International Conference of Multidisciplinary Cel: Proceeding
1 (1), 2024, 229-238

Available Online: https://proceeding.ressi.id/index.php/IConMC

Determinants the use of accounting information systems in micro, small, and medium enterprises: Case study on MSMEs in Semarang City

Widaryanti Widaryanti *, Luhgiatno Luhgiatno, Lies Indriyatni, Septiyana Nurfadila, Anggun Anggun

Sekolah Tinggi Ilmu Ekonomi Pelita Nusantara. Jl. Slamet Riyadi No.40A, Semarang, 50161, Indonesia
* Corresponding Author. Email: wdr.yanti2@gmail.com

Received: 2 April 2024; Revised: 22 April 2024; Accepted: 2 May 2024

Abstract: This research aims to contribute to knowledge-building on microenterprises in emerging economies by assessing the determinants that drive their use of accounting systems. A probabilistic model was developed to determine the likelihood that a micro-firm would adopt an accounting registry system as a function of a series of contingencies and personal characteristics of their owners/managers. Data from micro-small enterprises in Semarang City was used. The findings suggest that accounting knowledge, education level, business life, the scale of business, and motivation influence micro-firms adopting accounting systems. The study contributes to a better understanding of microenterprises and the factors determining the use of accounting systems. The results highlight that public policies fostering microenterprises should facilitate access to technology and external funds. Consistent with previous studies, the authors' findings highlight the importance of training owners/managers on issues related to their business.

Keywords: Use of Accounting System, Accounting Knowledge, Education Level, Business life, Scale Business, Motivation

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are business units managed by individuals and community groups. In MSMEs, business actors are generally the owners and managers of their businesses. Therefore, they are fully responsible for the company being run, and all decisions related to business operations are entirely in their hands. Since the economic crisis, the role of MSMEs can be seen as a safeguard in the process of national economic recovery, both in terms of encouraging the rate of national economic growth and employment.

MSMEs are proven to be able to absorb as much as 97% of the workforce because of their labor-intensive nature, which means they have the potential for large job opportunities and growth and can grow national income. MSMEs, in general, play a role in creating jobs, encouraging economic growth, and accelerating income equality through business opportunities.

The number of MSME actors is very large and spread in various regions. Based on data obtained from the Semarang City Micro and Small Business License (IUMK), the number of micro-businesses registered in Semarang City in 2023 is 16,485. With this large number, it can be interpreted that micro-enterprises play an important role in economic growth.

Currently, business actors need to have a strategy in an effort to maintain their business to avoid failure and economic crisis; one of the recent economic crises is the result of the COVID-

19 Pandemic. One way that can be done is to make good financial records. Good financial records make it easier for business managers to develop their business in the next period.

Increasing the competitiveness of a company requires the ability to manage good finances. Business owners can use an accounting system to record activities for their business financial management. The obligation to implement good accounting records for MSME actors in Indonesia has been stated in Law Number 9 of 1995 concerning Small Businesses and Tax Law Number 2 of 2007 concerning the Development of Small and Medium Enterprises and Cooperatives.

Implementing financial records to provide financial statements is still difficult for MSME actors. This is due to the weak ability possessed by business actors, especially in terms of knowledge of accounting to manage finances. Another reason that is a problem for business actors not utilizing the accounting system is the complexity of the financial recording process with the accounting system and the assumption that financial statements are less important for MSME actors. In addition, recording with an accounting system consumes more energy and costs than it should.

Based on the background that has been explained and the problems that occur, there are efforts to prove the factors that influence the use of accounting systems for micro, small, and medium enterprises, as well as case studies on micro-enterprises in Semarang City. The reason for choosing micro businesses in Semarang City as the object of research is because the number of micro-businesses in Semarang City is quite large and has various types of businesses. In addition, in practice, many micro-businesses in Semarang City still have not utilized the accounting system as a financial management tool. This study aims to analyze the effect of accounting knowledge, education level, business age, business scale, work motivation, external funds, and accounting knowledge partially or simultaneously on the use of accounting information systems.

