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RESEARCH TREND OF BUSINESS STARTUP PERFORMANCE: BIBLIOMETRIC ANALYSIS

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ABSTRACT

This paper has analyzed research trends regarding business startup performance in 2000-2023. The aims of this study were to identify: (1) the trend of publication of startup performance in the Google Scholar database in 2000-2023; (2) publishers that publish the most startup performances; (3) researchers who actively examine startup performance; (4) most cited article titles, (5) publication network map based on startup performance keywords. Research on startup performance was still lacking, while the phenomenon indicates the number of startups was growing, but it has not been used as an object of research, especially in strategic management. Data collection through Google Scholar uses Publish or Perish with the keyword "startup performance". Research data includes the number of publications per year, journal name, author name, year of publication, publisher, and number of citations. Furthermore, the data was analyzed using Excel. Analysis of publication trends using VOSviewer. Data analysis techniques using descriptive statistics. The results indicate: (1) publications with the theme of startup performance in the Google Scholar database for 2000-2023 totaling 172 articles; (2) Elsevier was the publisher which publishes the most articles on startup performance; (3) writers who actively research startup performance, such us: individuals (Aaron Chatterji) and collaborations (Joonkyu Choi, Nathan Goldschlag, John C. Haltiwanger, and J. Daniel Kim); (4) Ming Mao and Marty Humphrey's article entitled "A Performance Study on The VM Startup Time in The Cloud" was the most cited (675 citations); and (5) there were five clusters that have the opportunity to become gap research related to startup performance themes (business, business startup performance, entrepreneur, post startup performance, social capital, startup performance, venture, performance evaluation, role, and rapid startup performance). The research results have implications for further research that the theme of startup performance was still rarely researched, and it has the potential to be a new research in the field of strategic management.

Keywords: business, startup performance, bibliometric, strategic management.

INTRODUCTION

The development of digital technology makes startup business ideas a business opportunity. Startups were a group of individuals who create and sell new products or services in uncertain market dynamics in search of the right business model, so startups face changing market conditions with a very high degree of uncertainty (Ries, 2011). Startup entrepreneurs were individuals who have businesses and/or startups that have the potential to develop their business capacity (Yulianto, 2017). Startup business was different from ordinary and conventional businesses, because etymologically the word startup means to start and to develop. Startup business was a business that has just been formed and it was still in the development stage by prioritizing new ideas and innovations that provide solutions to problems in society. For the developing countries, entrepreneurial development which at the beginning can be a major factor in a country's economic growth. It causes development still depends on capital formation (domestic and foreign), digital entrepreneurial formation was needed, especially for startup entrepreneurs. Entrepreneurship has a role in national development and development (Yulianto, 2019). The startup business emerged at the beginning of the global economic crisis in 1998-2000 which initially only offered services and products that were much sought after and needed by the public, but still had a small market reach (Kiwe, 2018). The rapid growth of the internet and broad market support causes startup businesses to change more quickly and strategically. Startup

refers to a company that provides or owns business services by adopting digital technology. Startup-based companies focus more on offering goods or services as a form of solution needed by the community. Startup business was designed to solve problems faced by society. Generally, startup companies have comparative and competitive advantages through their ability to utilize digital technology.

Utilizing of digital technology requires startup companies to be ready to enter the free market in cyberspace it was able to reach all consumers and expand market share by expanding the market on a large scale. Startup companies carry out technological disruptions on a large scale that change business models from conventional to digital, so they can be accessed without any space or distance limitations. It was the basis for startup companies to have a target of massively increasing consumer growth at the start of their launch (Fisher & Duane, 2015). Many startup companies face challenges and obstacles in facing intense business competition. Because startups were a new and developing business model, innovative strategies were needed to introduce and market their products, as well as introduce their business to potential customers (Wardhani et al., 2021). One of the factors that can trigger competitive advantage in the startup business was to innovate continuously because it can provide added value to comparative and competitive advantages compared to its competitors. The failure of startup development was caused by inconsistency in startup development. Inconsistent startups tend to fail and often make changes to their overall business model (Marmer et al., 2012).

