

The Influence of Entrepreneurial Bricolage on Opportunity Recognition for New Ventures Based on Artificial Intelligence

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ABSTRACT

This study delves into the subtle relationships between entrepreneurial bricolage, the use of artificial intelligence (AI), entrepreneurial knowledge, and the identification of opportunities in the field of entrepreneurship. It fills information gaps about the impact of these elements on opportunity recognition while examining the mediating role of entrepreneurial expertise. The major goal of this study was to investigate how entrepreneurial bricolage and AI adoption influence opportunity recognition, with a particular emphasis on the mediating role of entrepreneurial knowledge. Furthermore, the study hoped to contribute empirical data that could improve our knowledge of how these aspects interact. A structured questionnaire was provided to 420 entrepreneurs as part of a quantitative study methodology to collect data. For data analysis, SPSS was used, which included descriptive statistics, correlation analysis, regression analysis, and mediation analysis. According to the findings, entrepreneurial knowledge serves as a bridge between entrepreneurial bricolage and opportunity recognition, as well as between AI utilization and opportunity recognition. As a result, the study presents empirical evidence demonstrating the importance of entrepreneurial bricolage, AI adoption, and entrepreneurial knowledge in improving opportunity recognition. These findings highlight the importance of these aspects and their interdependence in the context of entrepreneurship. This work has practical consequences for businesses, politicians, and researchers alike by shining light on the optimal allocation of resources, the adoption of AI, and the cultivation of knowledge to better opportunity recognition. Furthermore, it adds empirical data on the role of entrepreneurial knowledge as a mediator in the theoretical understanding of entrepreneurship and innovation.

Keywords: Entrepreneurial Knowledge, Artificial Intelligence Utilization, Opportunity Recognition, Entrepreneurial Bricolage.

INTRODUCTION

Entrepreneurship is essential for economic growth and innovation. Entrepreneurs face several challenges and opportunities in today's dynamic and continuously changing business environment. Entrepreneurial bricolage and the use of artificial intelligence (AI) are two key variables that have received much attention in entrepreneurship research. Entrepreneurial bricolage is the innovative and resourceful use of limited resources, while AI utilization is the application of AI technology to data analysis, decision-making, and invention (Iqbal & Li, 2021). Both ideas have the ability to influence opportunity recognition, which is

important for entrepreneurship (Kuckertz et al., 2020). Understanding the relationship between entrepreneurial bricolage, AI utilization, and opportunity awareness can provide important information for entrepreneurs, policymakers, and researchers.

Despite the increased interest in entrepreneurial bricolage and AI utilization, there remains a gap in the literature about their impact on opportunity recognition. While separate studies have looked at these characteristics in isolation, few have looked at how entrepreneurial bricolage and AI utilization affect opportunity recognition together (Olan et al.,

2022). Furthermore, the role of entrepreneurial expertise as a mediator in this relationship has received less attention (Shepherd & Majchrzak, 2022). As a result, the research question addressed in this study is to evaluate the impact of entrepreneurial bricolage and AI utilization on opportunity recognition, with a particular emphasis on the mediating role of entrepreneurial expertise.

This study was motivated by the desire to comprehend the variables impacting opportunity recognition in entrepreneurship, with an emphasis on the interaction between entrepreneurial bricolage, AI use, and entrepreneurial knowledge (Schade & Schuhmacher, 2023). For seeing and seizing chances, entrepreneurial bricolage, which is characterized by resource-constrained inventiveness and resource reconfiguration, is essential (Berger & Hottenrott, 2021). However further research is needed to understand how bricolage and opportunity recognition are related. In a similar manner, given the advanced capabilities of AI technologies in data analysis and decision-making, it is imperative to undertake additional research to examine the impact of AI utilization on the process of recognizing opportunities.

The study's goal is to improve the understanding of how to use the Internet of Things (IoT) in the workplace. The conclusions will have applications for businesspeople, decision-makers, and scholars. Entrepreneurs can profit from knowledge about efficiently utilizing resources and implementing AI technologies to enhance opportunity recognition. Policymakers can create assistance programs that encourage bricolage, the acceptance of AI, and the growth of knowledge. Furthering the theoretical understanding of entrepreneurship and innovation, the study also adds to academic knowledge by giving empirical evidence on the correlations between these variables. Objective: The primary objective of this study is to examine the impact of entrepreneurial bricolage and AI utilization on opportunity recognition, with a specific focus on the mediating role of entrepreneurial knowledge.

LITERATURE REVIEW

Entrepreneurial Bricolage

Entrepreneurial bricolage is the process of creatively and innovatively utilizing existing resources to overcome resource restrictions and identify new business prospects (Tajeddini, Gamage, Tajeddini, & Kallmuenzer, 2023). This method entails reorganizing available resources, displaying flexibility, and responding to changing conditions. Entrepreneurs participate in a resourceful and improvisational approach by using limited resources, allowing them to recognize and grab new chances that would otherwise go unreported (Lanivich, Adomako, Ahsan, Istiqlil, & Cox, 2023).

Artificial Intelligence Utilization

Artificial intelligence has transformed corporate operations. Entrepreneurs are able to automate responsibilities, gain information, and make decisions based

on data with the aid of AI technologies like natural language processing, data analytics, and machine learning. This study explores how artificial intelligence (AI) affects the entrepreneurial process' ability to recognize opportunities (Alkhulaifat, Raffu, Khalkhali, Welsh, & Sotardi, 2023).

Entrepreneurial Knowledge

Entrepreneurial knowledge comprises a wide range of entrepreneurship-related skills, expertise, and insights. It consists of industry-specific knowledge, market data, technological skills, and entrepreneurial experience obtained from past ventures. Entrepreneurial knowledge, according to Flowers and Meyer (2020), is a combination of human skills, social networks, and cognitive frameworks that entrepreneurs use to recognize and capitalize on opportunities.

Opportunity Recognition

Opportunity recognition is the initial step in the entrepreneurial process, involving the identification of new and viable business prospects (Chaoyun & Ching Yin, 2020). By scanning the external environment, entrepreneurs search for emerging trends, market gaps, and unmet customer needs. Lobo, Reich, and Ardichvili (2023) emphasize the importance of recognizing opportunities through a combination of effectuation and causation, where entrepreneurs leverage their knowledge, creativity, and network connections to identify potential opportunities.

