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Social Media Adoption Among Indonesian Urban farmers: Com-B Model Analysis

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Abstract
This study aims to explore the capabilities and potential of urban farmers in utilizing socialmedia as a tool to support urban farming practices. Through the use of Structural Equation Modeling Partial Least Square (SEM-PLS) analysis method, this study identifies the significant influence of ability, motivation, and opportunities provided by social media on the adoption of social media use in the context of urban farming. The findings show that urban farmers' ability and opportunity to use social media directly influence the level of social media adoption in urban farming. While there was no significant support for the relationship between urban farmers' ability to use social media and motivation to use social media in urban farming, this finding highlights the importance of the opportunities provided by social media in motivating urban farmers to adopt social media in their activities. The implications of these findings can be used to develop more effective strategies in utilizing social media to support urban farming and increase community engagement in sustainable agricultural practices.

Keywords: capability, opportunity, motivation, social media adoption, urban farming

1. Introduction

1.1 The Role of Social Media in Agriculture

Agriculture is an important sector for human life. However, the number of individual farms in Indonesia has decreased by 7.45% from 2013. While the number of millennial farmers amounted to 21.93% of the total number of farmers in Indonesia (Badan Pusat Statistik, 2023). However, the existence of the world's agricultural sector has opportunities. The Food and Agriculture Organization mentions that there are around 200 million urban farming farmers in the world who are able to supply food to 700 million people, which is around 12 percent of the world's population(Production & Food, 2022).

The Ministry of Agriculture, as stated on its website (Kementan, 2021), supports urban farming activities. The website explains that the trend of urban farming is increasing and sales of horticultural seeds have increased fivefold due to the impact of the COVID-19 pandemic which has forced many people to stay at home.

The Indonesian government's policy of Large Scale Social Restrictions (Lockdown) during the Covid-19 pandemic certainly limited people's outdoor physical activities in 2020, thus

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encouraging an increase in the number of social media usage for business purposes or virtual interactions (Frederick & Krisna Maharani, 2021). Social media has reached various sectors, including agriculture. Even on the scale of home farming, social media can make the market bigger because it can reach a wider audience (Likitswat, 2021).

Social media is one of the effective forums for exchanging information. various activities can be published easily so that they can be easily accessed by many people. in this study, researchers saw many phenomena related to the use of social media in agriculture, ranging from sharing experiences, success stories to marketing products or farm products. Social media makes work related to agriculture that was previously not or rarely shown(Riley & Robertson, 2021).In addition, the use of social media by urban farming influencers is significant in disseminating information on specific themes, in previous studies social media was recommended to be more actively used to promote good practices by agricultural advisors(Skaalsveen et al., 2020).

Social media adoption is often associated with business innovation in various fields. The ability to access the internet is an asset to shift the trade of agricultural products from conventional methods through digital marketing(Holton et al., 2023). Social media provides opportunities for urban farmers to promote their crops, products, and share their experiences and processes. Even in the realm of home farming, social media can make urban farming reach a wider audience and customers(Likitswat, 2021). This research is crucial because urban farming not only offers solutions to urban food security issues but also opens new opportunities for millennials to engage in a more modern and innovative agricultural sector. Additionally, the COVID-19 pandemic has significantly altered consumer behavior and trade patterns, where digital technology and social media have become the main tools for marketing and communication in the agricultural sector (Holton et al., 2023; Frederick & Krisna Maharani, 2021). Recognizing the importance of expanding connectivity in this digital era(Holton et al., 2023), does agricultural activities become popular again? This study will analyze how the Capability, Opportunity, and Motivation of urban farmers in accessing social media can provide meaningful interventions in urban farming activities.

1.2 COM-B Model

The COM-B model is part of the Behavior Change Wheel (BCW) framework (Michie et al., 2011a). The COM-B model represents the observation that at any given moment, a particular behavior will occur only when the person in question has the ability and opportunity to engage in that behavior and is more motivated to perform that behavior than any other behavior (Michie et al., 2011a). The COM-B Model of Behavior is used in this study and is used to help analyze and understand what factors influence behavior, in this study the behavior of social media adoption in urban farming activities. Below is the conceptual framework model used in this study to examine the factors influencing social media adoption in urban farming activities. The model consists of three key components: Capability, Opportunity, and Motivation, which interact to generate behavior.

