

# Enhancing Competitiveness of Indonesian Culinary SMEs: The Role of Entrepreneurial Networks, Entrepreneurial Bricolage, and Frugal Innovation

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## ABSTRACT

**Research Originality:** This study comprehensively analyzes entrepreneurial networks, bricolage, and frugal innovation within the context of Indonesian culinary SMEs.

**Research Objectives:** This study explores how entrepreneurial networks, entrepreneurial bricolage, and frugal innovation contribute to improving the competitiveness of SMEs in Indonesia's culinary sector.

**Research Methods:** Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) on 100 culinary SMEs across various regions of Indonesia.

**Empirical Results:** This study reveals that while entrepreneurial networks do not directly impact competitiveness, they play a crucial role in fostering entrepreneurial bricolage and frugal innovation. These two constructs, in turn, significantly enhance the competitiveness of SMEs.

**Implications:** This research provides insights on how SMEs in emerging economies can harness resourcefulness and innovation to sustain growth and competitiveness.

## Keywords:

entrepreneurial networks; entrepreneurial bricolage; frugal innovation; SME competitiveness.

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## How to Cite:

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## INTRODUCTION

Indonesia's culinary industry, renowned for its rich cultural diversity and unique flavors, is a key contributor to the national economy. Small and Medium Enterprises (SMEs) in this sector play a crucial role in generating employment, preserving cultural heritage, and supporting regional economic growth (Kalfas et al., 2024). However, these enterprises face significant competitive challenges in an increasingly globalized and dynamic market (Anggadwita et al., 2021). Factors such as limited access to resources (Yuldinawati et al., 2018), financial constraints (Ramdhani et al., 2020), and heightened competition necessitate innovative approaches to sustain and enhance their market position (Alamanda et al., 2019).

This study integrates Network Theory and the Resource-Based View (RBV) to examine how entrepreneurial networks, bricolage, and frugal innovation enhance SME competitiveness. These strategies—entrepreneurial networks (Abu-Rumman et al., 2021), bricolage, and frugal innovation (Iqbal et al., 2024)—are pivotal for empowering SMEs to navigate complex market challenges. Network Theory highlights that networks grant SMEs access to critical external resources, such as knowledge, capital, and partnerships, which may not be available within the enterprise (Granovetter, 1985). These entrepreneurial networks are particularly beneficial for Indonesia's culinary SMEs, providing essential support and fostering collaboration that enables them to thrive even in resource-constrained environments. The RBV aligns entrepreneurial bricolage and frugal innovation by proposing that SMEs can enhance their competitive advantage through the creative use of limited internal resources (Barney, 1991). For Indonesian culinary SMEs, this strategy involves creating high-quality, cost-effective food products that align with local tastes, accomplished with a limited investment. Integrating Network Theory and RBV offers a compelling framework for understanding how entrepreneurial networking, entrepreneurial bricolage, and frugal innovation interact to enhance competitiveness. While Network Theory emphasizes the value of external resources that extend SMEs' capabilities beyond internal limitations, RBV focuses on optimizing these resources to sustain competitive advantage. This study provides insights into how these strategies can be leveraged in synergy to support SME resilience and growth in a competitive market by integrating these theories.

Entrepreneurial networks have emerged as an important resource for SMEs, providing critical connections, knowledge, and access to resources that facilitate growth and enable market expansion (Aldrich & Zimmer, 1986; Abu-Rumman et al., 2021). These networks enable collaboration and the exchange of information, empowering SMEs to utilize shared knowledge and access new markets with greater efficiency. For culinary SMEs, entrepreneurial networks serve as crucial resources for understanding market trends, enhancing brand visibility, and fostering cross-regional collaboration opportunities that expand their influence (Jones et al., 2019). These networks facilitate market entry and expansion and enable collaboration and sharing of best practices among entrepreneurs (Wasim et al., 2023).

Conversely, entrepreneurial bricolage—the innovative application of existing resources to address challenges and seize opportunities—has demonstrated effectiveness for SMEs operating with limited resources (Baker & Nelson, 2005; Mateus & Sarkar, 2024). This approach is particularly relevant in SMEs, where resource scarcity is often a significant barrier to growth. By adopting a bricolage mindset, these enterprises can turn constraints into opportunities, developing unique solutions that differentiate them in a competitive market (Tajeddini et al., 2023).

