*\*\* | -7.29\*\*\* | -5.55\*\*\* | -1.77\* | -4.50\*\*\* | -4.35\*\*\* |
|  | (-24.10) | (-34.95) | (-40.21) | (-32.69) | (-19.45) | (-19.99) | (-23.07) | (-41.59) | (-22.39) | (-31.83) | (-37.14) | (-28.71) | (-18.42) | (-49.35) | (-40.85) | (-2.31) | (-7.09) | (-11.22) |
| cut3 | -2.36\*\*\* | -3.60\*\*\* | -4.29\*\*\* | -3.32\*\*\* | -1.75\*\*\* | -2.05\*\*\* | -2.28\*\*\* | -4.49\*\*\* | -2.08\*\*\* | -3.63\*\*\* | -4.05\*\*\* | -3.09\*\*\* | -1.56\*\*\* | -5.94\*\*\* | -4.28\*\*\* | -0.35 | -3.08\*\*\* | -2.94\*\*\* |
|  | (-18.55) | (-31.76) | (-38.31) | (-28.94) | (-13.18) | (-14.10) | (-17.39) | (-40.08) | (-16.49) | (-27.73) | (-34.29) | (-24.04) | (-11.90) | (-49.53) | (-39.25) | (-0.46) | (-4.91) | (-7.79) |
| cut4 | -0.75\*\*\* | -1.99\*\*\* | -2.68\*\*\* | -1.72\*\*\* | -0.14 | -0.43\*\* | -0.67\*\*\* | -2.87\*\*\* | -0.46\*\*\* | -2.02\*\*\* | -2.45\*\*\* | -1.48\*\*\* | 0.07 | -4.19\*\*\* | -2.67\*\*\* | 1.49 | -1.24\* | -1.09\*\* |
|  | (-6.25) | (-19.17) | (-26.21) | (-16.23) | (-1.07) | (-3.14) | (-5.39) | (-28.17) | (-3.88) | (-16.46) | (-22.42) | (-12.30) | (0.55) | (-39.17) | (-26.96) | (1.95) | (-1.98) | (-2.93) |
| N | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 |
| pseudo R-sq | 0.031 | 0.016 | 0.025 | 0.017 | 0.047 | 0.030 | 0.030 | 0.031 | 0.044 | 0.016 | 0.019 | 0.019 | 0.054 | 0.116 | 0.027 | 0.173 | 0.173 | 0.173 |
| AIC | 15738.82 | 15982.40 | 15840.15 | 15958.95 | 15484.04 | 15763.02 | 15750.05 | 15739.94 | 15533.70 | 15982.41 | 15940.21 | 15941.15 | 15368.52 | 14368.32 | 15806.09 | 13465.08 | 13463.46 | 13464.62 |
| BIC | 15980.56 | 16224.14 | 16081.89 | 16200.69 | 15725.78 | 16004.76 | 15991.78 | 15981.68 | 15775.44 | 16224.15 | 16181.94 | 16182.89 | 15610.26 | 14610.06 | 16047.83 | 13815.18 | 13805.23 | 13781.38 |
| Note: | \* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001. | | |  |  |  |  |  |  |
|  | *t* statistics in parentheses. | | |  |  |  |  |  |  |

**Appendix D – Output of Ordered Probit Regression for “Rating Level”**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model | Model |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| Topic1 | 9.53\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 3.40\*\*\* | 1.91\* | 1.91\*\* |
|  | (15.02) |  |  |  |  |  |  |  |  |  |  |  |  |  |  | (4.48) | (2.57) | (2.70) |
| Topic2 |  | 0.35 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.72\*\* |  |  |
|  |  | (0.77) |  |  |  |  |  |  |  |  |  |  |  |  |  | (2.76) |  |  |
