



Research article

Determinants of micro, small, and medium-scale enterprise performers' income during the Covid-19 pandemic era

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ABSTRACT

The global Covid-19 pandemic has had a major impact on all aspects of life, even in Indonesia, inflation was 2.96% year on year. The pandemic has also caused a decline in production, sales and income of micro, small and medium enterprises (MSMEs), for which recovery is necessary. This study aims to analyze the influence of factors, age, number of workers, length of business, empowerment, human capital, business capital, type of business, business category, and production technology on the income of MSME performers'. This research was conducted in Surakarta which was determined purposively, with a population of all MSME performers' with various types of businesses. This study uses quantitative methods with survey techniques. Samples were taken randomly as many as 210 MSME performers'. Data were collected through structured interviews with questionnaires and Focus Group Discussion (FGD). The results of multiple regression data analysis using OLS (Ordinary Least Squares) and dummy variables indicate that the factors of age, number of workers, length of business, empowerment, human capital, type of business and production technology have a significant effect on income. The use of manual and modern technology, types of culinary businesses and other businesses have a significant influence on income. Own business capital and those from loan capital, as well as micro and small business category are not significant to income. All production factors together have a contribution to income of 42.53 percent (R^2). The results of the analysis t-test also show that there is a significant difference between the income of MSMEs that have less than 3 employees and have more than 3 employees. While empowerment can increase MSME income, MSME performers who often participate in empowerment and those who rarely participate in empowerment have no different income. The implications of the results of this study can be used as the basis for formulating an empowerment model for MSME performers that is in accordance with pandemic conditions.

1. Introduction

Economic activity in Indonesia is currently a serious concern of the government, related to efforts to maintain economic growth during the Covid 19 pandemic. Micro, Small and Medium Enterprises (MSMEs) are the government's mainstay to be able to survive in the face of various difficulties and fulfill needs. Micro, Small and Medium Enterprises (MSMEs) have an important role in the development of the economy in the community. In fact, during the monetary crisis, it turned out that Micro, Small and Medium Enterprises (MSMEs) had become a safety valve so that the nation's economy had a high level of resilience.

However, the current condition of the Covid 19 Virus is very fast in spreading in Indonesia and has a fairly large impact on economic activities in Indonesia. This condition shows that the COVID-19 pandemic has had

an impact on activities in the service sector and production of the processing industry, including the efforts of MSME performers. The impact of the Covid 19 pandemic on Indonesia's macro conditions was shown in several events: first, in April 2020, around 1.5 million employees were laid off or laid off (Termination of Employment), 1.2 million of which came from the formal sector; and 0.3 million from the informal sector. Likewise, the tourism sector which is quiet, has an impact on the retail industry. Second, the spread of Covid 19 also has an impact on the investment, trade, micro, small and medium enterprises (MSME) sectors because when tourists visit tourist attractions, it is those tourists who usually buy souvenirs, but during the pandemic, tourist visits decreased drastically. Third, inflation occurred in March 2020 of 2.96% year on year, the number of tourists decreased by 6,800 per day, this condition affected Indonesia's macro economy because the aviation sector also declined (Fahriska, 2020).

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In Indonesia, business groups are regulated in Law no. 20 of 2008, this business group is managed by a person or a business entity with total assets owned less than USD 3,500 up to USD 700,000. The existence of MSMEs has a very important role in economic development in Indonesia because it supports income, opens up job opportunities, and prospers society as a whole (Sugiyanto et al., 2019).

The global Covid-19 pandemic has had a major impact on all aspects of life, particularly in the MSME sector. The call to maintain personal and environmental hygiene while reducing activities outside the home, reinforced by the government's policy to stay at home, has narrowed the business market for MSMEs. The Ministry of Cooperatives and MSMEs said that the MSME sector was shaken by the pandemic. MSME performers experienced a lot of decreased turnover, lack of capital, and hampered distribution (Amri, 2020). As a result, MSMEs need the ability to recover (recovery) and desperately need support from outsiders.

The quality of human resources is needed in maintaining a business during the Covid-19 Pandemic. Human capital is the spearhead of a business, because with the knowledge and skills possessed by humans, the problems experienced by a business can be overcome. Human capital is considered important, according to the results of Anwar's (2019) study because it is based on the consideration that women are not only responsible for family reproduction, but also produce commodities and process food, and it is estimated that women are involved in half of the total production. Human capital is the main input in the production process (Ahmed et al., 2020a,b). Human capital is responsible for more than half of the total production value (Bobba et al., 2020). Human capital according to economics is a stock of skills and productive knowledge of people in society (Todaro, 1995).

The failure of a business and the absence of growth in it is because MSMEs do not increase their resource capabilities and skills (Surin et al., 2017). In addition to the human capital aspect, the problem faced by MSME performers is that business sales have decreased, so that capital for production turnover is hampered. Capital is a very vital thing in a business or company. Without capital, a business cannot run as it should. Starting from large businesses and small-scale businesses, they still need capital to run their business (Sudaryono, 2017).

Surakarta City is one of the cities in Central Java Province where most of the people live by trading business. According to data from the Central Statistics Agency (BPS) in 2020, it is stated that the most jobs carried out by the people in Surakarta City are wholesale and retail trade, repair of cars and motorcycles as many as 76,632 people, followed by employment in the manufacturing industry of 60,534 people. According to the Surakarta City Cooperatives and MSMEs Office, the total number of Micro, Small and Medium Enterprises (MSMEs) in Surakarta City is 7,410 units. Almost as many as 53 million micro-enterprises, 98 percent of which are micro-enterprises managed by poor households. So that under normal conditions, they still need support from various parties for their business development (Suminah, 2016), let alone being affected by the COVID-19 pandemic, which cannot be known when it will end.

In order to strengthen and empower MSME performers, it is necessary to study the factors that affect the income of MSME performers during the Covid-19 Pandemic. The theory of producer behavior is a theory that explains how the behavior/behavior of producers to produce products efficiently in their production activities. Producers try to produce good products by regulating the use of their production factors. In this study, the factors referred to are age, number of workers, business capital, type of business, length of business, empowerment, human capital (motivation of business performers and the use of quality raw materials) (Zulkarnain and Nugroho, 2019).