The rapid development of startups can make investors see a business opportunity, so investors dare to invest by investing their capital. For startup business people, getting additional funding was very useful for the sustainability and growth of their startup. But on the other side, investors will also not give their capital to startup companies that were considered to have the potential for low investment returns and high risks. Fundraising was the lifeblood of startups, a steady flow of funds from various sources will help the growth of startup companies (Agustini & M.Kom, Putu Agus Swastika, Estiyanti, 2019). The success of a startup, one of which can be seen from how big the valuation, the greater the value, the more open the opportunity to get funds from investors. Generally, the risk of a startup business was higher than that of other businesses which were operating normally, especially the risk of failure or a business concept was not designed according to market needs when it was launched or current conditions or future developments. But on the other side, the startup business promises a much higher rate of return, if the level of market acceptance was in accordance with the design of the business model. When making an investment, an investor certainly expects the value of the investment will increase or at least be equal to the value of compensation for the risk investor takes, because the investor has already considered the time value of money from the value of investment. It can be an obstacle for startup companies to obtain funding sources from investors and the capital market (Yanuarti & Dewi, 2018).

New entrepreneurs generally utilize various resources to meet their business financing needs (Yulianto & Iryani, 2018). Eventhough in reality only some startup companies were successful and able to increase the value of the company to get funding from investors, the startup business phenomenon was an interesting trending topic to study in depth. Research on the performance of startup businesses was still lacking, while the phenomenon indicates the number of startup companies was increasing, but it was not being used as research objects, especially in strategic management. Therefore, the study will examine trends in business startup performance using bibliometric analysis. Bibliometric analysis provides an understanding of research trends in a particular subject area and describes the performance of other research, as well as research groups or institutions, based on a number of bibliometric information (Li et al., 2020). The aim of this research was to identify five research questions: (RQ1) the trend of publication of startup performance in the Google Scholar database for 2000-2023; (RQ2) the publisher which published the most startup performance; (RQ3) researchers who actively research of startup performance; (RQ4) the most cited article titles; and (RQ5) publication network map based on startup performance keywords. The results will be expected to provide implications for future research of startup performance related to management science. Because management science cannot be separated from various perspectives as philosophies that were integrated with each other as a unit in the synergy of the management process (Yulianto, 2021).

METHOD

The method used a literature review with a bibliometric analysis. Literature review using systematic, explicit and reproducible methods (Garza-Reyes, 2015). Bibliometric analysis was an approach to examine the evolution of research domains, including topics and authors, based on the social, intellectual, and conceptual structures of scientific disciplines (Donthu et al., 2021). Bibliometrics was introduced by Pritchard, Nalimov and Mulchencko in 1969 (Tupan et al., 2018). Bibliometrics was a scientific study it has existed since the 1980s and belongs to the field of library science, but in its development bibliometrics can be applied and studied in all fields of science (Rohanda & Winoto, 2019). According to (Pattah, 2013), bibliometrics was a research method it was descriptive in nature and based on the pattern of authorship used to identify the gender of the author, type of work, level of collaboration, productivity of the author institution, as well as the subject of the article. The purpose of the bibliometric analysis was to explain written communication, the nature and direction of developing descriptive means of counting and analyzing the various facets of communication (Basuki, 2002).

This study uses data from international publications on the theme of business startup performance sourced from the Google Scholar database. Google Scholar was a service from Google Scholar was a service from Google that allows users to search for scientific references and research in various formats that can be scientifically justified (Istiana, 2016). Google Scholar was chosen because it was one of the largest databases that provides scientific literature, both journals and other publications that have been properly validated. The advantages of Google Scholar were: easy access, cost efficient, efficient storage space, time efficient, and Google Scholar as a media publication. The search for references was limited to several aspects: (1) the type of bibliography used in the form of journals, article titles, abstracts, and keywords; (2) the keywords used were "startup performance" for 2000-2023; and (3) restrictions were made only on searching articles using English. Data was number of publications per year, journal name, author name, year of publication, publisher, and number of citations were obtained using Publish and Perish, then analyzed using Excel. Meanwhile, to analyze the trend of of international publications using VOSviewer. VOSviewer was software used to create maps based on network data, visualize and explore maps (Eck & Waltman, 2022). The analysis technique uses descriptive statistics, data transformation to tabulations, so it was easy to understand and interpreted (Yulianto, 2016). Descriptive statistics only describe and analyze data groups, without making conclusions to generalize to larger data groups.