| Topic3 |  |  | -4.77\*\*\* |  |  |  |  |  |  |  |  |  |  |  |  | -0.94 | -2.46\*\*\* | -2.40\*\*\* |
|  |  |  | (-11.94) |  |  |  |  |  |  |  |  |  |  |  |  | (-1.53) | (-4.49) | (-5.14) |
| Topic4 |  |  |  | 2.19\*\*\* |  |  |  |  |  |  |  |  |  |  |  | 3.15\*\*\* | 1.66\*\* | 1.67\*\* |
|  |  |  |  | (4.76) |  |  |  |  |  |  |  |  |  |  |  | (5.19) | (2.90) | (3.23) |
| Topic5 |  |  |  |  | 13.60\*\*\* |  |  |  |  |  |  |  |  |  |  | 8.47\*\*\* | 6.98\*\*\* | 7.04\*\*\* |
|  |  |  |  |  | (19.33) |  |  |  |  |  |  |  |  |  |  | (10.69) | (9.56) | (10.16) |
| Topic6 |  |  |  |  |  | 8.68\*\*\* |  |  |  |  |  |  |  |  |  | 4.81\*\*\* | 3.30\*\*\* | 3.38\*\*\* |
|  |  |  |  |  |  | (13.94) |  |  |  |  |  |  |  |  |  | (6.98) | (4.79) | (5.26) |
| Topic7 |  |  |  |  |  |  | 9.60\*\*\* |  |  |  |  |  |  |  |  | 1.55\* | 0.07 |  |
|  |  |  |  |  |  |  | (14.91) |  |  |  |  |  |  |  |  | (2.07) | (0.10) |  |
| Topic8 |  |  |  |  |  |  |  | -6.42\*\*\* |  |  |  |  |  |  |  | -2.21\*\*\* | -3.71\*\*\* | -3.66\*\*\* |
|  |  |  |  |  |  |  |  | (-17.21) |  |  |  |  |  |  |  | (-3.80) | (-7.41) | (-8.54) |
| Topic9 |  |  |  |  |  |  |  |  | 11.52\*\*\* |  |  |  |  |  |  | 7.86\*\*\* | 6.40\*\*\* | 6.43\*\*\* |
|  |  |  |  |  |  |  |  |  | (18.31) |  |  |  |  |  |  | (10.95) | (9.49) | (10.12) |
| Topic10 |  |  |  |  |  |  |  |  |  | 0.38 |  |  |  |  |  | 1.22 |  |  |
|  |  |  |  |  |  |  |  |  |  | (0.80) |  |  |  |  |  | (1.93) |  |  |
| Topic11 |  |  |  |  |  |  |  |  |  |  | -2.60\*\*\* |  |  |  |  | 0.71 | -0.77 |  |
|  |  |  |  |  |  |  |  |  |  |  | (-5.89) |  |  |  |  | (1.07) | (-1.33) |  |
| Topic12 |  |  |  |  |  |  |  |  |  |  |  | 3.96\*\*\* |  |  |  | 2.48\*\*\* | 0.99 |  |
|  |  |  |  |  |  |  |  |  |  |  |  | (6.78) |  |  |  | (3.53) | (1.49) |  |
| Topic13 |  |  |  |  |  |  |  |  |  |  |  |  | 15.71\*\*\* |  |  | 9.29\*\*\* | 7.82\*\*\* | 7.94\*\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  | (22.54) |  |  | (11.86) | (9.83) | (10.48) |
| Topic14 |  |  |  |  |  |  |  |  |  |  |  |  |  | -15.17\*\*\* |  | -11.17\*\*\* | -12.63\*\*\* | -12.70\*\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | (-41.32) |  | (-20.38) | (-25.75) | (-30.46) |
| Topic15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | -4.94\*\*\* | 0.00 | -1.48\*\* | -1.58\*\*\* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | (-13.45) | (.) | (-2.81) | (-3.41) |
| Business\_1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|  | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) | (.) |