This study aims to determine the effect of age, number of workers, length of business, empowerment, human capital, business capital, technology used by MSME performers, types of culinary businesses, and other types of business on the income of MSME performers during the Covid-19 pandemic. The hope is that the right empowerment program can be implemented to assist MSME performers in running their

businesses during the Covid-19 Pandemic. This study was conducted to see the determinants that affect the income of business performers in the city of Surakarta during the covid 19 pandemic.

2. Research methods

This study was designed to examine the effect of age, number of employees, length of business, empowerment carried out, human capital, sources of business capital, production technology, business category, type of culinary business, and other types of business on the income of MSME performers during the Covid-19 pandemic in Surakarta.

The hypotheses of this research are:

- 1) There are factors of age, number of employees, length of business, empowerment carried out, human capital, sources of business capital, technology used, business category, and type of business on the income of MSME performers in Surakarta.
- 2) There are differences in the use of technology (manual and modern), sources of capital (own capital and other sources), business categories (micro and small businesses), type of business (culinary and others) to income.

This research was conducted in Surakarta City which was determined purposively with the consideration that Surakarta City had the most MSME performers in Solo Raya. The research method used is a quantitative method with a survey technique, which focuses on solving actual problems that exist at the present time. Data collection is carried out in stages as follows:

- 1) Preliminary survey: is an initial study to see the field conditions of the research object, initial information in the form of secondary data from various parties and must be confirmed with field conditions, which includes site surveys and selecting business locations, as well as types of businesses managed by MSME performers in Surakarta. This survey was conducted on 12–23 April 2021 in 5 sub-districts in Surakarta which includes 5 sub-districts namely Banjarsari, Jebres, Laweyan, Kliwon Market, and Serengan. Based on the preliminary survey, data on the number of MSMEs, business locations, and general conditions in the field were obtained. Then the results of this preliminary survey are used to determine the number of respondents and as material for compiling a questionnaire. Based on the data from the preliminary survey, MSME performers are categorized as 6,133 micro-enterprises, 972 small-scale business performers and medium-sized business performers. 305 people. From the existing data, a sample of 210 people was taken, based on Hair (2010) that the sample for survey research was at least 150 respondents. Samples were taken by quota sampling, each district as many as 42 people randomly.
- 2) Structured interviews using questionnaires, to 210 MSME performers in 5 sub-districts. Interviews were held on May 20 – June 23, 2021. The results of interviews with the questionnaire were then tabulated and analyzed descriptively. There are 8 main points in the questionnaire consisting of age, number of employees, length of business, empowerment carried out, human capital, sources of business capital, technology used, type of business, and income.
- 3) Focus Group Discussion (FGD), is an activity held to dig deeper information about the problems and expectations of MSME performers related to production factors that affect the income of MSME performers. The FDGs were held at the offices of each sub-district from 22–24 June 2021. The FDGs were attended by 1 research team as FGD guides, 2 enumerators, and approximately 10 participants per sub-district, as well as 2 representatives from sub-districts.

To analyze the effect of the determinant on the dependent variable, multiple regression analysis was used with dummy variables and OLS (Ordinary Least Squares). The ability of the model to explain the

phenomenon under study is seen from the value of Adjusted R², then it is analyzed partially by looking at the effect of the independent variable on the dependent variable.

The formula for the dummy variable and OLS (Ordinary Least Squares) is given as:

Multiple regression model with n independent variables and n dummy variables can be described as follows:

$$Y = bo + b1X1 + b2X2 + b3X3 + \dots + bnDn + \square$$

Where,

Y = dependent variable

Xi = independent variable to i, Di = dummy variable to i for i = 1,2,3,...n

bi = nonstandard partial regression coefficient to i, for i = 1,2,3,...n

□ = error, predictor error

bo = intercept

3. Results

3.1. Descriptive analysis

3.1.1. Number of MSMEs by sub district and business category

Businesses in Indonesia have certain criteria as regulated in Law no. 20 of 2008 concerning MSMEs. These businesses are divided into three groups based on the number of MSMEs owned. Micro enterprises are productive economic enterprises owned by individuals or business entities in accordance with the criteria for the number of assets owned by micro-enterprises less than USD 3,500. A small business is a productive economic business that stands alone, both owned by individuals and groups and not as a main company branch. The assets owned by small businesses are USD 3,500 – USD 35,000. A medium-scale business is a business in a productive economy that is not part of a branch subsidiary of the center and has assets of up to USD 35,000 – USD 700,000. The description of the MSME performer in Surakarta City is presented in Table 1, distributed by sub-district and business category.

From Table 1, it can be seen that the micro-scale business group is the one with the most significant number with 6,133 business units (82.77 percent), followed by the small-scale business group consisting of 972 business units (13.12 percent), and the medium-scale business group consisting of 305 business units (4.12 percent). The proportion of the three business groups is almost the same in the five sub-districts in Surakarta City, the largest number of business performers is micro-enterprises.

Data on the number of Micro, Small, and Medium Enterprises (MSMEs) in Surakarta City in this study were obtained from Capital Data by the Surakarta City Cooperatives and MSMEs Office in January–December 2020 and January–March 2021. In Solo Raya, it was shown that 70 percent of MSMEs work on their own for their livelihood. Based on a survey (2021) in Surakarta, 492 MSMEs were covering the districts of Jebres 122, Serengan 72, Pasar Kliwon 162, Laweyan 54, and Banjarsari 82 MSMEs that had participated in the Small Business Women Network (JARPUK).