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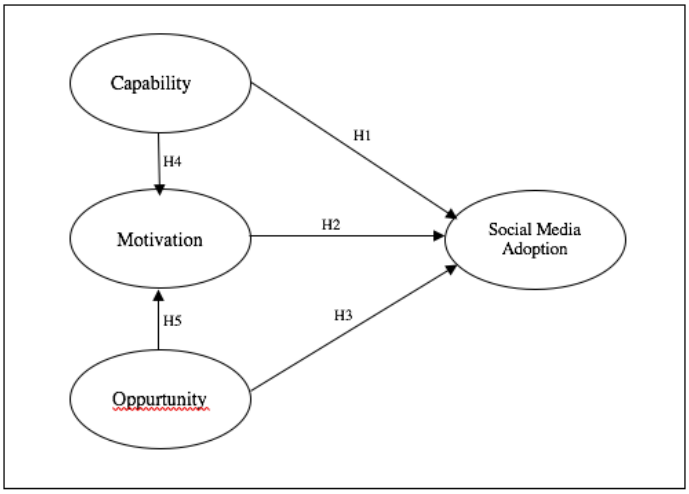

Figure. 1 Research Model

1.2.1 Social Media Capability and Adoption in Urban Farming Activities

Capabilities are the physical and psychological capacities to engage in the behavior in question (Willmott et al., 2021). Physical ability relates to whether an individual has the knowledge and skills necessary to perform the target behavior; and psychological ability relates to an individual's capacity to engage in the cognitive processes of understanding, reasoning, and thinking necessary to perform the target behavior(Michie et al., 2014). The ability to use social media includes the physical ability to use the device and the cognitive ability to understand how social media applications work.

In the COM-B model, capabilities are said to be related to behavior directly and indirectly through motivation as a mediating effect. Therefore, the first hypothesis of this study is:

H1: The capability of urban farmers in using social media strengthens the level of social media adoption in urban farming activities.

1.2.2 Motivation and Adoption of Social Media

Motivation can be thought of as the quantity attached to any behavior permitted by ability and opportunity in a given situation(Michie et al., 2014). Motivation represents an individual's desire or readiness to process information, a force that directs the individual to achieve goals. It reflects the readiness and interest to engage in the elaboration of information (Bettiga et al., 2018; MacInnis et al., 1991).

In theory, there may be millions of these, but in practice in any given situation there are only a small number that will in some way be considered by the brain, either through habit or desire. These behaviors may or may not enter consciousness and indeed most of our actions seem to us to simply flow from stimuli in our environment and our thoughts. COM-B postulates that the motivation to perform (or not) a behavior must be stronger than the motivation to continue as before or engage in competing behaviors(West & Michie, 2020).

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In previous research on the COM-B theory, motivation influences decision-making related to behavior. Therefore, the second hypothesis is:

H2: *The strength of motivation to use social media in urban farming activities affects the adoption behavior of social media for urban farming.*

1.2.3 Opportunities and Adoption of Social Media

opportunities are situations, favorable trends in the environment and can be utilized (David, 2009). Opportunities refer to external factors that exist outside of a person and can activate or encourage certain behaviors, including physical and social factors (Michie et al., 2011b). In other words, according to Michie (2011), Opportunities are defined as external factors that are outside the individual that enable or inhibit a behavior. Previous research shows that the role of opportunity in influencing behavior directly(Howlett et al., 2019).

If opportunities can influence urban farmers' decision to adopt social media, and they perceive it as beneficial, then in this study, the third hypothesis is:

H3: *Opportunities offered by social media to urban farmers strengthen the level of social media adoption in urban farming activities.*

1.2.4 The Influence of Capability on Motivation to Adopt Social Media in Urban Farming Activities

Capability and opportunity are presented as influences that affect the relationship between motivation and behavior, rather than behavior itself. This represents the idea that, in individuals and over time, they act like 'logic gates' where both 'gates' (capabilities and opportunities) must be open for motivation to generate behavior. Disaggregating over time and person, we can think of capabilities and opportunities more quantitatively: the greater the capabilities and opportunities, the more likely a behavior is to occur because the more often the 'gates' open when motivation is present(West & Michie, 2020).