| Business\_2 | 0.33\*\*\* | 0.33\*\*\* | 0.57\*\*\* | 0.34\*\*\* | 0.28\*\*\* | 0.54\*\*\* | 0.27\*\*\* | 0.32\*\*\* | 0.34\*\*\* | 0.33\*\*\* | 0.30\*\*\* | 0.33\*\*\* | 0.33\*\*\* | 0.26\*\* | 0.45\*\*\* | 0.50\*\*\* | 0.51\*\*\* | 0.52\*\*\* |
|  | (4.42) | (4.35) | (7.22) | (4.48) | (3.72) | (7.01) | (3.50) | (4.17) | (4.52) | (4.39) | (3.94) | (4.38) | (4.32) | (3.29) | (5.85) | (5.76) | (5.84) | (6.01) |
| Business\_3 | 0.53\*\*\* | 0.52\*\*\* | 0.45\*\*\* | 0.33\*\*\* | 0.50\*\*\* | 0.72\*\*\* | 0.56\*\*\* | 0.52\*\*\* | 0.49\*\*\* | 0.53\*\*\* | 0.51\*\*\* | 0.55\*\*\* | 0.48\*\*\* | 0.52\*\*\* | 0.50\*\*\* | 0.34\*\*\* | 0.34\*\*\* | 0.34\*\*\* |
|  | (7.33) | (7.16) | (6.20) | (4.08) | (6.81) | (9.71) | (7.67) | (7.11) | (6.67) | (7.15) | (6.96) | (7.51) | (6.47) | (6.83) | (6.85) | (3.68) | (3.79) | (3.78) |
| Business\_4 | 0.55\*\*\* | 0.64\*\*\* | 0.64\*\*\* | 0.64\*\*\* | 0.61\*\*\* | 0.53\*\*\* | 0.54\*\*\* | 0.57\*\*\* | 0.56\*\*\* | 0.65\*\*\* | 0.64\*\*\* | 0.66\*\*\* | 0.59\*\*\* | 0.49\*\*\* | 0.62\*\*\* | 0.31\*\*\* | 0.31\*\*\* | 0.31\*\*\* |
|  | (7.04) | (8.22) | (8.14) | (8.24) | (7.77) | (6.70) | (6.87) | (7.29) | (7.16) | (8.25) | (8.16) | (8.44) | (7.40) | (6.07) | (7.88) | (3.68) | (3.74) | (3.70) |
| Business\_5 | 0.14\* | 0.18\* | 0.12 | 0.15\* | 0.18\* | 0.40\*\*\* | 0.24\*\*\* | 0.14\* | 0.09 | 0.19\*\* | 0.22\*\* | 0.21\*\* | 0.14\* | 0.55\*\*\* | 0.21\*\* | 0.45\*\*\* | 0.46\*\*\* | 0.45\*\*\* |
|  | (2.02) | (2.50) | (1.76) | (2.09) | (2.53) | (5.50) | (3.35) | (2.03) | (1.31) | (2.68) | (3.10) | (2.93) | (1.99) | (7.24) | (2.92) | (5.41) | (5.62) | (5.47) |
| Business\_6 | 0.43\*\*\* | 0.45\*\*\* | 0.41\*\*\* | 0.46\*\*\* | 0.49\*\*\* | 0.66\*\*\* | 0.53\*\*\* | 0.43\*\*\* | 0.43\*\*\* | 0.46\*\*\* | 0.46\*\*\* | 0.22\* | 0.40\*\*\* | 0.47\*\*\* | 0.46\*\*\* | 0.45\*\*\* | 0.46\*\*\* | 0.52\*\*\* |
|  | (4.58) | (4.79) | (4.38) | (4.90) | (5.10) | (6.88) | (5.64) | (4.59) | (4.54) | (4.88) | (4.86) | (2.20) | (4.20) | (4.66) | (4.91) | (3.90) | (4.04) | (4.92) |
| Business\_7 | 0.06 | 0.09 | 0.19\*\* | 0.10 | 0.08 | 0.33\*\*\* | 0.04 | 0.04 | 0.15\* | 0.09 | 0.08 | 0.12 | 0.12 | 0.00 | 0.17\*\* | 0.19\*\* | 0.19\*\* | 0.19\*\* |
|  | (0.94) | (1.47) | (2.91) | (1.56) | (1.22) | (4.92) | (0.66) | (0.68) | (2.26) | (1.32) | (1.23) | (1.87) | (1.88) | (0.01) | (2.65) | (2.66) | (2.59) | (2.64) |