Accounting information is basically financial and is mainly used for decision-making, staffing, and implementation of corporate decisions. For financial data to be appropriately utilized by internal and external parties of the company, the data must be in appropriate forms. Accounting information must be used for strategic planning, management supervision, and operational supervision (Efriyenty, 2019). Accounting information is quantitative information about economic entities useful for economic decision-making in determining choices between alternative actions (Jones & Riahi-Belkaoui, 2010).

The accounting knowledge from MSME managers influences the use of accounting information systems in MSMEs. Accounting knowledge is a set of knowledge about information systems that produce financial statements for interested parties about economic activity and company conditions. Accounting knowledge is a set of knowledge about information systems that produce financial statements for interested parties about economic activity and company conditions. Accounting knowledge is information about accounting known by someone in the form of oral and written information (Mardiani, 2019). Accounting knowledge possessed by MSME owners is very influential in using accounting information. Making accounting records that produce accounting information will be easier if the owner has high accounting knowledge. The results of research conducted by (Kaukab et al., 2020) also show that accounting knowledge has a positive and significant effect on using accounting information.

Another factor that affects the use of accounting information systems in MSMEs is the level of education of MSME actors. (Purba & Khadijah, 2020) stated that the higher the level of education of micro, small, and medium enterprises (MSMEs), the more MSME actors apply and explore the use of accounting information in running the business of MSME investors.

In the Law of the Republic of Indonesia article 1 Number 20 of 2003 concerning National Education, the definition of education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious and spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state (Indonesia, 2003). Formal education includes primary, secondary, and higher education (Kaukab et al., 2020). A low level of formal education (primary school through high school education) means that the owner or manager is less likely to use accounting information than a high level of formal education. This is because accounting teaching materials are more commonly given in universities than in lower education. Murniati (Kaukab et al., 2020) found that entrepreneurs with low levels of formal education tend not to have adequate preparation and use of accounting information compared to those with higher formal education.

The business age also influences the use of accounting information systems in MSMEs. The longer a business is run, the more likely it will be to utilize good accounting information for the business being run (Permadi & Fauzi, 2022). Business age is the age or length of time a company is formed and operates (Mardiani, 2019). The research results show that companies established for 11-20 years provide more accounting information. The longer the business runs, the more it will significantly develop positively or negatively. The development of these businesses in the trade and competition climate that occurs in the business world or market, and usually, businesses that are longer established tend to develop more because they already have more experience in running their business. Businesses that are more developed and have more competitors will tend to be more able to utilize accounting information systems.

The use of accounting information systems in MSMEs is influenced by business scale. Business scale is a measure used to reflect the size of the company. Business scale is one indication of the development of a company where a large company will impact the employees involved in it. The increase in employees yearly indicates that the company is growing and developing because large companies will need many employees (Kaukab et al., 2020). Business scale is a measure used to reflect the size of the company. The classification of company size according to Law No. 20 of 2008 is divided into 4 (four) categories, namely micro enterprises, small enterprises, medium enterprises, and large businesses, which are distinguished according to the turnover and assets owned by the company. Business scale is one indication of the development of a company where a large company will impact the employees involved in it.

The increase in employees yearly indicates that the company is growing and developing because a large company will also need many employees. If the scale of the business increases, then the proportion of companies providing accounting and additional information also increases (Kaukab et al., 2020).

Business scale is the company's ability to manage its business by looking at how many employees are employed and how much revenue it earns in one accounting period (Fithoriah & Ari, 2017). According to (Malindar et al., 2023), business scale significantly affects the use of accounting information.

The work motivation of MSME actors also influences the use of accounting information systems in MSMEs. Motivation is giving them the proper guidance or direction, resources, and rewards so that they are inspired and interested in working the way you want. According to Nawawi (Kaukab et al., 2020), it is a condition that encourages or causes someone to do an action or activity that takes place consciously. A person's work motivation depends on the strength of the motivation itself to make a real effort on the motivation in business actors, which can later make them behave when running their business. A business actor needs work

motivation to build his business to grow. This situation also reinforces that high work motivation can be an essential aspect influencing a person's perception of the use of accounting information in their business.