Frugal innovation complements bricolage by emphasizing cost-effective, sustainable, and user-centric innovation (Fu et al., 2024). This approach allows SMEs to create customer value while maintaining affordability and efficiency, crucial factors in competitive markets (Bound & Thornton, 2012; Radjou et al., 2012). The integration of these elements establishes a strong framework that effectively addresses the challenges SMEs encounter while capitalizing on their strengths in ways that conventional business strategies may overlook. Understanding this interplay is vital for developing strategies that enhance the competitiveness of SMEs, particularly in the dynamic and challenging environment of the Indonesian culinary sector.

Despite the recognized importance of these strategies, the existing literature has not sufficiently explored the synergistic effects of entrepreneurial networks, entrepreneurial bricolage, and frugal innovation in the context of Indonesian culinary SMEs. Most studies focus on these elements in isolation, leaving a gap in understanding how they interact to enhance competitiveness. This research aims to address this gap by examining the interconnected roles of entrepreneurial networks, bricolage, and frugal innovation in strengthening the competitiveness of culinary SMEs in Indonesia. This study is significant as it offers insights into how Indonesian culinary SMEs can leverage their networks and resourcefulness to innovate and compete effectively in a challenging market environment. Culinary SMEs have significant potential to expand into global markets. The growing global trend of appreciating authentic and unique foods from various countries presents opportunities for Indonesian culinary SMEs to penetrate international markets. However, to capitalize on these opportunities, SMEs must overcome various challenges, such as resource limitations and market access, making exploring strategies to enhance their competitiveness highly relevant.

By critically reviewing existing literature and addressing the identified research gap, this study will contribute to a broader understanding of how SMEs in developing economies can achieve sustainable growth and competitiveness. The findings will have implications for academic research, policymakers, and practitioners seeking to support the growth and development of SMEs in the Indonesian culinary sector.

## METHODS

The research method employed in this study involves a quantitative approach using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS). SEM PLS was chosen for its ability to test complex structural relationships between latent variables

and because it can be used with relatively small sample sizes without assuming normal distribution (Hair et al., 2019).

The data used in this study were collected through a survey conducted with 100 respondents who are culinary SME owners across Indonesia. This sample size represents understanding general relationship patterns between the proposed variables, providing insightful and reliable findings. Furthermore, Partial Least Squares (PLS) analysis does not require a large sample size, with recommended ranges between 30 to 100 respondents (Jumani & Sukhabot, 2021; Singkheepapha et al., 2022). The respondents were randomly selected from various regions throughout the country, ensuring broad representation from diverse geographical and cultural contexts within the culinary sector, with the following detailed breakdown.

The geographic distribution of respondents reveals that 60% are based on the island of Java, highlighting the significant concentration of culinary SMEs in this densely populated region, renowned for its diverse and vibrant culinary industry. Another 10% of the respondents are from Bali, where the tourism-driven economy strongly influences the local culinary sector. Meanwhile, 15% of the respondents are from Sumatra, a region with a rich culinary heritage and a growing SME sector that substantially contributes to local and national markets. Additionally, 10% of the respondents are from Kalimantan, representing the emerging culinary businesses on this resource-rich island. The remaining 5% of the respondents are from Sulawesi, a region known for its distinctive culinary offerings and a developing SME sector.

The respondents are involved in a diverse range of culinary product types, with 40% engaged in producing snack chips, which are widely popular across Indonesia and play a significant role in the local snack industry. Another 25% focus on producing various cakes, catering to the growing market demand for traditional and modern cake varieties. Additionally, 20% of the respondents specialize in various beverages, offering a mix of traditional and innovative beverages that appeal to diverse consumer preferences. In the catering services segment, 5% of the respondents provide meal packages for events and daily consumption. Another 5% are involved in producing packaged spices, essential in Indonesian cuisine, offering both convenience and traditional flavors to consumers. The remaining 5% of the respondents are engaged in producing snack boxes, which are a popular choice for events and gatherings.