Entrepreneurial Bricolage and Opportunity Recognition

Entrepreneurial bricolage has emerged as a fundamental component impacting the process of opportunity recognition, which is a crucial step in the entrepreneurial process. The identification and pursuit of new business prospects are greatly impacted by entrepreneurial bricolage, which is characterized by resource-constrained inventiveness, adaptability, reconfiguration of existing resources, exploration, and experimentation (Donbesuur, Owusu-Yirenkyi, Among, & Hultman, 2023). Entrepreneurs create distinctive value propositions that solve market requirements and gaps by effectively utilizing restricted resources. Bricolage's versatility helps business owners react to shifting market circumstances and grab new opportunities. Entrepreneurs actively hunt for and identify potential possibilities through investigation and innovation. Bricolage-related cognitive shifts and resourceful problem-solving enable entrepreneurs to see limitations as opportunities for resourceful resource utilization (Chang & Chen, 2020). Understanding how entrepreneurial bricolage affects the ability to recognize opportunities broadens our understanding of successful entrepreneurial tactics and advances entrepreneurship theory and practice.

H1: Entrepreneurial Bricolage has a significant and positive impact on opportunity recognition.

Artificial Intelligence Utilization and Recognizing Opportunity

Recognizing opportunities is a fundamental component of entrepreneurship, and the use of artificial intelligence (AI) has resulted in considerable breakthroughs in this field. The use of AI in entrepreneurship has transformed data analysis and pattern identification. Entrepreneurs are able to utilize AI-powered algorithms and machine-learning approaches to swiftly and effectively examine enormous amounts of data (Petrescu, Krishen, Kachen, & Gironde, 2022). Other important advantages of AI use include real-time market monitoring and trend spotting. Entrepreneurs can use AI systems to collect and analyze data in real time from a variety of sources, including social media, internet platforms, and industry reports. This real-time market monitoring allows entrepreneurs to discover changes in client preferences, emerging market gaps, and prospective opportunities. Entrepreneurs who can spot trends early on have a competitive advantage in recognizing and developing new business prospects (Southworth et al., 2023).

AI technologies also make it easier to acquire and analyze customer data, which results in valuable customer insights and customization. Entrepreneurs may acquire deep insights into customer preferences, behavior, and demands by employing AI-powered solutions such as natural language processing and sentiment analysis (Petrescu et al., 2022). This client-centric strategy allows for the identification of unmet customer demands and the creation of individualized products, which improves opportunity detection (Luo, Pan, Mo, Mao, & Zou, 2023).

AI's predictive analytics skills drive opportunity identification. Entrepreneurs may create data-driven forecasts about industry trends, demand patterns, and future prospects by leveraging historical data and machine learning algorithms (Salim, Juliandry, Raymond, & Moniaga, 2023). This enables entrepreneurs to make proactive decisions and prepare strategically based on anticipated changes. Predictive analytics helps entrepreneurs detect emerging market gaps and possible client needs, which leads to more accurate and timely opportunity identification.

AI-enabled automation improves the efficiency of opportunity recognition. AI technology automates tedious operations, giving entrepreneurs more time to scan the company environment, perform market research, and think creatively (Makridis & Han, 2021). Because of the increased efficiency and decreased cognitive burden, opportunity recognition can be approached in a more methodical and complete manner. Entrepreneurs can devote more resources to opportunity identification, resulting in more effective and timely recognition (Santos et al., 2021).

H2: Artificial intelligence utilization has a significant and positive impact on opportunity recognition.

Entrepreneurial Knowledge and Opportunity Recognition

The process of recognizing opportunities in entrepreneurship heavily relies on entrepreneurial knowledge. Industry-specific information, market intelligence, technical skills, and experiential learning from prior entrepreneurial attempts are all included in

entrepreneurial knowledge. This information gives you a framework for identifying and assessing business prospects (Murphy, Danis, & Mack, 2020). Entrepreneurs can spot market inefficiencies, unmet consumer requirements, and opportunities for innovation by leveraging their industry knowledge and market insights. The ability of the entrepreneur to effectively identify possibilities is improved by the acquisition and consolidation of entrepreneurial knowledge through education, training, networking, and experiential learning. Entrepreneurs can assess the viability, profitability, and competitive advantage of possible prospects by using their entrepreneurial knowledge (Adeel, Daniel, & Botelho, 2023). Entrepreneurs may more effectively assess risks, analyze market dynamics, and make strategic decisions by utilizing their knowledge. Entrepreneurs can successfully handle hurdles and take advantage of favorable possibilities by applying their understanding of entrepreneurship. As a result, the successful identification and exploitation of new company possibilities depend heavily on entrepreneurial knowledge (Packard & Burnham, 2021).

H3: Entrepreneurial knowledge has a significant and positive impact on opportunity recognition.

Entrepreneurial Bricolage and Entrepreneurial Knowledge

Entrepreneurial bricolage has a substantial impact on the development and acquisition of entrepreneurial knowledge because it is characterized by resource restriction inventiveness, reconfiguration of existing resources, flexibility, and adaptability. A key component of entrepreneurial bricolage is resource constraint innovation, which promotes knowledge generation (Atiase, Kolade, & Liedong, 2020). When entrepreneurs encounter resource constraints, they are forced to think creatively and create inventive solutions. This resource-constrained creativity generates new ideas and insights, which leads to the creation of entrepreneurial knowledge. As they manage resource-constrained contexts, entrepreneurs take unconventional tactics and acquire distinctive insights (Yang & Leposky, 2022). Another important feature of business bricolage that influences knowledge acquisition is the reconfiguration of existing resources. Entrepreneurs actively use their resources, reusing and merging them in novel ways (de Guimarães, Severo, & de Vasconcelos, 2018). This procedure broadens their understanding of these resources' capabilities and prospective applications. Entrepreneurs gain knowledge about the potential and constraints of their available assets by experimenting with resource reconfiguration, generating a stronger grasp of how to exploit them successfully (Falihat, Soto-Acosta, & Ramayah, 2022).

