

TRACKING EMPLOYMENT TRENDS IN MALAYSIA USING TEXT MINING TECHNIQUE

(Mengesan Trend Pekerjaan di Malaysia Menggunakan Teknik Perlombongan Teks)

SYERINA AZLIN MD NASIR* & WAN FAIROS WAN YAACOB

ABSTRACT

The Covid-19 pandemic has changed the world we live in today. In particular, Movement Control Orders (MCOs) that have been deployed nationwide also have an indirect impact on the job creation. With the large number of graduates who have graduated and those who do not have a job will make it even more difficult to get a job. This study attempts to investigate the employment trends during the pandemic in Malaysia by extracting job advertisements randomly from JobStreet website from September to October 2020. A sample of 1050 documents was analysed using text mining technique on two driving factors, job title and location. The results reveal that the highest number of positions offered are managers and the place that offered the most jobs was in Kuala Lumpur followed by Selangor. Further analysis is performed using K-Medoids Clustering to cluster the job titles against the location to illustrate the employment trends in Malaysia, which resulted in similar outcomes.

Keywords: clustering; job vacancy; text mining

ABSTRAK

Pandemik Covid-19 telah mengubah dunia yang kita hidup pada hari ini. Khususnya, Perintah Kawalan Pergerakan (PKP) yang telah dikerahkan di seluruh negara juga memberi kesan tidak langsung kepada penciptaan pekerjaan. Dengan bilangan siswazah baharu yang ramai bermakna mereka yang menganggur akan lebih sukar lagi untuk mendapatkan pekerjaan. Kajian ini cuba menyiasat trend pekerjaan semasa pandemik di Malaysia dengan mengekstrak iklan pekerjaan secara rawak dari laman sesawang JobStreet dari September hingga Oktober 2020. Sampel 1050 dokumen telah dianalisis menggunakan teknik perlombongan teks atas dua faktor, nama jawatan dan lokasi tempat kerja. Keputusan yang didapati mendedahkan bahawa jawatan yang paling banyak ditawarkan adalah pengurus dan tempat yang paling banyak menawarkan pekerjaan adalah Kuala Lumpur diikuti oleh Selangor. Analisis lanjut dilakukan menggunakan Kluster K-Medoids untuk mengelompokkan nama jawatan terhadap lokasi tempat kerja untuk menggambarkan trend pekerjaan di Malaysia, dengan keputusan yang sama.

Kata kunci: pengelompokan; kekosongan jawatan; perlombongan teks

References

- Buheji M. & Buheji A. 2020. Planning competency in the new normal – employability competency in post-COVID-19 pandemic. *International Journal of Human Resource Studies* **10**(2): 237-251.
- Dake D. K. 2018. Using text mining algorithm to track job seeker search patterns in Ghana. *International Journal of Innovative Research in Computer and Communication Engineering* **6**(1):195–201.
- Darabi H., Karim F.S.M., Harford S.T., Douzali E. & Nelson P.C. 2018. Detecting current job market skills and requirements through text. Paper presented at the *2018 ASEE Annual Conference & Exposition*, Salt Lake City, Utah. doi:10.18260/1-2--30284.
- DOSM. 2020. Department of Statistics Malaysia Official Portal, Gov.my. <https://www.dosm.gov.my/v1/index.php> (23 Oct 2020).

- Espinoza L. C., Guerrero A. R. & Agudo T. N. 2015. Specializations for the Peruvian professional in statistics: a text mining approach. *Proceedings of 2nd Annual International Symposium on Information Management and Big Data*, pp. 35–42.
- Karakatsanis I., AlKhader W., MacCrory F., Alibasic A., Omar M. A., Aung Z. & Woon W. L. 2017. Data mining approach to monitoring the requirements of the job market: A case study. *Information Systems* **65**: 1-6.
- Kino Y., Kuroki H., Machida T., Furuya N. & Takano K. 2017. Text analysis for job matching quality improvement. *Procedia Computer Science* **112**:1523–1530.
- Kuligowska K. & Lasek M. 2013. Text mining in practice: Exploring patterns in text collections of remote work job offers. *Business Informatics* **4**(30): 181–195.
- Kumar L. & Bhatia P. K. 2013. Text mining: concepts, process and applications. *Journal of Global Research in Computer Science* **4**(3): 36-39.
- JobStreet. 2020. JobStreet Malaysia website, com.my. <https://www.jobstreet.com.my> (3 Nov 2020).
- JobStreet-Covid-19. 2020. JobStreet Covid-19 Job Report, Malaysia August 2020 Edition. <https://www.jobstreet.com.my/en/cms/employer/wp-content/themes/jobstreet-employer/assets/loa/report/my/JobStreet-COVID-19-Job-Report-Malaysia-Sept-2020.pdf> (23 Oct 2020).
- Leo M. 2019. What you didn't know about fresh graduate unemployment in Malaysia. *EduAdvisor.my*, 26 Aug 2019.
- Maceli M. & Burke J. 2016. Technology skills in the workplace: Information professionals' current use. *Information Technology and Libraries* **35**(4): 35–61.
- Maer-Matei M. M., Mocanu C., Zamfir A.-M. & Georgescu T. M. 2019. Skill needs for early career researchers - A text mining approach. *Sustainability* **11**(10), art. 2789.
- RapidMiner. 2020. RapidMiner website – RapidMiner Studio 9.7 .com. <https://docs.rapidminer.com/9.7/studio/releases/changes-9.7.0.html>. Released: June 2nd, 2020 (10 June 2020).
- Raosoft. 2004. Raosoft Sample Size Calculator. Raosoft Inc., Seattle. <http://www.raosoft.com/samplesize.html> (24 May 2021).
- Syerina Azlin M. N., Wan Fairos W.F. & Wan Adibah Hanis W. Z. 2020. Analysing online vacancy and skills demand using text mining. *Journal of Physics Conference Series* 1496, art. 012011.
- Wowczko I. 2015. Skills and vacancy analysis with data mining techniques. *Informatics* **2**(4): 31–49.

*Faculty of Computer and Mathematical Sciences
Universiti Teknologi MARA Cawangan Kelantan
Kampus Machang
Bukit Ilmu, 18500 Machang
Kelantan DN, MALAYSIA
E-mail: syerina@uitm.edu.my**

*Faculty of Computer and Mathematical Sciences
Universiti Teknologi MARA Cawangan Kelantan, Kampus Kota Bharu
Lembah Sireh, 15050 Kota Bharu,
Kelantan DN, MALAYSIA
E-mail: wnfairos@uitm.edu.my*

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*Corresponding author