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The Role of Open Innovation and Intellectual Capital on Business Sustainability: Study of Furniture MSMEs in Banjarmasin, Indonesia

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ABSTRACT

Furniture MSMEs in Banjarmasin City face various challenges in achieving business sustainability. This research aims to identify and analyze the influence of open innovation on the sustainability of the MSME furniture business and analyze the influence of intellectual capital on the sustainability of the MSME furniture business. This research used a quantitative method by distributing questionnaires to 50 respondents, namely owners and managers of furniture MSMEs in Banjarmasin City. The sampling technique uses non-probability sampling with purposive sampling. Data analysis used descriptive analysis and PLS-based SEM with SmartPLS4.0. Open innovation (X1) and intellectual capital (X2) have a positive and significant influence on business sustainability (Y). In conclusion, open innovation and intellectual capital are important factors that contribute to the sustainability of the MSME furniture business in Banjarmasin City.

1. Introduction

Furniture MSMEs in Banjarmasin City play an important role in the local economy. Their contribution to GDP (gross domestic income), job creation, and local economic development is very significant. Furniture MSMEs in Banjarmasin City contribute to GDP through the production, sales, and distribution of furniture products. This contribution helps increase the income and welfare of the people in Banjarmasin City. Furniture MSMEs in Banjarmasin City absorb a lot of workers, both from the production and non-production sectors. This helps reduce unemployment and improve people's standard of living. Furniture MSMEs in Banjarmasin City help develop the local economy by increasing the demand and supply of

furniture products. This encourages economic growth in various related sectors, such as raw materials, logistics, and trade. Furniture MSMEs in Banjarmasin City face intense competition, both from within the country and abroad. This competition is getting tighter with the presence of cheaper and better quality furniture products from other countries. Furniture MSMEs in Banjarmasin City generally have limited resources, such as capital, technology, and human resources. These limitations prevent them from increasing production, product quality, and competitiveness. Rapid technological developments are also a challenge for furniture MSMEs in Banjarmasin City. They need to adapt to new technologies to improve production efficiency and



product quality (Aguinis, 2012; Albizzati, 2020; Amran, 2016).

Open innovation and intellectual capital are two important factors that can help furniture MSMEs in Banjarmasin City achieve business sustainability. Open innovation is a strategy that allows furniture MSMEs to get ideas, knowledge, and technology from outside the company. Open innovation can help furniture MSMEs increase productivity, product quality, and competitiveness. Furniture MSMEs in Banjarmasin City need to increase open innovation by collaborating with various parties, such as research institutions, universities, and other companies. This collaboration can help furniture MSMEs to develop new and innovative products, as well as increase production efficiency. Intellectual capital is the intangible assets owned by a company, such as knowledge, skills, and brands. Intellectual capital can help furniture MSMEs increase company value, competitiveness, and business sustainability. Furniture MSMEs in Banjarmasin City need to increase intellectual capital by improving the quality of human resources and protecting intellectual property rights for their products (Belton, 2020; Bessy, 2017; Berrone, 2017). This research aims to identify and analyze the influence of open innovation on the sustainability of the MSME furniture business and the influence of intellectual capital on the sustainability of the MSME furniture business.

2. Literature Review

Business sustainability theory

Business sustainability is a concept that refers to the ability of an organization to operate sustainably in the long term. This is achieved by balancing economic, social, and environmental aspects in the organization's operational activities. The triple bottom line (TBL) theory was put forward by John Elkington in 1994. TBL emphasizes that business sustainability must be achieved by paying attention to three aspects: economic, social, and environmental. Stakeholder

theory states that organizations must pay attention to the interests of all stakeholders, such as employees, customers, suppliers, and the surrounding community. This theory states that a sustainable organization is an organization that is able to compete in the long term. This is achieved by building sustainable competitive advantages. Factors that influence business sustainability

Economic factors: Economic factors that influence business sustainability include profitability, efficiency, and financial stability.

Social factors: Social factors that influence business sustainability include employee satisfaction, relationships with the community, and compliance with laws and regulations.

Environmental factors: Environmental factors that influence business sustainability include the use of natural resources, environmental pollution, and climate change.

