




The Influence of Knowledge Management and Learning Organization on Competitive Advantage in Startups in Malang City with Organizational Creativity as a Mediating Variable (A Study on Startup Companies at Stasiun Malang)

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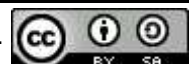
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ABSTRACT

This study explores the impact of learning organization and knowledge management on competitive advantage, with organizational creativity as a mediating variable, within Malang's startup ecosystem. Using a quantitative approach and Partial Least Squares Structural Equation Modeling (PLS-SEM), data were collected from 104 startups. Results reveal that Learning Organization ($\beta=0.289$, $p<0.05$) and Knowledge Management ($\beta=0.260$, $p<0.05$) significantly enhance Competitive Advantage. Both Learning Organization ($\beta=0.249$, $p<0.05$) and Knowledge Management ($\beta=0.523$, $p<0.05$) positively influence Organizational Creativity, which subsequently strengthens Competitive Advantage ($\beta=0.374$, $p<0.05$). Organizational Creativity partially mediates the impact of Learning Organization ($\beta=0.093$, $p<0.05$) and Knowledge Management ($\beta=0.196$, $p<0.05$) on Competitive Advantage. The model shows that 50.9% of what affects creativity in organizations and 65.5% of what affects their competitive advantage can be understood from the data. This highlights how important creativity and knowledge are for staying competitive over time. Findings emphasize the strategic value for startups in integrating learning and knowledge frameworks to maintain competitive positioning. Findings emphasize the strategic value for startups in integrating learning and knowledge frameworks to maintain competitive positioning. These insights apply not just to startups but also to industries like manufacturing, healthcare, and education. By focusing on learning, managing knowledge well, and encouraging creativity, these sectors can boost innovation, work more efficiently, and become more adaptable. This will help them stay competitive over time.



1. Introduction

In the BANI (Brittle, Anxious, Non-linear, Incomprehensible) era and the digital revolution, the digital industry has opened significant business opportunities, including the growth of startups in Indonesia. According to the Minister of Communication and Informatics, Indonesia's digital economy sector contributed 11% to the national GDP in 2019, largely driven by the development of startups. The startup ecosystem in Indonesia has reached its peak with various digital innovations in e-commerce, fintech, edtech, and healthtech, driving economic growth, innovation, and technological advancement. Data from Startup Ranking shows that Indonesia ranks sixth in the world with 2,502 startups as of March 2023, indicating significant global competitiveness, even surpassing Singapore, the Philippines, and Malaysia in Southeast Asia (Annur 2024).

Startups in Indonesia are mainly concentrated in the Greater Jakarta area, with other regions, such as Malang, Bandung, Yogyakarta, and other cities in Java, also showing growth. However, not all startups are thriving evenly across Indonesia. The success of the startup sector in Indonesia, despite the global wave of layoffs, still shows growth with an increase of more than 60% in employee numbers between May 2022 and May 2023. Nevertheless, a major challenge for startups in Indonesia is the difficulty in accessing funding due to unstable global economic conditions, forcing startups to survive with existing resources (Kompas). According to the Indonesian Information and Communication Technology Creative Industry Society (MIKTI), other major issues faced by startups include limited capital, regulations, market access, business strategies, human resources (HR), and facilities. These challenges demand competent HR support to help startups survive in uncertain economic situations (Sivitas 2020).

The threat of an economic recession in 2023 presents a serious challenge for the sustainability of startups. Startups that succeed in achieving competitive advantage are those that can combine innovation, adaptation, and networks to face challenges and seize opportunities (Hendi et al. 2022). Research shows that the concepts of learning organizations and creativity are crucial for the success of startups, especially in facing intense competition in high-tech sectors (Mai and Nguyen 2023); (Huang and Yao 2017). In addition, knowledge management also plays a role in achieving competitive advantage, with research showing the positive impact of knowledge management on organizational success (Dalmarco et al. 2017);(Bresciani et al. 2023);(Rehman et al. 2022).

Creativity also plays an important role in the relationship between knowledge management and competitive advantage. (Shateri et al. 2016) found that creativity can be achieved through effective knowledge management, while (Mazhar and Akhtar 2018) emphasized the role of creativity in building competitive advantage. Unfortunately, research on the relationship between knowledge management and organizational creativity is still limited to the education sector and has not been widely conducted in the startup sector, making it a novel contribution to startup research (Centobelli et al. 2017). The Knowledge-Based View (KBV) approach emphasizes that knowledge is the primary resource that can create long-term competitive advantage (Centobelli et al.

2017) In the context of KBV, a learning organization that continuously updates and develops its knowledge will have a stronger competitive advantage (Huang and Yao 2017). The integration of knowledge management, learning culture, and creativity adds sustainable value to organizations.

Research by (Djamaludin et al. 2022) shows that learning organizations, creativity, and knowledge management all influence each other. Recent studies by (Mai and Nguyen 2023) indicate that factors such as creativity, innovation, and supportive ecosystems are key for the success of startups. They also highlight the importance of support from ecosystems, such as mentorship, incubation programs, funding access, and other forms of assistance that help startups grow. This supportive ecosystem, through relevant education and training, helps enhance the skills of entrepreneurs, which in turn improves the chances of success for startups in a competitive market.