The duration of business operations among the respondents shows that 70% have been operating their culinary SMEs for less than five years, indicating that a significant portion of these businesses are relatively new and emerging. On the other hand, 30% of the respondents have been in business for 5-10 years, representing a more established group of SMEs with a more extended presence and potentially more experience in navigating the challenges of the culinary industry. This distribution highlights the dynamic nature of the sector, with a mix of new entrants and established players contributing to the overall landscape.

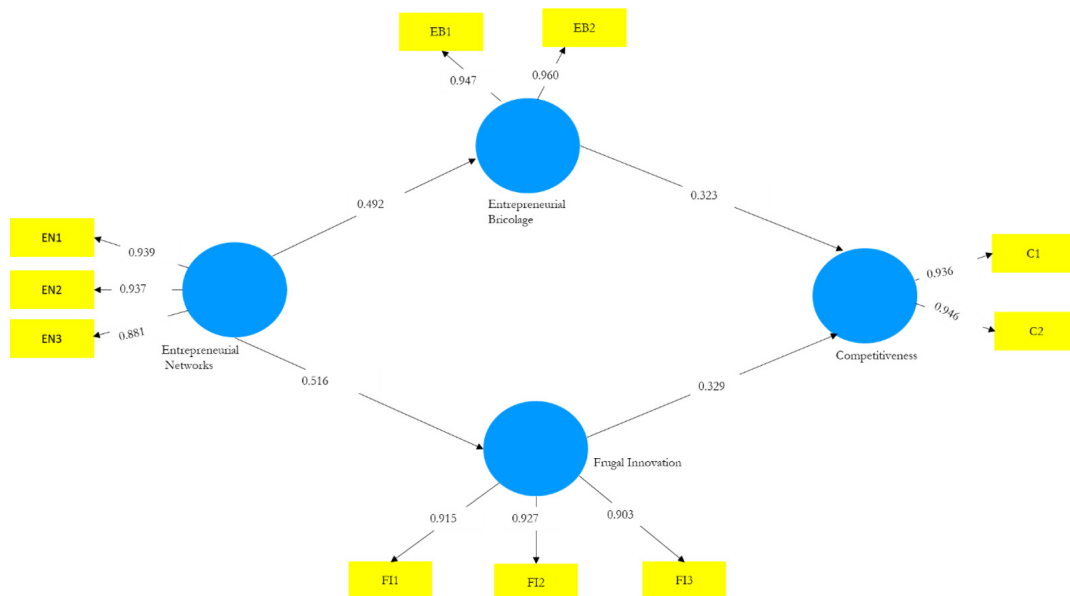
The survey was designed to measure variables related to entrepreneurial networks, bricolage, frugal innovation, and the competitiveness of SMEs. Smart PLS software was used as the analytical tool to analyze the collected data. Smart PLS was selected for its capability to perform flexible path modeling and handle models with numerous indicators

and latent variables. Additionally, Smart PLS allows researchers to comprehensively test the validity and reliability of the model, including estimating direct and indirect relationships between the hypothesized variables (Hair et al., 2019).

## RESULTS AND DISCUSSION

In this study, the structural model testing using the Partial Least Square (PLS) method was conducted in two stages: measurement model testing (outer model) and structural model testing (inner model). At an outer model stage, the measurement model determines the validity and reliability of the reflective indicators associated with the latent variables. The validity measurement is carried out by examining the factor loadings, where an indicator is considered valid if it has a factor loading greater than 0.50 (Figure1). Meanwhile, reliability is measured through the internal consistency of the indicators that describe the latent variable construct. After confirming that all indicators are valid and reliable, the testing continues by evaluating the structural model. This evaluation examines the percentage of variance explained ( $R^2$ ) for the endogenous latent variables, which are influenced by the exogenous latent variables. Additionally, the  $t$ -statistic values obtained through bootstrapping are used to determine the significance of the relationships between variables.

Figure 1. Full Structural Model (PLS Algorithm)



The numbers displayed on each arrow indicate the factor loading values, which reflect the validity of the indicators about the latent variables. Each indicator with a factor loading greater than 0.50 is considered valid. The testing results show that all indicators have significant factor loadings and meet the validity requirements, as seen from the values on each arrow. The measurement model (outer model) connects latent variables to manifest variables. The measurement model is evaluated through Confirmatory Factor Analysis (CFA) to assess the validity and reliability of the latent constructs. This method

involves testing for convergent validity, discriminant validity, and reliability. Convergent validity is based on the principle that measures (manifest variables) of a construct should be highly correlated. A common rule of thumb for assessing convergent validity is that factor loadings should be greater than 0.7 for confirmatory research, and loadings between 0.6 and 0.7 are acceptable for exploratory research.

