

Big data adoption: does it have a great impact on crowdfunding success in SMEs?

Adopción de big data: ¿tiene un gran impacto en el éxito del crowdfunding en las pymes?

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Resumen: Propósito – Uno de los problemas de las MIPYMES es el capital limitado que tienen para construir su negocio. La presencia de la plataforma de Crowdfunding es una solución para que las MIPYMES encuentren inversores para financiar sus negocios. El problema es que no todos los inversionistas quieren financiar a estas MIPYMES y, como resultado, muchas MIPYMES no obtienen fondos del crowdfunding. El propósito de esta investigación es averiguar si la adopción de Big Data puede afectar el éxito del crowdfunding. ¿En este caso, hacer que los inversores se sientan más seguros para invertir?

Diseño/metodología/enfoque: este estudio recopila artículos sobre la adopción de big data en las pymes en la base de datos Emerald Insight. Además, también recopilamos artículos de la investigación realizada por Deng et al. en 2022 sobre los factores que influyen en el éxito del crowdfunding.

Hallazgos: descubrimos que la adopción de big data puede representar varios factores que influyen en el éxito del crowdfunding. En otras palabras, si los actores de las MIPYMES aplican big data a su negocio, es muy probable que se ganen la confianza de los inversionistas y reciban los fondos que necesitan. Originalidad/valor: esta investigación proporciona una descripción general para que los actores de las MIPYME consideren la adopción de big data en su negocio. Si los actores de las MIPYMES lo han implementado, además de tener un buen efecto en las operaciones comerciales, también les resultará más fácil obtener el éxito del crowdfunding.

Palabras clave: adopción de big data, big data de pymes, éxito de crowdfunding.

Abstract: Purpose – One of the problems of MSMEs is the limited capital they have to build their business. The presence of the Crowdfunding platform is a solution for MSMEs to find investors to fund their businesses. The problem is, not all investors want to fund these MSMEs and as a result, many MSMEs do not get funds from crowdfunding. The purpose of this research is to find out whether the adoption of Big Data can affect crowdfunding success. In this case, making investors does it feel more confident about investing?

Design/methodology/approach – This study collects articles regarding the adoption of big data in SMEs in the Emerald Insight Database. Furthermore, we also collected articles from

the research conducted by Deng et al. in 2022 regarding factors influencing crowdfunding success.

Findings – We found that the adoption of big data may represent several factors that influence crowdfunding success. In other words, if MSMEs actors apply big data to their business, it is very likely that they will gain the investors' trust and receive the funds they need.

Originality/value – This research provides an overview for MSMEs actors to consider the adoption of big data in their business. If MSMEs actors have implemented it, then apart from having a good effect on business operations, they will also find it easier to get crowdfunding success.

Keywords: big data adoption, SMEs big data, crowdfunding success.

1. INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) have a very important role in economic growth in developing countries as well as in driving innovation and growth in a country (Wehinger, 2014). Especially in Indonesia, MSMEs have contributed to reducing the unemployment rate by employing more than half of the private sector workforce, which represents 99.99% of the total business units and employment of 97% of the total national workforce (kemenkopukm.go.id, 2022). MSMEs have also proven to play an important role in Indonesia's economic recovery (Rosavina et al., 2019). This is reinforced by the infographic Databoks (2022) which states that Indonesia is the country with the largest economy in Southeast Asia, what is due to the influence of the existence of MSMEs.

In addition, MSMEs also have influence and contributed to export activities, even though in Indonesia, MSMEs only contribute 16% of the total export value (Yoshino & Taghizadeh-Hesary, 2017). This is considered a very small contribution, taking into account that in China and India, MSMEs account for 40% of the total export value, followed by Thailand for 26%, and South Korea for 19% (Yoshino & Taghizadeh-Hesary, 2017). This is enough to prove that MSMEs have a very important role in increasing innovation and growth in a country. MSMEs contribution to the Indonesian economy is enormous and has experienced a significant increase year by year to reach Rp. 8,500 trillion or 61.97% of the country's total GDP in 2020 (Central Bureau of Statistics, 2020).

However, MSMEs have problems that hinder the growth of their business units, especially during the Covid-19 pandemic, one of which is the problem of access to funding. According to Aprihasyyati & Fitria (2021), MSMEs relatively have very limited access to funding compared to large companies. Investment Climate Surveys by The World Bank (2007) show that most MSMEs in developing countries, especially in Asian countries, have problems in obtaining access to funding and very little possibility of receiving financing through formal banks (Rosavina et al., 2019). In fact, in a developing economy, MSME actors really need funding to open new businesses or expand existing ones. Thus, in developing countries, they tend to seek funding capital for their businesses through bank debt because access to those entities is relatively easier with a wider variety of office networks (Niazi et al., 2021) compared to accessing funding through platforms on the internet (Niazi et al., 2021). Nugroho & Rachmaniyah, 2019) due to the lack of infrastructure as well as MSME actors' lack of knowledge to access funding on the internet (Fajar & Larasati, 2021). Research in the world shows that 70% of MSMEs in India, 80% of MSMEs in China, and 90% of MSMEs in Malaysia have bank debt (Yoshino & Taghizadeh-Hesary, 2017). Asian countries' economies are still dominated by the banking system, where banks are the main source of financing. However, since the crisis in the Asian

Region, banks have begun to be careful in providing loans to MSMEs which has made it increasingly difficult for MSME actors to obtain funding (Yoshino, 2020).