H4: *Urban farmers' capability to use social media increases their motivation to use social media in urban farming activities.*

1.2.5 The Effect of Opportunity on Motivation to Use Social Media in Urban Farming Activities

Both capabilities and opportunities will often influence one's motivation to perform a behavior. In general, the more capable we are, or believe we are, of performing a behavior and the more conducive the environment is to performing it, the more we are likely to want to do it. Conversely, when a behavior is difficult, or we believe it is, we are less motivated to perform it (unless the difficulty itself is part of the attraction)(West & Michie, 2020).

Previous research found opportunity to have an indirect relationship with physical activity (behavior) through the mediating effect of motivation in adult samples(Howlett e.t al., 2019). Later, follow-up studies found opportunities to directly predict motivation and sitting behavior (Howlett et al., 2021). In this study, following the construction of the existing COM-B model shows that opportunities influence the motivation to perform a behavior(Michie et al., 2011).

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This study will also test whether Opportunity has an influence on the adoption of social media in urbanfarming activities. Therefore in this study, the fifth hypothesis is:

H5: *The opportunities that social media offers to urban farmers increases the motivation to use social media in urban farming activities.*

2. Research Methods

2.1 Research Design

This research is a quantitative study aimed at measuring something precisely. Quantitative research is often used for testing theories (Cooper & Schindler, 2013). The quantitative approach will test the influence among variables in the COM-B theory, which is then measured with instruments so that the quantity of data can be analyzed with statistical procedures(Creswell & Creswell, 2018). This research is related to the Capability, Opportunity, and Motivation of individuals involved in urban farming activities who adopt social media as a means to interact and obtain information.

2.2 Population and Sample

Population is the entire set of individuals or entities that are the focus of observation in a particular location(Cooper & Schindler, 2013). Sekaran and Bougie add that the population can consist of people, events, or specific phenomena that attract the attention of research(Sekaran & Bougie, 2016). This research focuses on the motivation and attractiveness of Urban Farming practices in various cities in Indonesia, so the relevant population is individuals or groups involved in gardening or farming activities in urban areas within the productive age range of 18-60 years and actively engaged in urban farming practices and have access to the internet or social media for interaction or seeking information related to urban farming. The sample is a subset of the population selected to be the subject of the research, and the selection process must be done carefully to represent the population as a whole(Cooper & Schindler, 2013). In this study, primary data analysis is conducted using data collected from 269 urban farmers. Purposive sampling technique is employed for selecting respondents to fill out the survey instrument. Researchers will reach out to social media platforms and gardening communities to obtain representative data.

2.3 Measurement of Variable

The questionnaire in this study consists of 26 questions. Variable Capability(Michie et al., 2011b) has 4 questions from 2 indicators (physical and psychological), Opportunity (Michie et al., 2011b)has 7 questions from 2 indicators (social and physical), Motivation (Michie et al., 2011b)has 6 questions from 2 indicators (reflective and automatic), and Adoption (Rogers et al., 2014)with 9 research questions. Measurements are made using a 5-point Likert scale for all questions, where 5 means "Strongly Agree", 4 means "Agree", 3 means "Neutral", 2 means "Disagree", and 1 means "Strongly Disagree".

2.4 Data Analysis Techniques

In this study, Structural Equation Modeling Partial Least Squares (SEM-PLS) is employed to analyze the collected data. SEM-PLS consists of two models, namely the measurement model (outer model) and the structural model (inner model). The measurement model defines how the

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construct variables are measured, while the structural model indicates the relationships between constructs to address research questions or test hypotheses. Testing quantitative instruments includes reliability and validity tests. Reliability testing is conducted using Cronbach's Alpha coefficient, while validity is verified through Convergent and Discriminant validity tests. Hypothesis testing in PLS is performed using bootstrapping method with p-value expected to be less than 0.05, indicating a 5% error level and 95% confidence level.