The Average Variance Extracted (AVE) should also exceed 0.5. However, for the initial stages of measurement scale development, factor loadings between 0.5 and 0.6 are still considered adequate (Chin, 1998). Reliability testing evaluates the instrument's accuracy, consistency, and precision in measuring the construct, typically using Composite Reliability (CR). The standard criterion for construct reliability is a CR value greater than 0.7 for confirmatory research, with values between 0.6 and 0.7 acceptable for exploratory research. All manifest variables in this study were declared to have met the requirements for convergent validity. To further ensure the robustness of the model, discriminant validity can be assessed through cross-loading factors with constructs and by comparing the AVE with the correlation of latent variables.

Discriminant validity can be assessed by cross-loading factors with constructs and comparing the AVE with the correlation of latent variables. If the correlation of a construct with its associated indicators is higher than its correlation with other constructs, the variable is said to have high discriminant validity. The cross-loading values are presented in Table 1. The cross-loading factor values show that the correlation of each latent construct with its corresponding indicators is higher than with other constructs. Therefore, the indicators used to measure the latent variables have met the necessary criteria.

Table 1. Factor Cross Loading Test

	Entrepreneurial Network	Entrepreneurial Bricolage	Frugal Innovation	Competitiveness
EN1	0.939	0.467	0.545	0.497
EN2	0.937	0.461	0.485	0.445
EN3	0.887	0.456	0.478	0.456
EB1	0.436	0.947	0.421	0.476
EB2	0.499	0.960	0.433	0.548
FI1	0.463	0.369	0.915	0.498
FI2	0.436	0.353	0.927	0.487
FI3	0.513	0.498	0.903	0.512
C1	0.44	0.49	0.479	0.936
C2	0.443	0.524	0.547	0.946

Source: Authors (2024)

The Fornell-Larcker Criterion is a method used to assess discriminant validity in a structural equation model. It compares the Average Variance Extracted (AVE) square root for each latent variable with the correlations between those and other latent variables. According to the Fornell-Larcker Criterion, for discriminant validity to be established,



the diagonal values (square roots of AVE) should be greater than the off-diagonal values (correlations with other constructs) in their respective rows and columns.

In Table 2, each diagonal value is higher than the corresponding off-diagonal values in the same row and column, indicating that each construct shares more variance with its indicators than with other constructs. This result suggests that discriminant validity is achieved, meaning that the constructs are distinct and measure different concepts effectively.

Table 2. Fornell-Lacker Criterion

	Entrepreneurial Network	Entrepreneurial Bricolage	Frugal Innovation	Competitiveness
Entrepreneurial Network	0.941			
Entrepreneurial Bricolage	0.539	0.954		
Frugal Innovation	0.546	0.448	0.915	
Competitiveness	0.469	0.492	0.516	0.921

Source: Authors (2024)

Furthermore, from the results of Composite Reliability (CR) and Cronbach's Alpha, the Composite Reliability (CR) value is greater than 0.7 and the Cronbach's Alpha value is greater than 0.6, so it can be concluded that the data is reliable which shows that all indicators have consistency in measuring each variable.