This happened from 2007 to 2009 when the global financial crisis occurred. It had a domino effect in the Asian Region which made it more difficult for MSMEs to get access credit funding due to the large number of bad loans (Oliveira et al., 2017). Moreover, according to Oliveira et al. (2017), the great number of bad loans has resulted in banks being more careful in providing credit funding. This was exacerbated by the crisis caused by the Covid-19 pandemic which had a significant impact on all companies, including MSMEs. The Covid-19 pandemic hit MSMEs due to their financial weakness because of the large amount of banks debts, especially in developing countries in Asia (Ciampi et al., 2021). The latest survey conducted by Sonobe et al., (2021) which carried out research in countries in Asia, including Indonesia, regarding the impact of the Covid-19 pandemic on MSMEs, stated that it resulted in the sustainability of MSME businesses being very serious due to the damage to their finances, where there were many unpaid bank debts and no cash. Therefore, there is a need for an alternative solution related to the problem of MSME funding which has been so far dominated by bank debt, even though bank debt has many risks, especially a financial crisis (Sonobe et al., 2021).

In recent decades, along with changes in the industrial era that started from the trend of the computerized and machine industry to the trend of the digital industry, many new ways of obtaining external funding have been developed which are, at the same time, a solution to the problem of access funding for MSMEs, one of which is funding through crowdfunding platforms (Alalwan et al., 2022). Crowdfunding platforms have become very popular in the digital industry era because they easily bring together micro, small to medium businesses with individuals or ventures who wish to invest their funds to the public through online platforms. Compared to conventional funding models such as through formal banks, lending institutions, or venture capital firms, crowdfunding platforms are an alternative to get access to funding because these platforms are the most recent innovations in the world of financing without going through complicated schemes like conventional funding (Hervé et al. al., 2019). This is also strengthened by the existence of technology that is more effective than conventional financial institutions, as fintech institutions are able to obtain information regarding the history of funding from MSME actors who have the opportunity to overcome problems in Asian countries related to bank bad loans (Cornelli et al., 2019).

The concept of crowdfunding was created and intended for business people who want to develop their business but are constrained in terms of financial capital (Nugroho & Rachmaniyah, 2019). The crowdfunding platform has proven to be a more effective way of funding to support micro, small and medium enterprises (Barbi & Mattioli, 2019). This can be seen in the UK's first crowdfunding platform, Crowdcube, which, by 2022, has managed to channel funds to more than 1,000 business units (Crowdcube.com, 2022) and with crowdfunding platforms in other countries which have succeeded in channeling funds to MSME. In the United States, crowdfunding platforms such as Kickstarter and Indie GoGo are very popular with fund distributions that continue to increase every year (Bradford, 2012). In Indonesia, there is a crowdfunding platform which is also very popular and has proven to be an alternative financing for traditional entrepreneurship, namely Bizhare which has successfully set up more than 102 business units in Indonesia (Bizhare.id), Santara more than 300 business units (Santara.co.id), and Amarta more than 1.2 million business units (Amarta.com). This is enough to prove that crowdfunding is a new method as an alternative funding solution for new and developing businesses, which allows individuals from various aspects of the business, whether profit, non-profit, social or cultural-oriented, to get more funding in return for equity or future products. (Mollick, 2014; Schwienbacher & Larralde, 2010).

The way the crowdfunding platform works is by connecting business units listed on the crowdfunding platform with investors, both from individuals and ventures such as capital market. Later, investors will get share rights and a percentage of ownership in accordance with the issued capital. This makes it easier for MSMEs to obtain fresh funds directly from the public (Du et al., 2022; Nugroho & Rachmaniyah, 2019).

New challenges emerged after the crowdfunding platform became a popular funding alternative for MSMEs. The high level of risk on crowdfunding platforms is a major problem. The major problem is that it is very vulnerable to mismanagement of funds by MSMEs which results in their businesses being more at risk of going bankrupt what can result in losses for investors (Forbes & Schaefer, 2017). Therefore, each crowdfunding platform has its own ways to deal with this risk, specifically selecting MSMEs as a listing requirement and providing guidance and supervision on managing funds that have been successfully collected from the public through the crowdfunding platform and through investors channeling funds to units. (Amartha.com, 2022; Santara.co.id, 2022; Bizhare.id, 2022).

In order to assist entrepreneurs in obtaining the expected funds, the crowdfunding platform also provides guidance to MSMEs listed on the platform on designing fundraising campaigns (Amartha.com, 2022; Santara.co.id, 2022; Bizhare.id, 2022). However, the advice given to entrepreneurs often relies on intuition rather than on strategy to design campaigns (Thürriidl & Kamleitner, 2016). As a result, crowdfunding campaigns are not well designed and opportunities to raise funds are often wasted when funding targets are not met. This limitation then prompted researchers to conduct research studies which focus on optimizing the effectiveness and the impact of crowdfunding campaigns (Stiver et al., 2015).