| Business\_8 | 0.52\*\*\* | 0.52\*\*\* | 0.60\*\*\* | 0.53\*\*\* | -0.00 | 0.74\*\*\* | 0.45\*\*\* | 0.52\*\*\* | 0.50\*\*\* | 0.53\*\*\* | 0.48\*\*\* | 0.56\*\*\* | 0.41\*\*\* | 0.56\*\*\* | 0.58\*\*\* | 0.31\*\*\* | 0.32\*\*\* | 0.32\*\*\* |
|  | (7.88) | (7.97) | (9.02) | (8.13) | (-0.07) | (10.98) | (6.79) | (7.91) | (7.57) | (7.93) | (7.34) | (8.50) | (6.17) | (8.16) | (8.77) | (3.89) | (3.98) | (4.03) |
| Business\_9 | 0.53\*\*\* | 0.51\*\*\* | 0.79\*\*\* | 0.52\*\*\* | 0.48\*\*\* | 0.69\*\*\* | 0.39\*\*\* | 0.50\*\*\* | 0.53\*\*\* | 0.51\*\*\* | 0.48\*\*\* | 0.55\*\*\* | 0.49\*\*\* | 0.40\*\*\* | 0.55\*\*\* | 0.64\*\*\* | 0.65\*\*\* | 0.64\*\*\* |
|  | (6.84) | (6.68) | (9.71) | (6.79) | (6.18) | (8.87) | (5.00) | (6.52) | (6.89) | (6.70) | (6.29) | (7.10) | (6.34) | (5.12) | (7.13) | (7.36) | (7.41) | (7.47) |
| Business\_10 | 0.47\*\*\* | 0.49\*\*\* | 0.48\*\*\* | 0.53\*\*\* | 0.56\*\*\* | 0.80\*\*\* | 0.60\*\*\* | 0.52\*\*\* | 0.50\*\*\* | 0.53\*\*\* | 0.51\*\*\* | 0.55\*\*\* | 0.55\*\*\* | 0.74\*\*\* | 0.56\*\*\* | 0.84\*\*\* | 0.86\*\*\* | 0.86\*\*\* |
|  | (6.39) | (6.17) | (6.53) | (7.26) | (7.67) | (10.62) | (8.20) | (7.07) | (6.73) | (7.15) | (7.04) | (7.60) | (7.40) | (9.30) | (7.70) | (8.94) | (9.91) | (10.10) |
| Busines\_11 | 0.39\*\*\* | 0.44\*\*\* | 0.40\*\*\* | 0.49\*\*\* | 0.53\*\*\* | 0.75\*\*\* | 0.56\*\*\* | 0.46\*\*\* | 0.45\*\*\* | 0.48\*\*\* | 0.48\*\*\* | 0.51\*\*\* | 0.48\*\*\* | 0.64\*\*\* | 0.53\*\*\* | 0.72\*\*\* | 0.75\*\*\* | 0.74\*\*\* |
|  | (5.89) | (5.96) | (5.99) | (7.36) | (7.91) | (10.78) | (8.35) | (6.85) | (6.65) | (7.11) | (7.27) | (7.69) | (7.02) | (8.98) | (7.90) | (8.09) | (9.30) | (9.43) |
| Business\_12 | 0.63\*\*\* | 0.67\*\*\* | 0.69\*\*\* | 0.67\*\*\* | 0.64\*\*\* | 0.86\*\*\* | 0.56\*\*\* | 0.67\*\*\* | 0.66\*\*\* | 0.67\*\*\* | 0.66\*\*\* | 0.67\*\*\* | 0.67\*\*\* | 0.60\*\*\* | 0.68\*\*\* | 0.66\*\*\* | 0.66\*\*\* | 0.67\*\*\* |
|  | (7.77) | (8.40) | (8.57) | (8.42) | (7.94) | (10.56) | (6.87) | (8.31) | (8.18) | (8.39) | (8.30) | (8.35) | (8.25) | (7.19) | (8.47) | (7.48) | (7.47) | (7.57) |
| Business\_13 | 0.25\*\*\* | 0.27\*\*\* | 0.21\*\* | 0.25\*\*\* | 0.27\*\*\* | 0.50\*\*\* | 0.31\*\*\* | 0.23\*\* | -0.09 | 0.29\*\*\* | 0.31\*\*\* | 0.31\*\*\* | 0.29\*\*\* | 0.24\*\* | 0.31\*\*\* | 0.05 | 0.06 | 0.05 |
|  | (3.51) | (3.72) | (2.96) | (3.53) | (3.71) | (6.75) | (4.34) | (3.14) | (-1.24) | (3.93) | (4.23) | (4.26) | (3.90) | (3.14) | (4.34) | (0.56) | (0.73) | (0.56) |
