A Bibliometric and Visualized Analysis of Digital Payment 2019-2021

Melly Susanti *[1], Heru Kreshna Reza[2]

Abstract*:* The implementation of government policies by working from home has made consumer behavior change from a cash payment system to a digital payment system. The purpose of this study was to determine consumer behavior in using m-payments during the covid-19 pandemic. Publication documents in the Scopus database, reviewed from bibliometric maps using VOSViewer software. The collection method is through publish or perish. Articles are downloaded in *.ris format, then processed using Mendeley software. The results of the study show an increase in the use of mobile payment publications in 2020, changes in consumer behavior from paying cash, to switching to a non-cash payment system.

Keywords: Mobile Payment, Digital Payment, bibliometric, pandemic, VOSviewer

1. Introduction

The global COVID-19 pandemic has changed human behavior. Working at home makes people forced to get to know digital technology. Purba et al., (2021) Provide application security in transaction activities to prospective customers. Banking service providers and online shops provide online payment features. The application of mobile payments makes it easy for the public to make transactions.

Mobile payments are moving towards a cashless society. The era of 0.5 cash has been replaced with digital transactions. Intention to use mobile banking is influenced by attitudes, social, and the covid-19 pandemic Patil et al., (2020).

Schieman et al., (2021) in their research found that there had been a shift in work patterns during the pandemic. During the COVID-19 pandemic, many people around the world are working from home in an effort to slow the spread of the virus, working from home is generally a positive experience (Békés & Doorn, 2020; Beck & Hensher, 2020; Nundy et al., 2021). According to Chadee et al., (2021) there are no clear guidelines regarding the use of digital technology to work at home. In addition, working at home causes an increase in household energy use (Nundy et al., 2021).

Technological innovation plays an important role in developing the economy Ge et al., (2022). Consumer services can provide consumer access through mobile applications (Karjaluoto et al., 2019; Vij et al., 2020). In developed markets, mobile banking and mobile payment application services have been used. Karjaluoto et al., (2019) The perceived value of mobile payment services produces a strong positive effect on customer satisfaction.The main managerial implication of this study is that the bank's investment in developing the MFSA results in improved customer relationships and increased business.

Payments through electronic wallets, which are one of the solutions to digitize consumer debt and corporate receivables, are increasingly popular globally (Khoa, 2020). O'Brien et al., (2020)) provide a literature review on factors that contribute to past payments (PP), intention to pay (PI), and willingness to pay (WTP).

Bibliometric studies can provide relevant evaluations and assessments of the social and scientific relevance of a particular discipline or field of research (López-Muñoz et al., 2014). There are many bibliometric studies on research output performance in Specific Countries such as in China (Xu & Ye, 2003),Nurgia (Xie et al., 2020) and Taiwan (López-Muñoz et al., 2014). Bibliometrik digunakan untuk mengidentifikasi pola publikasi ilmiah (ezama-Nicolás, R., 2018), terutama publikasi ilmiah yang dikendalikan oleh Elsevier, Wiley, Taylor & Francis, Springer Nature, dan Sage. Yeung et al., (2017) using the bibliometric method stated that brain imaging and the term brain connectivity have relatively high citation scores in neuroscience studies published from 2006 to 2015. While Wagner et al., (2019)

[1] Dept of Accounting, Fac of Economic and Business , Muhammadiyah Bengkulu, INA
ORCID ID : 0000-0003-1041-7566
[2] Dept of Accounting, Fac of Economic and Business , Esa Unggul Jakarta, INA
* Corresponding Author Email: maksi07.unib@gmail.com

tested both novelty and conventionality, international collaborations failed to produce more new articles.

The purpose of this study was to determine the development of research related to consumer behavior using mobile payments during the covid-19 pandemic, bibliometrics and publication trends in the Scopus database using VOSViewer software. Bibliometrics is effective in providing datasets that can be used to improve the quality of research. Bibliometric analysis is used to look for trends and patterns (Xie et al., 2020).
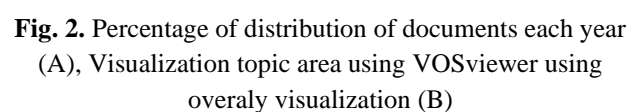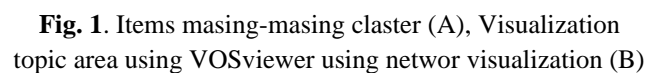
2. Mathodology

The method used in this study is to take data from Scopus through the publish or perish tool. Data were collected from 189 Scopus indexed documents. The most complete database is on Scopus (Ondrej Klapka & Faculty, 2018). The research was conducted online, searching for data on September 15, 2022, using the keywords Consumer Behavior and Cellular Payments. The data period used is 2019, 2020, 2021. In 2019 the world was hit by the corona-19 outbreak, many people transacted via ATM cards. Many people use mobile payments, transacting from home is safer.