Figure 2. Bootstrapping

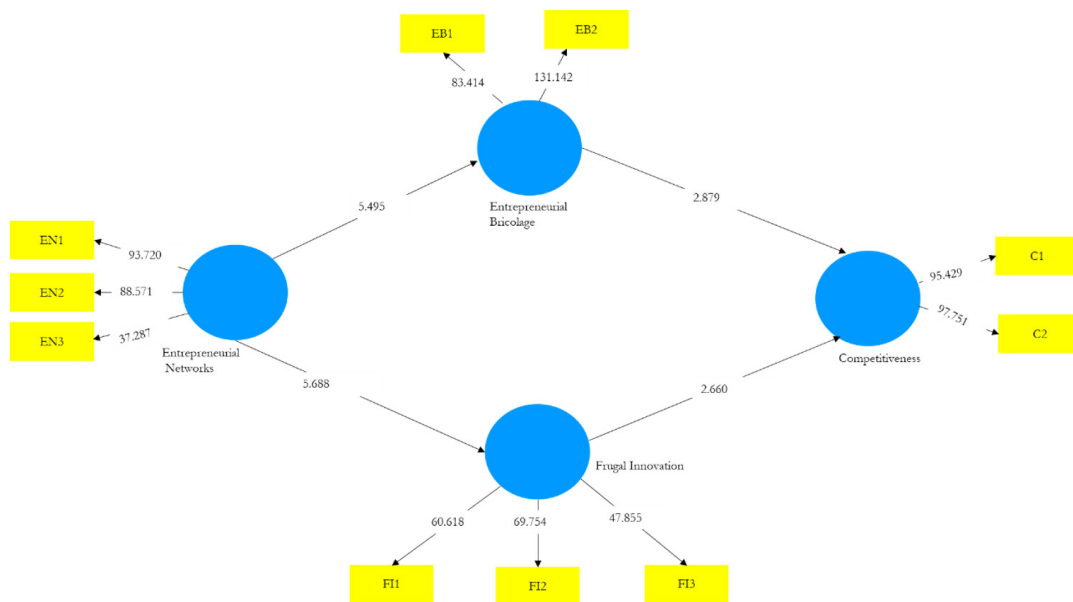


Figure 2 represents bootstrapping results in a Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis. Bootstrapping is a resampling method used to assess the stability and reliability of the model's estimates, particularly the significance of the paths between constructs. The t-values indicate the significance of the relationships, with

values greater than 1.96 generally considered statistically significant at the 5% level. For instance, the t-values between EB1 and Entrepreneurial Bricolage (83.414) and between C1 and Competitiveness (95.429) suggest robust and significant relationships. Overall, the bootstrapping results suggest that the relationships between the constructs and their indicators are robust and statistically significant, reinforcing the model's validity. This result supports the model's reliability in explaining the relationships among the latent variables.

Building on this result, the hypotheses in this study will be tested using the path coefficients and t-values (Table 3) to determine whether the effects are statistically significant. Additionally, the significance of the path analysis will also reveal the parameter coefficients (original sample), which indicate the significance of the influence of each research variable.

Table 3. Path Analysis

	Original Sample (O)	T Statistics ( O/STDEV )	P Values	Note
Entrepreneurial Network -> Competitiveness	0.140	1.259	0.209	Reject H <sub>1</sub>
Entrepreneurial Network -> Entrepreneurial Bricolage	0.492	5.495	0.000	Accept H <sub>1</sub>
Entrepreneurial Network -> Frugal Innovation	0.516	5.688	0.000	Accept H <sub>1</sub>
Entrepreneurial Bricolage -> Competitiveness	0.323	2.879	0.004	Accept H <sub>1</sub>
Frugal Innovation -> Competitiveness	0.329	2.660	0.008	Accept H <sub>1</sub>
Entrepreneurial Network -> Entrepreneurial Bricolage -> Competitiveness	0.159	2.494	0.013	Accept H <sub>1</sub>
Entrepreneurial Network -> Frugal Innovation -> Competitiveness	0.170	2.410	0.016	Accept H <sub>1</sub>

Source: Authors (2024)

According to Richter and Tudoran (2024), business research typically employs a 95% confidence level. The t-statistic value indicates that the path coefficient score must be above 1.96 for a two-tailed hypothesis. Based on the result, it was found that the Entrepreneurial Network does not significantly affect Competitiveness. Conversely, the Entrepreneurial Network positively affects Entrepreneurial Bricolage and Frugal Innovation. Additionally, entrepreneurial bricolage positively affects Competitiveness, and frugal innovation impacts Competitiveness. Furthermore, Entrepreneurial Bricolage mediates the effect of the Entrepreneurial Network on Competitiveness, while Frugal Innovation mediates the effect of the Entrepreneurial Network on Competitiveness through Frugal Innovation.