Strategies to improve business sustainability: Develop a sustainability strategy. This strategy should include the organization's vision, mission, and goals regarding sustainability.

Implement sustainability practices: These practices can include saving energy, reducing emissions, and using sustainable raw materials.

Building relationships with stakeholders: Organizations need to build good relationships with all stakeholders to gain their support in achieving sustainability.

Benefits of business sustainability:

- increase profitability:** Business continuity can increase an organization's profitability by increasing operational efficiency and reducing costs.
- Enhancing reputation:** Business sustainability can improve an organization's reputation and attract customers and investors who care about the environment and society.
- Increasing competitiveness:** Business sustainability can increase an organization's competitiveness by building sustainable competitive advantages.

Business sustainability is an important concept for organizations that wish to operate in the long term. By paying attention to economic, social, and environmental aspects in its operational activities,



organizations can achieve sustainability and increase their profitability, reputation, and competitiveness (Boone, 2019; Branco, 2020; Carter, 2019).

Open innovation theory for business sustainability

Open innovation is a paradigm that encourages companies to utilize external knowledge and resources to develop innovation. This is different from the traditional paradigm, where companies focus on internal research and development. Open innovation has several benefits for companies, including Accelerating the innovation process, reducing research and development costs, increasing access to new knowledge and technology, and increasing opportunities for collaboration with other parties. Open innovation is a paradigm that encourages companies to break down internal boundaries and utilize external resources to spur creation and breakthroughs. In practice, there are various open innovation models that can be adopted, each offering a unique approach to getting companies to the gates of progress. The licensing model is like spreading the seeds of innovation throughout the world. Companies grant rights to other parties to use their technology or products, opening up wider opportunities for collaboration and idea development. Imagine a technology company that has a revolutionary patent for batteries. With a licensing model, they can open access for various manufacturers to produce products with this technology, producing innovative product variations and expanding market reach. The joint venture model is like combining two giants to create magic. Companies work with others to build new ventures, combining skills, resources, and ideas to produce extraordinary products or services. For example, a leading automotive company could collaborate with a leading technology company to develop self-driving cars, combining manufacturing expertise and cutting-edge technology to deliver the future of mobility. The crowdsourcing model is like opening the door to a sea of ideas and solutions from

the wider community. Companies invite the public to help solve problems, develop new ideas, or provide feedback on products and services. Imagine a cosmetics company that wants to launch a new product. They can hold crowdsourcing competitions, inviting graphic designers from around the world to design eye-catching logos and packaging, resulting in innovative and cost-effective designs. Open innovation is a strategy that can help companies achieve business sustainability. This can be achieved by increasing the speed and efficiency of innovation, increasing access to new knowledge and technology, increasing opportunities for collaboration with other parties, increasing competitiveness, and increasing value for customers (Chauhan, 2019; Chivu, 2019; Epstein, 2016).

Intellectual capital theory related to business sustainability

Intellectual capital is an intangible asset that is a source of competitive advantage and the key to business sustainability. This asset consists of three main elements: 1. Human capacity: Employee knowledge, skills, and experience are the main foundation of intellectual capital. Their ability to innovate, solve problems, and adapt to change is a determining factor in achieving long-term success. 2. Structural capacity: Systems, processes, and infrastructure that support the creation, storage, and use of knowledge. An organizational culture that encourages learning, collaboration, and information sharing is also included in this element. 3. Relational capacity: Network of relationships and collaboration with customers, suppliers, partners, and other stakeholders. The ability to build and maintain strong relationships with external parties can open new opportunities and increase a company's competitiveness. The influence of intellectual capital on business sustainability: 1. Increasing innovation: Intellectual capital encourages the development of new products and services that are