Flexibility and adaptation, which are inherent in business bricolage, are critical in learning and knowledge acquisition. Bricolage entrepreneurs must be open to new ideas, willing to learn from mistakes and fast to modify their methods (Chen, Tang, & Han, 2022). This adaptability encourages an attitude of constant learning, allowing entrepreneurs to gain knowledge from a variety of sources. They learn through iterative cycles of trial and error, feedback, and market

observations, modifying their knowledge and skills in response to changing conditions (Marvel, Wolfe, & Kuratko, 2020). Entrepreneurial bricolage promotes experimentation and exploration, hence accelerating knowledge acquisition. Entrepreneurs practice active learning by carrying out experiments, testing theories, and soliciting feedback. They get practical insights and tacit knowledge through hands-on experiences that supplement formal schooling. Bricolage encourages hands-on learning by allowing entrepreneurs to hone their knowledge and skills through practical application and experiential learning (Ferriani, Lazerson, & Lorenzoni, 2020). Entrepreneurial bricolage's inventive problem-solving technique improves the application of entrepreneurial expertise. Entrepreneurs use their knowledge and skills to tackle problems and limits in novel ways. They use their entrepreneurial experience to manage challenging situations and find and capitalize on possibilities. Bricolage empowers entrepreneurs to solve market needs and generate creative solutions through the resourceful use of knowledge (Tajeddini et al., 2023).

H4: Entrepreneurial Bricolage has a significant and positive impact on entrepreneurial knowledge.

Artificial Intelligence Utilization and Entrepreneurial Knowledge

Artificial intelligence (AI) in entrepreneurship has a transformational impact on entrepreneurial expertise. AI technologies, through diverse methods, improve the acquisition and enrichment of entrepreneurial knowledge (Alkhulaifat et al., 2023). For starters, AI enables businesses to quickly and efficiently evaluate massive amounts of data, discovering new insights and patterns that lead to knowledge creation. The entrepreneur's awareness of market trends, customer behavior, and competitive landscapes improves as a result of these expanded data analytic skills. Second, AI-powered algorithms provide recommendations and predictions, supplementing and increasing the entrepreneur's decision-making powers and experience (Olan et al., 2022). Entrepreneurs can make informed and data-driven decisions in numerous facets of their businesses by embracing AI technologies. Third, AI enables continuous learning and adaptability by delivering real-time data on market trends, consumer behavior, and technical breakthroughs. This encourages a culture of continuous learning and adaptability, allowing entrepreneurs to change their strategy as needed (Weng & Chiu, 2023). Fourth, AI technologies promote collaboration and knowledge sharing among entrepreneurs, mentors, and experts, thereby increasing the entrepreneur's network and providing access to a variety of perspectives and expertise (Malik, De Silva, Budhwar, & Srikanth, 2021). Finally, by performing repetitive chores, AI automation frees up entrepreneurs' time, allowing them to focus on higher-value activities that contribute to knowledge acquisition and innovation. Entrepreneurs can better organize their resources and engage in activities that promote entrepreneurial knowledge growth by automating monotonous jobs (Khogali & Mekid, 2023).

H5: Artificial intelligence utilization has a significant and positive impact on entrepreneurial knowledge.

Entrepreneurial Knowledge as a Mediator

Entrepreneurial knowledge bridges the gap between entrepreneurial bricolage and opportunity recognition. Entrepreneurial bricolage has a tremendous impact on recognizing and pursuing new business possibilities since it is characterized by resource constraint inventiveness, reconfiguration of existing resources, flexibility, and adaptability (Mir Shahid & Alarifi, 2021). Entrepreneurs use bricolage to creatively use limited resources, adapt to changing situations, and explore unorthodox techniques. This process helps them uncover market gaps, unmet customer needs, and developing possibilities. However, entrepreneurial knowledge mediates the impact of bricolage on opportunity recognition (Avnimelech & Rechter, 2023). Entrepreneurial knowledge includes industry understanding, market intelligence, technological capabilities, and hands-on experience. Entrepreneurs with a broad knowledge base are better positioned to identify and assess possible possibilities. They may evaluate market dynamics, client preferences, and competition landscapes, resulting in more precise and effective opportunity identification (Rossi, Chouaibi, Graziano, & Festa, 2022). Bricolage is a knowledge acquisition platform. Entrepreneurs gain significant insights and experiential learning as they participate in resource-constrained creativity, resource reconfiguration, and adaptive problem-solving (Okolie et al., 2021). Bricolage exposes entrepreneurs to a variety of scenarios, problems, and possibilities, which aids in the acquisition and refinement of entrepreneurial knowledge. Bricolage knowledge is then employed in the opportunity identification process. Entrepreneurs with a broad knowledge base may assess the feasibility, profitability, and competitive advantage of possible opportunities. Their awareness of market dynamics, client needs, and corporate settings improves the precision and efficiency with which opportunities are identified (Saiyed, Wierenga, Fernhaber, & Nummela, 2023).

H6: Entrepreneurial knowledge mediates the relationship between entrepreneurial bricolage and opportunity recognition.

Between AI utilization and opportunity recognition, entrepreneurial knowledge functions as a mediator. Through their interactions with AI systems, businesspeople who use AI technology learn and grow in their understanding of the industry. The ability to recognize opportunities in a timely manner is a hallmark of this company's success (Selden & Fletcher, 2019). The development of entrepreneurial knowledge improves an entrepreneur's capacity to decipher insights given by AI, assess their applicability to the market, and make defensible decisions. Entrepreneurial knowledge offers the contextual comprehension and subject-matter proficiency necessary to fully realize the opportunity recognition potential of AI technology (Łopatka, 2021). The acquisition of knowledge by business owners is facilitated by AI utilization. The knowledge base of the entrepreneur is enriched by the insightful insights, patterns, and predictions produced by AI technologies. Entrepreneurs acquire new views, enlighten hidden trends, and unearth previously

unrecognized possibilities by utilizing AI-powered data analysis and machine learning algorithms (Zarei, Khan, & Abbassi, 2023). AI-driven knowledge acquisition expands the entrepreneur's understanding of market dynamics and consumer behavior by supplementing and enhancing their previous expertise. The opportunity recognition phase is where the entrepreneurial knowledge derived by AI utilization is then implemented. Entrepreneurs who have acquired information can use it to assess the viability, profitability, and competitive advantage of possible prospects revealed by AI technologies (Zhdanov, Bhattacharjee, & Bragin, 2022). Entrepreneurial knowledge

enables business owners to contextualize AI-generated insights, confirm their market implications, and reach well-informed conclusions. When entrepreneurial knowledge is applied, AI-driven opportunity recognition is guaranteed to match the entrepreneur's expertise and business objectives (Shepherd & Majchrzak, 2022).