Previous studies show the relationship between learning organization, knowledge management, organizational creativity, and competitive advantage. (Huang and Yao 2017) found that learning organizations positively influence communication and organizational creativity in the high-tech industry. (Shehabat 2020) demonstrated that effective knowledge management can enhance organizational performance and establish a sustainable competitive advantage. (Makabila et al. 2017) found that learning culture, learning processes, and systems thinking positively contribute to the competitive advantage of state-owned companies in Kenya. (Miri et al. 2019) found a significant positive relationship between learning organization and creativity in general hospitals in Shiraz, Iran. (Sutanto 2017) identified that organizational learning ability and creativity positively affect organizational innovation in universities in East Java, Indonesia. However, most of these studies have limitations regarding the generalization of results and focus on a single location or type of organization.

This study makes a unique contribution by examining the burgeoning startup ecosystem in Malang, Indonesia. Unlike previous research focused on established industries, this study explores how startups leverage learning organization and knowledge management frameworks, with organizational creativity as a key link to enhanced competitive advantage. The findings indicate that organizational creativity distinguishes successful startups from failures by fostering innovation, adaptability, and responsiveness to market changes crucial in the fast-paced startup world. Creative startups can innovate, differentiate, and seize opportunities faster than competitors. Conversely, a lack of creativity results in inflexible business models that struggle to adapt, hindering growth. Thus, organizational creativity is essential for startup success in the volatile and competitive modern business environment.

This study aims to examine the effect of learning organization and knowledge management on competitive advantage with organizational creativity as a mediating variable, focusing on startups under the auspices of Station Malang, a startup community that supports digital entrepreneurs in Malang City. Station Malang has developed into a startup accelerator for the Malang Raya area. However, in 2023, the growth of this community has stagnated, making it a relevant case to study how internal organizational

factors contribute to competitive advantage. The combination of learning organization, knowledge management, and organizational creativity offers new insights into how startups can build sustainable competitiveness in a dynamic market. This study highlights that organizational creativity plays a critical role in translating organizational learning and knowledge management into competitive advantage. These findings provide actionable strategies to foster creativity and innovation in their organizations. Implementing a learning-oriented culture and effective knowledge management practices can increase adaptability, accelerate product innovation, and improve business performance. In addition, startup ecosystems such as Station Malang can leverage these insights to design more effective incubation and training programs that empower startups to grow sustainably.

2. Literature Review

Resource-Based View (RBV)

The Resource-Based View (RBV) focuses on internal resources and capabilities to explain organizational profit and value (Mahmood and Mubarik 2020) (Budiarto et al. 2023). It highlights differences in firm performance within industries emphasizing that not all resources are equal. To achieve competitive advantage, firms must identify, develop, and leverage rare, valuable, inimitable, and non-substitutable resources.

Ricardian logic attributes performance heterogeneity to varying resource productivity. Firms must possess superior capabilities to acquire valuable resources, enabling accurate future resource valuation (Barney et al. 2021). This heterogeneity sustains performance differences, as certain resources remain difficult to replicate (Furr and Eisenhardt 2021).

RBV underscores intangible assets, particularly knowledge, as vital for competitive advantage due to their uniqueness and sustainability (Chahal et al. 2020). The Knowledge-Based View (KBV), an extension of RBV, positions firms as knowledge-driven entities (Grant and Phene 2022). Knowledge—spanning technical, market, and customer insights—creates value and fosters adaptability in dynamic environments. Effective knowledge management and continuous organizational learning are essential for maintaining competitiveness.

Knowledge-Based View

The Knowledge-Based View (KBV), is a strategic management approach emphasizing knowledge as a critical resource for achieving competitive advantage. KBV focuses on how organizations effectively manage and utilize knowledge to create value and enhance performance (Grant and Phene 2022). KBV underscores the importance of linking knowledge management with organizational learning to sustain competitiveness. It argues that enhancing knowledge and learning capabilities fosters organizational creativity, serving as a mediator between knowledge management, learning organizations, and competitive advantage.

Learning Organizational

A Learning Organization is a concept introduced as a framework where members of an organization continuously develop the capacity to achieve desired results through an open mindset, group aspirations, and shared learning (Haider et al. 2019) (Purnomo et al. 2023). Senge identified five key components for creating a learning organization: systems thinking, which helps understand the interactions of elements within the organization; personal mastery for self-development; mental models that shape thinking and problem-solving approaches; shared vision that aligns individual and organizational goals; and team learning, which allows groups to think collectively and innovatively.

Knowledge Management

According to Nonaka & Takeuchi, knowledge management connects data, information, and knowledge, where data is raw information, information is data that holds meaning, and knowledge is the understanding of information to support specific goals, such as decision-making (Latifah et al. 2022) (Martins et al. 2019). Human knowledge is divided into explicit knowledge—documented and easily shared—and tacit knowledge—residing in individual experience and difficult to document. Although tacit knowledge is hard to codify, it holds high value because it is based on skills and experience; when shared through social interaction, it can generate new knowledge (Olaisen and Revang 2018).