| Business\_14 | 0.40\*\*\* | 0.43\*\*\* | 0.41\*\*\* | 0.44\*\*\* | 0.50\*\*\* | 0.63\*\*\* | 0.52\*\*\* | 0.42\*\*\* | 0.34\*\* | 0.46\*\*\* | 0.45\*\*\* | 0.47\*\*\* | 0.40\*\*\* | 0.65\*\*\* | 0.47\*\*\* | 0.58\*\*\* | 0.60\*\*\* | 0.60\*\*\* |
|  | (3.73) | (3.99) | (3.79) | (4.13) | (4.58) | (5.82) | (4.81) | (3.86) | (3.06) | (4.27) | (4.24) | (4.38) | (3.68) | (5.44) | (4.33) | (4.57) | (4.83) | (4.78) |
| Business\_15 | 0.66\*\*\* | 0.62\*\*\* | 0.59\*\*\* | 0.59\*\*\* | 0.64\*\*\* | 0.45\*\*\* | 0.64\*\*\* | 0.61\*\*\* | 0.68\*\*\* | 0.63\*\*\* | 0.60\*\*\* | 0.55\*\*\* | 0.63\*\*\* | 0.63\*\*\* | 0.64\*\*\* | 0.53\*\*\* | 0.53\*\*\* | 0.56\*\*\* |
|  | (8.18) | (7.73) | (7.39) | (7.41) | (7.82) | (5.46) | (7.99) | (7.55) | (8.35) | (7.73) | (7.50) | (6.85) | (7.77) | (7.44) | (8.02) | (5.84) | (5.93) | (6.29) |
| Business\_16 | 0.51\*\*\* | 0.53\*\*\* | 0.51\*\*\* | 0.53\*\*\* | 0.52\*\*\* | 0.45\*\*\* | 0.51\*\*\* | 0.52\*\*\* | 0.51\*\*\* | 0.54\*\*\* | 0.53\*\*\* | 0.53\*\*\* | 0.54\*\*\* | 0.40\*\*\* | 0.52\*\*\* | 0.30\*\*\* | 0.30\*\*\* | 0.30\*\*\* |
|  | (6.17) | (6.55) | (6.18) | (6.51) | (6.29) | (5.43) | (6.16) | (6.31) | (6.17) | (6.60) | (6.46) | (6.46) | (6.49) | (4.81) | (6.37) | (3.41) | (3.47) | (3.50) |
| Business\_17 | 0.27\*\*\* | 0.33\*\*\* | 0.33\*\*\* | 0.34\*\*\* | 0.33\*\*\* | 0.53\*\*\* | 0.34\*\*\* | 0.28\*\*\* | 0.34\*\*\* | 0.32\*\*\* | 0.34\*\*\* | 0.37\*\*\* | 0.31\*\*\* | 0.37\*\*\* | 0.36\*\*\* | 0.42\*\*\* | 0.41\*\*\* | 0.40\*\*\* |
|  | (3.97) | (5.04) | (4.99) | (5.15) | (4.88) | (7.75) | (5.17) | (4.14) | (5.14) | (4.80) | (5.15) | (5.52) | (4.53) | (5.39) | (5.42) | (5.57) | (5.53) | (5.46) |
| Business\_18 | 0.31\*\*\* | 0.39\*\*\* | 0.44\*\*\* | 0.40\*\*\* | 0.25\*\*\* | 0.60\*\*\* | 0.33\*\*\* | 0.38\*\*\* | 0.20\*\* | 0.40\*\*\* | 0.37\*\*\* | 0.40\*\*\* | 0.30\*\*\* | 0.28\*\*\* | 0.41\*\*\* | 0.13 | 0.13 | 0.14 |
|  | (4.65) | (5.86) | (6.48) | (5.94) | (3.72) | (8.69) | (4.93) | (5.69) | (2.90) | (5.91) | (5.58) | (5.99) | (4.44) | (4.08) | (6.10) | (1.72) | (1.80) | (1.85) |
| Business\_19 | -0.07 | 0.22\*\*\* | 0.19\*\* | 0.22\*\* | 0.18\*\* | 0.47\*\*\* | 0.26\*\*\* | 0.29\*\*\* | 0.17\* | 0.23\*\*\* | 0.21\*\* | 0.25\*\*\* | 0.20\*\* | 0.28\*\*\* | 0.27\*\*\* | 0.26\*\* | 0.27\*\*\* | 0.27\*\*\* |
|  | (-0.99) | (3.32) | (2.84) | (3.28) | (2.75) | (6.83) | (3.89) | (4.34) | (2.53) | (3.47) | (3.16) | (3.70) | (2.91) | (3.96) | (4.01) | (3.28) | (3.43) | (3.45) |