H7: Entrepreneurial knowledge mediates the relationship between artificial intelligence utilization and opportunity recognition.

Based on the above discussion and literature review, we propose the following conceptual framework (Figure 1).

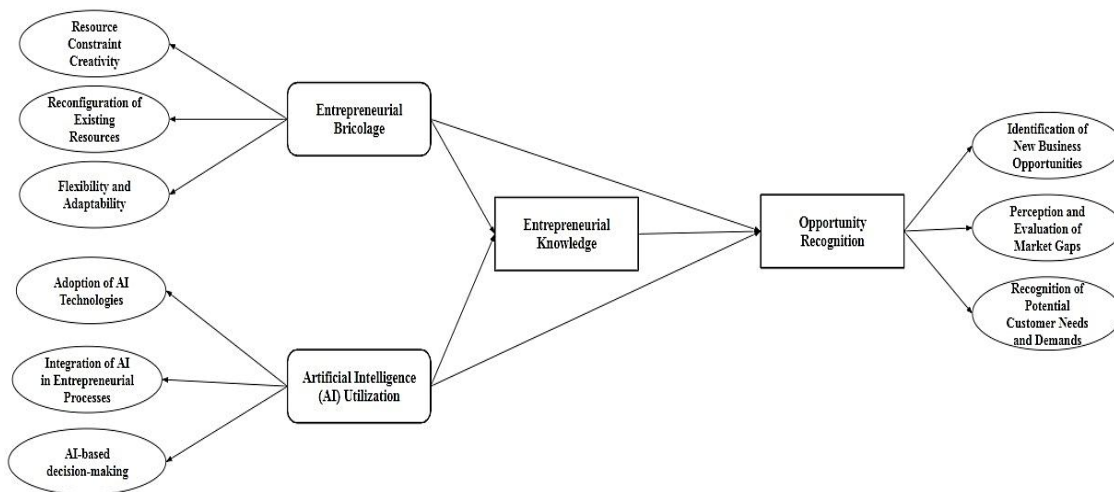


Figure 1. Conceptual Framework

METHODOLOGY

Research Design

The relationship between entrepreneurial bricolage, the use of artificial intelligence, entrepreneurial expertise, and opportunity recognition was investigated using a quantitative research approach. Data from the participants were gathered using a cross-sectional method at a certain period. 420 people were the intended sample size for this investigation. Convenience and purposeful sampling methods were combined to choose the participants. Data from businesspeople who had used artificial intelligence technologies were gathered through convenience sampling. A varied sample of entrepreneurs from various business sectors and industries was ensured by purposeful sampling.

A systematic questionnaire with items measuring the relevant factors was used to gather the data. An online survey platform was used to administer the questionnaire in an electronic manner. Each participant received a different URL to access the survey. Demographic data and specialized scales or items to assess entrepreneurial bricolage, artificial intelligence utilization, entrepreneurial expertise, and opportunity recognition were included in the questionnaire.

The Statistical Package for the Social Sciences was used to examine the data that had been gathered. The demographic details of the participants and the variables of interest were summarized using descriptive statistics, such as means,

frequencies, and percentages. To investigate the connections between the variables and test the provided hypotheses, inferential statistics, such as regression analysis and correlation analysis, were used. The use of entrepreneurial expertise as a mediator between the use of entrepreneurial bricolage and artificial intelligence and opportunity recognition was the subject of mediation analysis.

Measures

Entrepreneurial bricolage was measured by using a 4-item scale adopted from Davidsson, Baker, and Senyard (2017). Artificial intelligence utilization was measured by using a 5-item scale adopted from Jelen, Babic, & Podobnik (2022). Opportunity Recognition was measured by using a 4-item scale adopted from Lanivich et al. (2022). Entrepreneurial Knowledge was measured by using a 5-item scale adopted from Flowers & Meyer (2020).

RESULTS

The descriptive statistics for four variables, namely Entrepreneurial Bricolage, Artificial Intelligence Utilization, Entrepreneurial Knowledge, and Opportunity Recognition, are presented in Table 1 and Figure 2. The measurements for these variables were taken on a scale ranging from 1 to 5. There were a total of 420 observations for the variable called "Entrepreneurial Bricolage." On average, respondents

displayed a moderately high level of entrepreneurial bricolage, as indicated by the mean score of 4.00 for this variable. Based on a standard deviation of 0.64, it seems that the responses were moderately spread out from the average. A score of 1 shows that there were people who had low levels of entrepreneurial bricolage, whereas a score of 5 indicates that there were individuals with high levels of entrepreneurial bricolage. Likewise, there were also 420 observations for the variable "Utilization of Artificial Intelligence." Based on the average score of 4.29, it seems that most respondents indicated a relatively high level of incorporating artificial intelligence into their entrepreneurial endeavors. The responses were not as spread out as the variable "Entrepreneurial Bricolage," as indicated by the standard deviation of 0.51. The range of responses observed in this variable is indicated by the minimum score of 1 and the maximum score of 5. There were also 420 observations

for the variable "Entrepreneurial Knowledge." Based on the average score of 4.08, it can be inferred that respondents generally had a decent amount of entrepreneurial knowledge. Based on a standard deviation of 0.63, it seems that the responses were moderately spread out from the average. The range of responses observed for this variable is indicated by the minimum score of 1 and the maximum score of 5. There were 320 observations for the variable "Opportunity Recognition," suggesting that there were some instances where data for this variable was not available. Based on the average score of 4.07, it seems like most respondents had a fairly good ability to identify entrepreneurial opportunities. The responses were relatively dispersed compared to the other variables, as indicated by the standard deviation of 0.71. The range of responses observed for this variable is represented by the minimum score of 1 and the maximum score of 5.

