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# Analysis of Determinants of Digital Adoption of Small and Medium Micro Enterprises in Surakarta City

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## *Abstract*

The city of Surakarta has grown to become the center of the digital ecosystem in Indonesia. The government has made various efforts to increase collaboration and creativity between various sectors. However, based on the level of digital adoption of micro, small and medium enterprises in the city of Surakarta, it is still low, so policy innovation is needed to increase digital adoption for business actors. This research aims to analyze the influence of business actor characteristics and business characteristics on the level of digital adoption of micro, small and medium enterprises in the city of Surakarta. This research uses cross-sectional secondary data with secondary data sources obtained through the Surakarta City Cooperatives, SMEs and Industry Department. The sampling technique uses purposive sampling. Data analysis methods use univariate, bivariate and multivariate analysis. The research results obtained 2,425 samples, of which 1,821 business units (75.09%) had utilized digital adoption and 604 business units (24.91%) had not yet utilized digital adoption. Business experience, type of business and business capital have a positive and significant effect on the level of digital adoption of micro, small and medium enterprises in the city of Surakarta. Based on the results of this study, the researcher provides recommendations for the Surakarta City government to utilize the role of digital adoption in formulating policies for the empowerment and development of micro, small and medium enterprises in the City of Surakarta because micro, small and medium Enterprises play an important role in economic growth in the City of Surakarta.

***Keywords:*** *Digital Adoption; SMEs; Characteristics of Business Actors; Business Characteristics*

## *Introduction*

Entering the industrial revolution 4.0, digital technology has become one of the main capital needed by Micro, Small and Medium Enterprises (MSMEs) to develop their businesses. The development of the industrial sector which goes hand in hand with technological developments has a positive impact on improving the country's economy(Caballero-Morales, 2021; Räisänen & Tuovinen, 2020)). According to The Association of Southeast Asian Nations (ASEAN) (2022) released by the United Nations Conference on Trade and Development (UNCTAD) in September 2022, Indonesia has the largest number of MSMEs in the ASEAN region. The number of MSMEs in Indonesia will reach 65,465,497 units in 2022. The contribution of MSMEs to GDP (Gross Domestic Product) in 2022 will reach 65%, the contribution of

SME exports to non-oil and gas exports in 2022 will reach 17%. The average absorption of labor in Indonesia by MSMEs during 2015-2022 reached 96.90%, while for large businesses it was only around 3 percent. Based on these data, MSMEs have an important role in economic growth and national investment (Ministry of Cooperatives and SMEs, 2022). According to the We Are Social report (2023), the number of internet users in Indonesia has reached 213 million people in 2023. This number is equivalent to 77% of Indonesia's total population of 276.4 million people at the beginning of 2023.

Based on Presidential Regulation Number 2 of 2022 concerning National Entrepreneurship Development 2021 – 2024, the President of the Republic of Indonesia targets 30 million MSME players to enter the digital ecosystem (On Boarding Digital). According to the Ministry of Cooperatives' Report (2022) in the Working Group on Digitalizing MSMEs Towards a Digital Economy, there are 17.2 million MSME business actors who have On Boarded Digital or around 26.3 percent of all MSMEs in Indonesia. Based on this data, 73.7% of MSMEs still need to be able to On Board Digital.

Based on data from the Central Statistics Agency for 2022, the largest number of MSMEs in Central Java is Surakarta City with 11,157 MSMEs, and the lowest number with Salatiga City is 826 MSMEs. The development of MSMEs in the City of Surakarta in the 2020-2022 period experienced very significant developments. The number of MSMEs in Surakarta City in 2022 will be 11,157, an increase of 306% from 2021 with 3,635. The rapid development of MSMEs in the City of Surakarta is supported through government policies and development, empowerment and acceleration programs involving synergy and collaboration from various stakeholders in the City of Surakarta(Hutasuhut, 2022)

A fundamental part of using digital adoption is the digital marketing aspect(Amjad, 2022; Padula et al., 2015), marketing methods or methods are an important part of how a business is recognized by customers and gets customers. Based on data from the Surakarta City Cooperatives, SMEs and Industry Department, MSMEs that use manual marketing methods dominate at 83.45%. Then digital marketing methods account for 12.95%. Meanwhile, 3.60% of MSMEs use a combination of manual and digital methods (hybrid).