more competitive and in line with market needs. 2. Improve efficiency: Effective systems and processes can improve operational efficiency and reduce costs. 3. Increase competitiveness: The ability to adapt to change and create value for customers provides a competitive advantage in a dynamic market. 4. Improve reputation: A good reputation as an innovative and trustworthy company can attract the best customers, investors, and talent. 5. Improve long-term sustainability: Building intellectual capital helps companies achieve long-term goals and adapt to future challenges. Measuring and managing intellectual capital is an important step to ensure business sustainability. Various methods and measurement tools can be used to assess the value of intellectual capital, such as Balanced Scorecard: Which measures a company's performance from multiple perspectives, including financial, customer, internal processes, and learning and growth. Intellectual capital index (ICI): Measures the value of intellectual capital based on financial and non-financial indicators. Value Creation method: Measures the contribution of intellectual capital to the creation of value for the company. Intellectual capital is a strategic asset that plays an important role in business sustainability. By effectively managing and developing intellectual capital, companies can increase their competitiveness, achieve long-term goals, and build a solid foundation for a glorious future (Figge, 2022; Garcia-Gonzalez, 2020; Hahn, 2015)

3. Methods

This research uses quantitative methods with the aim of examining the influence of open innovation (X1) and intellectual capital (X2) on business sustainability (Y) in furniture MSMEs in Banjarmasin City. The population of this research is all furniture MSMEs in Banjarmasin City. The sampling technique uses non-probability sampling with purposive sampling. The research sample was 50 respondents selected based on the criteria: Owners and managers of furniture

MSMEs in Banjarmasin City who were willing to fill out the questionnaire completely. The research instrument used was a questionnaire adopted and modified from previous research. The questionnaire consists of Part A: Respondent profile; Part B: Open innovation indicators (X1); Part C: Intellectual capital indicator (X2); and Part D: Business sustainability indicators (Y).

Data analysis was carried out in two stages, namely Descriptive Analysis, used to describe the characteristics of respondents and research variables. Descriptive analysis was carried out by calculating statistics such as mean, median, mode, standard deviation, and frequency. PLS-based SEM analysis with SmartPLS4.0 is used to test the influence of Open Innovation (X1) and intellectual capital (X2) on business sustainability (Y). SEM analysis was carried out using SmartPLS4.0 software. SEM analysis is carried out by first examining the measurement model which assesses the validity and reliability of the construct and assesses convergent validity and discriminant validity. Then, continue with examining the structural model, which assesses the significance of the relationship between constructs, assesses the R-squared, adjusted R-squared, and Q-squared values, and assesses the goodness-of-fit (GoF) of the model. This research was conducted by paying attention to research ethics, namely respecting respondent privacy, ensuring confidentiality of respondent data, and obtaining respondent consent before filling out the questionnaire.

4. Results and Discussion

The majority of respondents (50%) are between 40-49 years old, indicating that many furniture businesses in Banjarmasin City are managed by individuals who are mature and experienced. The 50-59-year age group is also quite significant (34%), indicating that many furniture entrepreneurs have been involved in this industry for a long time. Respondents aged 20-29 years (8%) and 30-39 years



(2%) are in the minority but show that the younger generation is interested in getting into the furniture business. Most of the respondents (52%) came from Kandangan, indicating that this area is the center of the furniture industry in Banjarmasin City. There were also quite a lot of respondents from Banjarmasin (42%), indicating that this city, as an economic and trade center, also has a growing furniture industry. Respondents from other regions (Martapura, Bugis, and Java) are in the minority, indicating that the furniture industry in Banjarmasin City is still dominated by local entrepreneurs. Men dominate respondents (92%), indicating that the furniture business in Banjarmasin City is still dominated by men. This may be due to the perception that furniture

work requires a strong physique and high technical skills. Respondent's education was fairly evenly distributed, with the largest proportion at junior high school or equivalent (20%) and high school or equivalent (38%). This shows that formal education is not the main requirement to become a furniture entrepreneur. Skills and work experience in the furniture sector are preferred. The characteristics of the respondents show that the furniture business in Banjarmasin City is dominated by entrepreneurs aged 40-49 years, coming from Kandangan, male, and having a junior high school or high school education. This needs to be considered in the research and development of furniture businesses in Banjarmasin City.

Table 1. Characteristics of respondents.