| Business\_20 | 0.36\*\*\* | 0.31\*\*\* | 0.23\*\*\* | 0.10 | 0.39\*\*\* | 0.49\*\*\* | 0.39\*\*\* | 0.33\*\*\* | 0.29\*\*\* | 0.33\*\*\* | 0.30\*\*\* | 0.34\*\*\* | 0.35\*\*\* | 0.40\*\*\* | 0.29\*\*\* | 0.28\*\* | 0.29\*\* | 0.28\*\* |
|  | (5.45) | (4.75) | (3.49) | (1.22) | (5.77) | (7.16) | (5.82) | (4.89) | (4.27) | (4.78) | (4.52) | (5.13) | (5.13) | (5.64) | (4.41) | (2.96) | (3.09) | (3.09) |
| Business\_21 | 0.37\*\*\* | 0.39\*\*\* | 0.40\*\*\* | 0.40\*\*\* | 0.29\*\*\* | 0.27\*\*\* | 0.38\*\*\* | 0.37\*\*\* | 0.29\*\*\* | 0.40\*\*\* | 0.37\*\*\* | 0.40\*\*\* | 0.31\*\*\* | 0.36\*\*\* | 0.38\*\*\* | 0.14 | 0.14 | 0.14 |
|  | (5.12) | (5.47) | (5.56) | (5.55) | (4.04) | (3.74) | (5.31) | (5.17) | (3.95) | (5.51) | (5.19) | (5.66) | (4.32) | (4.82) | (5.24) | (1.76) | (1.83) | (1.82) |
| Business\_22 | 0.48\*\*\* | 0.47\*\*\* | 0.62\*\*\* | 0.48\*\*\* | 0.37\*\*\* | 0.63\*\*\* | 0.44\*\*\* | 0.48\*\*\* | 0.44\*\*\* | 0.47\*\*\* | 0.44\*\*\* | 0.47\*\*\* | 0.44\*\*\* | 0.40\*\*\* | 0.48\*\*\* | 0.48\*\*\* | 0.48\*\*\* | 0.48\*\*\* |
|  | (5.05) | (4.98) | (6.48) | (5.07) | (3.87) | (6.58) | (4.66) | (5.06) | (4.64) | (4.99) | (4.72) | (4.97) | (4.60) | (4.11) | (5.10) | (4.59) | (4.60) | (4.67) |
| Business\_23 | -0.09 | -0.12 | -0.09 | -0.12 | -0.13 | 0.07 | -0.08 | -0.05 | -0.33\*\* | -0.11 | -0.09 | -0.12 | -0.11 | -0.15 | -0.14 | -0.15 | -0.13 | -0.14 |
|  | (-0.86) | (-1.14) | (-0.84) | (-1.13) | (-1.15) | (0.63) | (-0.72) | (-0.47) | (-2.97) | (-0.99) | (-0.84) | (-1.14) | (-1.01) | (-1.28) | (-1.28) | (-1.20) | (-1.11) | (-1.17) |
| Business\_24 | 0.61\*\*\* | 0.61\*\*\* | 0.72\*\*\* | 0.62\*\*\* | 0.39\*\*\* | 0.81\*\*\* | 0.57\*\*\* | 0.65\*\*\* | 0.44\*\*\* | 0.62\*\*\* | 0.59\*\*\* | 0.64\*\*\* | 0.48\*\*\* | 0.53\*\*\* | 0.62\*\*\* | 0.39\*\*\* | 0.40\*\*\* | 0.40\*\*\* |
|  | (7.89) | (7.91) | (9.20) | (8.00) | (4.90) | (10.24) | (7.33) | (8.30) | (5.59) | (7.91) | (7.54) | (8.23) | (6.03) | (6.57) | (7.95) | (4.44) | (4.51) | (4.52) |
| Business\_25 | 0.29\*\*\* | 0.26\*\*\* | 0.23\*\*\* | 0.25\*\*\* | 0.19\*\* | 0.46\*\*\* | 0.32\*\*\* | 0.27\*\*\* | 0.29\*\*\* | 0.26\*\*\* | 0.23\*\*\* | 0.01 | 0.23\*\* | 0.30\*\*\* | 0.26\*\*\* | 0.26\*\* | 0.27\*\* | 0.35\*\*\* |
|  | (4.25) | (3.73) | (3.35) | (3.72) | (2.74) | (6.56) | (4.57) | (3.92) | (4.12) | (3.79) | (3.32) | (0.14) | (3.24) | (4.10) | (3.73) | (2.93) | (3.00) | (4.51) |
| cut1 | -1.99\*\*\* | -2.52\*\*\* | -2.87\*\*\* | -2.42\*\*\* | -1.79\*\*\* | -1.87\*\*\* | -1.95\*\*\* | -3.06\*\*\* | -1.90\*\*\* | -2.51\*\*\* | -2.72\*\*\* | -2.29\*\*\* | -1.64\*\*\* | -3.91\*\*\* | -2.87\*\*\* | -1.14\*\* | -2.61\*\*\* | -2.61\*\*\* |