The total number of MSMEs in Surakarta City is 7412. As many as 83 percent of the total MSMEs in Surakarta City are micro-enterprises or as many as 6,135 MSMEs. As many as 13 percent or 972 MSMEs are small businesses, and another 4 percent or 305 MSMEs are medium enterprises. Micro-enterprises are far more abundant than other business category. MSMEs are an alternative source of income for the community. During the Covid-19 pandemic, the company laid off many workers or employees (termination of employment). Businesses operating since before the pandemic that was used as the main source of income were also affected. Large and tight competition is also a challenge for MSMEs. Business performers are required to be creative and innovative in order to be able to compete with other business performers to survive and meet needs during the Covid-19 pandemic.

Table 1. Number of MSMEs by sub district and business category in Surakarta.

Location	Business Category	Number	Percentage (%)
Banjarsari Sub-District	Micro	1,912	81.33
	Small	338	14.38
	Medium	101	4.30
	Total	2,351	100
Jebres Sub-District	Micro	1,622	85.77
	Small	205	10.84
	Medium	64	3.38
	Total	1,891	100
Laweyan Sub-District	Micro	1,158	81.43
	Small	182	12.80
	Medium	82	5.77
	Total	1,422	100
Pasar Kliwon Sub-District	Micro	886	85.36
	Small	129	12.43
	Medium	23	2.22
	Total	1,038	100
Serengan Sub-District	Micro	555	78.39
	Small	118	16.67
	Medium	35	4.94
	Total	708	100
Total Surakarta City	Micro	6,133	82.77
	Small	972	13.12
	Medium	305	4.12
	Total	7,410	100

Source: Cooperative and MSME Service Office, 2021

3.1.2. Number of workers by business category

The number of workers is the amount of labor absorption owned by MSMEs to assist in the production process of their business. This labor absorption is important concerning the national economy because MSMEs can help absorb labor and reduce poverty. According to Law no. 13 of 2003, Labor is everyone who can do work to produce goods or services to meet their own needs and the community. MSMEs are an alternative to reduce the number of unemployed because they are local and can absorb labor. The number of workers is closely related to the business category. Ideally, the bigger the business, the more manpower is needed. The workforce can be seen from the number of working hours of employers. Working hours have a positive influence on business volume. This means that the higher the working hours, the higher the capacity of products created for sale (Prawira et al., 2019). Sumarsono (2013) also states that if many products are sold, entrepreneurs will increase their productivity and need more workers. The number of MSME workers based on business categories can be seen in Table 2.

Based on Table 2 regarding the percentage of the number of workers in micro-enterprises in Surakarta City, most micro-enterprises have a small workforce. As many as 98 percent of micro-scale SMEs have a small workforce, around 0–16 workers. As much as 1 percent of micro-scale SMEs have a workforce that is classified as medium, namely 17–33 workers. As much as 1 percent of micro-scale SMEs have a large workforce, namely 34–50 workers.

Regarding the percentage of the number of workers in small businesses in Surakarta City in Table 2, it can be seen that most small-scale MSME performers have a small number of workers. As many as 98 percent of small-scale MSME performers have a small workforce, namely 0–34 workers. As many as 1 percent of small-scale MSME performers have a workforce that is classified as medium, namely 35–69 workers. As much as 1 percent of small-scale MSME performers have a large workforce, namely 70–104 workers.

Regarding the percentage of the workforce in medium-sized enterprises in Surakarta City in Table 2, it can be seen that most of the middle-

category MSME performers have a small number of workers. As many as 92 percent of middle-category MSME performers also have a small workforce, namely 0–37 workers. As many as 5 percent of middle-category MSME performers have a workforce that is classified as medium, namely 38–75 workers. As much as 1 percent of middle-category MSME performers have a relatively large workforce, namely 76–113 workers.

Based on Table 2 regarding the percentage of the workforce in medium-sized enterprises in Surakarta City, it can be seen that most of the middle-category MSME performers have a small number of workers. As many as 92 percent of middle-category MSME performers also have a small workforce, namely 0–37 workers. As many as 5 percent of middle-category MSME performers have a workforce that is classified as medium, namely 38–75 workers. As much as 1 percent of middle-category MSME performers have a relatively large workforce, namely 76–113 workers.

3.1.3. Distribution of MSME performers' age

Age is one element of the respondent's identity that can affect their business activities. Distribution of MSME performers' age can be seen in Table 3.

The results in the field on Table 3 show that most of the MSME performers are of middle age. A person's age is a standard of self-maturity. The older a person's ages, the more his emotions settle, the more painstaking and diligent in managing his business, feeling in the right business field, and not switching to other businesses. Lindaan et al. (2016) explained that age level affects a person's ability to carry out activities and concepts of thinking. At a young age, most will seek experience or choose a more prestigious type of work and are still unstable in determining the field of work. Business is an alternative income and support in old age or retirement. Experience in managing MSMEs is also a success factor, where older people are more experienced, such as looking for cheaper raw materials, product marketing, and communication experience in finding customers.

The respondents in this study amounted to 210 people with unspecified gender. Most of the respondents' last education was high school/equivalent. Most of the respondents' residence status is their own. The age of the youngest respondent is 19 years, and the age of the oldest respondent is 87 years. Young respondents certainly have a stronger physical condition than older respondents. Age can also affect the level of adjustment to changing conditions including technological sophistication. Young business performers have one advantage compared to old-age entrepreneurs: using technology to support the business they run. It is not uncommon for business performers who are classified as young to use technology or social media to help promote their business so that the general public is in great demand so that the use of technology and social media can support business productivity and business income. Information technology adoption (IT) is believed to provide benefits for MSME to

Table 2. Number of workers by business category in Surakarta.

No.	Categories of MSME	Total of MSME workers	Percentage (%)
1	Micro	6133	
	(0–16 workers)	6120	98
	(17–33 workers)	9	1
	(34–50 workers)	4	1
2	Small	972	
	(0–34 workers)	958	98
	(35–69 workers)	7	1
	(70–104 workers)	7	1
3	Medium-scale	305	
	(0–37 workers)	281	92
	(38–75 workers)	15	5
	(76–113 workers)	9	3
	Total	7410	100

boost online sales (Chowdhury et al., 2020). The necessity of a small company to implement the information technology adoption to compete in the global market (Setyawati et al., 2014).