The development of academic research on crowdfunding also includes studies on the motivation of fundraisers to use it, the determinants of its successful practices, the frameworks and their suitability for crowdfunding realities, the motivation by funders, the role of social networks and signaling in crowdfunding, and the classification and strategies of crowdfunding intermediaries (Block et al., 2018). Literature reviews on crowdfunding and its success have also been carried out by (Kaartemo, 2017), (Shneor & Vik, 2020), and (Deng et al., 2022). Kaartemo (2017) identified four main determinants of crowdfunding success, such as: project-related factors, creators (fundraising), supporters, and platforms. Researchers explain the influence of each determinant on crowdfunding success by reviewing research findings from each representative study. Shneor & Vik (2020) identified general trends and research gaps regarding independent variables based on each of the main crowdfunding models, that is reward-based, equity-based, lending-based and donation-based separately. Then they developed an integrated framework for influential independent variables based on their respective crowdfunding models. Deng, et al. (2022) collected definitions and measures of determinants including their effect on crowdfunding success (positive, negative, or insignificant effect). They also show how different determinants influence crowdfunding success and how the measurement of crowdfunding success determines the choice of the research method.

The literature review mentioned the factors that influence crowdfunding success in general, consisting of a mixture of reward-based, donation-based, equity-based and lending-based crowdfunding. In this review, there are factors that determine crowdfunding success, such as the role of technology adoption in business operations, MSMEs business innovation, and business productivity. However, the three literature reviews provide an explanation regarding the determinants of crowdfunding success with the majority of cases in developed countries in America and Europe. In fact, crowdfunding is an alternative funding solution for MSMEs which is very important for developing countries' economies (Block et al., 2018).

Deng et al. (2022) made improvements to the research conducted by Kaartemo (2017) and Shneor & Vik (2020) by providing a framework related to crowdfunding success. Deng et al. (2022) provides an explanation in which there are several determinants that come from different platform and crowdfunding models in crowdfunding success. This is explained in the integrated research framework in which the determinants of crowdfunding success include four factors that refer to Kaartemo (2017), Koch & Siering (2015) and Zhou et al., (2018), namely Project-Related Factors, Creator-Related Factors Backer-Related Factors, and Platform-Related Factors. Each of these factors consists of other factors. This creates a complexity of factors that affect crowdfunding success. In this research, the researcher wants to test whether there is a simplification of the factors, what is done by providing a Big Data adoption determinant as a replacement factor for the determinants proposed by Deng et al (2022).

Researchers found other literature studies regarding the adoption of Big Data in SMEs proposed by Willetts et al. (2020) who found that Big Data adoption in MSMEs has a positive influence on technology adoption, business innovation, and business productivity. This is also supported by research conducted by Achdiat et al. (2021) and Sen et al. (2016) which states that MSMEs have a huge opportunity to adopt Big Data in their business operations. As a result, these MSMEs have good technology adoption, business innovation, and business productivity. Thus, if the MSME has adopted Big Data, then it has fulfilled some of the factors that determine crowdfunding success.

In this study, the researcher tries to summarize previous findings regarding crowdfunding success and Big Data adoption for SMEs in which he concludes that Big Data adoption in SMEs can represent some of the factors that determine crowdfunding success. It was found that there was an increase in growth and innovation from MSMEs where if MSMEs succeed in getting funding from crowdfunding sites, they tend to experience increased growth and innovation (Wahjono et al., 2021). In addition, previous studies have used little literature in discussing the development of crowdfunding in Asian countries. In Indonesia itself, the trend regarding crowdfunding has not received much attention due to the lack of public literature regarding alternative funding (Nugroho & Rachmaniyah, 2019). This includes trends and literature regarding the adoption of Big Data, especially in micro and small businesses (Achdiat et al., 2021). In fact, Big Data adoption can increase business growth and innovation (Sen et al., 2016) through increasing the probability of success in crowdfunding.

2. RESEARCH METHODOLOGY

The method in this literature review follows those conducted by Amri & Aryani (2021), Bellini et al. (2022), Ernawati & Aryani (2019), and Thomas & Tee (2022). We conducted a literature review regarding the factors that influence crowdfunding success with the Big Data adoption factor as a simplification factor of the determinants proposed by Deng et al. (2022). Articles related to crowdfunding success have been taken from the research by Deng et al. (2022), while articles related to Big Data adoption have been taken from the Emerald Insight Database. The reason we chose this publisher is because Emerald is a well-known journal publisher in academic circles and often becomes a research reference for academics (Ansari & Raza, 2020). We did a search for articles related to Big Data adoption with the keyword "Big Data Impact" with a row search "Small Medium Enterprise OR SME". The timeframe for searching for articles is from 2010 to 2022. This is because Big Data trends were developing together with the development of the industrial revolution 4.0 in 2010 (Bettioli et al., 2021; Willetts et al., 2020).

Next, we conduct a review and provided the results of our analysis regarding the literature. Based on the criteria and limitations of the research, we collected 94 articles related to crowdfunding success from the research conducted by Deng et al. (2022) and 65 articles related to Big Data adoption from the Emerald Insight Database. We hope that our research can provide views to developing countries in the success of crowdfunding by adopting Big Data in their business operations.

