

## KESAHAN DAN KEBOLEHPERCAYAAN INSTRUMEN AMALAN INOVASI TERBUKA DALAM PENGKOMERSIALAN HASIL PENYELIDIKAN DI UNIVERSITI

(*Validity and Reliability of the Open Innovation Practice Instrument in the Commercialization of Research Results in Universities*)

MARINA MUHAMMAD RAZAKI\*, MOHAMMAD ISMAIL & NUR IZZATI MOHAMAD ANUAR

### ABSTRAK

Amalan Inovasi terbuka semakin mendapat perhatian sebagai satu pendekatan yang dapat membantu meningkatkan kadar pengkomersialan hasil penyelidikan. Mengikut konteks universiti, amalan inovasi terbuka memainkan peranan penting dalam memupuk kerjasama, perkongsian pengetahuan dan pemindahan teknologi antara akademia dan industri. Kajian ini merupakan kajian rintis yang bertujuan untuk meneroka dan menilai kesahan dan kebolehpercayaan instrumen amalan inovasi terbuka. Kajian ini menggunakan pendekatan kuantitatif dan data dikumpul secara tinjauan menggunakan soal selidik kepada 109 orang responden. Responden terdiri daripada pensyarah Universiti awam Malaysia yang terlibat secara aktif dalam pengkomersialan hasil penyelidikan. Data dianalisis menggunakan perisian *Statistical Packages for Social Sciences* (SPSS) versi 25. Hasil analisis deskriptif mendapati bahawa responden sering kali mengamalkan inovasi terbuka dalam mengkomersialkan hasil penyelidikan mereka. Analisis Faktor Penerokaan (AFP) menunjukkan bahawa nilai *Kaiser-Meyer-Olkin* (KMO) melebihi 0.50 dan ujian *Barlett's Test of Sphericity* menunjukkan hasil yang signifikan. Tidak ada item yang dihapus dalam kajian ini. Manakala hasil ujian kebolehpercayaan bagi sembilan item instrumen amalan inovasi terbuka ini adalah diterima dengan nilai alfa Cronbach 0.916. Kesimpulannya, penemuan kajian ini menunjukkan bahawa instrumen tersebut mempunyai kesahan dan kebolehpercayaan yang tinggi dan sedia untuk diuji pada peringkat seterusnya.

*Kata kunci:* amalan inovasi terbuka; pengkomersialan hasil penyelidikan; analisis faktor penerokaan

### ABSTRACT

Open Innovation practices are becoming more attention as an approach that can help increase the rate of commercialization of research results. According to the university context category, open innovation practices play an important role in facilitating collaboration, knowledge exchange and technology transfer between academia and industry. The purpose of this pilot study is to explore and evaluate the validity and reliability of open innovation practice instruments. This study uses a quantitative approach and data is collected through a survey using a questionnaire to 109 respondents. The respondents consisted of lecturers from Malaysian public universities who were actively involved in the commercialization of research results. Data were analyzed using Statistical Packages for Social Science (SPSS) version 25 software. The results of the descriptive analysis found that respondents frequently use open innovation when commercializing their research findings. Findings of Exploratory Factor Analysis (EFA) show that the Kaiser-Meyer-Olkin (KMO) value exceeds 0.50 and the Bartlett's Test of Sphericity shows a significant results. No items were deleted in this study. While the reliability test results for the nine items of this open innovation practice instrument were accepted with a Cronbach's alpha value of 0.916. In conclusion, the findings of this study

show that the instrument has high validity and reliability and is ready to be tested at the next stage.