The Entrepreneurial Network construct typically includes indicators such as the strength of business connections, the frequency of interactions within the network, and access to resources like knowledge, capital, and market opportunities (Robledo et al., 2023). In this study, the Entrepreneurial Network was expected to directly influence the competitiveness of SMEs, particularly in the culinary sector in Indonesia. However, the findings indicate that this network does not significantly impact competitiveness.



One possible reason is the nature of the connections within the network. The benefits may be limited if these networks are primarily composed of similar, small-scale businesses without substantial ties to larger, more resource-rich entities. The network might be substantial regarding social capital but weak in access to critical resources that could enhance competitiveness, such as advanced technology, skilled labor, or innovative practices (Pylypenko et al., 2023). In Indonesia, many SMEs in the culinary sector may rely heavily on traditional practices and local markets, limiting the potential competitive advantage that can be gained from networking alone (Shahira et al., 2023).

In Indonesia, the culinary sector predominantly comprises micro and small enterprises with limited access to large-scale distribution channels and advanced technological tools (Alamanda et al., 2023). While valuable for maintaining relationships and gaining incremental knowledge, the Entrepreneurial Network might not be sufficient to enhance competitiveness significantly (Liu et al., 2023). Many of these businesses operate in a highly competitive and fragmented market, where differentiation and innovation are crucial to staying ahead. Therefore, the influence of networks might be overshadowed by other factors, such as product innovation, customer service, and pricing strategies, which are more directly linked to competitiveness.

Additionally, Indonesia's cultural and social dynamics might contribute to this outcome (Samsu et al., 2023). The entrepreneurial networks in Indonesia, especially in traditional culinary businesses, are often informal and based on social ties rather than strategic alliances. This result limits the scope of resource-sharing and collective bargaining power, which are critical for improving competitiveness on a larger scale.

This finding contrasts with the firm's Resource-Based View (RBV), which suggests that access to unique resources through networks can be a source of competitive advantage (Kero & Bogale, 2023). The RBV posits that entrepreneurial networks should provide access to rare, valuable, and inimitable resources, enhancing competitiveness. However, in the context of Indonesian culinary SMEs, the resources accessed through these networks may not meet the criteria of rarity or inimitability or be adequately leveraged to enhance competitiveness (Perdana & Prasasti, 2023).

Another contrasting concept is the Social Capital Theory (Alpino & Mehlum, 2023), which argues that the value of networks is in the strength and diversity of connections. If the networks are not diverse or do not include connections to more powerful or innovative partners, the expected competitive advantage may not materialize. This condition might explain why, despite strong networking, the impact on competitiveness is insignificant.

In the future, it would be valuable to compare the role of entrepreneurial networks across different sectors and regions within Indonesia to understand the contextual factors that enhance or diminish their impact on competitiveness. Understanding how entrepreneurial networks evolve and their long-term impact on competitiveness could provide deeper insights (Perdana & Prasasti, 2023). This network includes studying how networks transition from social to strategic alliances (Mathey et al., 2024).

The constructs of Entrepreneurial Network, Entrepreneurial Bricolage, and Frugal Innovation each play crucial roles in driving competitiveness, particularly in the context of SMEs in Indonesia's culinary sector. Entrepreneurial network typically includes the breadth and depth of business connections, the frequency of information exchange, and the extent of resource sharing (Mathey et al., 2024). These networks are essential for accessing ideas, knowledge, and materials vital for entrepreneurial bricolage and frugal innovation.

Entrepreneurial bricolage involves using limited resources in creative and unconventional ways to solve problems and create value (Iqbal et al., 2024). Indicators include the ability to repurpose existing resources, improvisation skills, and the capacity to operate under constraints. Those creative approaches align closely with frugal innovation, which focuses on developing simple, cost-effective solutions within tight resource constraints. Frugal innovation focuses on creating simple and cost-effective solutions that are both affordable and sustainable (Dima et al., 2022). Indicators include innovating within budget constraints, adapting existing technologies, and delivering value to resource-constrained customers (Cai et al., 2019).