3. FINDINGS

Based on an article search from the Emerald Insight Database, we found 65 articles discussing Big Data adoption. The articles we found are in Table 1.

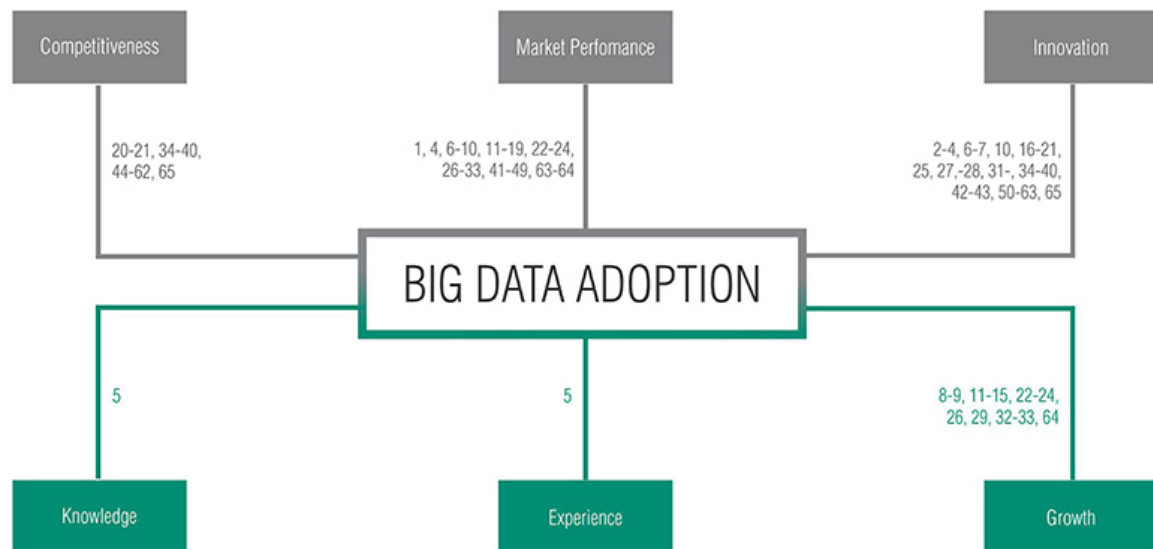
TABLE 1
List of articles on Big Data adoption