RESULTS AND DISCUSSION

RQ1. Publication trends of startup performance (2000-2023)

Based on a Google Scholar database search for 2000-2023, it indicates a fluctuating development of startup performance research trends. Startup performance research began in 2002 only 1 article published in the Google Scholar database entitled "Startup Performance and Entrepreneurial Economic Development: The Role of Knowledge Relatedness" written by GP West III and TW Noel, published by Frontiers of Entrepreneurship Research. Figure 1 illustrates publication trends of startup performance (2000-2023).

Figure 1. Publication trends of startup performance (2000-2023)

Research trends of startup performance have increased significantly since 2018-2022. The period prior to 2018 was indicated a fluctuating increase in the number of scientific publications of startup performance. In early 2023, there was a drastic decline in article publications. It findings

indicate research of startup performance was still lacking, and it has a high chance of becoming a research gap for renewable studies.

RQ2. Publishers which published the most startup performance articles

Based on a search with the keyword startup performance on the Google Scholar database, it indicates that there were 172 scientific publications during 2000-2023. The publisher that published the most startup performance articles was Elsevier (14 articles). Figure 2 illustrated of publishers which published the most startup performance articles

Figure 2. Publishers which published the most startup performance articles

Elsevier was one of the world's largest providers of scientific, technical and medical information. Elsevier as a technology company founded in 1880 was recognized as a quality publisher at the international level, both in terms of content and language. Authors must go through a very rigorous selection process in order to publish on Elsevier. The findings indicate articles on startup performance has good quality, so it have the opportunity to be published in international publishers.

RQ3. Researchers who were actively researching of startup performance

Based on the level of productivity of researchers with the theme of startup performance in 2000-2023 on the Google Scholar database, it indicates productivity was 1 publication per author. Writers who were active in researching of startup performance, both individually (Aaron Chatterji) and in collaboration (Joonkyu Choi, Nathan Goldschlag, John C. Haltiwanger, and J. Daniel Kim), each of whom has published 2 articles on startup performance related to the field of strategic management. Table 1 illustrates of researchers who were actively researching of startup performance.

Table 1. Researchers who were actively researching of startup performance

Authors (Affiliation)	Articles	Title (Journal, Year)
Aaron Chatterji (Fuqua School of Businesss)	2	1. Experimentation and Start-up Performance: Evidence from A/B Testing (Management Science, 2021) 2. When does advice impact startup performance? (Strategic Management Journal, 2018)
Joonkyu Choi (Federal Reserve Board), Nathan Goldschlag (Center for Economic Studies), John C. Haltiwanger (University of Maryland), J. Daniel Kim (University of Pennsylvania)	2	1. Early Joiners and Startup Performance (NBER Working Paper, 2022) 2. Founding teams and startup performance (SSRN Scholarly, 2019)

The findings indicate there were only a few researchers who publish articles of startup performance. The results indicate there was a great opportunity to conduct research base on startup performance, especially in the area of strategic management, because the productivity of researchers for publication was still lacking.

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RQ4. The title of the most cited article

Based on searches using the keyword startup performance in the Google Scholar database for 2000-2023, an article written by Ming Mao and Marty Humphrey in 2012 entitled "A Performance Study on The VM Startup Time in The Cloud" was the most cited (675 citations). Table 2 illustrates the most cited authors and article titles.

Table 2. The most cited authors and article titles

Cited	Title (Journal, Year)	Authors
675	A Performance Study on the VM Startup Time in the Cloud (IEEE Fifth International Conference on Cloud Computing, 2012)	Ming Mao & Marty Humphrey
613	Management Accounting Systems Adoption Decisions: Evidence and Performance Implications from Early-Stage/Startup Companies (The Accounting Review, 2005)	Antonio Davila & George Foster
159	When does advice impact startup performance? (Strategic Management Journal, 2018)	Aaron Chatterji, Solène Delecourt, Sharique Hasan, & Rembrand Koning
154	TCP startup performance in large bandwidth networks (Institute of Electrical and Electronics Engineers, 2004)	Ren Wang, G. Pau, K. Yamada, M.Y. Sanadidi, & M. Gerla
153	Founder Replacement and Startup Performance (Review of Financial Economics, 2017)	Michael Ewens & Matt Marx

The findings indicate many articles on startup performance were cited by other researchers as reference. It indicates the most research on startup performance has a good quality and has a great opportunity to be used as a reference source, particularly in strategic management.