3.1.4. UMKM business performers distribution based on human capital

Human capital is a combination of knowledge, skills, motivation, and one's ability to carry out their duty to achieve goals. Human capital distribution can be seen on the Table 4 below.

Based on Table 4 of human capital in Surakarta City, it can be seen that the level of human capital for MSMEs is moderate. Human capital in this study includes the motivation of MSME performers in carrying out the business they run, and having a positive attitude in using raw materials. The majority of MSMEs in Surakarta have human capital in the medium category, which is 63.8 percent. This condition means that MSME performers still need relevant training and assistance to increase the motivation of MSME recovery performers to run their businesses, such as online marketing training (Novanda et al., 2021). The pandemic also requires business performers to be able to innovate in business, respond to existing changes so that businesses continue to run smoothly.

Technology is a fundamental tool, machine, method, process, activity, or idea that facilitates human activities (Kearsley and Shneiderman, 1998). Production technology is the entire method or object used by business performers to facilitate their business production activities. In this study, production technology is divided into three parts, namely manual, semi-manual, and (modern) technology. The results in the field show that the majority of MSMEs in Surakarta City still use manual and semi-manual production technology. Only a few have used modern technology. The use of technology in business production is very important because it helps business performers simplify and reduce business operational costs. According to Cahyono et al. (2020), the application of appropriate technology is able to produce a production technology package that can increase production capacity and income.

3.1.5. Distribution of business capital sources for MSMEs

Business capital is used to establish or run a business in the form of money, goods, or energy (Dobija and Kurek, 2004). Based on the research that has been carried out, it can be seen that the business capital owned by MSME performers in Surakarta City mostly comes from their capital and their capital with the help of loans. There are only 9 MSMEs performers in the city of Surakarta who have business capital loans because they feel burdened when repaying loans. MSMEs have the principle not to make loans as much as possible and as little as possible using their capital. If they have economic difficulties, the alternative is to make loans to family or relatives who do not have an interesting system, and the installments can also be more flexible.

Table 5 shows that most of the sources of MSME business capital come from their own capital. The number of MSME performers whose business capital comes from bank loans, the percentage is written in brackets. There are also MSME performers who have the principle of not making borrow, especially to banks and the like, because they hold on to religious beliefs. One of the perpetrators of MSMEs in Surakarta City as a respondent in this study also uses a customer loan system. This method is carried out in a convection business. It works with the customer providing capital in goods, namely rolls of cloth, as a form of down payment (DP).

Most MSMEs are borrowing from BRI in the KUR (People's Business Credit), PKK (Empowerment and Family Welfare), and cooperative

Table 3. Distribution of MSME performers' age in Surakarta.

Category (year)	Frequency	Percentage (%)
Young (19–41)	70	33.4
Middle (42–64)	124	59.0
Old (65–87)	16	7.6
Total	210	100

Table 4. Micro, small, medium-scale business performers distribution based on human capital in Surakarta.

No.	Category	Frequency	Percentage (%)
1.	Low (33–44)	58	27.6
2.	Medium (45–56)	134	63.8
3.	High (57–68)	18	8.6
	Total	210	100

programs. According to Mukoffi and As'adi (2021), MSME performers can run their businesses if they have sufficient capital. The amount of capital owned by each business performers, if too little, will complicate his business, especially if the capital he has is not his capital. It will increase the financing burden.

3.1.6. Business length for MSMEs performers'

Based on the results of the study, it can be seen that most MSMEs in Surakarta City have been running their business for more than 10 years, which is an average of 15 years, so they feel the changes that have occurred in their business from before the pandemic to the time of the Covid-19 pandemic.

Table 6 shows that the majority of MSMEs have been in business for under 17 years, although some have been in business for more than 50 years. Based on the results of the study, it can be seen that most MSMEs in Surakarta City have been running their business for more than 10 years, which is an average of 15 years, so they feel the changes that have occurred in their business from before the pandemic to the time of the Covid-19 pandemic. There are also MSME performers who have just started their business during the pandemic for the last 2 years. New businesses start a business during a pandemic because they have lost their jobs due to the pandemic, such as layoffs. One of the agribusiness performers in this study admitted that his current business had been started in 1999 and stopped in 2014 because he got a job as an employee in Surabaya. After the pandemic, he was laid off and started his business again. MSMEs have just started after the pandemic to meet their needs. The length of the business determines the experience (Asmie, 2008). The longer the effort, the better the quality of the business (Chiiya and Roberts-Lombard, 2012).

3.1.7. Category business MSME performers'

Business-category is a level of business to distinguish business levels based on the value of assets owned by the business. Based on Law no. 20 of 2008 concerning MSMEs that businesses with assets (excluding land and buildings of business premises) < USD 3,500 belongs to the micro-business category, assets > USD 3,500 – USD 35,000 included in the small category, assets > USD 35,000 – USD 700,000 belongs to the middle category.

Research results, on Table 1 show that most of the MSME businesses in Surakarta City are micro-scale businesses. Another small part is small and medium-sized businesses because starting a micro business does not need to use very large capital. The goal of MSME performers in Surakarta City is mostly just to survive. Business development requires considerable capital and manpower, while the capacity of MSME performers is quite limited. According to Agustriyana et al. (2021), the management of

Table 5. Distribution of business capital sources for MSMEs in Surakarta.

No.	Source of Capital	Frequency (People)	Percentage (%)
1.	Owner's equity	150	71,42
2.	Own capital and loans from family and or relatives	48	22.85
3.	Bank loan	12	5,71
	Total	210	100.0

Table 6. Distribution of business length for MSMEs in Surakarta.

No.	Business Length	Frequency (People)	Percentage (%)
1.	Business Length (<17 year)	135	64.3
2.	Business Length (17.1–34 year)	52	24.8
3.	Business Length (34–52 year)	23	11.0
	Total	210	100.0

micro-enterprises is carried out thoroughly so that it is more of a choice as a business forum that generates economic value.