Nº	TITLE	YEAR	AUTHOR
1	Innovative low-cost strategy and firm performance of restaurants	2019	Kankam-Kwarteng, Collins; Osman, Barbara; Donkor, Jacob
2	Innovation in the "forgotten businesses"	2021	Silva, Gleisiz; Di Serio, Luiz Carlos
3	Guarantees used in refundable financing of innovation in micro, small and medium-sized enterprises	2019	Cunha Schmidt, Richard; Hoffmann, Michelle; Gaia
4	Does open access to academic research help small, science-based companies?	2020	ESabry, Ekhasan; Sumikusa, Koichi
5	Role of strategic management for employee engagement and skill development for start-ups	2020	Kulkarni, Praveen; Mukherjee, Rohit; Ingtagaj, Sanjev
6	Leveraging supply integration, mass customization and manufacturing flexibility capabilities and the contingency of innovation orientation	2022	Jafari, Hamid; Ghaderi, Hadi; Estami, Mohammad H.; Malik, Mohsin
7	Servitization maturity model: developing distinctive capabilities for successful servitization in manufacturing companies	2022	Kimta, Koji; McAlone, Tim C.; Ogata, Keiji; Pigozzo, Daniele C.A.
8	Strategic business decision making: the use and relevance of marketing metrics and knowledge management	2021	Melović, Boban; Dabić, Marina; Vlačović, Milica; Črović, Dragana; Backović, Tamara
9	Chinese entrepreneurs and workers at the crossroad: the role of social networks in ethnic industrial clusters in Italy	2022	Biggeri, Mario; Bratto, Lisa; Caloffi, Annalisa; Zhou, Huanhui
10	Innovations in veterinary markets: opinion leaders' social capital	2021	Kulikov, Ignat; Barner-Romosten, Wilhelm; Ivanova-Georgieva, Maria; Tsvetkova, Anastasia; Heikkinen, Magnus; Wikström, Kim
11	In-store technologies to improve customer experience and interaction: an exploratory investigation in Italian travel agencies	2022	Dini, Mauro; Splendiani, Simone; Bruni, Laura; Pinciarelli, Ennio
12	Market-driven management of start-ups: The case of wearable technology	2022	Oyghurali, Miliat; Abubakar, A. Mohammed; Fadhil, Moham
13	E-commerce in the internet-enabled foreign expansion of Polish fashion brands owned by SMEs	2022	Witek-Hajduk, Marzanna; Katarzyna, Gruszczyńska; Anna; Malgorzata; Napiórkowska; Anna
14	Mobilising finance and achieving early growth in new technology-based firms: a legitimacy perspective	2022	Rannikko, Heikki; Buffat, Mickaël; Haksson, Anders; Löfdén, Hans; Tommiska, Erno T.
15	Loyalty program activity: make B2B customers buy more	2019	Kwiatk, Piotr; Thanasi-Bogi, Marzela
16	Digital organisational readiness: experiences from manufacturing companies	2021	Machado, Carla Gonçalves; Wierath, Mats; Almström, Peter; Ericson Öberg, Anna; Kurban, Marjan; AlMushalah, Sultan
17	Intelligent materials: a review of applications in 4D printing	2017	Li, Xin; Shang, Jianzhong; Wang, Zhou
18	A cyber situational awareness model to predict the implementation of cyber security controls and precautions by SMEs	2021	Renard, Karen; Ophoff, Jacques
19	Ethical framework for IoT deployment in SMEs: individual perspective	2022	Vermann, Mikko; Rantanen, Minna M.; Harkko, Ville
20	The entrepreneurship ecosystem in the ICT sector in Qatar: local advantages and constraints	2020	Ben Hassan, Tarik
21	Impacts of innovation type SMEs R&D capability on patent and new product development	2018	Kim, Minsoo; Kim, Ji-eung; Saeng, Yeong-ahn; Lim, Kiang-sun
22	The impact of information and communication technology and internal market orientation blending on organisational performance in small and medium enterprises	2021	Karakov, Sergey; Ruiz-Alba, José L.; Muñoz, María M.
23	Opening up to startup collaborations: open business models and value co-creation in SMEs	2022	Ghezzi, Antonio; Cavallo, Angelo; Sarnai, Silvia; Rangone, Andrea
24	Online branding strategies of family SME wineries: a Hungarian-German comparative study	2022	Faunovic, Ivan; Obermajer, Nina; Kovari, Edit
25	The impacts of intellectual capital on financial performance and value-added of the production evidence from Chile	2021	Acuña-Ospina, Christian; González, Oscar Contreras
26	Market-oriented business model for SMEs' disruptive innovations internationalization	2021	Sundström, Agneta; Hyder, Aimal S.; Chowdhury, Dhanul Huda
27	Extended contextual validation of stakeholder approach to firm technology adoption: moderating and mediating relationships in an innovation eco-system	2022	Doe, Joshua Kofi; Van de Wetering, Rogier; Honyenuga, Ben; Versendaal, Zhen
28	Innovative capability, strategic goals and financial performance of SMEs in Ghana	2018	Donkor, Jacob; Donkor, George; Nana Agyekum; Kankam-Kwarteng, Collins; Adoo, Eunice
29	Supply chain drivers, partnerships and performance of high-tech SMEs	2018	Razaei, Jafar; Ort, Roland; Trott, Paul
30	SMEs motivations for CSR: an exploratory study	2020	Grinstad, Siv Marina Flac; Glavne-Geo, Richard; Fjerholt, Berbro Elisabeth
31	Logistics 4.0 in warehousing: a conceptual framework of influencing factors, benefits and barriers	2022	Pierotti, Sara; Bestides Santonoz, Roman Felipe; Bremer, Peik; Beer, Jakob Emanuel
32	The physical internet as a new supply chain paradigm: a systematic literature review and a comprehensive framework	2020	Treibmaier, Horst; Mirkovski, Kristijan; Lowry, Paul Benjamin; Zacharia, Zach G.
33	The impact of digitalization on business models	2018	Bosman, Harry; Nikou, Shahrokh; Molina-Castillo, Francisco J.; de Reuver, Mark