Competitive Advantage

According to Porter, competitive advantage is a company's ability to achieve superior performance through its characteristics and resources, surpassing competitors in the same industry (Al-Khawaldah et al. 2022). This advantage is rooted in the value offered to buyers, either through lower prices or unique benefits. Porter developed the value chain concept as a framework for analyzing business activities that support competitive advantage. Porter's five competitive forces, which include the threat of new entrants, the threat of substitute products, the bargaining power of suppliers, the bargaining power of buyers, and industry rivalry, provide the basis for identifying and managing factors that influence competitive advantage.

Organizational Creativity

Creativity, often regarded positively, is defined as the process of using imagination and skills to generate unique ideas or products and as the ability to create (Alnor et al. 2024). Organizational creativity heavily depends on collective knowledge, research activities, design and development efforts, and interactions with the external environment. Wallas in *The Art of Thought*, identified four stages of the creative process: preparation, incubation, illumination, and verification. The preparation stage involves gathering information and experiences, including past failures, to build a foundation for creative thinking (Botella and Lubart 2019). During the incubation stage, collected ideas are processed subconsciously, allowing for intuitive reflection and maturation.

3. Research Method

Research Type

This research uses a quantitative approach with an explanatory research type to examine the relationships and effects between variables, including Learning Organization, Learning Management, and Competitive Advantage, with Organizational Creativity as a mediator variable. Through this method, the researcher collects numerical data and analyzes it using statistics to test hypotheses objectively. This study focuses on Start Up organizations in Station Malang, where company leaders are selected as respondents because they have in-depth insights into the business being conducted. This approach aims to provide empirical evidence on the factors influencing competitive advantage among startups.

Population and Sample

The population of this study consists of all startup companies affiliated with Stasiun Malang, totaling 139 startups that meet specific characteristics for this research, namely based in Malang, part of Station Malang, and operating for at least 3 years. Sampling was conducted using a probability sampling method, where every unit in the population has an equal chance of being selected, thus ensuring proportional representation of the population and reducing bias. The sample size was calculated using the Slovin formula, resulting in 104 startup companies as the sample. The selection of managers or CEOs of startups as respondents is considered ideal because they have an in-depth understanding of business strategies, operations, and internal dynamics of the organization, as well as access to extensive information, allowing them to provide comprehensive insights into business practices to achieve competitive advantage.

Research Variables

This study uses four main variables: Learning Organization (X1) and Knowledge Management (X2) as independent variables, Organizational Creativity (Y1) as the mediating variable, and Competitive Advantage (Y2) as the dependent variable. Each variable is measured using specific indicators and items to ensure the validity of the measurement. Indicators serve as a guide to illustrate the concept of the variable, while items are questions that measure those indicators. In this quantitative approach, the items are measured using a specific scale to obtain representative results that can be analyzed.

This study examines the interplay of Learning Organization, Knowledge Management, and Organizational Creativity in achieving Competitive Advantage within the startup ecosystem of Malang, Indonesia. Learning Organization is assessed through continuous learning, dialogue and inquiry, team learning and collaboration, integrated systems, empowerment, systems relationships, and strategic leadership. Knowledge Management is evaluated based on knowledge acquisition, conversion, and application. Organizational Creativity is measured through individual creativity, group creativity, internal organizational environment, and knowledge creation. Finally, Competitive Advantage is measured by brand image, product quality, cost, production system, and economic scale.

Data Analysis

The data analysis method in this study employs Partial Least Squares (PLS), a variant-based Structural Equation Modeling (SEM) technique, to test hypotheses and confirm theories. SEM PLS was chosen as the analytical tool for this research due to its excellent capabilities in processing data based on Partial Least Squares Structural Equation Modeling. The PLS-SEM method is highly suitable for exploratory research, complex models with numerous latent variables, and data that does not meet normality assumptions. Inferential analysis uses SEM based on PLS to explore relationships between variables (Creswell and Creswell 2018). The inner model tests the relationships between latent variables and measures hypotheses, with R-Square (R^2) analysis used to evaluate model quality, where values of 0.75, 0.50, and 0.25 indicate strong, moderate, and weak models, respectively. Q2 analysis is used to evaluate predictive relevance, with values greater than zero indicating significant relevance. The outer model measures validity and reliability, with convergent validity (values >0.5), discriminant validity (AVE >0.5), and Composite Reliability (CR) (values >0.7). Hypothesis and mediation testing are performed based on the following criteria: 1) if a, b, and c are significant but $c < b$, partial mediation occurs; 2) if a and b are significant but c is not, perfect mediation occurs; 3) if a, b, and c are significant with $c = b$, it is not mediation; 4) if a or b is not significant, it is not mediation.