3. Results

This research is focused on the phenomenon of social media adoption in the context of urban farming activities. Through analyzing the influence of capability, opportunity, motivation, and social media adoption behavior, this study aims to understand the dynamics of interaction between urban farmers and home gardeners with social media platforms in supporting urban farming practices. By involving 269 respondents, this research seeks to depict the extent to which social media plays a role in facilitating the exchange of information, knowledge, and experiences in the urban farming community.

3.1Descriptive Analysis

Descriptive analysis was conducted to identify the characteristics of the distribution of respondents gathered in this study. The characteristics of respondents compiled by the researcher depict the population willing to participate in filling out the questionnaire, namely urban farmers and gardeners aged 18-65 years who use social media for gardening activities. Characteristics of respondents in this study include aspects such as gender, age, occupation, all of which are outlined in Table 1. The survey results show a distribution pattern that can be summarized as follows:

Table1.Classification of Respondents

Gender	**Total**	**Percentage**
Female	78	28,9%
Male	191	71.1%
Total	269	100%
Age	**Total**	**Percentage**
18-25	86	32%
26-32	97	36,1%
33-40	55	20,4%
>40	31	11,5%
Total	269	100%
Profession	**Total**	**Percentage**
Housewife	83	30,9%
Employee	79	29,4%
Student	52	19,3%
Entrepreneur	17	6,3%
Civil servant	7	2,6%
Teacher/lecturer	11	4,1%
Farmer/Gardener	9	3,3%

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Content creator	5	1,9%
Unemployed	6	2,2%
Total	269	100%
Social Media	**Total**	**Percentage**
Instagram	269	100%
Tiktok	118	43,9%
Youtube	120	120%
Facebook	137	50,9%
Total	269	100%

Source: PLS-SEM analysis, 2023

This research reveals significant age variation among respondents involved in urban farming activities through social media. There is a strong interest from the younger generation, especially in the age range of 18 to 25 years, comprising 32% of the total respondents. Additionally, high participation is also observed in the young adult age group, between 26 to 32 years old, accounting for 36% of the total respondents. Furthermore, some respondents aged 33 to 40 years are also interested in urban farming activities, indicating that interest in social media in this context is not limited to the younger generation alone but also involves older age groups.

Furthermore, the respondents' occupational backgrounds also provide valuable insights into the variation of participation in urban farming. The majority of respondents are housewives, followed by employees and students. However, there is also participation from various other professions such as entrepreneurs, civil servants, teachers/lecturers, farmers/gardeners, content creators, and unemployed respondents. This indicates that urban farming through social media attracts interest from diverse segments of society, enriching interaction and collaboration in these activities.

3.2Statistics and Data Analysis

3.2.1 Outer Model Analysis

The preliminary test was conducted to evaluate the relationship between variables and their indicators. This study employs indicators that are reflective in nature, as shown in Figure 2. The outer model with reflective indicators is assessed through evaluations of convergent validity, discriminant validity, as well as reliability measured by composite reliability and other methods.

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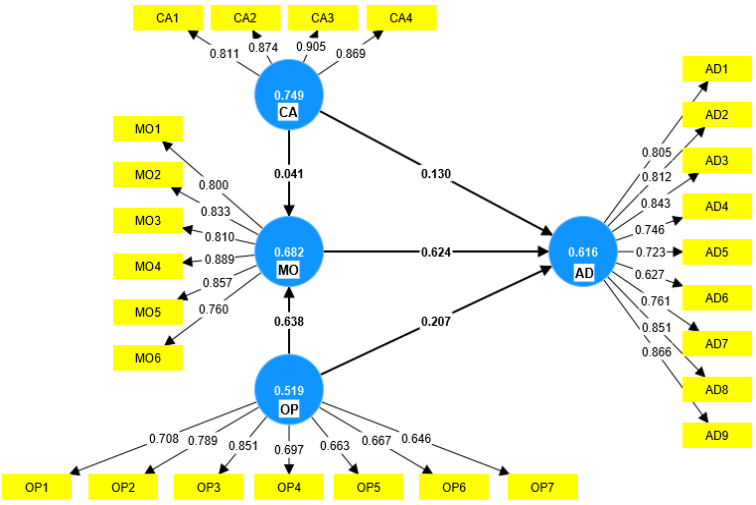

Figure2.Measurement Model

Explanation: CA (Capability), MO (Motivation), OP (Opportunity), AD (Adoption)

Convergent Validity

The fundamental principle of convergent validity in measurement is that the measuring instrument for a concept should demonstrate significant correlations. Practical rules used to assess convergent validity include the requirement that outer loading values should be greater than 0.7, and Average Variance Extracted (AVE) values should exceed 0.5 (Chin, 1995).