The positive effect of Entrepreneurial Networks on both Entrepreneurial Bricolage and Frugal Innovation indicates that strong networks provide the necessary resources, ideas, and support systems that enable entrepreneurs to creatively leverage their limited resources (bricolage) and develop cost-effective innovations (frugal innovation). In turn, entrepreneurial bricolage and frugal innovation significantly enhance competitiveness by allowing SMEs to differentiate themselves, meet market needs efficiently, and maintain flexibility in a competitive environment (Al Omoush et al., 2023). These relationships are particularly relevant in the Indonesian culinary SME sector. Many SMEs operate with limited financial and technological resources but have access to rich networks of suppliers, customers, and other entrepreneurs. These networks often serve as vital channels for exchanging knowledge about local tastes, sourcing affordable ingredients, and sharing best practices for operational efficiency.

Entrepreneurial bricolage is common in this context, as many business owners must creatively use what is available to them, such as adapting traditional recipes with modern twists using locally sourced, inexpensive ingredients (Iqbal et al., 2024). Frugal innovation is also critical, as SMEs must innovate within tight budget constraints to create products that appeal to a broad market while remaining affordable (Al Omoush et al., 2023). The ability to innovate frugally allows these businesses to compete effectively against larger firms with more resources (Rossetto et al., 2023).

While the findings align with theories that emphasize the importance of networks in resource-constrained environments, they challenge some traditional views that prioritize resource abundance as a key driver of competitiveness. The Resource-Based View (RBV) suggests that firms with unique, valuable, and difficult-to-imitate resources achieve a competitive advantage (Kero & Bogale, 2023). However, in Indonesian culinary SMEs, competitiveness derives more from how resources are utilized creatively (bricolage) and innovatively (frugal innovation) than from abundant resources.

This challenges the notion that more resources always lead to greater competitiveness. Instead, it supports the idea that resourcefulness—how resources are applied—drives competitive success in resource-scarce environments. This perspective aligns with the theory of effectuation, which posits that successful entrepreneurs do not start with a given set of resources but instead create value by leveraging available means.

Future research could explore several areas, and future research should investigate the specific characteristics of entrepreneurial networks that contribute most to bricolage and frugal innovation. For example, studies could examine whether the network's diversity or the strength of ties is more crucial for fostering these outcomes (Flipo et al., 2023). Future research can conduct more detailed, sector-specific studies that provide further insights into how these relationships play out in different industries. For instance, comparing the role of networks in the culinary sector with those in technology-based SMEs could reveal sector-specific dynamics. It would be valuable to explore potential barriers to the effectiveness of entrepreneurial networks, such as cultural or social factors that limit the full utilization of these networks for bricolage and innovation.

## CONCLUSION

The study explored the relationships between Entrepreneurial Networks, Entrepreneurial Bricolage, Frugal Innovation, and Competitiveness within the context of Indonesian culinary SMEs. The findings reveal that while entrepreneurial networks do not directly impact competitiveness, they play a crucial role in fostering both entrepreneurial bricolage and frugal innovation. These two constructs, in turn, significantly enhance the competitiveness of SMEs. The results suggest that for SMEs in resource-constrained environments, such as Indonesia's culinary sector, leveraging networks to stimulate bricolage and frugal innovation is key to achieving a competitive advantage.

This study offers valuable implications for academic research, practical application, and policy development. It broadens the literature on SME competitiveness by analyzing the combined effect of entrepreneurial networks, entrepreneurial bricolage, and frugal innovation, focusing on emerging markets like Indonesia. By demonstrating the interaction among these constructs, the study advances our understanding of resource-constrained entrepreneurship, underscoring the importance of creatively leveraging limited resources to maintain competitiveness. Additionally, this research integrates the Resource-Based View (RBV) and Network Theory, presenting a novel framework that illustrates how external and internal resources can work synergistically to overcome limitations and drive sustainable growth.

For SME owners and managers, the findings emphasize the value of adopting entrepreneurial bricolage and frugal innovation strategies. Policymakers can leverage these insights to create tailored support programs that enhance networking opportunities, such as entrepreneurship hubs and industry-specific meetups. Business training programs should incorporate modules on creative problem-solving and affordable innovation techniques, equipping SME entrepreneurs to maximize limited resources and enhance their flexibility

in a dynamic market landscape. Additionally, government agencies can allocate dedicated funding for research and development (R&D) targeted at culinary SMEs, focusing on cost-effective innovations, efficient production practices, and sustainable packaging. These initiatives would enable culinary SMEs to respond to market demand and consumer preferences without requiring substantial capital investment.

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