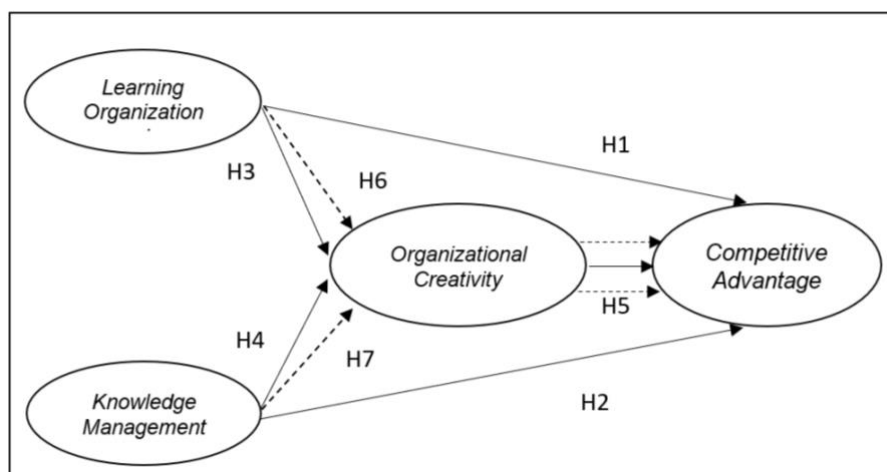


Figure 1. Model Hypothesis

Source: Processed data, 2024

4. Results and Discussion

Results

Second-Order Structural Equation Modeling Analysis

Measurement Model Analysis for Lower Order Constructs (LOC)

There are three key criteria for data analysis using SmartPLS 4 to evaluate the outer model. The first is convergent validity, which assesses the validity of each relationship between indicators and their corresponding constructs or latent variables. The second is discriminant validity, which ensures that each latent construct is distinct

from other variables in the model. Lastly, composite reliability measures the actual reliability of a construct within each variable, ensuring consistency and accuracy.

Convergent Validity

Convergent validity assesses the strength of the correlation between constructs and their latent variables. It is evaluated through the loading factor of each construct indicator. An ideal loading factor value is >0.7 , indicating that the indicator is valid in measuring the construct. In empirical research, a loading factor value >0.5 is still acceptable (Hair et al. 2022), and some experts even consider 0.4 as acceptable. This value reflects the percentage of variance in the indicators explained by the construct:

Table 1. Convergent Validity

Variabel	Item	Convergent Validity	
		Loading Factor	Information
Learning Organization (X1)	X1.1.1	0,933	Valid
	X1.1.2	0,919	Valid
	X1.1.3	0,933	Valid
	X1.2.1	0,913	Valid
	X1.2.2	0,881	Valid
	X1.2.3	0,928	Valid
	X1.3.1	0,898	Valid
	X1.3.2	0,894	Valid
	X1.3.3	0,911	Valid
	X1.4.1	0,941	Valid
	X1.4.2	0,950	Valid
	X1.4.3	0,947	Valid
	X1.5.1	0,927	Valid
	X1.5.2	0,917	Valid
	X1.5.3	0,895	Valid
	X1.6.1	0,984	Valid
	X1.6.2	0,984	Valid
X1.7.1	0,935	Valid	
X1.7.2	0,938	Valid	
X1.7.3	0,881	Valid	
Knowledge Management (X2)	X2.1.1	0,848	Valid
	X2.1.2	0,933	Valid
	X2.1.3	0,854	Valid
	X2.1.4	0,929	Valid
	X2.2.1	0,873	Valid
	X2.2.2	0,873	Valid
	X2.2.3	0,865	Valid
	X2.2.4	0,884	Valid
	X2.3.1	0,836	Valid
	X2.3.2	0,850	Valid
	X2.3.3	0,906	Valid
X2.3.4	0,883	Valid	
X2.3.5	0,922	Valid	
Y1.1.1	Y1.1.1	0,787	Valid
	Y1.1.2	0,879	Valid
	Y1.1.3	0,883	Valid

Variabel	Item	Convergent Validity	
		Loading Factor	Information
Organizational Creativity (Y1)	Y1.1.4	0,898	Valid
	Y1.1.5	0,861	Valid
	Y1.1.6	0,854	Valid
	Y1.1.7	0,868	Valid
	Y1.1.8	0,888	Valid
	Y1.2.1	0,899	Valid
	Y1.2.2	0,859	Valid
	Y1.2.3	0,821	Valid
	Y1.2.4	0,894	Valid
	Y1.2.5	0,865	Valid
	Y1.2.6	0,911	Valid
	Y1.2.7	0,877	Valid
	Y1.3.1	0,866	Valid
	Y1.3.2	0,805	Valid
	Y1.3.3	0,860	Valid
	Y1.3.4	0,858	Valid
	Y1.3.5	0,821	Valid
	Y1.3.6	0,860	Valid
	Y1.3.7	0,859	Valid
	Y1.3.8	0,797	Valid
	Y1.4.1	0,864	Valid
	Y1.4.2	0,860	Valid
	Y1.4.3	0,855	Valid
	Y1.4.4	0,895	Valid
	Y1.4.5	0,924	Valid
Competitive Advantage (Y2)	Y2.1.1	0,916	Valid
	Y2.1.2	0,934	Valid
	Y2.1.3	0,954	Valid
	Y2.2.1	0,893	Valid
	Y2.2.2	0,876	Valid
	Y2.2.3	0,887	Valid
	Y2.2.4	0,882	Valid
	Y2.3.1	0,921	Valid
	Y2.3.2	0,942	Valid
	Y2.3.3	0,956	Valid
	Y2.3.4	0,841	Valid
	Y2.4.1	0,890	Valid
	Y2.4.2	0,879	Valid
	Y2.4.3	0,908	Valid
	Y2.5.1	0,884	Valid
Y2.5.2	0,880	Valid	
Y2.5.3	0,875	Valid	

Source : Processed Data (2024)

Table 1 shows that the loading factor values (convergent validity) for each construct item are generally valid, as they meet the ideal threshold of >0.7 . However, one item has a loading factor <0.7 . According to (Hair et al. 2022), loading factor values between 0.4 and 0.7 can still be considered acceptable if the composite reliability and AVE values meet

the criteria for validity and reliability. Therefore, the loading factor results in this study still satisfy the basic requirements for convergent validity.