Table2.Convergent Validity Reflective AVE

Construct	AVE
CA	0,749
MO	0,682
OP	0,519
AD	0,616

Source: PLS-SEM analysis, 2023

Explanation: CA (Capability), MO (Motivation), OP (Opportunity), AD (Adoption)

Hair et al. (2008) states that a loading value exceeding 0.50 is considered to be particularly significant. Besides being assessed through AVE, convergent validity can also be evaluated using outer loading values as listed in Table 3.

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Table3.Outer LoadingConvergent Validation

	AD	CA	MO	OP
AD1	0.805			
AD2	0.812			
AD3	0.843			
AD4	0.746			
AD5	0.723			
AD6	0.627			
AD7	0.761			
AD8	0.851			
AD9	0.866			
CA1		0.811		
CA2		0.874		
CA3		0.905		
CA4		0.869		
MO1			0.800	
MO2			0.833	
MO3			0.810	
MO4			0.889	
MO5			0.857	
MO6			0.760	
OP1				0.708
OP2				0.789
OP3				0.851
OP4				0.697
OP5				0.663
OP6				0.667
OP7				0.646

Source: PLS-SEM analysis, 2023
Explanation: CA (Capability), MO (Motivation), OP (Opportunity), AD (Adoption)

According to Chin (1995), outer loading values within the range of 0.5 to 0.6 are considered to meet the criteria for convergent validity. In this study, convergent validity values are indicated in Table 3. The data in that table show that all instruments representing each variable in the study have good convergent validity, as their values exceed 0.60. In addition to assessing convergent validity, to test the validity of the measurement tool, discriminant validity testing is required, as explained in Table 4.

Discriminant Validity

This validity is applied when conducting measurements through two different instruments, testing two constructs that are expected to have no relationship with each other. In this study,

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discriminant validity testing is done using the Fornell method, by evaluating the correlation values between constructs.

Table4.Cross-LoadingDiscriminant Validity

	AD	CA	MO	OP
AD1	**0.805**	0.459	0.726	0.637
AD2	**0.812**	0.389	0.719	0.631
AD3	**0.843**	0.474	0.689	0.648
AD4	**0.746**	0.362	0.514	0.467
AD5	**0.723**	0.405	0.475	0.431
AD6	**0.627**	0.322	0.514	0.364
AD7	**0.761**	0.459	0.585	0.512
AD8	**0.851**	0.448	0.732	0.590
AD9	**0.866**	0.430	0.734	0.593
CA1	0.441	**0.811**	0.358	0.518
CA2	0.450	**0.874**	0.335	0.554
CA3	0.456	**0.905**	0.391	0.538
CA4	0.492	**0.869**	0.426	0.546
MO1	0.681	0.400	**0.800**	0.564
MO2	0.674	0.403	**0.833**	0.604
MO3	0.675	0.289	**0.810**	0.529
MO4	0.705	0.301	**0.889**	0.555
MO5	0.711	0.395	**0.857**	0.517
MO6	0.605	0.386	**0.760**	0.515
OP1	0.554	0.597	0.490	**0.708**
OP2	0.582	0.532	0.585	**0.789**
OP3	0.638	0.582	0.628	**0.851**
OP4	0.434	0.393	0.405	**0.697**
OP5	0.385	0.361	0.294	**0.663**
OP6	0.414	0.299	0.376	**0.667**
OP7	0.454	0.277	0.456	**0.646**

Source: PLS-SEM analysis, 2023

Based on the table above, the Capability, Motivation, and Opportunity variables towards Adoption have cross-loading values higher than the cross-loading values towards other constructs. From these analysis results, it can be concluded that the constructs used in this study have good discriminant validity.