Table 1. Descriptive Statistics

	N total	Mean	SD	Minimum	Maximum
Entrepreneurial Bricolage	420	4.00	0.64	1	5
Artificial Intelligence Utilization	420	4.29	0.51	1	5
Entrepreneurial Knowledge	420	4.08	0.63	1	5
Opportunity Recognition	320	4.07	0.71	1	5

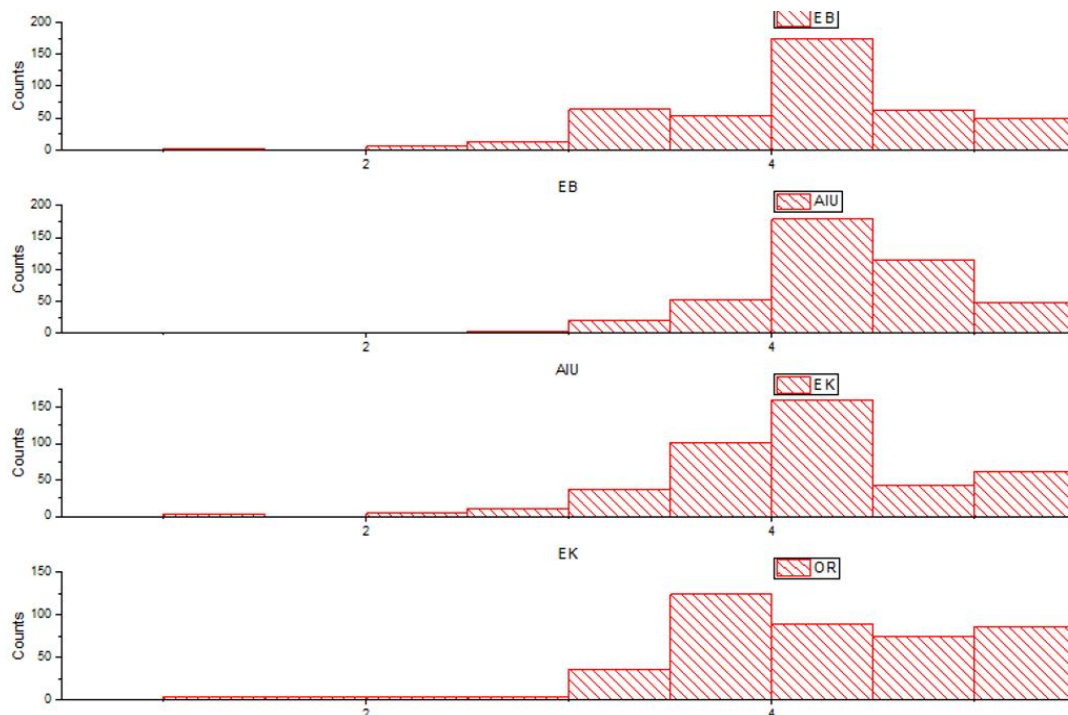


Figure 2. Descriptive Statistics

The skewness and kurtosis values for four variables, namely Entrepreneurial Bricolage, Artificial Intelligence Utilization, Entrepreneurial Knowledge, and Opportunity Recognition, are presented in Table 2 and Figure 3. The statistics give us insights into how the data is structured and spread out for each variable. The symmetry of the data distribution is measured by skewness. A skewness value of zero suggests that the distribution is perfectly symmetrical.

When the distribution has a negative skewness, it means that it is leaning towards the left side with a longer tail on that side. On the other hand, a positive skewness suggests a distribution that is leaning towards the right side with a longer tail on that side. Kurtosis quantifies how much a distribution is more peaked or flatter than a normal distribution. A normal distribution is indicated by a kurtosis value of 3. If the value is greater than 3, it means that the

distribution is more peaked (leptokurtic). On the other hand, if the value is less than 3, it means that the distribution is flatter (platykurtic). Based on the variables shown in **Table 1**, we can observe that "Entrepreneurial Bricolage," "Artificial Intelligence Utilization," "Entrepreneurial Knowledge," and "Opportunity Recognition" have negative skewness values. This indicates that the distributions of these variables are slightly skewed towards the left. The kurtosis values for all

four variables are less than 3, which suggests that the distributions are leptokurtic. This implies that the distributions exhibit heavier tails and are more peaked in comparison to a normal distribution. The kurtosis values of the variables are relatively higher, which suggests that there is a greater concentration of scores around the mean and more extreme scores in the tails.

Table 2. Normality Assessment

	N	Skewness	Kurtosis
Entrepreneurial Bricolage	420	-0.61557	1.03394
Artificial Intelligence Utilization	420	-1.15672	2.75718
Entrepreneurial Knowledge	420	-0.86393	2.31599
Opportunity Recognition	420	-0.91413	2.08451