Then the articles are downloaded in *.ris format and then processed using Mendeley Desktop software to facilitate data analysis. Furthermore, VOSviewer was used for the bibiliometric map (van Eck et al., 2013). VOSviewer can create publication maps, or network-based journal maps / co-citation (Hudha et al., 2020). The frequency of less relevant keywords can be eliminated. VOSviewer software can also be used to perform data mining, mapping (Xie et al., 2020).

3. Results And Discussion

1. Visualizing topic areas using VOSviewer.

Penyihir menunjukkan hubungan antara satu topik dengan topik lainnya, hubungan antar topik dapat dilihat pada tabel 1.

Table 1. Relationship between topics

Clusters	Collor	Kayword
1	Red	41
2	Green	34
3	Dark blue	34
4	Yellow	25
5	Dark Purple	20
6	Light blue	19
7	Orange	16
	Total	Total

Visualisasi jaringan terbentuk 7 cluster, seperti pada tabel 1 dan gambar 1. Cluster terbesar ada pada warna merah,

berwarna merah. Merah menunjukan kata kunci terbanyak yang diginakan dalam penelitian mobile payment.

Fig. 1. Items masing-masing claster (A), Visualization topic area using VOSviewer using networ visualization (B)

Fig. 2. Percentage of distribution of documents each year (A), Visualization topic area using VOSviewer using overaly visualization (B)
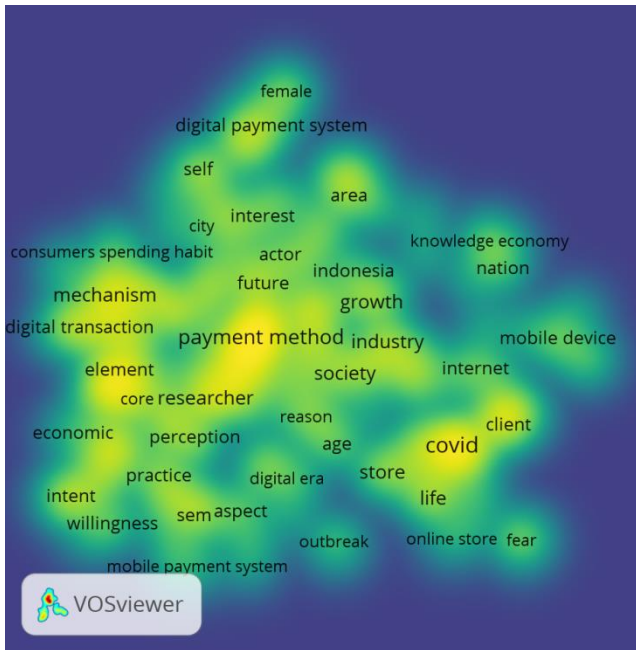
Fig.3. Visualization topic area using VOCviewer using density visualization

Figure 1 shows the relationship between clusters in each of the topic areas studied. The keyword "Pandemic" (red) relates to the keyword "Area" (blue), and relates to the keyword "Life" (purple). There is a close relationship between circles of spheres. Figure 2 is the Trend every year. lighter colors indicate that the topic was recently researched. Please note that this research data was taken from 2019, 2020, and 2021. The number of documents each year is shown in the graph (Figure 2.A) In 2019 there were 52 documents, in 2020 there were 110 documents, and in 2021 there were 9 documents. In 2020 there was a significant increase in the research trend, as much as 64% of the total published documents. Meanwhile, Figure 3 shows the depth of research, answering that the darker the color appears and the number of studies increases.

From Figure 1-3 it can be seen that the keywords that often appear are "Payment method and covid". From this data, we can look for topics that are still little done, such as mobile payment systems, online stores, digital payment systems. This new topic search can be seen in topics that are in a concentrated area (figure 3).

The theoretical contribution of this research is the mapping of research related to consumer behavior in using mobile payments during the covid-19 pandemic. Furthermore, the availability of information in each topic area can be searched by entering more specific keywords.

Other research such as Added Value and Ease of Using Quick Responses Qris Indonesian Standard (QRIS),(Susanti & Kresnha Reza, 2022). Business using the internet network is important and sustainable (Kresnha Reza & Susanti, 2022).

2. Topic Analysis in Each Cluster

In addition to bibliometric analysis we can analyze; author, journal, country of study, language used, and topics in each cluster. Specifically for Topics in Each Clusters are shown in Figures tables 1 and 2.