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Table5.Fornell-Larcker Discriminant Validity

	AD	CA	MO	OP
AD	0.785			
CA	0.533	0.865		
MO	0.819	0.439	0.826	
OP	0.702	0.623	0.663	0.721

Source: PLS-SEM analysis, 2023

Table 5. shows the square root of the Average Variance Extracted (AVE) for each latent variable, considering that each latent variable exhibits higher values than the correlations between the latent variables and other latent variables. These results indicate that the constructed questionnaire has good discriminant validity, as measured through the Fornell-Larcker approach.

Reliabilities

In this study, reliability testing was conducted using Cronbach's Alpha to evaluate the internal consistency and homogeneity among the items of the investigated variables. A measurement is considered reliable if the Cronbach's Alpha value exceeds 0.70, as per the perspective of Ghazali & Latan (2015). The results of the reliability test can be found in Table 6.

Table6.Reliabilities

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AD	0.921	0.931	0.935	0.616
CA	0.888	0.891	0.923	0.749
MO	0.906	0.908	0.928	0.682
OP	0.846	0.864	0.882	0.519

Source: PLS-SEM analysis, 2023

From the data contained in Table 6, it can be observed that all variable items show a Cronbach's Alpha value that exceeds 0.60. Therefore, it can be concluded that all variables can be considered reliable and suitable for further analysis. The questionnaire used in the study shows a good level of reliability, indicating that all indicators in this study can produce consistent answers if applied to the same subject, even though at different times and conditions.

Inner Model Analysis

Structural model design assessment criteria include:

- R-Square: when the R^2 value shows> 0.75 it can be said to be in the high category, 0.50 to < 0.75 medium value, and> 0.25 to> 0.50 in the low category on endogenous latent variables (Hair et al., 2017).
- Q-Square:when Q^2 which produces a value> 0, it means that the construction has predictive relevance, whereas, when the resulting Q^2 value < 0, it means a lack of predictive relevance (Hair et al., 2017).
- Goodness of Fit. Tanenhaus (2004) said the overall model fit test looks at the GoF value, which is the root of the geometric mean of the AVE multiplied by R^2.

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R-Square

Measurement of the level of variation in changes in the independent variable on the dependent variable is done through the R Square test. The higher the R Square value, the more optimal the prediction model. According to Chin (1995), R Square is considered strong if the value is > 0.67; moderate if > 0.33 but < 0.67; weak if > 0.19 but < 0.37. The results of the R Square test can be found in Table 7.

Table7.R- Square

	R-square	R-square adjusted
AD	0.726	0.722
MO	0.441	0.437

Source: PLS-SEM analysis, 2023

With an Adoption variable R-Square of 0.726 and an Adjusted R-Squared of 0.722, the regression model used in this analysis can explain about 72.6% of the variation in the dependent variable reasonably well. This indicates that the factors incorporated into the model, such as the independent variables, make a significant contribution in explaining the phenomenon observed in the data. As for the motivation variable, with an R-Square of 0.441 and an Adjusted R-Squared of 0.437, the regression model is able to explain about 44.1% of the variation in the dependent variable. The Adjusted R-Squared which is almost the same as the ordinary R-Squared indicates that the addition of independent variables in the model does not provide a significant increase in the model's ability to explain variations in the data.

Q-Square

Q-square analysis using the cross validated redundancy approach, this approach is suggested by Hair et al. (2017). The following Q-square analysis results are presented in the table 8.

Table8.Q-Square

	SSO	SSE	Q^2 (=1-SSE/SSO)
AD	2421.000	1363.590	0.437
CA	1076.000	1076.000	0.000
MO	1614.000	1145.284	0.290
OP	1883.000	1883.000	0.000

Source: PLS-SEM analysis, 2023

In evaluating the Q square for the AD and MO variables in the developed model, we can assess how well the model can explain the variation in these two variables. The analysis showed that the model was able to explain about 43.7% of the variation in the AD variable based on the model predictions. This reflects the model's ability to predict and explain changes in this response variable. Meanwhile, for the mediator variable MO, the analysis shows that the model can explain about 29.0% of the variation in this variable based on the model predictions. This table reflects how well the model can describe the relationship between the exogenous variables and the mediator MO.