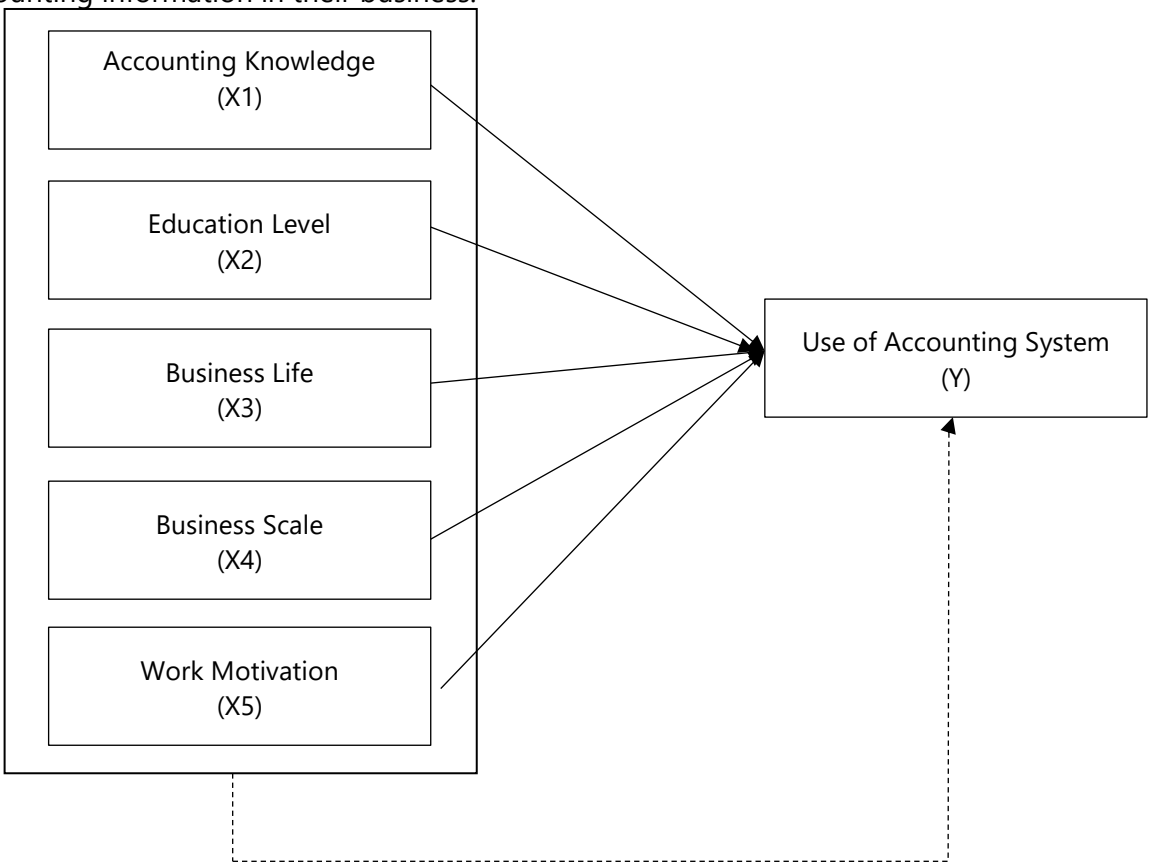

Figure 1. Framework of Thought

METHODS

This study's variables consist of independent variables (independent variables) and dependent variables (dependent variables). The independent variables in this study were accounting knowledge, education level, business age, business scale, and work motivation. The dependent variable in this study is the use of accounting information. Indicators of the use of accounting information refer to (Wibowo et al., 2022): (1) Statutory Accounting Information which consists of cash-in books, cash-out books, accounts receivable books, inventory books, sales books, and purchase books. (2) Budgetary information includes a cash flow, sales, and production budget. (3) Additional Accounting Information consisting of inventory reports, employee salary reports, and production cost reports.