34	Fortune favours the digitally mature: the impact of digital maturity on the organisational resilience of SME retailers during COVID-19	2022	Robertson, Jandrić, Bitha, Ehsani, Walker, Bernard, Woodworth, Russell, Balzarova, Michaela
35	The impact of digital technologies on business models: insights from the space industry	2022	Alcini, Davide; Latronico, Lovetta; Pellegrini, Luisa
36	Digitalization in small and medium enterprise: a parsimonious model of digitalization of accounting information for sustainable innovation ecosystem value generation	2022	Pham, Quang Huy; Vu, Kien Phuc
37	Digital servitization strategies for SME internationalization: the interplay between digital service maturity and ecosystem involvement	2022	Kolagar, Mital; Reim, Wiebke; Parida, Vinit; Sjödin, David
38	From strategic goals to business model innovation paths: an exploratory study	2018	Heikkilä, Marikka; Bouwman, Harry; Heikkilä, Jukka
39	An exploratory study of innovation strategies of the internet of things SMEs in South Korea	2017	Shin, Dong-Il
40	The use of Twitter for innovation in business markets	2020	Cripps, Helen; Singh, Ashay; Mejlott, Thomas; Salo, Jari
41	Factors affecting the performance of Indonesian special food SMEs in entrepreneurial orientation in East Java	2019	Hutahayan, Benny
42	Digital supply chain model in Industry 4.0	2020	Garay-Rodrigo, Claudia Leticia; Martínez-Flores, Jose Luis; Smith, Wade P.; Caballero-Morales, Santiago Omar; Albaladejo-Alcaraz, Alejandra
43	Small and Medium Enterprises (SMEs) facing an evolving technological era: a systematic literature review on the adoption of technologies in SMEs	2022	Zamani, Seydeh Zahra
44	Boosting innovative business ideas through hackathons: The "Hack for Travel" case study	2022	Franco, Stefano; Preziosa, Angiolino; Petruccielli, Antonio; Messeri
45	Building SMEs' resilience in times of uncertainty: the role of big data analytics capability and co-innovation	2022	Casullo, Maria Vincenza; Montora, Raffaella; Douglas, Alexander
46	The impact of market orientation on innovativeness: evidence from Yemeni SMEs	2020	Alhakimi, Wail; Mahmoud, Mohammed
47	Strategic capabilities for business model digitalization	2022	Menchini, Fernando; Russo, Pasquale; Tadeu, Slavov; Toppo; Nascimento Borges, Souza, Rodrigo Paiva
48	Going digital: case study of an Italian insurance company	2021	Pisani, Galena
49	Food supply chain management: systems, implementations, and future research	2017	Zhong, Ray; Xu, Xun; Wang, Lihui
50	The digital transformation of Swiss small and medium-sized enterprises: insights from digital tool adoption	2022	Kraft, Corin; Lindeque, Johan P.; Peter, Marc K.
51	Research on the impact of digital finance on the innovation performance of enterprises	2022	Jiang, Ziyi; Ma, Guojian; Zhu, Wenyue
52	Servitization and performance in the business-to-business context: the moderating role of Industry 4.0 technologies	2022	Bortoluzzi, Guido; Charvatić, Marija; Romanello, Rubina; Tabacco, Rubenica; Veglio, Valerio
53	Industry 4.0 in food processing: drivers, challenges and outcomes	2022	Romanello, Rubina; Veglio, Valerio
54	Barriers constraining the growth of and potential solutions for emerging entrepreneurial SMEs	2022	Khan, Muhammad Asif
55	Market-oriented CSR implementation in SMEs with sustainable innovations: an action research approach	2020	Sundbom, Agneta; Hyder, Aimal S.; Chowdhury, Ehsanul Huda
56	Logistics 4.0 measurement model: empirical validation based on an international survey	2022	Dallasega, Patrick; Wozniak, Marvet; Sarkis, Joseph; Topayawong, Korakot; Yaiboubhat
57	"It's a new game out there": e-commerce in internationalizing retail SMEs	2020	Hidari, Sara Meilin; Rovina Nordman, Emilia; Toloday, Daniel; Özbek, Nurgül
58	Digital twins: a state-of-the-art review of its enabling technologies, applications and challenges	2021	Hu, Weihe; Zhang, Tongzhou; Deng, Xiaoyi; Liu, Zhenyi; Tan, Jianrong
59	The impact of customer performance on IMC outcomes: firm size moderation in the inter-country context	2021	Bulkooskaya, Vira; Lorch-Andrus, Joann; Alarcón-del-Arco, María-del-Carmen
60	An exploration of the applicability of Lean Startup in small non-digital firms: an effectuation perspective	2022	Solamani, Sam; van Eck, Tijl; Kievit, Henk; Koolemeijer, Kitty
61	Business model innovation in small- and medium-sized enterprises	2019	Müller, Julian Markus
62	Adopting a digital transformation strategy to enhance business network commons regeneration: an explorative case study	2020	Zoppellotto, Alessio; Bullini Oriandi, Ludovico; Rocognoli, Cecilia
63	International open innovation and international market success: an empirical study of emerging market small and medium-sized enterprises	2022	Zahoor, Nadia; Khan, Zaher; Anjan, Ahmad; Khan, Huda; Tarba, Shlomo Yedida
64	The role of innovation ecosystems in Industry 4.0 adoption	2021	Matt, Dominik T.; Molinaro, Margherita; Ozes, Guido; Pedrini, Giulio
65	Information technology and E-accounting: some determinants among SMEs	2022	Thottoli, Mohammed Muneer; Ahmed, Essia Ries

In the analysis of the articles selected, we found the impact of adopting Big Data on a business entity. As for what we found, there was an impact on Market Performance, Innovation, Growth, Experience, Knowledge, and Competitiveness. In Image 1, the impact of Big Data adoption on business entities is also explained regarding the definition and measurement of this impact in Table 2.

IMAGE 1
The impact of big data adoption on business entities



TABEL 2
Definition and measurements of the impact of big data adoption

Nº	IMPACT	DEFINITION AND MEASUREMENT
1	Market Performance	Refers to the end results of these policies—the relationship of selling price to costs, the size of output, the efficiency of production, progressiveness in techniques and products, and so forth.
2	Innovation	Feasible relevant offering such as a product, service, process or experience with a viable business model that is perceived as new and is adopted by customers.
3	Growth	The process through which an organisation expands
4	Experience	Entrepreneurial experience, the process understanding customer needs, building products that customers desire, and validating the viability of business.
5	Knowledge	An ability or skill to developed through consistent exposure to entrepreneurial activities.
6	Competitiveness	A company's ability to achieve its mission and able to compete with competitors

Then, we also compare it with the findings from the study by Deng et al. (2022) by asking whether the impact of Big Data adoption is among the factors that influence crowdfunding success. Image 2 illustrates the factors that influence crowdfunding success when these factors are also the impact caused by Big Data adoption as it is shown in Image 1. In the mapping variables, we found that there were 20 out of 94 articles in the research by Deng et al. (2022) which supports the impact of Big Data adoption on the determinant of crowdfunding success.