Table 2. Topics in Cluster 1, 2 and 3

Clusters 1	Clusters 2	Clusters 3
account	advance	acceptance
client	alternative	advertising
communication technology	amount	aspect
contrast	case study	behavioral intention
covid	cash payment	behavioural intention
customer behavior	chapter	complexity
customer experience	city	conceptual model
delivery service	competition	consideration
device	consent	construct

digital economy

e wallet service

e wallet service provider

e wallet user

easiness

extent

fintech industry

fraud

ict

indian economy

industry

infrastructure

internet

knowledge economy

lack

mobile commerce

mobile device

mobile phone

mobility

nation

pandemic

peer

politic

research finding

restaurant

simplicity

situation

society

solution

thing

usefulness

way

consumer demand

consumers spending habit

consumption

difference

digital game

digital transaction

effectiveness

efficiency

element

experiment

goal

incentive

integrity

mechanism

online transaction

payment method

payment process

positive effect

privacy

quality

rapid growth

reason

recent year

tangibility

work

consumer adoption

consumers behavior

content

core

current study

digital communication

economic

indian consumer

influencing factor

information technology

intent

logic

measurement

mobile service provider

payment mode

payment system

practice

researcher

rule

seller

social influence

student

tam

transition

unified payment interface

Table 3. Topics in Cluster 4, 5, 6, and 7

Clusters 4	Clusters 5	Clusters 6	Clusters 7
blockchain technology	age	age group	access
consumers intention	digital technology	area	actor
digital era	digitalization	case	book
digital transformation	fear	cfa	financial service
empirical study	feature	comparison	future
literature review	first group	confirmatory factor analysis	growth
m payment	home	digital payment system	importance
mobile payment service	life	female	interest
mobile payment system	main reason	financial attitude	mobile banking
motivation	online payment	indonesia	mobile technology
motive	online purchase	marketing	p2p
outbreak	online store	moderation analysis	participant
perception	payment provider	online review	paypal
practical implication	present study	program	perspective
probability	purchase	protocol	regulator
reliability	reference	self	social medium
research limitations implication	second group	subject	
research model	store	topic	
security	valid response	total	
sem	year		
significant effect			
structural equation modelling			
validity			
variance			
willingness			

4. Conclusion

There has been a change in behavior during the covid-19 pandemic, where during the covid-19 pandemic all humans limit going out of the house. All work is done in house. Work from home, improve technology innovation, and increase entrepreneurial ideas.

This article configures and visualizes the literature systematically, analyzing it through a bibliometric approach. Bibliometrics identify the main themes, each study or scope of knowledge.

Consumer behavior in using mobile payments is clearly seen in the many publications in 2020. At that time there was a high death rate caused by the spread of the covid-19 virus. The implementation of government policies by working from home has made consumer behavior change from a cash payment system to a digital payment system.

Future research can use other keywords, with research topics related to the use of mobile payments.

5. Acknowledgment

References

[1]. Beck, M. J., & Hensher, D. A. (2020). Insights into the impact of COVID-19 on household travel and activities in Australia – The early days of easing restrictions. *Transport Policy*, *99*, 95–119. https://doi.org/10.1016/j.tranpol.2020.08.004

[2]. Békés, V., & Doorn, K. A. van. (2020). Psychotherapists' attitudes toward online therapy during the COVID-19 Pandemic. *Journal of Psychotherapy Integration*, *30*(2), 238–247. https://doi.org/10.1037/int0000214

[3]. Chadee, D., Ren, S., & Tang, G. (2021). Is digital technology the magic bullet for performing work at home? Lessons learned for post COVID-19 recovery in hospitality management. *International Journal of Hospitality Management*, *92*. https://doi.org/10.1016/j.ijhm.2020.102718

[4]. ezama-Nicolás, R., et al. (2018). A Bibliometric Method for Assessing Technological Maturity: The Case of Additive Manufacturing. *Scientometrics*, *117*(3), 1425–1452.

[5]. Ge, T., Abbas, J., Ullah, R., Abbas, A., Sadiq, I., & Zhang, R. (2022). Women's Entrepreneurial Contribution to Family Income: Innovative Technologies Promote Females' Entrepreneurship Amid COVID-19 Crisis. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.828040

[6]. Hudha, M. N., Hamidah, I., Permanasari, A., Abdullah, A. G., Rachman, I., & Matsumoto, T. (2020). Low carbon education: A review and bibliometric analysis. *European Journal of Educational Research*, *9*(1), 319–329. https://doi.org/10.12973/eu-jer.9.1.319

[7]. Karjaluoto, H., Shaikh, A. A., Saarijärvi, H., & Saraniemi, S. (2019). How perceived value drives the use of mobile financial services apps. *International Journal of Information Management*, *47*, 252–261. https://doi.org/10.1016/j.ijinfomgt.2018.08.014