Accounting knowledge can be defined as a set of knowledge that is composed of how to record, classify, and summarize transactions and events of a financial nature in a helpful way and in the form of units of money, interpreting the results of the process in the form of quantitative information used for economic decision making as a basis for choosing various alternatives (Fithoriah & Ari, 2017). Bonner and Walker (Fithoriah & Ari, 2017) state that accounting knowledge indicators are declarative and procedural.

The level of education is the stage of education that is determined based on the level of development of students, goals to be achieved, and abilities developed (Mubarokah & Srimindarti, 2022). Types of education include general, vocational, academic, professional, vocational, religious, and special education. Pathways, levels, and types of education can be

realized through educational units organized by the government, local governments, and communities. In this study, the variable level of education is regulated from the last education taken by business actors. Educational background is given weights of 1, 2, 3, 4, and 5 according to the level of education, starting from the lowest to the highest, measured by an ordinal scale (Lestanti, 2016)

Table 1. Assessment of ordinal scales of educational level variables

No.	Education Level	Score
1.	SD	1
2.	SMP	2
3.	SMA/SMK	3
4.	Diploma (DIII)	4
5.	Bachelor S1 and above	5

This study measures the business's life based on the length of the company's existence and measures it with the Ariska Tri Febriyanti instrument (Mardiani, 2019) with ordinal scale measurements. The age of effort was grouped from lowest to highest, with each group given weights of 1, 2, 3, 4, and 5.

Table 2. Ordinal scale assessment of business age variables

No.	Business Age (years)	Score
1.	1-5	1
2.	6-10	2
3.	11-15	3
4.	16-20	4
5.	>20	5

According to Kristan Candra (Mardiani, 2019), business scale is the company's ability to manage its business, judging from the number of employees and the amount of revenue obtained by the company in one accounting period. The business scale variable in this study was measured based on the number of employees working in micro-enterprises using an ordinal measurement scale.

Table 3. Ordinal scale assessment of business scale variables

No.	Number of Employees (people)	Score
1.	1-5	1
2.	6-10	2
3.	11-15	3
4.	16-20	4
5.	>20	5

Motivation is the key to a successful organization, maintaining continuity of work in the organization in a strong way and helping it survive. Motivation is giving them the right guidance or direction, resources, and rewards so that they are inspired and interested in working the way you want. Indicators for work motivation variables are taken from Sohail (Kaukab et al., 2020), namely (1) Achievement motivation, (2) Motivation for power, and (3) Motivation to be affiliated or friendly.

The population used in this study is micro enterprises registered in Micro and Small Business Licenses in Semarang City, with a population of 16,485. In this study, sampling was carried out using a purposive sampling method. Purposive sampling is a technique with specific considerations, also called aiming sampling (Efriyenty, 2019). The sample selection criteria are

determined as follows: (1) Registered at the Semarang City Cooperative and MSME Office, (2) Registered at the Semarang City Micro and Small Business License, (3) Established ≥ 1 year

The data used in this study is secondary data on the list of micro-businesses in Semarang City, which is taken through the Semarang City IUMK website. This study also used primary data, namely data from responses to questionnaires given to respondents. Data is taken by giving questionnaires to samples containing questions related to the variables studied.

Multiple linear regression is a regression model with one dependent variable and more than one independent variable. Multiple regression analysis determines how much influence the independent variable has on the dependent variable. With multiple linear regression, the regression model of this study was obtained, namely:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + e$$

Information:
Y = Use of accounting information systems in MSMEs
α = Y value if X = 0 (constant)
β1 = Regression Coefficient X1
β2 = Regression Coefficient X2
β3 = Regression Coefficient X3
β4 = Regression Coefficient X4
β5 = Regression Coefficient X5
X1 = Accounting Knowledge
X2 = Education Level
X3 = Business Life
X4 = Business Scale
X5 = Work Motivation
e = *Standart error* (error factor)