RQ5. Publication network map based on startup performance keywords

Co-occurrence analysis include keywords were similar to each other and based on the same topic but not exactly the same. In bibliometric analysis, the co-occurrence of keywords was used to reveal the relevance of research themes from the field of strategic management. Using VOSviewer to generate co-occurrence networks for startup performance. The minimum total link strength of an item was 1 of 19 items, and it indicates 19 meets the threshold. Next, 10 items were selected according to the field of strategic management, and the results formed 5 clusters as ilustrated in figure 3.
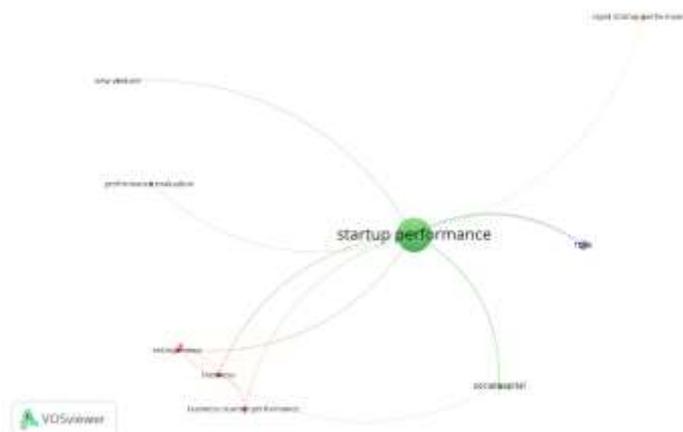

Figure 3. Network vizualization

The network visualization indicate there were five clusters, such us: Cluster 1 has a red color (business, business startup performance, entrepreneur, post startup performance); Cluster 2 has a green color (social capital, startup performance); Cluster 3 has a blue color (new venture, performance evaluation); Cluster 4 has a purple color (role); and Cluster 5 has a yellow color (rapid startup performance). The link were not so strong spread across five clusters marked with small circles. These small dots still don't have much research results, and it have the opportunity to do renewable research. Visualization overlay to identify and detect state of the art research on startup performance in 2000-2023. The results of the bibliometric analysis through Publish or Perish metadata imported into

Vosviewer produce an overlay visualization. The results indicates the colors at the nodes represent keywords in the year of publication, and it indicate the publication period around 2010-2018. The dark blue color indicates the article was published around 2010, and the yellow color indicates the article was published around 2018.
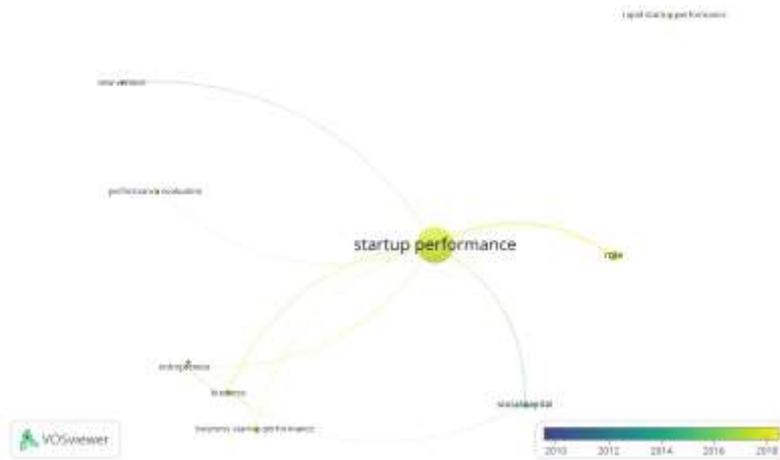

Figure 4. Overlay vizualization

Based on the visualization overlay illustration, it indicates that startup performance keywords have yellow nodes, which means the article was published around 2018. Article titles with startup performance keywords in yellow were related to the keywords rapid startup performance, role, entrepreneur, and business startup performance. It means there was still an opportunity to conduct research on these keyword themes, because there were only a few who publish on startup performance.