[8]. Khoa, B. T. (2020). The role of mobile skillfulness and user innovation toward electronic wallet acceptance in the digital transformation era. In *2020 International Conference on Information Technology Systems and Innovation, ICITSI 2020 - Proceedings* (pp. 30–37). https://doi.org/10.1109/ICITSI50517.2020.9264967

[9]. Kresnha Reza, H., & Susanti, M. (2022). Digital Business Adoption 2013-2018 A Bibliometric Study. *International Journal of Educational Research & Social Sciences*, *3*(2), 722–727. https://doi.org/10.51601/ijersc.v3i2.324

[10]. López-Muñoz, F., Shen, W. W., Shinfuku, N., Pae, C. U., Castle, D. J., Chung, A. K., Sim, K., & Álamo, C. (2014). A Bibliometric Study on Second-generation Antipsychotic Drugs in the Asia-Pacific Region. *Journal of Experimental and Clinical Medicine (Taiwan)*, *6*(4), 111–117. https://doi.org/10.1016/j.jecm.2014.06.001

[11]. Nundy, S., Ghosh, A., Mesloub, A., Albaqawy, G. A., & Alnaim, M. M. (2021). Impact of COVID-19 pandemic on socio-economic, energy-environment and transport sector globally and sustainable development goal (SDG). In *Journal of Cleaner Production* (Vol. 312). https://doi.org/10.1016/j.jclepro.2021.127705

[12]. O'Brien, D., Wellbrock, C. M., & Kleer, N. (2020). Content for Free? Drivers of Past Payment, Paying Intent and Willingness to Pay for Digital Journalism–A Systematic Literature Review. *Digital Journalism*, *8*(5), 643–672. https://doi.org/10.1080/21670811.2020.1770112

[13]. Ondrej Klapka, A. S., & Faculty. (2018). Visual Analysis of Search Results in Scopus Database. In Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics): Vol. 11057 LNCS. Springer International Publishing. https://doi.org/10.1007/978-3-030-00066-0

[14]. Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management*, *54*. https://doi.org/10.1016/j.ijinfomgt.2020.102144

[15]. Purba, J. T., Budiono, S., & Rajagukguk, W. (2021). Strategy of technology services for customers in pandemic COVID19 situation: A case from Indonesia. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (p. 409). https://api.elsevier.com/content/abstract/scopus_id/85114219899

[16]. Schieman, S., Badawy, P. J., A. Milkie, M., & Bierman, A. (2021). Work-Life Conflict During the

COVID-19 Pandemic. *Socius*, *7*. https://doi.org/10.1177/2378023120982856

[17]. Susanti, M., & Kresnha Reza, H. (2022). Added Value and Ease of Using Quick Responses Qris Indonesian Standard (QRIS). *International Journal of Science, Technology & Management*, *3*(3), 715–723. https://doi.org/10.46729/ijstm.v3i3.518

[18]. van Eck, N. J., Waltman, L., van Raan, A. F. J., Klautz, R. J. M., & Peul, W. C. (2013). Citation Analysis May Severely Underestimate the Impact of Clinical Research as Compared to Basic Research. *PLoS ONE*, *8*(4). https://doi.org/10.1371/journal.pone.0062395

[19]. Vij, A., Ryan, S., Sampson, S., & Harris, S. (2020). Consumer preferences for Mobility-as-a-Service (MaaS) in Australia. *Transportation Research Part C: Emerging Technologies*, *117*. https://doi.org/10.1016/j.trc.2020.102699

[20]. Wagner, C. S., Whetsell, T. A., & Mukherjee, S. (2019). International research collaboration: Novelty, conventionality, and atypicality in knowledge recombination. *Research Policy*, *48*(5), 1260–1270. https://doi.org/10.1016/j.respol.2019.01.002

[21]. Xie, L., Chen, Z., Wang, H., Zheng, C., & Jiang, J. (2020). Bibliometric and Visualized Analysis of Scientific Publications on Atlantoaxial Spine Surgery Based on Web of Science and VOSviewer. *World Neurosurgery*, *137*(February), 435-442.e4. https://doi.org/10.1016/j.wneu.2020.01.171

[22]. Xu, F., & Ye, Y. (2018). Design and practice of a new campus card payment system in mobile internet scenarios. *Journal of Zhejiang University, Science Edition*, *45*(1), 60–64. https://doi.org/10.3785/j.issn.1008-9497.2017.01.010

[23]. Yeung, A. W. K., Goto, T. K., & Leung, W. K. (2017). The changing landscape of neuroscience research, 2006-2015: A bibliometric study. *Frontiers in Neuroscience*, *11*(MAR), 2006–2015. https://doi.org/10.3389/fnins.2017.00120