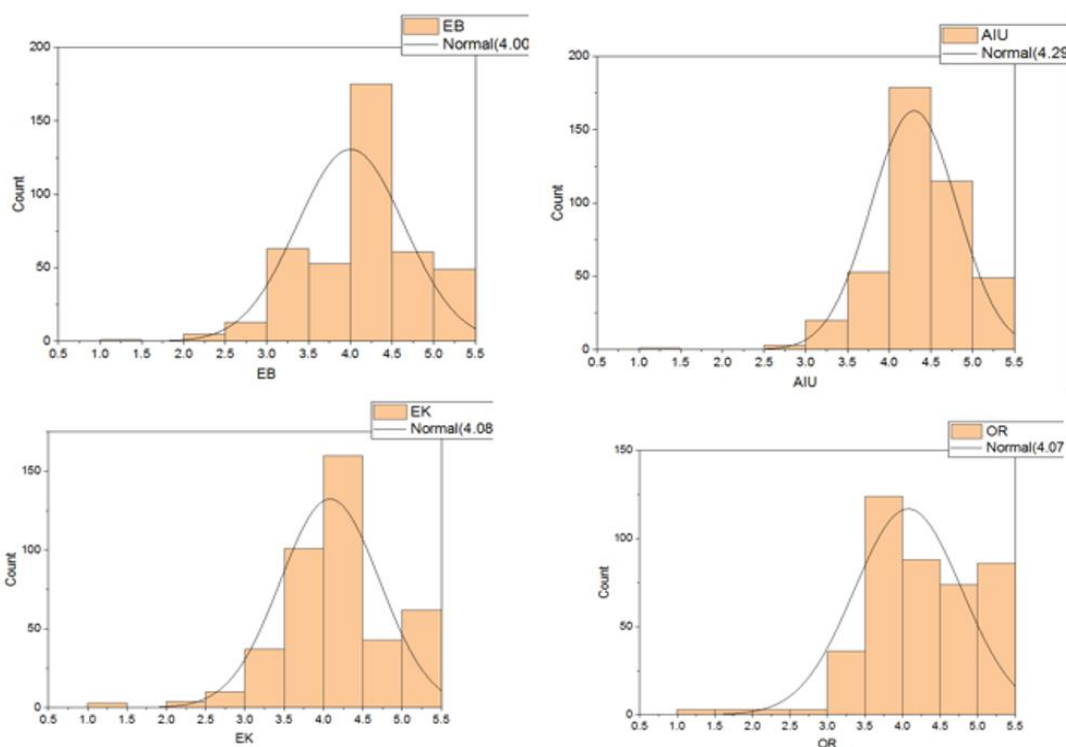


Figure 3. Normality Assessment of Variables

The results of the reliability analysis for four variables, namely Entrepreneurial Bricolage (EB), Artificial Intelligence Utilization (AIU), Entrepreneurial Knowledge (EK), and Opportunity Recognition (OR), are shown in **Table 3**. The analysis gives details about the quantity of items, their outer loadings, and Cronbach's alpha coefficient, which assesses the internal consistency or reliability of the scale. There are four items for the variable "Entrepreneurial Bricolage," namely EB1, EB2, EB3, and EB4. The strength of the relationship between each item and the underlying construct is represented by the outer loadings. The construct is strongly associated with three items (EB1, EB3, and EB4) as their outer loadings are greater than 0.7. On the other hand, the EB2 item displays a slightly lower outer loading of 0.611, indicating a comparatively weaker connection. The Entrepreneurial Bricolage scale shows high internal

consistency with a Cronbach's alpha coefficient of 0.880. In the same way, there are five items (AIU1, AIU2, AIU3, AIU4, and AIU5) for the variable "Utilization of Artificial Intelligence." The outer loadings of four items (AIU1, AIU2, AIU3, and AIU5) are higher than 0.7, which suggests a significant connection with the construct. On the other hand, the outer loading of item AIU4 is slightly lower at 0.626, indicating a somewhat weaker connection. The Artificial Intelligence Utilization scale shows moderate internal consistency with a Cronbach's alpha coefficient of 0.704. There are five items that make up the variable "Entrepreneurial Knowledge" - EK1, EK2, EK3, EK4, and EK5. There are four items (EK1, EK2, EK4, and EK5) that have outer loadings higher than 0.7, which suggests a strong connection with the construct. On the other hand, the EK3 item exhibits a lower outer loading of 0.595, indicating a

comparatively less strong association. The Entrepreneurial Knowledge scale shows moderate internal consistency with a Cronbach's alpha coefficient of 0.759. There are four items (OR1, OR2, OR3, and OR4) that make up the variable known as "Opportunity Recognition". The construct shows a strong association with three items (OR1, OR2, and OR4) as their

outer loadings are above 0.7. The outer loading of OR3 is slightly lower at 0.653, indicating a comparatively weaker connection. The Opportunity Recognition scale shows high internal consistency with a Cronbach's alpha coefficient of 0.849.

Table 3. Reliability Analysis

Variable	No of items	Items	Outer Loading	Cronbach alpha
EB	4	EB1	0.719	0.880
		EB2	0.611	
		EB3	0.830	
		EB4	0.785	
AIU	5	AIU1	0.698	0.704
		AIU2	0.771	
		AIU3	0.770	
		AIU4	0.626	
		AIU5	0.726	
EK	5	EK1	0.740	0.759
		EK2	0.786	
		EK3	0.595	
		EK4	0.764	
		EK5	0.604	
OR	4	OR1	0.659	0.849
		OR2	0.742	
		OR3	0.653	
		OR4	0.774	

Table 4 and **Figure 4** display the correlation matrix, which illustrates the interrelationships among the variables EB, AIU, EK, AND OR. The study revealed statistically significant positive correlations between all pairs of variables,

with a p-value less than 0.01. The findings indicate robust correlations among the variables, implying their interconnectedness.

Table 4. Correlation Analysis

		EB	AIU	EK	OR
EB	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	420			
AIU	Pearson Correlation	.740**	1		
	Sig. (2-tailed)	0.000			
	N	420	420		
EK	Pearson Correlation	.670**	.670**	1	
	Sig. (2-tailed)	0.000	0.000		
	N	420	420	420	
OR	Pearson Correlation	.680**	.570**	.730**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	420	420	420	420

****.** Correlation is significant at the 0.01 level (2-tailed).

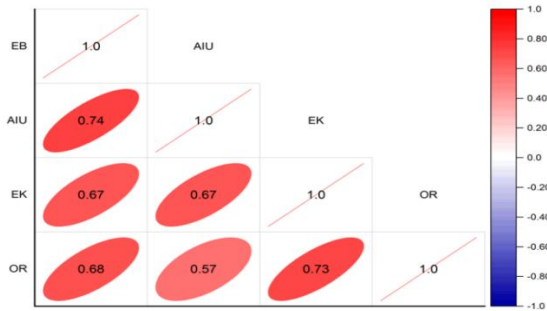


Figure 4. Correlation Matrix

The results of a regression analysis are shown in Table 5 and Figure 5, which was used to explore the connections between the variables and test various hypotheses. The information contained in the table consists of the hypothesis, the relationship being examined, the beta coefficient (BETA), the t-value, the p-value, and the decision made based on the significance level. Hypothesis H1 examines the connection between Entrepreneurial Bricolage (EB) and Opportunity Recognition (OR). Based on the beta coefficient of 0.416, it seems that there is a positive correlation between EB and OR. The relationship is statistically significant, as indicated by the t-value of 6.767. Additionally, the p-value of 0.001 further

Table 5. Regression Analysis

Hypothesis	Relation	BETA	T value	P value	Decision
H1	EB -> OR	0.416	6.767	0.001	Accepted
H2	AIU -> OR	0.226	4.375	0.001	Accepted
H3	EK -> OR	0.627	11.599	0.001	Accepted
H4	EB -> EK	0.296	5.502	0.001	Accepted
H5	AIU -> EK	0.617	8.988	0.001	Accepted