IMAGE 2
Impact of big data adoption to determinat of crowdfunding success

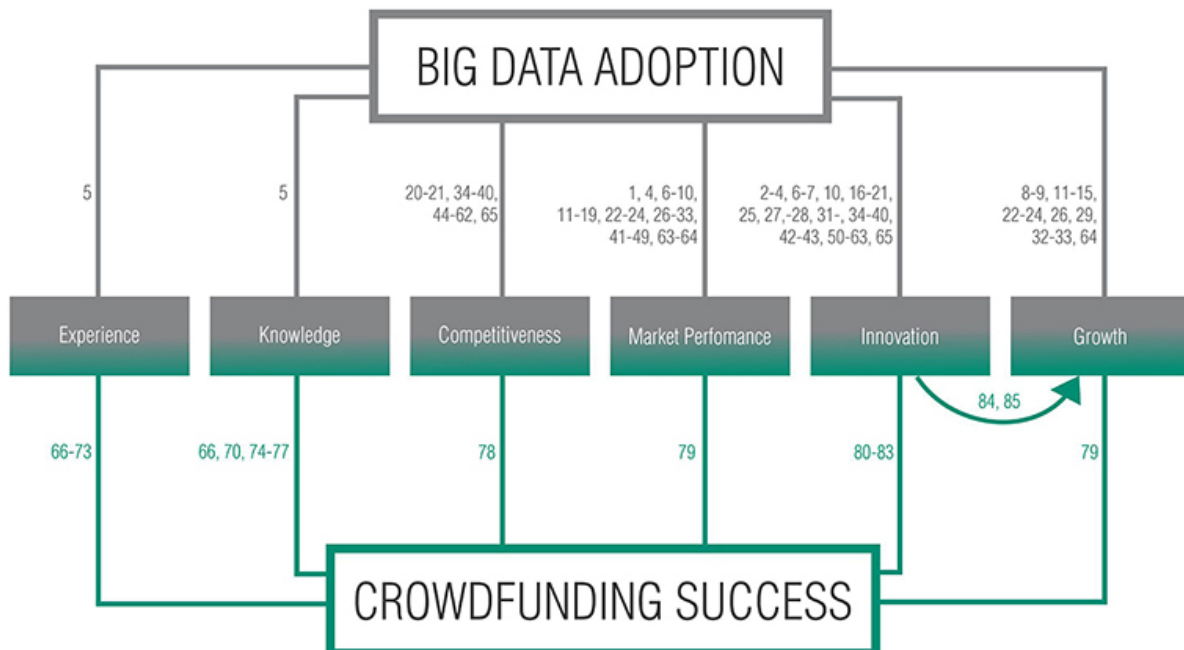


TABLE 3
List of determinant crowdfunding success articles from the research of Deng et al 2022

NO	TITLE	YEAR	AUTHOR
66	Equity crowdfunding founder teams: Campaign success and venture failure.	2021	Cookley J, Lacroz A, Linares-Zagana JM
67	Guarant, trust and reward-based crowdfunding success: A Chinese case	2019	Zhao I, Viniq T
68	Understanding the importance of interaction between creators and backers in crowdfunding success. <i>Electronic Commerce Research and Applications</i>	2018	Wang N, Li Q, Liang H, Yu T, Ge S
69	The impact of soft information extracted from descriptive text on crowdfunding performance.	2020	Jiang C, Han R, Xu Q, Liu Y
70	Resolving information asymmetry: Signaling, endorsement, and crowdfunding success.	2017	Courtney C, Dutta S, Li Y
71	Is crowdfunding different? Evidence on the relation between gender and funding success from a german peer-to-peer lending platform	2014	Berastinika N, Schäfer D
72	The role of multidimensional social capital in crowdfunding: A comparative study in China and US	2014	Zheng H, Li D, Wu J, Xu Y
73	Project description and crowdfunding success: An exploratory study	2018	Zhou MJ, Lu B, Fan WP, Wang GA
74	Linguistic style and crowdfunding success among social and commercial entrepreneurs.	2016	Parhankangas A, Renko M
75	Adverse incentives in crowdfunding	2017	Hildebrand T, Puri M, Rocholl J
76	How social movements influence crowdfunding success	2019	Hsieh H-C, Hsieh Y-C, Vu THC
77	Third-party signals in equity crowdfunding: The role of prior financing.	2020	Kleinert S, Volkmann C, Grünhagen M
78	The effects of money saliency and sustainability orientation on reward based crowdfunding success.	2021	Chan HF, Moy N, Schaffner M, Torgler B
79	On equity crowdfunding: Investor rationality and success factors.	2019	Nitani M, Riding A, He B
80	Crowdfunding innovative ideas: How incremental and radical innovativeness influence funding outcomes.	2017	Chan CSR, Parhankangas A
81	User entrepreneurs' multiple identities and crowdfunding performance: Effects through product innovativeness, perceived passion, and need similarity.	2018	Oo PP, Allison TH, Sahaym A, Jusarikul S
82	Funders' positive affective reactions to entrepreneurs' crowdfunding pitches: The influence of perceived product creativity and entrepreneurial passion.	2017	Davis BC, Hmieleski KM, Webb JW, Coombs JE
83	The effects of pro-social and pro-environmental orientation on crowdfunding performance.	2021	Von Selasinsky C, Lutz E
84	The effect of virtuous and entrepreneurial orientations on microfinance lending and repayment: A signaling theory perspective.	2015	Missi TW, Neubaum DO, Meyerskens M
85	The role of customer investor involvement in crowdfunding success.	2020	Cornelius PB, Gokpinar B