This business can also be the first choice because it does not need to spend large enough capital on starting it. Based on the research carried out, it is known that most of the MSMEs in Surakarta City started their business in the 1990s and early 2000s. The longest business in this research started in 1971, and some are just starting in 2021. The year of starting a business can also determine the quality of business products. According to Nainggolan et al. (2016), not a few businesses that have been around for a long time but still have low incomes, even though ideally, the longer the business is undertaken, the higher the income level because experience and mastery of business skills are more creative and innovative.

The business category is part of the classification system in the form of type or group, which is a classification or type of business (Lambert and Davidson, 2013). In the research that has been carried out, it can be seen that most of the MSME performers in Surakarta City are included in the category of culinary and handicraft business types, while in the agribusiness, and other business categories, are relatively few. The type of culinary business is the most chosen by MSME performers because food is a basic human need (primary need), and its implementation is easier than other types of business. The main capital of MSME performers in running their business is the willingness and expertise or skills following the fields of interest and mastery in the fields of culinary, handicrafts, agribusiness, and others. According to Ananda and Susilowati (2017), MSMEs are labor-intensive and do not require certain specific requirements such as the level of education, the expertise (skills) of workers, and relatively little business capital, and the technology used tends to be simple.

3.1.8. Distribution of MSME performers by empowerment level

Empowerment is an effort made to build capacity by encouraging, motivating, and raising awareness of the potential of the community so that they can be independent (Paredes et al., 2019). Based on the field research that has been carried out, it can be seen that the types of empowerment activities that took place during the pandemic in Surakarta City were in the form of counseling, webinars, socialization, on-line competitions, guidance, and talk shows.

The implementers in the program are Shopee, Disperindag, Co-operatives and MSME Service, BRI, Gojek, and the Diocese. Empowerment programs were rarely carried out during the pandemic due to health protocol policies and limited technological facilities. The frequency in units of days during the pandemic, most MSME performers in Surakarta City participated in the empowerment program was 40 days. MSME performers who participated in the empowerment program explained that they benefited from the empowerment program in terms of the main information, although with limitations. According to Luttrell et al. (2009), empowerment in a process is focused on increasing organizational capacity or increasing group participation. When viewed from the results, empowerment is focused on improving the economy and access to economic resources.

Based on Table 7, the level of empowerment of MSME performers in Surakarta City can be seen that the level of empowerment during the pandemic is relatively low. There are as many as 176 respondents included in the low category (13–24) or 83.8 percent of the total 210 respondents. A total of 32 respondents were included in the moderate category (25–36) or 15.2 percent of the total 210 respondents. A total of 2 respondents were included in the high category (37–48) or 1 percent of

the total 210 respondents. Most of the respondents are included in the low category as many as 176 respondents.

The empowerment of MSME performers is still relatively low because few business performers participate in the implementation of empowerment programs during the pandemic due to the decreasing intensity of empowerment programs. In addition, due to restrictions on activity activities so that empowerment is carried out online. Some business performers are still limited in internet access. During the pandemic, types of empowerment program activities are carried out, such as training, webinars, counseling, and guidance held by both the government and the private sector. The government includes the Department of Industry and Trade (Disperindag) and the Office of Small and Medium Enterprises Cooperatives in Surakarta, while the private sector includes Bank Rakyat Indonesia (BRI), Bank Jateng, Shopee, and Gojek.

The level of empowerment is assessed from several aspects, including aspects of planning, implementation (material), post-empowerment program, and evaluation. The involvement of business performers in planning aspects of empowerment programs is still relatively low. The material is delivered through audiovisual (youtube). As a result, some participants benefited, but some felt less useful because the material did not match what was needed.

In implementing offline empowerment, it has been carried out well, but in terms of sustainability, assistance is still low. The evaluation of the empowerment program is still low due to the low involvement of business performers in the evaluation. The impact of empowering some business performers is to gain new knowledge, but the program's sustainability is still relatively low so that the benefits of the program also do not last long.

3.2. Empirical result

3.2.1. The results of the analysis determinants of MSME performers' income

This research explains independent variables including age (X1), number of workers (X2), length of business operation (X3), empowerment (X4), human capital (X5), business capital (X6), and uses dummy variables including production technology (D1), micro-scale business (D3), small-scale business (D4), culinary business type (D5), and other business types (D6). The dependent variable studied is MSME performers' income during the Covid-19 pandemic. The effect of independent variables on dependent one (MSME performers' income), either partially or simultaneously, is presented in Table 8.

Considering the data presented in Table 8 concerning the result of functional analysis on the MSME performers' income, the following points can be stated. The F-statistic value is 13.890, more than t-table $\alpha = 0.05$ ($13.890 > 1.80$), meaning that the model used to describe the phenomenon of employers' income has been appropriate. Independent variables including age, number of employees, length of business, empowerment, human capital, venture capital, production technology, type of business simultaneously affect dependent variables, MSME performers' income.

The adjusted R² value shown in Table 5 is 0.4253, meaning that the independent variables studied to contribute to the dependent one. Age, number of employees, length of business, empowerment, human capital, venture capital, production technology, type of business simultaneously affect the variable of income during the Covid-19 pandemic by 42.53 percent (the rest is affected by other variables).

Table 7. Distribution of MSME performers by empowerment level in Surakarta.

No.	Category	Frequency	Percentage (%)
1.	Low (13–24)	176	83.8
2.	Medium (25–36)	32	15.2
3.	High (37–48)	2	1
	Total	210	100

The t-test is used to see the effect of parsial independent variables: age, number of employees, length of business, empowerment, human capital, venture capital, production technology, type of business partially on the dependent one (MSME performers' income).

Table 8 shows the result of the functional analysis on income. It can be seen that the t-statistic value of the age variable is 6.414 more than the t-table (1.97208) or p-value less than α ($0.000 < 0.05$), meaning that there is a significant effect of age on MSME performers' income. He coefficient of regression value is 19.876. The coefficient of regression value is 19.876 and positive, indicating that each one-unit increase in constant value will increase income by USD 1.3913.