RESULTS AND DISCUSSION

This research was conducted at 100 SMEs in Semarang City. The respondents who were the subjects of this study were MSME actors in Semarang City. The sampling was conducted by giving questionnaires to MSME actors in Semarang City as many as 100 respondents. The following is a summary of the questionnaire that meets the criteria for selecting the research sample:

Table 4. Questionnaire Taking Rate

No.	Information	Sum	Presentase
1.	Number of questionnaires distributed	100	100%
2.	Number of questionnaires that did not return	2	2%
Total Number of questionnaires that can be processed		98	98%

Based on Table 5, it can be seen that respondents of this study aged 22-27 years as many as 9 people (9%), aged 28-33 years as many as 17 people (17.3%), aged 34-39 years as many as 30 people (30.6%), aged 40-45 years as many as 17 people (17.34%) people and respondents aged over 45 years as many as 25 people (25.5%).

Table 6. Respondents' Gender

No.	Gender	Frequency	Persentase
1.	Male	33	33,6
2.	Female	65	66,4
	Jumlah	98	100%

Table 5. Age of Respondents

Age of respondents	Sum	Persentase
22 – 27 year	9	9%
28 – 33 year	17	17,3%
34 – 39 year	30	30,6%
40 – 45 year	17	17,34%
Diatas 45 year	25	25,5%

Based on Table 6, it can be seen that 33 male respondents (33.6%) and 65 female respondents (66.4%).

Table 7. Validity Test Results

Item	r Calculate	r Table	Information
Use of Accounting Information System (Y)			
Y.1	0,623	0,1986	Valid
Y .2	0,754		Valid
Y .3	0,790		Valid
Accounting Knowledge (X_1)			
X_1.1	0,631	0,1986	Valid
X_1.2	0,693		Valid
Education Level (X_2)	0,745	0,1986	Valid
Business Life (X_3)	0,543	0,1986	Valid
Business Scale (X_4)	0,498	0,1986	Valid
Work Motivation (X_5)			
X_5.1	0,598	0,1986	Valid
X_5.2	0,684		Valid
X_5.3	0,762		Valid

The output result of the correlation value between the item score and the total score, namely *Pearson Correlation*, compared with the table r-value at the significance level of 0.05 with a two-sided test and the amount of data (n) = 98, then the df value = n – 2 = 96 so that the table r is 0.1986. Therefore all indicators are declared valid.

Table 8. Reliability Test Results

Research Variables	*Cronbach's Alpha*	r- criterion	Conclusion
Use of Accounting Information System (Y)	0,611	0,60	Reliable
Accounting Knowledge (X_1)	0,665	0,60	Reliable
Education Level (X_2)	0, 735	0,60	Reliable
Business Life (X_3)	0,689	0,60	Reliable
Business Scale (X_4)	0,725	0,60	Reliable
Motivation (X_5)	0,784	0,60	Reliable

Table 9. Normality Test Results

One-Sample Kolmogorov-Smirnov Test	
	Unstandardized Residual
Test Statistic	.058
Asymp. Sig. (2-tailed)	.200[c,d]
a. Test distribution is Normal.	
b. Calculated from data.	
c. Lilliefors Significance Correction.	
d. This is a lower bound of the true significance.	

The results of the data normality test with *the One Sample Kolmogrof-Smirnov Test* showed an *Asymp. Sig (2-tailed)* value of 0.200, because the significance was more than 0.05 (0.200 > 0.05), it can be concluded that the residual value is normally distributed.

Table 10. Multicollinearity Test Results

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.831	2.644		1.071	.288		
	Accounting Knowledge	.715	.146	.447	4.900	.000	.802	1.247
	Education Level	.367	.083	.406	4.445	.000	.802	1.247
	Business Life	.554	.079	.531	7.057	.000	.554	.079
	Business Scale	.347	.076	.345	4.582	.000	.347	.076
	Motivation	.650	.176	.446	3.692	.000	.650	.176
a. Dependent Variable: Use of Accounting Information System								

From the results of Table 10, it can be known that the *value of the Variance Inflation Factor* (VIF) of the five variables is ≤ 10, and the *tolerance* value ≥ 0.10 so that the regression model used in this study is free of multicollinearity.