Density visualization was an item that was marked the same as the item that was visible. Each item point has a color that depends on the density of the item. It identifies the color of a point on the map depends on the number of items related to other items. Density visualization was useful for obtaining an illustration of the general structure of a bibliometric map by identifying items considered important for analysis. Through density visualization, it can be interpreted the most widely used keywords in a publication. Density visualization of business startup performance was illustrated in figure 5.
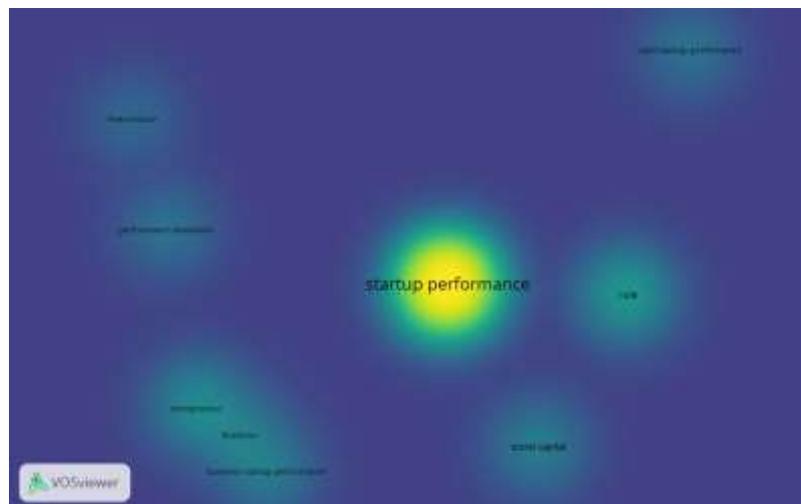

Figure 5. Density vizualization

Figure 5 illustrates density visualization using all articles on startup performance in 2000-2023. The results of the density visualization illustrate that each point has a color that indicates the density of the items at that point. Color categories range from blue to green to yellow. The greater the number of items around the dot and the higher the weight of the items, so the closer the dot's color was to

yellow. Conversely, the smaller the number of items around the point and the lower the weight of the items, so the closer the color of the point was to blue. Based on the illustration, the density visualization indicates that the highest weight was startup performance, while the others have quite low weights, although there was still a faint yellow color. It means there were still opportunities to conduct renewable research by taking these items as the sub-theme for further research.

CONCLUSION

The results of this study indicates: (1) publications with the theme of startup performance in the Google Scholar database for 2000-2023 totaling 172 articles; (2) Elsevier was the publisher that publishes the most articles on startup performance; (3) writers who actively research startup performance: individuals (Aaron Chatterji) and collaborations (Joonkyu Choi, Nathan Goldschlag, John C. Haltiwanger, and J. Daniel Kim); (4) Ming Mao and Marty Humphrey's article entitled "A Performance Study on The VM Startup Time in The Cloud" was the most cited (675 citations); and (5) there were five clusters have the opportunity to become gap research related to startup performance themes (business, business startup performance, entrepreneur, post startup performance, social capital, startup performance, venture, performance evaluation, role, and rapid startup performance). The results of this study have implications for further research where the theme of startup performance was rarely researched and it has the potential to become an updated theme for research in the field of strategic management.

The limitation of this research was the use of the database only on Google Scholar. Some databases that can be used for further research such us: Scopus, PubMed, SINTA, Croosref, Microsoft Academic, and Web of Science. If will use a combination of these databases, the next research will be more varied in detecting research developments on startup performance. In addition, this research period was only 2000-2023. For further research was recommended not limited to the period, so it can identify the start of research publications on the theme of startup performance.

REFERENCE

Agustini, N. L. P., & M.Kom, Putu Agus Swastika, Estiyanti, N. M. (2019). Analisa Nilai Valuasi Startup Berdasarkan Faktor Keuangan dan Faktor Non Keuangan Media Online PT . XYZ Bali. *Riset Dan E-Jurnal Manajemen Informatika Komputer*, *3*(2), 5–18.