Table 2. Nilai Average Variance Extracted (AVE)

Variable	Nilai Average Variance Extracted (AVE)	Composite Reliability
Brand Image	0,874	0,954
Competitive Advantage	0,631	0,967
Cost	0,838	0,954
Dialogue and Inquiry	0,824	0,933
Economic Scale	0,774	0,911
Group Creativity	0,767	0,958
System Relationships	0,968	0,984
Individual Creativity	0,749	0,960
Internal Organizational Environment	0,707	0,951
Strategic Leadership	0,844	0,942
Knowledge Acquisition	0,795	0,939
Knowledge Application	0,774	0,945
Knowledge Conversion	0,764	0,928
Knowledge Creation	0,774	0,945
Knowledge Management	0,632	0,960
Learning Organization	0,531	0,957
Organizational Creativity	0,586	0,975
Continuous Learning	0,862	0,949
Team Learning and Collaboration	0,812	0,928
Empowerment	0,834	0,938
Product Quality	0,783	0,935
Production System	0,796	0,921
Integrated System	0,894	0,962

Source : Processed Data (2024)

Convergent Validity refers to the extent to which different measures of the same concept demonstrate consistency or agreement. When the Average Variance Extracted (AVE) value meets or exceeds the recommended threshold of 0.50, the items converge to measure the underlying construct, establishing convergent validity (Hair et al. 2022). In this study, the AVE results indicate that all constructs have values greater than 0.50, confirming that the study meets the criteria for convergent validity. **Measurement Model Analysis for Higher Order Construct (HOC)**

Once all measurement model criteria for the Lower Order Construct (LOC) are met, the next step is to evaluate the measurement model at the Higher Order Construct (HOC) level. This evaluation follows the same criteria as applied to the LOC. The results of the 2nd-order outer model evaluation are presented in the figure below.

Outer Loading Second Order

This test examines the loading factor values, which represent the correlation between each item's outcome and its latent variable score. The loading factor values are obtained from the outer loadings output. According to (Hair et al. 2022) reflective items are considered valid and effective for measuring variables if their outer loadings exceed

0.7. The results of the outer loadings measurement using the PLS-Algorithm are presented below.

Table 3. Outer Loading

	Competitive Advantage	Knowledge Management	Learning Organization	Organizational Creativity
Brand Image	0,877			
Competitive Advantage	0,928			
Cost			0,755	
Dialogue and Inquiry	0,843			
Economic Scale				0,874
Group Creativity			0,748	
System Relationships				0,874
Individual Creativity				0,905
Internal Organizational Environment			0,824	
Strategic Leadership		0,902		
Knowledge Acquisition		0,904		
Knowledge Application		0,895		
Knowledge Conversion				0,878
Knowledge Creation			0,821	
Knowledge Management			0,734	
Learning Organization			0,772	
Organizational Creativity	0,901			
Continuous Learning	0,824			
Team Learning and Collaboration			0,829	

Source : Processed Data (2024)

Table 3 illustrates the loading factor values (convergent validity) for each indicator. A loading factor value > 0.7 is considered valid. The table reveals that all loading factor values for the indicators of Learning Organization (X1), Knowledge Management (X2), Organizational Creativity (Y1), and Competitive Advantage (Y2) exceed 0.7, indicating that these indicators are valid.

Composite Reliability

A questionnaire is considered reliable if respondents' answers to the questions are consistent and stable. In PLS, reliability can be tested using two parameters: Cronbach's alpha and composite reliability for each variable. An instrument is deemed reliable if the Cronbach's alpha value exceeds 0.6 and the composite reliability value exceeds 0.7 (Hair

et al. 2022). Below are the Cronbach's alpha and composite reliability values obtained from the data analysis.

Table 4. Composite Reliability dan Cronbach Alpha

	Cronbach's alpha	Composite reliability	Information
Competitive Advantage	0,923	0,943	Reliabel
Knowledge Management	0,883	0,928	Reliabel
Learning Organization	0,895	0,918	Reliabel
Organizational Creativity	0,906	0,934	Reliabel

Source : Processed Data (2024)

Based on the data analysis results in Table 3, all latent variables used in this study have Cronbach's alpha and composite reliability values above 0.7, indicating that the variables meet the required criteria. Therefore, it can be concluded that each variable demonstrates good reliability and is suitable for proceeding to the next testing stage.

Average Variance Extracted

The average variance extracted (AVE) values for each variable are used to conduct the convergent validity test. The AVE value describes the extent of variance or diversity of the manifest variables (items) that a latent variable can possess. An instrument is considered to have passed the convergent validity test if the AVE value exceeds 0.5 (Hair et al. 2022) . The results of the calculations are shown in the table below.