**Keywords:** open innovation practice; commercialization research results; exploratory factor analysis

## Rujukan

- Álvarez-Castañón L. del C. & Palacios-Bustamante R. 2021. Open innovation from the university to local enterprises: conditions, complexities, and challenges. *TELOS: Revista de Estudios Interdisciplinarios En Ciencias Sociales* **23**(3): 692–709.
- Anderson G. & Arsenault N. 1998. *Fundamentals of Educational Research*. Edisi ke-2. London: Routledge.
- APEC Policy. 2018. *Handbook on Technology Commercialization Practices in APEC Economies* (Issue July). Disediakan oleh MaTRineX Academy of International Innovation and Strategy.
- Åstebro T. 2004. Key success factors for technological entrepreneurs' R&D projects. *IEEE Transactions on Engineering Management* **51**(3): 314–321.
- Aziz K.A., Harris H. & Norhashim M. 2011. University research, development & commercialisation management: A Malaysian best practice case study. *World Review of Business Research* **1**(2): 179–192.
- Azmi I.M. & Alavi R. 2013. Patents and the practice of open science among government research institutes in Malaysia: The case of Malaysian Rubber Board. *World Patent Information* **35**(3): 235–242.
- Bansi R. 2016. Commercialization of university innovation in South Africa. PhD Thesis. Durban University of Technology.
- Bogers M. 2011. The open innovation paradox: Knowledge sharing and protection in R&D collaborations. *European Journal of Innovation Management* **14**(1): 93–117.
- Camerani R., Denicolai S., Masucci M. & Valentini G. 2016. Inbound Open Innovation, Outbound Open Innovation, and Their Joint Effect on Firm Performance. *Academy of Management Proceedings* **2016**(1): 17790.
- Cheng C.C.J. & Huiizingh E.K.R.E. 2014. When is open innovation beneficial? The role of strategic orientation. *Journal of Product Innovation Management* **31**(6): 1235–1253.
- Chesbrough H. 2006. Open innovation: A new paradigm for understanding industrial innovation. Dlm. Chesbrough H., Vanhaverbeke W., West J. (pnyt.). *Open Innovation: Researching a New Paradigm*, hlm. 75–80. Oxford: Oxford University Press.
- Chesbrough H.W. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, Massachusetts: Harvard Business School Press.
- Chesbrough H. 2012. Open innovation: Where we've been and where we're going. *Research Technology Management* **55**(4): 20–27.
- Chesbrough H. & Brunswicker S. 2014. A fad or a phenomenon? The adoption of open innovation practices in large firms. *Research-Technology Management* **57**(2): 16–25.
- Freixenet J., Braojos J., Rialp-Criado A. & Rialp-Criado J. 2021. Does international entrepreneurial orientation foster innovation performance? The mediating role of social media and open innovation. *International Journal of Entrepreneurship and Innovation* **22**(1): 33–44.
- Garriga H., von Krogh G. & Spaeth S. 2013. How constraints and knowledge impact open innovation. *Strategic Management Journal* **34**(9): 1134–1144.
- Hair J.F., Black W.C., Babin B.J., Anderson R.E. & Tatham R.L. 2010. *Multivariate Data Analysis*. Edisi ke-7. Upper Saddle River, NJ: Pearson Education.
- Hair J.F., Hult G.T.M., Ringle C.M. & Sarstedt M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling*. Edisi ke-2. Thousand Oaks, CA: SAGE Publications, Inc.
- Harris R., McAdam R., McCausland I. & Reid R. 2013. Knowledge management as a source of innovation and competitive advantage for SMEs in peripheral regions. *The International Journal of Entrepreneurship and Innovation* **14**(1): 49–61.
- Ismail K., Senin A.A., Mun S.W., Chen W.S & Musibau A.A. 2012. Decision making process in the commercialization of University patent in Malaysia. *African Journal of Business Management* **6**(2): 681–689.
- Ismail K., Anuar M.A., Omar W.Z.W., Aziz A.A., Seohod K. & Akhtar C.S. 2015. entrepreneurial intention, entrepreneurial orientation of faculty and students towards commercialization. *Procedia-Social and Behavioral Sciences* **181**: 349–355.
- Johannessen J.-A., Olsen B. & Lumpkin G.T. 2001. Innovation as newness: What is new, how new, and new to whom? *European Journal of Innovation Management* **4**(1): 20–31.
- Liao S., Fu L. & Liu Z. 2020. Investigating open innovation strategies and firm performance: the moderating role of technological capability and market information management capability. *Journal of Business and Industrial Marketing* **35**(1): 23–39.