Table 11. Heteroscedasticity Test

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	1.804	1.610	1.121	.266
	Accounting Knowledge	.012	.089	.132	.895
	Education Level	-.019	.050	-.369	.713
	Business Life	.092	.109	.847	.399
	Business Scale	.047	.095	.492	.624
	Motivation	-.137	.107	-1.276	.204

The results of the heteroscedasticity test using the Park test in Table 11 showed that the significance value for the variables Independence of Accounting Knowledge (X1) was 0.895, Education Level (X2) was 0.713, Business Life was 0.399, Business Scale was 0.624 and Motivation was 0.204. The results of the SPSS output display provide parameter coefficients for independent variables that are not significant, so it can be concluded that the regression model does not have heteroscedasticity.

Table 12. t test Result

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	2.831	2.644	1.071	.288
	Accounting Knowledge	.715	.146	4.900	.000
	Education Level	.367	.083	4.445	.000
	Business Life	.554	.079	7.057	.000
	Business Scale	.347	.076	4.582	.000
	Motivation	.650	.176	3.692	.000

The multiple linear regression equation in Table 12 is as follows:

$$\mathbf{Y = 2{,}831 + 0{,}715\ X_1 + 0{,}367\ X_2 + 0{,}554\ X_3 + 0{,}347\ X_4 + 0{,}650\ X_5 + e}$$

The statistical t-test on the variable Accounting Knowledge has a significant effect on the Use of Accounting Information System with a significance level of 0.00 < 0.05, while the t-count

is 4.900 > t-table 1.66660 so that the conclusion H1 can be drawn stating that " Accounting Knowledge affects the Use of Accounting Information System " is acceptable.

The statistical t-test on the Education Level variable has a significant effect on the Use of Accounting Information System with a significance level of 0.000 < 0.05, while t-count is 4.445> t-table is 1.66660 so it can be concluded H2 which states that "Education Level affects the Use of Accounting Information System" is acceptable.

The statistical t-test on the Business Life variable has a significant effect on the Use of Accounting Information System with a significance level of 0.000 < 0.05, while the t-count is 7.057> t-table is 1.66660 so it can be concluded H3 which states that "Business Life affects the Use of Accounting Information System " is acceptable.

The statistical t-test on the Business scale variable has a significant effect on the Use of Accounting Information Systems with a significance level of 0.000 < 0.05, while the t-count is 4.582> t-table is 1.66660 so it can be concluded H4 states that " Business scale affects Use of Accounting Information System" is acceptable.

The statistical t-test on the motivation variable has a significant effect on the Use of Accounting Information Systems with a significance level of 0.000 < 0.05, while t-count is 3.692> t-table is 1.66660 so it can be concluded H5 which states that "motivation affects the Use of Accounting Information System " is acceptable.

Table 13. Simultaneous Test Results F

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	284.146	2	142.073	39.357	.000[b]
	Residual	256.300	71	3.610		
	Total	540.446	73			

a. Dependent Variable: Use of Accounting Information System

b. Predictors: (Constant), Accounting Knowledge, Education Level, Business Life, Business Scale, Motivation

From the statistical F-test results*, a p-value of* 0.00 < 0.05 is obtained, meaning it is significant, while Fcalculate is 39.357 > Ftable is 3.13. Therefore, H6, which states that "Accounting Knowledge, Education Level, Business Life, Business Scale, Motivation simultaneously affects the Use of Accounting Information System," is acceptable.

Table 14. Adjusted R^2 Test Results

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725[a]	.526	.512	1.89996

a. Predictors: (Constant), Accounting Knowledge, Education Level, Business Life, Business Scale, Motivation

b. Dependent Variable: Use of Accounting Information System

The regression analysis results from Table 14 can be found *to be adjusted* R2 of 0.512. This means that 51.2% of the variation in the Use of the Accounting Information System can be explained by five independent variables: Accounting Knowledge, Education Level, Business Life, Business Scale, and Motivation.