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Hypothesis Testing

Hypotheses are tested using the bootstrapping method in PLS, by assessing the p-value. In this context, a p-value of less than 0.05 is required, which indicates that the error rate in this study is 5%, and the confidence level is 95%.

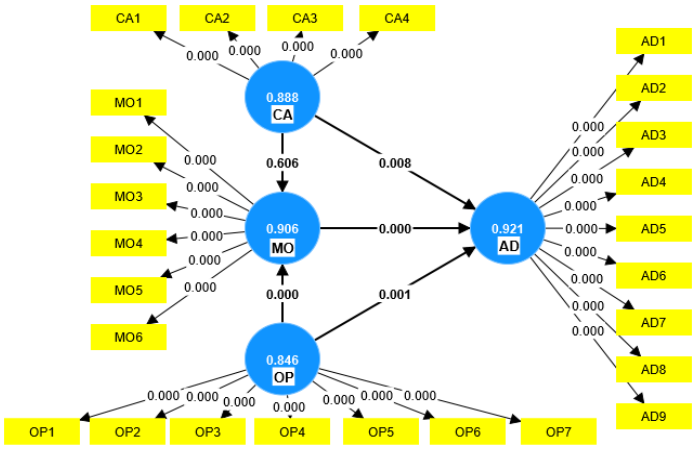

Figure 3. Structural Model
Source: PLS-SEM analysis, 2023

The hypothesis is accepted if it has a t-statistic value greater than its critical value, which is 1.96, and has p-values below 0.05.

Table9.Path Coefficient

	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	
CA -> AD	0.129	0.049	2.64	0.008	accepted
CA -> MO	0.04	0.08	0.516	0.606	**rejected**
MO -> AD	0.622	0.049	12.688	0.000	accepted
OP -> AD	0.21	0.06	3.461	0.001	accepted
OP -> MO	0.64	0.079	8.044	0.000	accepted

Source: PLS-SEM Analysis, 2023

Table 9. shows the results of the direct effect hypothesis analysis indicating that the relationship between urban farmers' ability to use social media and the level of social media adoption in urban farming activities is significant (P-Values = 0.008), thus Hypothesis 1 is accepted. Similarly, the findings show that strong motivation to use social media in urban farming activities has a significant positive influence on social media adoption behavior for urban farming, supported by the low p-value in table 9 (p-value = 0.000), thus Hypothesis 2 is also accepted. Furthermore, the opportunities offered by social media to urban farmers have been shown to strengthen the level of social media adoption in urban farming activities with high statistical significance (p-value = 0.000), thus Hypothesis 3 is accepted. However, the

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relationship between urban farmers' ability to use social media and motivation to use social media in urban farming activities is not supported by the findings of the analysis, thus Hypothesis 4 is rejected. On the other hand, the findings show that the opportunities offered by social media to urban farmers have a significant influence on the motivation to use social media in urban farming activities, as per the low p-value in table 9 (p-value = 0.000), thus Hypothesis 5 is accepted.

Mediation Analysis

Testing the mediation effect is applied by checking the specific indirect effect value through the bootstrapping method. This test is carried out to evaluate the effect of the mediator on other variables. The results of the mediation effect test can be found in Table 10.

Table1.Specific indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
CA -> MO -> AD	0.026	0.026	0.051	0.509	0.611
OP -> MO -> AD	0.398	0.397	0.049	8.123	0.000

Source: PLS-SEM Analysis, 2023

The results of the mediation effect analysis on the CA -> MO -> AD scheme show that the low T-statistic (0.509) may indicate that the mediation effect is not statistically significant. This is also reinforced by the high P-value (0.611), which indicates that the mediation effect does not reach the generally accepted level of statistical significance (p-value < 0.05). On the other hand, the analysis on the OP -> MO -> AD scheme shows an SIE value of about 0.398, with a high t-statistic value of 8.123 and a p-value of 0.000. The high t-statistic value and very low p-value indicate that the mediation effect in this context is highly statistically significant. This indicates that the mediator MO has a strong influence on the relationship between OP variables and AD variables. This analysis provides significant support for the role of mediators in this scheme.