- Manzini R., Lazzarotti V. & Pellegrini L. 2017. How to remain as closed as possible in the open innovation era: The case of Lindt & Sprüngli. *Long Range Planning* **50**(2): 260-281.
- McKeown M. 2014. *The Innovation Book: How to Manage Ideas and Execution for Outstanding Results*. Edisi Pertama. Harlow, UK: Pearson Education.
- Miller K., Alexander A., Cunningham J.A. & Albats E. 2018. Entrepreneurial academics and academic entrepreneurs: A systematic literature review. *International Journal of Technology Management* **77**(1–3): 9–37.
- Oskooii N. & Ajali J. 2017. Social capital and social entrepreneurship and innovation culture. *Innovative Marketing* **13**(3): 42–46.
- Portal MyGrant. 2021. <http://mygrants.gov.my/main.php> (24 November 2021).
- Portal Rasmi MASTIC. 2022. <https://www.mosti.gov.my/pusat-maklumat-sains-dan-teknologi-malaysia-mastic/> (15 Januari 2022).
- Razak A.A., Murray P.A. & Roberts D. 2014. Open innovation in universities: The relationship between innovation and commercialisation. *Knowledge and Process Management* **21**(4): 260–269.
- Razak A.A. & Murray P.A. 2017. Innovation strategies for successful commercialisation in public universities. *International Journal of Innovation Science* **9**(3): 296–314.
- Salter A.J. & Martin B.R. 2001. The economic benefits of publicly funded basic research: A critical review. *Research Policy* **30**(3): 509–532.
- Sarjidan M.A.M, Bakar A.A., Ismail N.H., Omar S.N.S.S. & Nordine N. 2023. Practices Malaysian research universities: Patent pro- file in the lens database. *Journal of Information and Knowledge Management* **13**(1): 75–89.
- Schmitz A., Urbano D., Dandolini G.A., de Souza J.A. & Guerrero M. 2017. Innovation and entrepreneurship in the academic setting: a systematic literature review. *International Entrepreneurship and Management Journal* **13**: 369–395.
- Sekaran U. 2006. *Research Methods for Business: A Skill Building Approach*. Edisi ke-4. New York, US: John Wiley & Sons.
- Sekaran U. & Bougie R. 2016. *Research Methods for Business: A Skill Building Approach*. Edisi ke-7. Chichester, West Sussex, UK: John Wiley & Sons.
- Tabachnick B.G. & Fidell L.S. 2014. *Using multivariate statistics*. Edisi ke-6. Harlow, UK: Pearson Education.
- Unit Perancang Ekonomi. 2021. *Rancangan Malaysia Kedua Belas 2021-2025. Malaysia Makmur, Inklusif Mampu*. Putrajaya: Unit Perancangan Ekonomi, Jabatan Perdana Menteri.
- West J. & Gallagher S. 2006. Challenges of open innovation: the paradox of firm investment in open-source software. *R&D Management* **36**(3): 319–331.
- Wu A.Y.-H., Little V.J. & Low B. 2016. Inbound open innovation for pharmaceutical markets: a case study of an anti-diabetic drug in-licensing decision. *Journal of Business & Industrial Marketing* **31**(2): 205-218.
- Zikmund W.G. 2003. *Business Research Methods*. Edisi ke-7. South-Western: Thomson.

*Fakulti Keusahawanan dan Perniagaan,  
Universiti Malaysia Kelantan,  
Kampus Kota, Pengkalan Chepa,  
16100 Kota Bharu,  
Kelantan DN, MALAYSIA  
E-mail: mohammad.i@umk.edu.my, nurizzati.ma@umk.edu.my*

*Fakulti Pengurusan dan Teknologi Maklumat,  
Kolej Universiti Islam Antarabangsa Sultan Ismail Petra (KIAS),  
KM 12 Jalan Kuala Krai,  
53700 Kota Bharu,  
Kelantan DN, MALAYSIA  
E-mail: marina@kias.edu.my\**

Received: 31 May 2023  
Accepted: 3 July 2023

\*Corresponding author