Based on the result of functional analysis on income presented in Table 8, it can be seen that t-statistic $7.372 > t$ -table 1.97208 and p-value $0.000 < 0.05$ (α). Thus, it can be interpreted that employee (worker) affects the MSME performers' income significantly. The coefficient of regression for the employee variable is 339.98, meaning that each one-unit increase in constant value will in the number of workers increase MSME performers' income by USD 0.0238.

From the data shown in Table 8, particularly for the length of business, it can be seen that t-statistic $1.888 < t$ -table 1.97208 and p-value $0.059 > 0.05$ (α), meaning that the length of business operation does not affect the MSME performers' income significantly. The regression coefficient is -9.4732, meaning that each one-unit increase in constant value will reduce the MSME performers' income by USD 0,0007.

The data in Table 8, particularly in empowerment, indicates that t-statistic $3.626 > t$ -table 1.97208 and p-value $0.000 < 0.05$ (α), meaning that empowerment significantly affects MSME performers' income. The regression coefficient is -101.73, meaning that each one-unit increase in constant value will reduce MSME performers' income.

Human capital, it can be seen that t-statistic $2.903 > t$ -table 1.97208 and p-value $0.004 < 0.05$ (α), meaning that there is a significant effect of human capital on MSME performers' income. The regression coefficient is 28.203, meaning that each one-unit increase in constant value will increase the income of MSME performers by USD 0.002.

From the data shown in Table 8, particularly in the point of business capital, it can be seen that t-statistic $7.801 > t$ -table 1.97208 and p-value of $0.000 < 0.05$ (α), meaning that there is a significant effect of the business capital on MSME performers' income. The regression coefficient is

Table 8. Result of functional analysis on MSME performers' income in Surakarta during Covid-19 pandemic.

Variable Model	Heteros (dep.var)		
	Coeff. of Reg.	t-stat.	p-value
X1 = Age (yr)	19.876	6.414	0.000
X2 = Employee (person/day)	339.98	7.372	0.000
X3 = Length of Business Operation (yr)	-9.4732	-1.888	0.059
X4 = Empowerment (times),	-101.73	-3.626	0.000
X5 = Human capital (index)	28.208	2.903	0.004
X6 = Business Capital (index)	181.19	7.801	0.000
Dummy technology			
D1 = Manual technology,	-257.09	-3.645	0.000
Dummy capitalization			
D2 = self-capital,	-75.025	-1.366	0.172
Dummy business category			
D3 = micro-scale business	479.54	1.522	0.128
D4 = small-scale business,	-415.99	-1.311	0.190
Dummy business typeD5 = culinary	985.77	7.550	0.000
D6 = others	1002.6	8.143	0.000
Constant adjusted R ²	-5504.6	-7.153	0.000
	0.4253		
	F = 13.890*)		

Notes:*) = significant at $\alpha 5\%$; t-table (n = 210), df = 197 $\alpha = 5\% = 1.960$.

181.19, meaning that each one-unit increase in the constant value will increase MSME performers' income by USD 0.0127.

In this research, most MSME performers still use production technology manually. Considering the result of analysis shown in Table 8, particularly in the point of manual technology, it can be seen that t-statistic $3.645 > t\text{-table } 1.97208$ and $p\text{-value } 0.000 < 0.05 (\alpha)$, meaning that there is a significant effect of manual technology on MSME performers' income. The regression coefficient is -257.09, meaning that each one-unit increase in the constant value will decrease the MSME performers' income by USD 0.018.

Considering the data shown in Table 8, particularly in the self-capital, it can be seen that t-statistic $1.366 < t\text{-table } 1.97208$ and $p\text{-value } 0.172 > 0.05 (\alpha)$, meaning that there is not a significant effect of the self-capital on MSME performers' income.

Considering the data shown in Table 8, particularly the point micro-scale business, it can be seen that t-statistic $1.522 < t\text{-table } 1.97208$ and $p\text{-value } 0.128 > 0.05 (\alpha)$, meaning that there is no significant effect of the category micro business on MSME performers' income. Likewise with the small business category, it can be seen that the t-statistic $1.311 < t\text{-table } 1.97208$ and $p\text{-value } 0.190 > 0.05 (\alpha)$, meaning that there is no significant effect of the small business category on the income of MSME performers'.

The Result analysis data shown in Table 8, culinary business type, it can be seen that, t-statistic $7.550 > t\text{-table } 1.97208$ and $p\text{-value } 0.000 < 0.05 (\alpha)$, meaning that there is a significant effect of the culinary on MSME performers' income. The regression coefficient is 985.77, meaning each one-unit increase in the constant value will increase the MSME performers' income by USD 0.069.

Table 8, in the point business others, shows that t-statistic $8.143 > t\text{-table } 1.97208$ and $p\text{-value } 0.000 < 0.05 (\alpha)$, meaning that there is a significant effect of the other business types on MSME performers' income. The regression coefficient is 1002.6, meaning that each one-unit increase in the constant value will increase the MSME performers' income by USD 0.0702.

3.2.2. The results of the different t-test from the number of employees, length of business, and empowerment on the income of SMEs

The results of the analysis in Table 9 show that the average number of MSME workers is less than 3 people, the income is U\$ 0.0117, while for the number of MSME workers more than 3 people the income is U\$ 0.0929.

From the results of the t test, it can be seen that there is a significant difference between the income of MSMEs that have less than 3 employees and have more than 3 employees.

The results of the analysis in Table 11 show that the average business duration is less than 15 year, the income is USD 0.016, while for the length of business more than 15 years the income is USD 0.063.

From the results of the t test, it can be seen that there is no significant difference between the income of MSMEs that have a business duration more than 15 years compared to businesses that have a duration of less than 15 years.

From the results of the t test, it can be seen that there is no significant difference between the income of MSMEs that have an empowerment level less than two and an empowerment level of more than equal to two.

4. Discussion

The effect of the age of MSME performers' on MSME income can be seen in Table 8. Age is the length of time an individual lives from birth to

Table 9. The results of the mean of the number of employees on the income of SMEs.