5. Discussion

The findings from this study highlight the significant factors influencing the adoption of social media in urban farming activities. Firstly, it was observed that urban farmers' capability in using social media significantly impacts the level of social media adoption in urban farming practices. This finding aligns with the COM-B model, which posits that capability is a crucial determinant of behavior (Michie et al., 2011a). Enhanced skills and knowledge in using social media platforms enable farmers to better integrate these tools into their farming activities, thereby increasing adoption rates. During the COVID-19 pandemic, dynamic capabilities such as sensing, seizing, and reconfiguring were crucial for overcoming challenges in social media adoption among SMEs(Hu et al., 2023). This suggests that while individual capability is

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important, external support and the ability to adapt strategies are also critical in adopting social mediaon urban farming and promote its activity.

However, the study did not find a significant relationship between urban farmers' capability in using social media and their motivation to adopt it to promote their activities. This suggests that while capability is essential for adoption, it does not directly translate into increased motivation. This aligns with findings from previous research, which demonstrated that although motivation is important, social media adoption is more significantly influenced by the ability to access knowledge, reduce costs, and improve customer relationships(Oyewobi et al., 2023). The Technology Acceptance Model (TAM) suggests that perceived usefulness and perceived ease of use are critical factors that influence individuals' decisions to adopt new technologies (Davis, 1989). In the context of urban farming, farmers may need to see tangible benefits and find the social media platforms user-friendly to be motivated to adopt them fully.

The strength of motivation to use social media was found to significantly influence adoption behavior. This result corroborates the COM-B model's assertion that motivation is a key driver of behavior(Michie et al., 2011b). The stronger the motivation among urban farmers, the more likely they are to adopt social media for their farming activities. This is consistent with findings from previous studies which suggest that motivation, driven by perceived benefits and positive outcomes, enhances the likelihood of technology adoption (Jones et al., 2015).

The opportunities provided by social media also play a crucial role in fostering its adoption among urban farmers. The study found that greater opportunities, such as easy access to social media platforms and supportive online communities, significantly boost adoption levels. This is in line with the concept that environmental factors and opportunities can facilitate behavior change (Michie et al., 2011b). Previous research by Hu et al. (2023) showed that access to online communities and digital resources plays a vital role in encouraging social media adoption among SMEs. This finding supports the view that the external environment and access to resources can dΔrive the adoption of new technologies in both business practices and urban farming(Hu et al., 2023; Oyewobi et al., 2023)

6. Conclusion

This study explored the impact of urban farmers' capabilities in using social media, their motivation, and the opportunities provided by social media on the adoption of social media in urban farming activities. The findings revealed a significant positive relationship between social media capabilities and the level of social media adoption in urban farming. Additionally, the motivation to use social media was found to be a significant predictor of social media adoption. However, the hypothesized relationship between capabilities and motivation was not supported, indicating that increased capabilities in using social media do not necessarily enhance motivation for social media adoption in this context.

7. Limitations and Suggestions

This study has several limitations that need to be considered. Although the sample size of participants is generally adequate for Structural Equation Modeling (SEM), it may still limit the generalizability of the findings, especially if the sample lacks diversity. Self-reported data

introduces potential biases, and the cross-sectional nature of the study restricts the ability to establish causality, making the observed relationships potentially correlational. Context-specific factors, such as local infrastructure and community support, and external influences like governmental policies and economic conditions, may also impact the results. Future research should address these limitations by expanding the sample size and ensuring a diverse participant pool, incorporating longitudinal studies to track changes over time, and differentiating between various social media platforms. Employing a mixed-methods approach can offer deeper insights, while investigating technological literacy, exploring intrinsic versus extrinsic motivations, and using experimental designs to test specific interventions can further clarify the drivers of social media adoption in urban farming. Additionally, considering external influences and utilizing advanced statistical techniques can provide a comprehensive view of the factors affecting social media use in this context.

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