Basuki, S. (2002). *Pemetaan Ilmu Pengetahuan. Kumpulan Makalah Kursus Bibliometrika. Masyarakat Informetrika Indonesia.* Pusat Studi Jepang, Depok: Universitas Indonesia.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How To Conduct a Bibliometric Analysis: An Overview and Guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Eck, N. J. Van, & Waltman, L. (2022). *VOSviewer Manual*. Universiteit Leiden.

Fisher, S., & Duane, J.-N. (2015). *The Startup Equation: A Visual Guidebook to Building Your Startup*. New York: McGraw Hill.

Garza-Reyes, J. A. (2015). Lean and Green – A Systematic Review of The State of The Art Literature. *Journal of Cleaner Production*, *102*, 18–29. https://doi.org/https://doi.org/10.1016/j.jclepro.2015.04.064

Istiana, P. (2016). Pentingnya Pemahaman Pustakawan Terhadap Bentuk Komunikasi Ilmiah Pada Profil Google Scholar. *Pustakaloka*, *8*(1), 131–144. https://doi.org/https://doi.org/10.21154/pustakaloka.v8i1.450

Kiwe, L. (2018). *Jatuh-Bangun Bos-Bos Startup*. Yogyakarta: Checklist.

Li, J., Lei, L., & Cheng, L. (2020). Mapping Evaluation , Appraisal and Stance in Discourse (2000–2015): A Bibliometric Analysis. *Glottotheory*, *10*(1–2), 31–55. https://doi.org/10.1515/glot-2019-0002

Marmer, M., Herrmann, B. L., Dogrultan, E., & Berman, R. (2012). *Startup Genome Report: A new Framework for Understanding Why Startups Succeed In*. San Fransisco: Startup Genome.

Pattah, S. H. (2013). Pemanfaatan Kajian Bibliometrika sebagai Metode Evaluasi dan Kajian dalam Ilmu Perpustakaan dan Informasi. *Khizanah Al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, Dan Kearsipan*, *1*(1), 47–57.

Ries, E. (2011). *The Lean Startup*. United States of America: Crown Business.

Rohanda, & Winoto, Y. (2019). Analisis Bibliometrika Tingkat Kolaborasi , Produktivitas Penulis , Serta Profil Artikel Jurnal Kajian Informasi & Perpustakaan Tahun 2014-2018. *PUSTABIBLIA: Journal of Library and Information Science*, *3*(1), 1–15. https://doi.org/DOI: http://dx.doi.org/10.18326/pustabiblia.v3i1.1-15

Tupan, Rahayu, R. N., Rachmawati, R., & Rahayu, E. S. R. (2018). Analisis Bibliometrik Perkembangan Penelitian Bidang Ilmu Instrumentasi. *BACA: Jurnal Dokumentasi Dan Informasi*, *39*(2), 135–149. https://doi.org/DOI: http://dx.doi.org/10.14203/j.baca.v39i2.413

Wardhani, A. R., Paramita, N., Hasean, R. B. F., & Fatikah, N. (2021). Indikator Kinerja Inovasi pada Startup. *The 4th Conference on Innovation and Application of Science and Technology (CIASTECH 2021)*, 359–366.

Yanuarti, I., & Dewi, H. (2018). Startup Bisnis Sebagai Alternatif Investasi: Studi Kasus Pada Pt. Fiture Teknologi Inovasi. *ULTIMA Management*, *10*(2), 81–96.

Yulianto, H. (2016). *Statistik 1*. Yogyakarta: Lembaga Ladang Kata.

Yulianto, H. (2017). Kajian Penerapan Financial Quotient Pada Wirausaha Pemula. *Equity: Journal of Economics, Management and Accounting*, *12*(1), 48–62.

Yulianto, H. (2019). Performance Analysis of Startup Entrepreneurs. *AKMEN*, *16*(4), 483–492.

Yulianto, H. (2021). Philosophy of Management Science: Ontology, Epistemology, And Axiology Perspectives. *Cross-Border Journal of Businees Management*, *1*(1), 152–162.

Yulianto, H., & Iryani. (2018). Penilaian Kelayakan Usulan Bantuan Permodalan: Studi Kasus Pada Wirausaha Pemula di Kota Makassar. *Prosiding Seminar Hasil Penelitian (SNP2M)*, 197–202.