Model	t-stat.	Sig. (p-value)	Mean (U\$)
Employees less than 3	-2.419	0.001	0.0117
Employees more than 3	-2.041	0.044	0.0929

Note: Significance at 5%.

Table 10. The results of the different t-test of the number of employees on the income of SMEs.

		Levene's Test for Equality of Variances	
		F	Sig.
income for SMEs	Equal variances assumed	11.433	.001
	Equal variances not assumed		

Note: Significance at 5%.

today, measured using year unit. The concept of age in business affects the range of business relations in which entrepreneurs in younger or older age tend to widen their social value in doing business, while in contrast, entrepreneurs in middle age are managing their business in more economically and less socially way (Brieger et al., 2021). Younger MSME performers have a more muscular physique and adapt more quickly to pandemic conditions, particularly technology development. However, old age also has added value in business operations because the older one is more experienced. Lindaan et al. (2016), explains that age affects an individual's ability to do activities and thinking concept. The age of MSME performers in Surakarta can be seen in Table 3.

Most people will look for experience or choose a more prestigious job at a young age and still determine the job field unstably. Business becomes an alternative source of income in old age. However, pandemic condition changes such perspective because the reduction of worker number in large companies or called job termination makes business an alternative source of income today. Employers make a job termination policy and reduce staff salary to reduce operational costs to prevent loss (Juaningsih, 2020; Shafi et al., 2020). This was previously supported by Gielnik et al.'s (2017) research that the young age of entrepreneurs affects income, which is indicated by the creative thinking of young people. Entrepreneurs can model the focus of opportunity as a mediator in doing business. An entrepreneur is also more willing to take risks at a young age, even though the probability of failure and success is 50 percent versus 50 percent.

Effect of worker number on MSME performers' income can be seen in Table 8. According to Law No. 13 of 2003, a worker is everyone capable of producing goods (products) or services to meet his/her own need or community's need. MSMEs are alternatives to reduce the unemployment rate, as it is local and can absorb workers. According to Engle et al. (2021) that increasing labor efficiency and productivity can reduce costs during production. In addition, the proportion of skilled workers is more considered and reliable than unskilled workers. Many workers can support the acceleration of production, but many unskilled workers will produce different production. Based on Tables 9 and 10, it can be seen that the income of MSMEs differs between MSMEs that have less than 3 employees and those with more than 3 people.

Effect of the length of business operation on MSME performers' income can be seen in Table 8. Length of business operation is the length of time the employer has passed through in running its business. The longer a business had operated, the more stable a business could stand (Khamis et al., 2018). Length of business operation does not significantly affect the income during a pandemic for some reasons. This is not in line with research from Mamun et al. (2019) that the length of business will affect income supported by stable production. This is because, in the course of the business, business performers can make failure a valuable experience so that from these problems, they can create a new business order for longer business continuity or stability. During this pandemic, more

Table 11. The results of the mean the length of business on the income of SMEs.

Model	t-stat.	Sig. (p-value)	Mean (U\$)
The length of business less than 15 years	-1.371	0.172	0.016
The length of business More than 15 years	-1.718	0.088	0.063

creative businesses are needed by people in a particular condition. For example, businesses producing motive-cloth masks can rarely be found before pandemic time, but much new business in this field emerges during the pandemic. Another reason is that the old business with limited human resources can neither survive nor adapt to the pandemic. The results of the analysis in Tables 11 and 12 show that the length of business has no effect on MSME income. For MSMEs whose duration of business is less than 15 years and those with more than 15 years of different income.

Effect of empowerment on MSME performers' income can be seen in Table 8. Empowerment is an attempt to build ability by encouraging, motivating, and generating awareness of potency to be independent. The empowered people would have the effective managerial capability and innovative work behavior (Malik et al., 2021). During the pandemic, the empowerment activities held for MSME performers are extension, webinar, socialization, online competition, guiding, and talk show. The program organizers are Shopee, Industry, and Trading Service Office (Disperindag), Cooperative and MSME Service Office, BRI, Gojek, and Keuskupan. An empowerment program is rarely held during the pandemic due to health protocol policy and limited technology facilities. It can be seen in Tables 13 and 14 that empowerment has a significant effect on MSME income. MSME performers who rarely participate in empowerment and those who often participate in empowerment have no different income.

Effect of human capital on MSME performers' income can be seen in Table 8. Human capital is the combination of knowledge, skill, innovation, and an individual's ability to do his/her task, thereby creating value to achieve an objective. The presence of human capital indicates that a company can give appropriate solutions based on the knowledge owned by the people inside the company. In its development, human capital is one of the determinants in the economic growth of a business entity (Rachmawati and Wulani, 2004). The results of the calculated value of the influence of human capital on the income of MSME performers are in line with the statement of Onkelinx et al. (2016). In this study, Onkelinx stated that the relationship between human capital and productivity is significant, meaning that investment in human resources or what is called human capital can continue to increase productivity in a long time period scale. Human capital is one of the initial capitals to increase and develop the productivity and performance of business performers in managing and running their business to increase the income of MSME performers. The human capital aspect in this research includes quality and inexpensive raw materials, using technology in processing and packaging, attending training and counseling, marketing and promotion, and human resources.

Effect of business capital on MSME performers' income can be seen in Table 8. To run a business, according to Sudaryono (2017), we need original capital in a varying amount depending on the size of the business in its beginning period. Capital is an amount of money or a set of commodities used to underlie a job. However, capital is also getting affected by the profitability and growth of a business (Indra et al., 2021). Adequate business capital helps the smoothness of business production. Revathy and Shanti (2016) state that capital is one of the production factors to determine productivity and influence income. It is confirmed by Wirawan et al. (2015) and Yuniartini (2013), also stating that capital significantly and positively affects business income.

Table 12. The results of the different the length of business on the income of SMEs.