Table 5. Average Variance Extracted (AVE)

	Average variance extracted (AVE)
Competitive Advantage	0,767
Knowledge Management	0,810
Learning Organization	0,615
Organizational Creativity	0,780

Source : Processed Data (2024)

Based on the calculations in Table 5, all the variables used in this study have values above 0.5. Therefore, it can be concluded that the variables in this study have met the criteria for convergent validity testing and can proceed to the next stage of testing.

Discriminant Validity

Discriminant validity is conducted to ensure that each concept of the latent models is distinct from other variables. Therefore, this study uses the Heterotrait-Monotrait ratio of correlations (HTMT) to assess discriminant validity.

Heterotrait-Monotrait ratio of correlations (HTMT)

HTMT is a new approach to assess discriminant validity in Partial-Least Square (PLS-SEM) variance-based models, as recommended by Henseler et al. (2015) in (Rasoolimanesh 2022) In HTMT measurement, there is a threshold for meeting the discriminant validity criteria, where the HTMT value must be less than 0.9.

Table 6. Heterotrait-Monotrait ratio of correlations (HTMT)

	Competitive Advantage	Knowledge Management	Learning Organization	Organizational Creativity
Competitive Advantage				
Knowledge Management	0,784			
Learning Organization	0,745	0,751		
Organizational Creativity	0,784	0,763	0,651	

Source : Processed Data (2024)

As shown in Table 6, the square root of the AVE for each latent variable is greater than its correlations with other latent variables, satisfying the Fornell-Larcker criterion. Therefore, the variables in this study meet the necessary conditions, and further analysis can proceed.

Full Colinearity Assesment

This test addresses collinearity issues by calculating the Variance Inflation Factor (VIF) before evaluating the structural model. High collinearity between constructs can distort the accuracy of path coefficient estimates, potentially leading to biased and ineffective results. VIF value above 3.3 indicates high multicollinearity and requires attention to reduce correlations among variables in the model.

Table 7. Full Colinearity Assessment

Variable	Full VIF
Learning Organization	1,926
Knowledge Management	2,357
Organizational Creativity	2,038
Competitive Advantage	1,800

Source : Processed Data (2024)

Based on Table 7, the test results show that all VIF values are below 3.3, indicating no data bias and no collinearity between constructs in this study's model. Collinearity testing was done by comparing the VIF values to 3.3. If the VIF exceeds 3.3, multicollinearity is present. Therefore, the results conclude that there is no multicollinearity among the independent variables since all VIF values are below 3.3.

R-Square

The determination coefficient in this study is used to indicate the extent of the influence of exogenous variables on endogenous variables. Therefore, as shown in Table 8 below, the R-Square values are presented.

Table 8. R Square

Variable	R-Square
Organizational Creativity	0,509
Competitive Advantage	0,655

Source : Processed Data (2024)

The R-square value for Organizational Creativity is 0.636. This indicates that Learning Organization and Knowledge Management explain 50.9% of the variance in Organizational Creativity, while the remaining 49.1% is attributed to factors outside the scope of this research.

For Competitive Advantage, the R-square is 0.655, meaning that Learning Organization, Knowledge Management, and Organizational Creativity account for 65.5% of its variance. The other 34.5% is explained by variables not included in this model.

PLS Predict

Predictive power demonstrates a model's ability to predict new or future research outcomes. This step is carried out using the PLSpredict procedure, which compares the root mean squared error (RMSE) or mean absolute error (MAE) values from the PLS path model for each item with those generated by the linear regression (LM) model. The results of the PLS Predict test are as follows.

Table 9. PLS Predict

Indikator	Q ² predi ct	PLS- SEM_RMSE	PLS- SEM_MAE	LM_RM SE	LM_RM SE
Brand Image	0,375	0,801	0,653	0,822	0.787
Cost	0,555	0,676	0,569	0,663	0.765
Economic Scale	0,375	0,801	0,650	0,868	0.782
Product Quality	0,431	0,764	0,628	0,783	0.956
Production System	0,411	0,777	0,635	0,815	0.981
Group Creativity	0,273	0,863	0,701	0,853	0.838
Individual Creativity	0,396	0,786	0,628	0,790	0.864
Internal Organizational Environment	0,362	0,807	0,625	0,822	0.902
Knowledge Creation	0,466	0,740	0,588	0,771	0.842

Source : Processed Data (2024)

Table 9 reveals that all items analyzed using PLS-SEM exhibit lower values compared to the linear regression model. This is evident in the smaller RMSE values observed in PLS compared to the LM benchmark. Consequently, the research model demonstrates a high predictive accuracy in representing the real-world phenomenon under investigation.

Hypothesis Testing

Hypothesis testing in this study aims to determine the impact of all hypotheses, both direct and indirect. In research, testing follows criteria that can be evaluated directly or indirectly by examining significance using p-values. A hypothesis is accepted if the p-value is less than 0.05, indicating a significant effect. Statistical testing is performed using the bootstrapping method via SmartPLS software, as shown in Table 10 below.