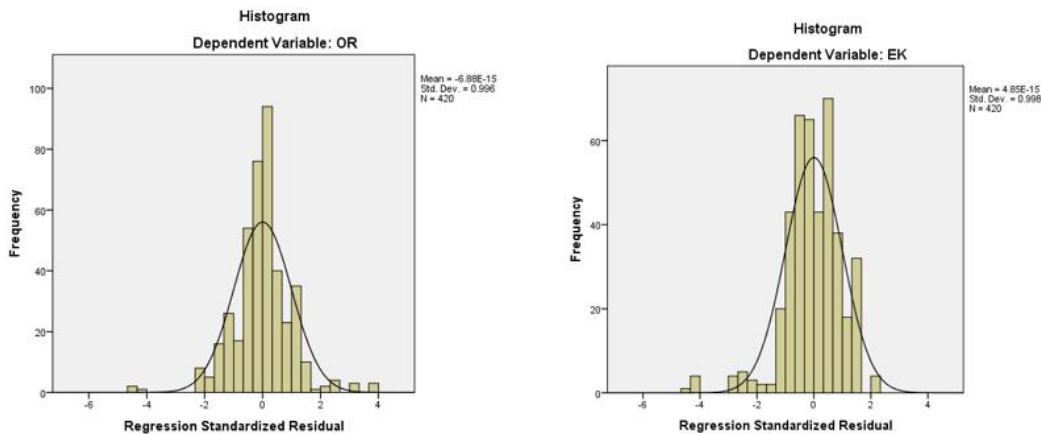


Figure 5. Regression Analysis

The results of a mediation analysis, shown in Table 6, aimed to explore the mediating effects of Entrepreneurial Knowledge (EK) on the connections between Entrepreneurial Bricolage (EB) and Opportunity Recognition (OR), as well as between Artificial Intelligence Utilization (AIU) and Opportunity Recognition (OR). The information contained in the table consists of the hypothesis, the relationship being examined, the beta coefficient (BETA), the t-value, the p-value, and the decision made based on the significance level. H6 examines how EK influences the connection between EB

and OR. Based on the beta coefficient of 0.375, it seems that there is a positive correlation between EB and EK. Statistical significance is indicated by a t-value of 7.693 and a p-value of 0.001. Hence, there is proof that suggests a connection between EB and EK. As a result, H6 is accepted. H7 explores how EK influences the connection between AIU and OR. Based on the beta coefficient of 0.251, it seems that there is a positive correlation between AIU and EK. Statistical significance is indicated by a t-value of 3.632 and a p-value of 0.003. Hence H7 is accepted.

confirms this. Therefore, H1 is accepted. Hypothesis H2 investigates how the use of Artificial Intelligence (AI) relates to the identification of opportunities. The beta coefficient of 0.226 suggests that there is a positive association between AIU and OR. Both the t-value of 4.375 and the p-value of 0.001 indicate that there is statistical significance. Therefore, H2 is accepted. H3 examines the connection between Entrepreneurial Knowledge (EK) and Opportunity Recognition (OR). Based on the beta coefficient of 0.627, it seems that there is a significant positive correlation between EK and OR. The statistical significance is high, as indicated by the t-value of 11.599 and the p-value of 0.001. As a result, H3 is accepted. H4 explores how Entrepreneurial Bricolage (EB) and Entrepreneurial Knowledge (EK) are connected. A positive relationship between EB and EK is indicated by the beta coefficient of 0.296. Statistical significance is indicated by a t-value of 5.502 and a p-value of 0.001. So, H4 is accepted. H5 examines the connection between the utilization of Artificial Intelligence (AI) and the knowledge possessed by entrepreneurs. Based on the beta coefficient of 0.617, it seems that there is a significant positive correlation between AIU and EK. Statistical significance is indicated by a t-value of 8.988 and a p-value of 0.001. Therefore, H5 is accepted.

Table 6. Mediation Analysis

Hypothesis	Relation	BETA	T value	P value	Decision
H6	EB-> EK -> OR	0.375	7.693	0.001	Accepted
H7	AIU-> EK -> OR	0.251	3.632	0.003	Accepted

DISCUSSION

The aim of this study was to investigate the impact of entrepreneurial bricolage and artificial intelligence utilization on opportunity recognition. In support of H1, according to the literature, entrepreneurial bricolage, which is characterized by inventiveness under resource constraints, resource reconfiguration, flexibility, and adaptability, facilitates the discovery and pursuit of business opportunities (Yu & Wang, 2021). Bricolage allows business owners to more easily identify market insufficiencies, unmet consumer wants, and new trends. They use their resourcefulness and innovative problem-solving skills to spot and seize chances that others might pass over. Hence H1 is supported.

The literature backs up the claim that using artificial intelligence enhances opportunity recognition. Entrepreneurs may now analyze massive amounts of data, spot patterns, and get insightful knowledge about market trends, consumer behavior, and competitive environments thanks to AI technologies (Straw, 2020). Entrepreneurs are better able to recognize and assess new possibilities thanks to data-driven predictions and suggestions provided by AI-powered algorithms and machine learning skills (Pessach & Shmueli, 2021). Hence H2 is supported.

Entrepreneurial knowledge, which includes industry-specific experience, market data, technical skills, and experiential learning, is essential to effective opportunity recognition (Rossi et al., 2022). Deeply knowledgeable business owners are better able to comprehend market dynamics, consumer needs, and competitive environments. They can assess the viability, profitability, and competitive advantage of possible prospects thanks to this expertise. Empirical studies that emphasize the value of entrepreneurial expertise in opportunity recognition are appropriate (Chu, Li, Li, & Ji, 2021). Hence H3 is supported.

According to empirical data, taking part in entrepreneurial bricolage activities improves knowledge growth. Entrepreneurs learn and develop their entrepreneurial skills through bricolage, which exposes them to a variety of settings, opportunities, and challenges (Donbesuur et al., 2023). Entrepreneurs obtain important insights and hands-on experience by creatively employing limited resources, repurposing existing resources, and adjusting to changing conditions. Hence H4 is supported.

AI utilization can contribute to entrepreneurial knowledge acquisition and development. AI technologies generate insights, patterns, and predictions that expand the entrepreneur's knowledge base (Gupta et al., 2020). By leveraging AI-powered data analysis and machine learning algorithms, entrepreneurs gain new perspectives, uncover hidden patterns, and discover previously unidentified opportunities (Hu, Lu, & Wang, 2022). Hence H5 is

supported.