In Image 2, it can be seen that there are several factors that influence crowdfunding success when these factors are part of the impact of Big Data adoption on business entities. Thus, business people, especially MSMEs, do not need to fulfill all the factors that influence crowdfunding success if they want to apply for funds on the crowdfunding platform. Instead, business people only need to adopt Big Data in their business systems. This includes the fulfilling of several factors that affect crowdfunding success.

In addition to the mentioned factors, in the Big Data literature analyzed, it appears that business entities adopt BD through the use of renewable technology so as to provide effectiveness and efficiency to business operations. Therefore, we concluded that the impact on Big Data adoption also affects how these business entities use the latest technology. Our assumption is that if a business entity is on a crowdfunding platform, potential investors tend to be more interested in business entities that have used the latest technology in their business operations. This is in line with the research by Lima & Araújo (2019) who agrees that technological developments in business entities give potential investors the possibility to be more confident about investing in them. This is confirmed by the research by Butticiè et al. (2021) and Hornuf et al. (2021) who state that technological developments in business entities can provide effectiveness and efficiency in business operations so that potential investors are more trusted to remain sustainable.

Thus, if MSME actors adopt Big Data in their business, then they will have a greater chance of succeeding in obtaining funding on the crowdfunding platform (crowdfunding success) rather than having to consider applying several crowdfunding success factors described in the research by Deng et al (2022). To save time and effort, MSME actors can only adopt Big Data because it already represents 6 factors for crowdfunding success as described in the research by Deng et al (2022).

The adoption of Big Data at the MSME level is achieved by applying renewable technology that can increase business value with effective operational costs (Nasrollahi et al., 2021), such as implementing an accounting system that is integrated with cloud computing and tax/government along with utilizing IoT (Internet of Things) technology) to read marketing trends as well as productivity. A Big Data adoption model like this can increase the competitiveness of MSMEs as well as their financial performance (Maroufkhani et al., 2020).

4. CONCLUSION

This research study reviewed the research by Deng et al. (2022) who describes the factors that influence crowdfunding success, especially MSMEs. Of the many factors found by Deng et al. (2022), we asked whether there is one factor that can influence many factors from the findings of the research by Deng et al. (2022). We are trying to see whether the adoption of Big Data in MSMEs can represent many of these factors.

The findings in this study are that the Big Data adoption in MSMEs has a positive influence on Market Performance, Innovation, Growth, Experience, Knowledge, and Competitiveness in business entities. In addition, it is also in line with technology development in these business entities because basically Big Data is a renewable technology in the current industrial revolution 4.0 era (Maroufkhani et al., 2020; Sen et al., 2016; Wang & Wang, 2020; Willetts et al., 2020).

Next, we try to compare the findings of the influence of Big Data adoption in MSMEs with the factors that influence crowdfunding success in the study by Deng et al. (2022). We found that the Big Data adoption can represent Market Performance, Innovation, Growth, Experience, Knowledge, Competitiveness, and Technology factors on crowdfunding success. If an MSME seeks crowdfunding success, then it will have to adopt Big Data in its business which will provide it with bigger opportunities.

Big Data adoption by MSMEs can be done by implementing cloud computing technology and Artificial Intelligence (AI) in every business operation, such as managing stock or warehouse management which is directly integrated with accounting and sales systems. Besides, other applications can be used, such as the Internet of Things technology in digital marketing activities by using Google Trends.

5. LIMITATIONS

There are limitations throughout the literature review regarding Big Data adoption and crowdfunding success which has been carried out using there are limitations to a manual method fully done by human capabilities. This means that there are possibilities that our analysis has errors or mistakes which may result in the conclusion of this research and which may not be in accordance with the truth.

Also, in this literature review, we only provided determinants or factors that influence crowdfunding success from the research by Deng et al. (2022) and only from factors that have a positive influence on crowdfunding success. The research by Deng et al. (2020) explains that there is a positive, negative, or insignificant influence on one particular factor. However, we only took the positive influence on crowdfunding success. We only focused on our research objectives which questioned whether the Big Data adoption in MSMEs can actually replace the several factors that influence crowdfunding success in Deng et al.'s research (2020) or not.

6. SUGGESTION

Based on these limitations, a suggestion for further research is to refine the literature related to MSMEs Big Data adoption which can be a major factor in crowdfunding success. This is carried out by adding

literature from various other popular journals besides the Emerald Insight Database and to analyze, more helpful applications are required, such as VOSviewer or NVivo. In addition, variations can be carried out for further research, for example by re-questioning whether there is a negative or insignificant influence by Big Data adoption on the impacts mentioned as well as by looking again at the factors that have a negative and insignificant influence on Deng et al.'s research (2022) which deals with the impact of Big Data adoption.

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