Figure 2. Hypothesis Testing
Source : Processed Data (2024)

Table 11. Direct Effect

	Hipotesis	Original Sample	T Statistic	P-Value	F ²	Information
H1	Learning Organization → Competitive Advantage	0,289	3,105	0,002	0,125	Signifikan
H2	Knowledge Management → Competitive Advantage	0,260	2,214	0,027	0,083	Signifikan
H3	Learning Organization → Organizational Creativity	0,249	2,515	0,012	0,070	Signifikan
H4	Knowledge Management → Organizational Creativity	0,523	5,302	0,000	0,310	Signifikan
H5	Organizational Creativity → Competitive Advantage	0,374	4,238	0,000	0,199	Signifikan

Source : Processed Data (2024)

Based on the results of the direct effect testing presented in Table 11, the path coefficients for each variable influence are as follows:

1. H1: Learning Organization (X1) has a positive and significant effect on Competitive Advantage (Y2) with a path coefficient of 0.289 and a p-value < 0.05. Therefore, the first hypothesis is accepted. H2: Knowledge Management (X1) has a positive and significant effect on Competitive Advantage (Y2) with a path coefficient of 0.260 and a p-value < 0.05. Therefore, the second hypothesis is accepted.
2. H3: Learning Organization (X1) has a positive and significant effect on Organizational Creativity (Y1) with a path coefficient of 0.249 and a p-value < 0.05. Therefore, the third hypothesis is accepted.
3. H4: Knowledge Management (X2) has a positive and significant effect on Organizational Creativity (Y1) with a path coefficient of 0.523 and a p-value < 0.05. Therefore, the fourth hypothesis is accepted.
4. H5: Organizational Creativity (Y1) has a positive and significant effect on Competitive Advantage (Y2) with a path coefficient of 0.374 and a p-value < 0.05. Therefore, the fifth hypothesis is accepted.

Table 12. Indirect Effect

	Hipotesis	Original Sample	T Statistic	P-Value	Information
H6	Learning Organization -> Organizational Creativity -> Competitive Advantage	0,093	2,105	0,035	Signifikan
H7	Knowledge Management → Organizational Creativity → Competitive Advantage	0,196	3,362	0,001	Signifikan

Source : Processed Data (2024)

Based on the results of the mediation effect testing presented in Table 12, the path coefficients for each variable influence are as follows:

1. H6: Organizational Creativity (Y1) mediates the relationship between Learning Organization (X1) and Competitive Advantage (Y2) positively and significantly with a path coefficient of 0.093 and a p-value < 0.05. Therefore, the sixth hypothesis is accepted.
2. H7: Organizational Creativity (Y1) mediates the relationship between Knowledge Management (X2) and Competitive Advantage (Y2) positively and significantly with a path coefficient of 0.196 and a p-value < 0.05. Therefore, the seventh hypothesis is accepted.

DISCUSSION

The Effect of Learning Organization on Competitive Advantage

The results of this study show that a learning organization positively influences competitive advantage. The original sample value is 0.289, the T-statistic is 3.105, and the P-value is 0.002, which means the findings are significant. This finding supports earlier research showing that learning within organizations can improve a company's competitive edge, especially for startups in fast-changing and competitive markets (Hosseini et al. 2022). Organizations that can quickly adapt to market changes are more successful in gaining sustainable competitive advantages (Makabila et al. 2017).

H1: Learning Organization (X1) has a positive and significant effect on Competitive Advantage (Y2).

The Effect of Knowledge Management on Competitive Advantage

This study reveals that Knowledge Management (KM) has a positive and significant effect on Competitive Advantage (H2 is accepted), with an original sample value of 0.260, a T-Statistic of 2.214, and a P-Value of 0.027. This finding supports the Knowledge-Based View (KBV), which asserts that knowledge is a crucial resource for achieving competitive advantage (Novianti 2019). This study aligns with research by Dalmarco et al. (2017), who showed that KM is a critical strategy for gaining and sustaining competitive advantage, even in Brazilian startups.

H2: Knowledge Management (X2) has a positive and significant effect on Competitive Advantage (Y2)

The Effect of Learning Organization on Organizational Creativity

The results show that learning organizations have a big impact on creativity within the organization. This was supported by an original sample value of 0.249, a T-statistic of 2.515, and a P-value of 0.012. This emphasizes the importance of organizational learning in enhancing creativity, particularly in startups that tend to be more innovative and creative (Tajpour et al. 2023). The knowledge-based concept, combined with organizational learning, can promote creativity, expand the knowledge base, and generate creative ideas and innovative solutions (Mai and Nguyen 2023). This is consistent with previous research by (Huang and Yao 2017);(Sutanto 2017) and (Tajpour et al. 2023), which found that organizational learning has a positive impact on creativity. Therefore, startups that adopt a learning culture can enhance employee creativity and create the solutions needed to compete in dynamic markets.

H3: Learning Organization (X1) has a positive and significant effect on Organizational Creativity (Y1)

The Effect of Knowledge Management on Organizational Creativity

This study shows a significant influence between Knowledge Management (KM) and Organizational Creativity, with an original sample value of 0.523, a T-Statistic of 5.302, and a P-Value of 0.000. This validates the hypothesis (H4) that KM significantly boosts organizational creativity, particularly in startups. (Andaleeb and Almuraqab 2021) suggest that managing knowledge—like creating, sharing, and using information—helps boost creativity in teams. They say that having a good system for knowledge leads to more creative ideas. Using knowledge-based principles makes knowledge an important resource that encourages innovation and creative problem-solving. A study by (Khattak et al. 2017) shows that knowledge management practices like training, meetings, seminars, and emails help share ideas, which boosts creativity in organizations.