CONCLUSION

From the results of the study, it can be concluded that Accounting Knowledge, Education Level, Business Life, Business Scale, and Motivation significantly affect the Use of Accounting Information Systems in SMEs in Semarang City both partially and simultaneously. It is expected that SMEs in Semarang City will maintain and improve SME actors always to maintain

Accounting Knowledge, Education Level, Business Life, Business Scale, and Motivation so that the Use of Accounting Information Systems carried out by SMEs becomes more optimal, for example, by providing training to beginner SMEs and senior SMEs. Further research is expected to add other variables so that other variables that affect the use of accounting information systems in SMEs can be known. Further research is expected to be able to use other methods to examine the influence of the use of accounting information systems, such as interviews.

REFERENCES

Efriyenty, D. (2019). Analisis faktor-faktor yang memengaruhi penggunaan informasi akuntansi pada UMKM Kota Batam. *Consideration of Employee Motivation in the Era of Industry 4.0*, *03*, 123–128.

Fithoriah, S., & Ari, P. (2017). Pengaruh tingkat pendidikan, pengetahuan akuntansi, pengalaman usaha dan skala usaha terhadap penggunaan informasi akuntansi pada usaha kecil menengah (Studi kasus pada pelaku UKM di Jalan Karangjati dan Jalan Pringapus Kabupaten Semarang). *Pharmacoeconomics: Theory and Practice*, *5*(1), 84–84. https://doi.org/10.30809/phe.1.2017.21

Indonesia, U.-U. R. (2003). Sistem pendidikan nasional. *Jakarta: Direktorat Pendidikan Menengah Umum*.

Jones, S., & Riahi-Belkaoui, A. (2010). *Financial accounting theory*. Cengage Learning Australia.

Kaukab, M. E., Nur setya handayani, & Yuwono, W. (2020). Penggunaan informasi akuntansi pada pelaku UMKM. *Jurnal Pendidikan, Sains Sosial, Dan Agama*, *6*(2), 28–41. https://doi.org/10.53565/pssa.v6i2.197

Lestanti, D. (2016). *Pengaruh pengetahuan akuntansi, pengalaman usaha dan motivasi kerja terhadap persepsi penggunaan informasi akuntansi pada pelaku UMKM di Boyolali*. 1–23.

Malindar, B., Sairmaly, F. A., Nifanngeljau, J., & Laratman, P. (2023). Pengaruh pengetahuan akuntansi, sosialisasi standar akuntansi dan skala bisnis terhadap kualitas laporan keuangan UMKM. *Jurnal Akuntansi Trisakti*, *10*(1), 153–168.

Mardiani, S. (2019). Pengaruh tingkat pendidikan, pengetahuan akuntansi, umur usaha dan skala usaha pelaku UMKM terhadap penggunaan informasi akuntansi di Kecamatan Marpoyan Damai. *Jurnal Dinamika Ekonomi & Bisnis*.

Mubarokah, I. H., & Srimindarti, C. (2022). Pengaruh tingkat pendidikan, skala usaha dan pengalaman usaha terhadap penggunaan informasi akuntansi. *Jurnal Akuntansi Profesi*, *13*(1), 163–171.

Permadi, T. A., & Fauzi, I. (2022). Faktor-faktor yang mempengaruhi pemanfaatan sistem informasi akuntansi pada UMKM Kota Medan. *Jurnal Akuntansi Audit Dan Perpajakan Indonesia*, *3*(2), 341–349.

Purba, N. M. B., & Khadijah, K. (2020). Analisis tingkat pendidikan, skala usaha, pendapatan usaha dan pengalaman usaha terhadap penggunaan informasi akuntansi pada pelaku UMKM di Kota Batam. *Jurnal Mutiara Akuntansi*, *5*(2), 79–87.

Wibowo, A. W., Kusmintarti, A., & Eltivia, N. (2022). Analysis and design of inventory accounting information system applications to improve internal control in MSMES Filo Cr Malang. *International Journal of Multidisciplinary Research and Literature*, *1*(6), 660–669.