The phenomenon of digital adoption by MSMEs is interesting to study considering that the issue of the level of digital adoption has a quite serious impact on improving the business of MSME players. Research on the determinants of digitalization factors for MSMEs has not been widely studied in Indonesia compared to other developing countries. Sharing Steps have been taken by both the central government and regional governments to support the 30 million MSME Go Digital Movement in accordance with Presidential Regulation no. 2 of 2022 concerning National Entrepreneurship Development 2021 – 2024.

The city of Surakarta has grown to become the center of the digital ecosystem in Indonesia by increasing collaboration and creativity. Ecosystem collaboration platforms and digital infrastructure in the city of Surakarta include the Solo Creative Hub, Solo Techno Park, Hetero Space, Lokananta Records and the Integrated Business Services Center. However, the level of digital adoption for MSMEs in Surakarta City is still low. Thus, this research considers that identifying factors in the level of digital adoption of MSMEs is very relevant for policy implications related to the level of digital adoption in society.

## *Data and Research Methods*

This research was conducted in Surakarta City, where Surakarta City has the largest number of MSMEs in Central Java Province and has a digital ecosystem infrastructure development index in Surakarta City of (57.71%), this percentage is far above the average national digital ecosystem infrastructure development index. amounted to (40.24%) and the average digital ecosystem infrastructure development by city or district in the Central Java Province region was (47.12%). The research population is MSMEs in Surakarta City. The type of research is quantitative by including data

measurements in the form of statistical scale data. Research data using cross-sectional secondary data. Respondents are research objects with criteria determined by researchers. namely respondents aged >15 years, have businesses in the culinary, fashion and craft sectors of Surakarta City and have an income.

The population in this study was 11,157 business units. The technique used in sampling this research is purposive sampling technique. The criteria for determining the sample for this research were micro, small and medium business actors assisted by the Surakarta City Cooperatives, SMEs and Industry Department. Based on this sampling technique, the number of samples (n) was obtained from Cross Section data of 2,425 business units obtained on May 28 2023. The data analysis methods used were univariate analysis, bivariate analysis and multivariate analysis. Multivariate analysis in this study used the logistic regression test.

Logistics(adopt_digitali)= β_0+ β_1 Laki-laki_i+ β_2 Umur_i+ β_3 Pengalaman_i+ β_4 Jenis_i+ β_5 Lokasi_i+ β_6 Omset_i+ β_7 Modal_i+ β_8 Tenaga Kerja_i+ μ_i

## *Research result*

The results of research on digital adoption in Surakarta City show that business actors who have utilized digital adoption are 1,821 business units (75.09%) and business actors who have not yet utilized digital adoption are 604 business units (24.91%). The variables in the univariate analysis are the business actor characteristic variables which include gender, age of the business actor, and business experience. Business characteristic variables include business type, business location, sales turnover, business capital, and number of employees.

The test results of the direct influence of MSME digital adoption factors in Surakarta City are presented in table 1.

Table 1 Test results of the direct influence of MSME digital adoption factors in Surakarta City.

| **Variable** | ***P-Value*** | **Information** |
|---|---|---|
| Male Business Actor | 0.725 | No effect |
| Age of Business Actor | 0.637 | No effect |
| Business Experience | 0.0748 | Influential |
| Type of business | 0.080 | Influential |
| Business Location | 0.193 | Influential |
| Business Turnover | 0.612 | No effect |
| Venture capital | 0.078 | Influential |
| Number of Employees | 0.5825 | No effect |

Source: STATA data processing (2024)

The results of the test of the direct influence of MSME digital adoption factors in Surakarta City are presented in table 4.5, where the first factor, namely the variable male business actor, on the level of digital adoption obtained a p-value of 0.725, which means above 0.25, so the variable male business actor -men are not included as candidates to be analyzed in the logistic regression model. The business actor age variable has a p-value of 0.637, which means it is above 0.25, so the business actor age variable is not included as a candidate to be analyzed in the logistic regression model.

The business experience variable has a p-value of 0.0748, which means it is below 0.25, so the business experience variable is included as a candidate variable to be analyzed in multivariate analysis, in this case using a logistic regression model. The type of business variable has a p-value of 0.080, which means it is below 0.25, so the type of business variable is included as a candidate variable to be analyzed

in multivariate analysis, in this case using a logistic regression model. The next variable is business location, where the business location variable has a p-value of 0.193, which means below 0.25, so the business location variable is included as a candidate variable to be analyzed in multivariate analysis, in this case using a logistic regression model.