H4: Knowledge Management (X2) has a positive and significant effect on Organizational Creativity (Y1)

The Effect of Organizational Creativity on Competitive Advantage

The study found a strong link between organizational creativity and competitive advantage, shown by a sample value of 0.374, a T-statistic of 4.238, and a P-value of 0.000. The hypothesis (H5), which emphasizes the role of organizational creativity in enhancing competitive advantage, especially in startup companies, receives this support. Well-managed creativity enables firms to adapt to market changes and offer innovative solutions that differentiate them from competitors (Potjanjaruwit 2018). (Elidemir et al. 2020) highlight that accumulated knowledge in startups becomes a critical asset that drives creativity and innovation, which in turn contributes to competitive advantage. This study also emphasizes the importance of fostering a work culture that supports creativity to maximize innovation and management strategies that focus on developing employees' creative capabilities.

H5: Organizational Creativity (Y1) has a positive and significant effect on Competitive Advantage (Y2)

The Effect of Learning Organization on Competitive Advantage Through Organizational Creativity

This study found a strong indirect link between learning organizations and competitive advantage through organizational creativity. The original sample value was 0.093, with a T-statistic of 2.105 and a P-value of 0.035, which supports the hypothesis (H6 is accepted). Organizational creativity acts as a mediator that links the learning process within the organization to competitive advantage, especially in the context of startups (Guntoro et al. 2021); (Mai and Nguyen 2023). The application of learning organization principles allows companies to acquire new knowledge, foster creativity, and cultivate an innovation culture that contributes to competitive advantage (Baia et al. 2020). (Sarstedt et al. 2021). This study emphasizes the importance of continuous learning programs to support creativity and innovation in facing market challenges.

H6: Organizational Creativity (Y1) mediates the relationship between Learning Organization (X1) and Competitive Advantage (Y2) positively and significantly

The Effect of Knowledge Management on Competitive Advantage Through Organizational Creativity

This study finds a strong indirect relationship between Knowledge Management and Competitive Advantage through Organizational Creativity. The original sample value is 0.196, with a T-Statistic of 3.362 and a P-Value of 0.001, which confirms the hypothesis (H7 is accepted). Organizational creativity serves as a mediator linking knowledge management to competitive advantage. Knowledge management acts as a driver of creativity in startup companies, which in turn enhances innovation and competitive positioning (Dalmarco et al. 2017). The effective application of knowledge management enables companies to create innovative products and services that differentiate them in the market. Therefore, startup companies should develop programs that support continuous learning and innovation to maximize the benefits of creativity and strengthen their competitive advantage.

H7: Organizational Creativity (Y1) mediates the relationship between Knowledge Management (X2) and Competitive Advantage (Y2) positively and significantly.

5. Conclusion

Startup companies gain a competitive advantage when they prioritize learning and knowledge management. This research confirms that both learning organizations and effective knowledge management significantly and positively impact a startup's competitive edge (with path coefficients of 0.289 and 0.260, respectively, and p-values < 0.05 for both). Furthermore, both factors boost organizational creativity (path coefficients of 0.249 and 0.523, respectively, and p-values < 0.05), which, in turn, strengthens competitive advantage (path coefficient 0.374, p-value < 0.05). Organizational creativity acts as a partial mediator between learning/knowledge management and competitive advantage (path coefficients of 0.093 and 0.196, respectively, and p-values < 0.05).

For startups, this means prioritizing knowledge management strategies like knowledge sharing and continuous learning to foster creativity and innovation. Investing in digital tools for collaboration and data-driven decisions, such as AI and big data analytics, can further enhance adaptability and innovation. Policymakers should integrate knowledge management and organizational learning into incubation programs. Facilitating access to training in digital tools and networking opportunities can also boost knowledge sharing and growth. Supporting research collaborations between startups, universities, and accelerators can bridge the gap between theory and practice.

Future research should explore diverse sectors and geographical regions to understand these relationships in different markets and cultures. Examining the role of emerging technologies like AI and big data analytics is also promising. A mixed-methods approach, incorporating qualitative insights, would provide a richer understanding. Finally, a more specific theoretical model based on the Knowledge-Based View could offer new insights into how organizational knowledge contributes to sustainable competitive advantage.

Based on the findings, startups, especially those within community-driven ecosystems like Station Malang, are recommended to adopt comprehensive strategies in learning organization and knowledge management to enhance their competitive advantage. To foster organizational creativity, which has been shown to mediate and strengthen competitive outcomes, startup leaders should implement structured knowledge-sharing systems and continuous learning programs that promote innovative thinking. Establishing a culture that encourages creativity as a core value can further optimize the benefits of knowledge management practices. Additionally, collaboration with external knowledge resources, such as universities and technology incubators, can enrich internal learning processes, providing startups with a broader base of insights and innovative approaches. Future studies could explore similar frameworks across diverse regions or sectors to validate these strategies' broader applicability and refine models that support startup competitiveness in various market conditions.

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