|  | (-28.19) | (-38.79) | (-43.65) | (-37.25) | (-25.04) | (-24.36) | (-27.07) | (-44.56) | (-27.38) | (-34.95) | (-40.61) | (-32.63) | (-22.62) | (-52.91) | (-44.46) | (-2.85) | (-8.19) | (-13.45) |
| cut2 | -1.78\*\*\* | -2.31\*\*\* | -2.66\*\*\* | -2.21\*\*\* | -1.58\*\*\* | -1.66\*\*\* | -1.74\*\*\* | -2.83\*\*\* | -1.69\*\*\* | -2.30\*\*\* | -2.52\*\*\* | -2.08\*\*\* | -1.43\*\*\* | -3.67\*\*\* | -2.66\*\*\* | -0.88\* | -2.35\*\*\* | -2.35\*\*\* |
|  | (-27.16) | (-38.86) | (-44.17) | (-37.18) | (-23.78) | (-22.98) | (-25.93) | (-45.56) | (-26.35) | (-34.34) | (-40.62) | (-31.94) | (-21.15) | (-54.75) | (-45.09) | (-2.20) | (-7.41) | (-12.29) |
| cut3 | -1.31\*\*\* | -1.86\*\*\* | -2.20\*\*\* | -1.75\*\*\* | -1.11\*\*\* | -1.19\*\*\* | -1.27\*\*\* | -2.35\*\*\* | -1.23\*\*\* | -1.84\*\*\* | -2.06\*\*\* | -1.62\*\*\* | -0.95\*\*\* | -3.10\*\*\* | -2.20\*\*\* | -0.27 | -1.75\*\*\* | -1.75\*\*\* |
|  | (-21.61) | (-34.27) | (-40.29) | (-32.45) | (-18.06) | (-17.49) | (-20.38) | (-42.47) | (-20.78) | (-29.47) | (-36.23) | (-26.84) | (-15.20) | (-53.14) | (-41.32) | (-0.68) | (-5.55) | (-9.32) |
| cut4 | -0.61\*\*\* | -1.17\*\*\* | -1.51\*\*\* | -1.06\*\*\* | -0.40\*\*\* | -0.49\*\*\* | -0.57\*\*\* | -1.64\*\*\* | -0.52\*\*\* | -1.16\*\*\* | -1.37\*\*\* | -0.93\*\*\* | -0.24\*\*\* | -2.30\*\*\* | -1.50\*\*\* | 0.59 | -0.88\*\* | -0.88\*\*\* |
|  | (-10.32) | (-22.46) | (-28.86) | (-20.51) | (-6.74) | (-7.31) | (-9.36) | (-31.27) | (-9.09) | (-19.00) | (-25.08) | (-15.86) | (-3.87) | (-42.50) | (-29.67) | (1.50) | (-2.81) | (-4.74) |
| N | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 | 30817 |
| pseudo R-sq | 0.032 | 0.016 | 0.025 | 0.018 | 0.045 | 0.030 | 0.031 | 0.034 | 0.042 | 0.016 | 0.019 | 0.019 | 0.054 | 0.121 | 0.027 | 0.178 | 0.178 | 0.177 |
| AIC | 15731.49 | 15974.59 | 15839.69 | 15951.79 | 15518.85 | 15757.66 | 15739.59 | 15697.15 | 15559.22 | 15974.55 | 15941.51 | 15926.97 | 15371.74 | 14276.27 | 15805.54 | 13392.11 | 13390.64 | 13390.35 |
| BIC | 15973.23 | 16216.33 | 16081.42 | 16193.53 | 15760.59 | 15999.39 | 15981.33 | 15938.89 | 15800.96 | 16216.29 | 16183.25 | 16168.71 | 15613.48 | 14518.01 | 16047.28 | 13742.21 | 13732.41 | 13707.11 |
| Note: | \* *p* < 0.05; \*\* *p* < 0.01; \*\*\* *p* < 0.001. | | |  |  |  |  |  |  |
|  | *t* statistics in parentheses. | | |  |  |  |  |  |  |