		Levene's Test for Equality of Variances	
		F	Sig.
Income for SMEs	Equal variances assumed	4.578	0.334
	Equal variances not assumed		

Note: Significance at 5%.

Table 13. The results of the mean of empowerment on the income of SMEs.

Model	t-stat.	Sig. (p-value)	Mean (US\$)
Empowerment	0.726	0.001	0.049

The frequency of empowerment followed by MSME performance can increase the average income of USD 0.049.

The relationship between MSME capital and income states that business capital significantly influences MSME business development. The greater the capital used and the easier it is to get business capital, it will result in increased business development. Capital also has a significant influence on MSME income where the amount of capital owned affects the level of profit to be obtained. High working capital is the most efficient way to maintain business flow and is able to influence income (Hasanah et al., 2020).

Effect of manual technology on MSME performers' income can be seen in Table 8. Technology is all tools, machines, means, processes, activities, and ideas developed to facilitate human activity. Production technology is all methods and objects used by business performers to facilitate their business production activities. Creative human resources are needed in order to achieve the expected technological commercialization in business (Binsawad et al., 2019). Technology use is essential to business productivity as it helps business performers facilitate the operational process and reduce operational costs. Expedient technology applications can produce production technology packages that can improve production capacity and income.

Effect of self-capital origin on MSME performers' income can be seen in Table 8. Business capital is used to establish and run a business, including money, stuff, and labor. Therefore, to run a business, it does require not only a skill in economic management but also a skill in engaging a relationship with stakeholders (Ahmed et al., 2020a,b). The result shows that the MSME performers' business capital in Surakarta comes primarily from self-capital and self-capital with loan grants, while the full-loan capital is scarce because the MSME performers feel burdened to repay it. MSME performers rarely conduct bookkeeping so that there is no separation between personal money and business money, leading to reduced income because personal money is also used as business capital. According to Mukoffi & As'adi (2021), MSME performers can run their businesses with adequate capital. The too-small size of capital owned by business performers will do their business in trouble. Moreover, if the capital owned is not self-capital, it will increase the financing burden.

Effect of micro-scale business category on MSME performers' income can be seen in Table 8. A micro-scale business is one with asset ownership of less than USD 3,500. Most businesses belong to the micro-scale business category because MSME performers run their businesses on small, narrow, or local scales. Effect of small-scale business category on MSME performers' income can be seen in Table 8. Small-scale business is the one with asset ownership of USD 3,500 to USD 35,000. This business category belongs to a larger category than micro-scale business. Conditions in the field show that the micro and small business category are almost the same, so the results of the analysis shown in Table 8 of MSME income, which include the micro category and the small business category, are no different. This means that the income of MSMEs included in the micro

Table 14. The results of the different of empowerment on the income of SMEs.

		Levene's Test for Equality of Variances	
		F	Sig.
Income for SMEs	Equal variances assumed	1.261	0.263
	Equal variances not assumed		

Note: Significance at 5%.

category and the small business category is the same. For example, the assets of the micro-category MSMEs are USD 3,000, and the assets of the small business category of USD 3,700, the difference in assets is only small, so the sales turnover is also almost the same. However, Wang et al. (2021) found that income was one predictor of higher MSE scores. This is also supported by Zheng et al. (2018) and Shorey et al. (2015) that lower incomes were prone to having a lower mean MSE score.

Effect of culinary business type on MSME performers' income can be seen in Table 8. The business category is the part of the classification system, either type or category, constituting business classification or type. The culinary business type is chosen most widely by MSME performers because food is a basic human need, and its operation is more manageable than other business types. According to Ananda and Susilowati (2017), MSME is a labor-intensive business not requiring certain preconditions like education level, expertise of workers, relatively small business capital, and simple technology used.

Effect of other business types on MSME performers' income can be seen in Table 8. Other business types in this research include craft business and agribusiness. The number of craft businesses and agribusiness studied in this research is smaller than that of the culinary business.

One of the impacts of the Covid-19 pandemic is MSMEs in Indonesia, based on data from the Ministry of Cooperatives, which illustrates that those 1,785 cooperatives and 163,713 MSME performers are affected by the Covid-19 pandemic. Most of the cooperatives affected by Covid-19 are engaged in daily necessities, while the MSME sector most affected is food and beverage (Amri, 2020; Memon et al., 2021).

If MSME performers have a higher level of business income, the individual will have sufficient ability to manage their finances wisely and accompanied by a good understanding of financial management as well. If an individual has the ability to manage his finances but is not used for business purposes, these funds can be used to earn additional income in the use of financial institution products such as investment and insurance (Arianti and Azzahra, 2020).

5. Conclusion and recommendation

The overall business production factors can affect the income of MSME performers. Taking into account the age of middle-aged MSME performers can be said to be of productive age, so it is still very possible to be empowered so that their business can exist again. MSME income can be increased by adding employees, because MSMEs with few and many employees show different incomes. Empowerment can also increase income but MSME performers who often participate and those who rarely participate in empowering their income are no different, for that it is necessary to formulate an empowerment model that is in accordance with pandemic conditions. Human capital which includes the motivation of MSME performers can also affect MSME income. To increase the motivation of MSME performers, it can be done by providing training related to increasing their motivation so that they get back up to manage their business. Business capital, either from own capital or from loans, has no effect on income.

This type of culinary business can increase the opinion of MSME performers compared to other businesses. Culinary businesses in Surakarta are the majority compared to the number of other businesses. In order to empower, it is better to focus on the UMKM type of culinary business.

The findings of this study are not all business production factors can affect the income of MSME performers. The implication is that in this pandemic period, what needs to be intervened is the MSME type of culinary business through empowerment according to their conditions.

Declarations

Author contribution statement

Suminah Suminah: Conceived and designed the experiments; Wrote the paper.

Suwarto Suwarto: Performed the experiments.

Sugihardjo Sugihardjo, Dwiningtyas Padmaningrum: Contributed reagents, materials, analysis tools or data.

Sapja Anantanyu: Analyzed and interpreted the data.

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Data will be made available on request.

Declaration of interest's statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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