In between entrepreneurial bricolage and opportunity recognition, entrepreneurial knowledge serves as a mediator. Bricolage activities help an entrepreneur gain and build entrepreneurial expertise, which in turn improves their capacity to spot and assess possibilities. Bricolage knowledge equips business owners to analyze market data, determine viability, and reach well-informed decisions (Basu & Bhola, 2022). You can talk about research that shows how entrepreneurial expertise mediates the link between opportunity recognition and bricolage. Hence H6 is supported. The link between AI utilization and opportunity recognition is mediated by entrepreneurial knowledge. Entrepreneurs with the required skills and understanding must interpret and assess the insights and data produced by AI (Wang, Guo, Cao, & Chen, 2023). Entrepreneurial knowledge enables business owners to contextualize AI-generated insights, confirm their market consequences, and make wise decisions (Robertson, Pitt, & Ferreira, 2020). Hence H6 and H7 are supported.

CONCLUSION

This study sheds insight into the connections between entrepreneurial bricolage, the use of artificial intelligence, entrepreneurial expertise, and opportunity recognition in entrepreneurship. The findings provide important insights into the elements impacting opportunity recognition and the function of entrepreneurial expertise as a mediator. The study shows that both entrepreneurial bricolage and the use of artificial intelligence have a favorable impact on opportunity recognition. Entrepreneurs who use resource restriction techniques and AI technologies to identify and pursue new company possibilities have a better chance of success. Furthermore, entrepreneurial knowledge serves as a mediator, bridging the effects of bricolage and AI utilization to improve opportunity recognition capacities. The study's practical implications help entrepreneurs use resources more effectively, adopt AI technologies, and enhance entrepreneurial skills to better opportunity recognition. Policymakers may create programs to encourage bricolage methods, ease AI adoption, and develop knowledge-sharing platforms, allowing entrepreneurs to improve their opportunity recognition ability and drive economic growth. The theoretical implications add to the previous literature by broadening our understanding of the elements driving opportunity recognition and giving empirical evidence on the function of entrepreneurial expertise as a mediator. The study adds to theoretical frameworks in entrepreneurship research and emphasizes the need to take into account the interaction between bricolage, AI utilization, and entrepreneurial expertise.

IMPLICATIONS

Practical Implication

This study has important implications for businesspeople looking to improve their capacity for opportunity recognition. First, the results show how entrepreneurial bricolage improves opportunity recognition. Entrepreneurs can effectively find and explore new company possibilities by utilizing their flexibility, resource-constrained innovation, and resource reconfiguration. Entrepreneurs who embrace a bricolage approach are more likely to spot lucrative opportunities because they can creatively work around resource constraints and adapt to shifting market conditions. The report also emphasizes the value of AI utilization in opportunity recognition. Entrepreneurs may use artificial intelligence (AI) tools to analyze data, make decisions, and innovate, enabling better-informed and data-driven opportunity appraisal. Entrepreneurs can acquire useful insights into market trends, consumer demands, and competitive environments by incorporating AI tools into their business operations. This improves opportunity recognition and strategic decision-making. Additionally, authorities might use the study's findings to develop assistance programs that encourage successful entrepreneurship. Programs can promote the use of bricolage in business, give people access to AI technologies, and aid in the growth of entrepreneurial expertise. Policymakers may empower entrepreneurs to improve their opportunity recognition skills and promote economic growth by supporting the use of creative resources, easing the deployment of AI, and fostering knowledge-sharing platforms.

Theoretical Implication

The research advances theoretical knowledge of opportunity recognition in entrepreneurship. To begin, the study increases our understanding of the elements impacting this essential entrepreneurial process by exploring the links between entrepreneurial bricolage, AI utilization, entrepreneurial expertise, and opportunity recognition. It adds to the existing theoretical frameworks in entrepreneurship research by providing empirical evidence of the positive influence of both entrepreneurial bricolage and AI utilization on opportunity recognition (Kang & Zeng, 2022). Second, the study emphasizes the role of entrepreneurial knowledge as a moderator in the correlations between bricolage/AI utilization and opportunity recognition (Menandro & Arnab, 2020). This discovery gives information on the mechanisms by which these variables influence opportunity recognition. It implies that entrepreneurial knowledge serves as a bridge, converting the results of bricolage and AI utilization into improved opportunity recognition capabilities (Vuorio & Torkkeli, 2023). This understanding broadens our understanding of the underlying processes involved in opportunity recognition and provides a more thorough theoretical framework for future research on the topic.

LIMITATIONS AND FUTURE DIRECTIONS

Despite its contributions, there are a few restrictions to consider. Self-reported data were used in the study, which can contribute to method bias and subjective interpretations. Future studies could utilize alternative data sources or objective measurements to enhance the validity of the findings. Second, because the study employed a cross-sectional design, it was unable to establish causality and capture the temporal dynamics of the associations. Longitudinal studies or experimental designs could provide a more complete picture of the temporal linkages between entrepreneurial bricolage, AI utilization, entrepreneurial expertise, and opportunity recognition. Furthermore, the study's sample size of 420 participants may not adequately represent the diversity and intricacies of the entrepreneurial scene. To improve the generalizability of the findings, future studies should investigate increasing the sample size and including people from various industries, geographies, and cultural backgrounds.

This work paves the way for future research on the subject of entrepreneurship. To begin, more research is required to investigate the contextual aspects that influence the efficiency of entrepreneurial bricolage and AI utilization on opportunity recognition. The correlations between these variables may be influenced by different industry settings, cultural contexts, and stages of venture growth. Future research could look into how contextual factors influence these relationships to have a more nuanced picture. Second, longitudinal research on the long-term benefits of entrepreneurial bricolage, AI utilization, and entrepreneurial expertise on opportunity recognition and business success might be done. This would allow for a better understanding of the dynamics and long-term viability of these connections. Future research could also look into the specific mechanisms that entrepreneurial knowledge uses to mediate the relationship between entrepreneurial bricolage/AI utilization and opportunity recognition. Exploring the pathways and processes involved would provide important insights into how entrepreneurial knowledge improves opportunity recognition abilities. Finally, cross-national research could reveal the impact of cultural, institutional, and economic factors on the linkages between entrepreneurial bricolage, AI utilization, entrepreneurial expertise, and opportunity recognition. This would lead to a better understanding of the dynamics of opportunity recognition in different circumstances.

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