The test results of the direct influence of business characteristic factors on the level of other digital adoption, namely business turnover, resulted in a p-value of 0.612, which means above 0.25, so that the business turnover variable is not included as a candidate variable to be analyzed in multivariate analysis, in this case using logistic regression model. Another variable is the business capital variable which has a p-value of 0.078, which means this variable has a p-value below 0.25 so that the business capital variable is included as a candidate variable to be analyzed in the logistic regression model. Another variable is the number of employees variable which has a p-value of 0.582, which means this variable has a p-value above 0.25 so that the number of employees variable is not included as a candidate variable to be analyzed in the logistic regression model.

Table 2 Simultaneous Test Results

| **Model Summary** | |
|---|---|
| Observation | 2425 |
| Likelihood Log | -1355.59 |
| LR chi2(4) | 11,19 |
| Probability > Chi2 | 0.0245 |

Source: STATA data processing (2024)

Based on table 2, the results of the statistical output using the logistic regression model showed that the research sample reflected in the observations was 2,425 business actors assisted by the Surakarta City Cooperatives, SMEs and Industry Department. The chi-square likelihood ratio (LR) test value is 11.19 and has four degrees of freedom, which means it has four predictors or independent variables. The p-value is 0.0245 with alpha=5% (p-value < alpha) which means the model is statistically significant because it has a p-value of less than 0.05. The conclusion is that a set of independent variables significantly influence the dependent variable on the level of digital adoption of MSMEs so it is decided to reject H0.

Table 3 Partial Test Results

| **Variable** | **Coefficient** | ***P-value*** | **Information** |
|---|---|---|---|
| Business Experience | 0.305 | 0.071* | Significant |
| Type of business | -0.112 | 0.033** | Significant |
| Business Location | -0.018 | 0.577 | Not significant |
| Venture capital | -0.172 | 0.079* | Significant |
| Constant | 1,480 | 0,000*** | Significant |

Source: STATA data processing (2024)

Note: Numbers in brackets indicate the standard deviation value ** is significant at alpha=0.01; **significant at alpha=0.05; *significant at alpha=0.10.

Presented in table 3 regarding the partial test results of the independent variables in the model shows that business experience has a coefficient of 0.305 and a p-value of 0.071 (less than 0.1), therefore rejecting H0 which means that business experience has a significantly positive effect on the level of digital adoption of MSMEs. The longer the MSME business experience, the higher the MSME digital adoption level. The business type variable has a coefficient of -0.112 and a p-value of 0.033 (less than 0.05), so it rejects H0, which means that MSMEs with culinary business types have a significantly positive influence on the level of digital adoption of MSMEs. Business actors with culinary business types have a higher level of digital adoption than other types of business. Another variable is business location, business location has a coefficient of -0.018 and a p-value of 0.577 (more than 0.10), so accepting H0 means business location has no significant effect on the level of digital adoption of MSMEs. The next variable is business capital, the business capital variable has a coefficient of -0.172 and a p-value of 0.079 (less than 0.10), so it rejects H0, which means business capital has a significantly positive effect on the level of digital adoption of MSMEs. The higher the business capital, the higher the level of digital adoption for MSMEs.

## *Discussion*

The results of this research are in line with studies conducted byNdichu et al. (2019)shows that business experience can help entrepreneurs identify business areas that can be improved through digital technology. Digital adoption increases operational efficiency, reduces costs and increases productivity. Entrepreneurs who have business experience have faced various business challenges and crises. Entrepreneurs can view digital adoption as a tool to increase business resilience, enabling faster adaptation to changing market or economic conditions(Safitri et al., 2022).

The results of this study are in line with researchSidabutar & Siswanto (2024)that the culinary sector has a positive and significant influence on digital transformation. MSMEs with culinary business types have a higher level of digital adoption compared to other types of business because the majority of business actors are engaged in culinary business types, the use of digital marketing through the Shopee Food, Grab Food and Go Food platforms is increasingly growing.(Martha et al., 2023). Other research also concludes that business actors with culinary business types have an obligation to fulfill legalities such as (Business Parent Number, PIRT or BPOM Distribution Permit and Halal Certificate) which are accessed online via the Online Single Submission system(Wijaya et al., 2023).

## *Conclusion*

The research results show that the variables of business experience, type of business and business capital have a positive and significant effect on the level of digital adoption of MSMEs in Surakarta City. The odds ratio value for business experience is 1.031, which means that the longer the business experience a business actor has, the higher the level of digital adoption for MSMEs. The odds ratio value of the business type variable is 0.893, which means that business actors with culinary business types have a digital adoption level of 0.893 greater than business actors with fashion and craft types of business. The odds ratio value for business capital is 0.841, which means that the more business capital you have, the higher the level of digital adoption for MSMEs.

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