Characteristics	Total	Percentage
Age		
20-29 years	4	8%
30-39 years	1	2%
40-49 years	19	38%
50-59 years	17	34%
60-69 years	9	18%
Origin		
Kandangan	26	52%
Banjarmasin	21	42%
Martapura	1	2%
Bugis	1	2%
Java	1	2%
Gender		
Male	46	92%
Female	4	8%
Education		
Elementary school equivalent	20	40%
Junior high school equivalent	10	20%
Senior High school equivalent	19	38%
Diploma	1	2%



Based on Table 2, all statement items in the three constructs (open innovation, intellectual capital, and business sustainability) have a calculated t-value that is higher than the critical t-value (0.70). This shows that all statement items are valid and can be used to measure the construct in question. The Cronbach's alpha and composite reliability values for the three constructs show high values, namely above 0.9. This shows that the research instrument is reliable, which

means that the instrument is consistent and reliable in measuring the construct in question. The results of the validity and reliability tests show that the research instruments used to measure business sustainability are valid and reliable. open innovation, intellectual capital. This means that the instrument can be used to measure the construct in question with a high level of accuracy and precision.

Table 2. Analysis of construct validity and reliability.

Construct	Statement items	T-count	T-critical	Decision	Cronbach's alpha	Composite reliability	Decision
Open innovation	Statement 1	0.855	0.70	Valid	0.928	0.935	Reliable
	Statement 2	0.870	0.70	Valid			
	Statement 3	0.863	0.70	Valid			
	Statement 4	0.874	0.70	Valid			
	Statement 5	0.733	0.70	Valid			
	Statement 6	0.816	0.70	Valid			
	Statement 7	0.738	0.70	Valid			
	Statement 8	0.765	0.70	Valid			
Intellectual capital	Statement 1	0.829	0.70	Valid	0.900	0.909	Reliable
	Statement 2	0.708	0.70	Valid			
	Statement 3	0.783	0.70	Valid			
	Statement 4	0.763	0.70	Valid			
	Statement 5	0.810	0.70	Valid			
	Statement 6	0.730	0.70	Valid			
	Statement 7	0.754	0.70	Valid			
	Statement 8	0.743	0.70	Valid			
Business sustainability	Statement 1	0.826	0.70	Valid	0.915	0.922	Reliable
	Statement 2	0.839	0.70	Valid			
	Statement 3	0.852	0.70	Valid			
	Statement 4	0.890	0.70	Valid			
	Statement 5	0.809	0.70	Valid			
	Statement 6	0.700	0.70	Valid			
	Statement 7	0.707	0.70	Valid			
	Statement 8	0.707	0.70	Valid			



Figures 1 and 2 show that the influence of the open innovation variable (X1) on the variables of business sustainability (Y) is significant. The t-statistic value is 2.963 greater than the t table (2.963 > 1.96), and the p-value is 0.003 < alpha 5% (0.05). Thus, open innovation has a positive and significant effect on the business sustainability of furniture MSMEs in Banjarmasin City. The influence of the intellectual

capital variable (X2) on business sustainability (Y) is strongly significant. This is shown by the t-statistic value of 5.999, which is higher than the t-table value (1.96), and the p-value of 0.000, which is lower than the alpha of 5% (0.05). These results indicate that intellectual capital has a positive and significant influence on business sustainability in Banjarmasin City furniture MSMEs.

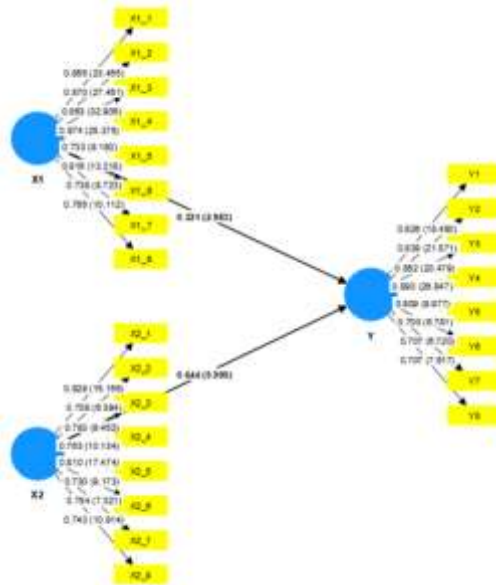


Figure 1. Structural model (path coefficient, beta).

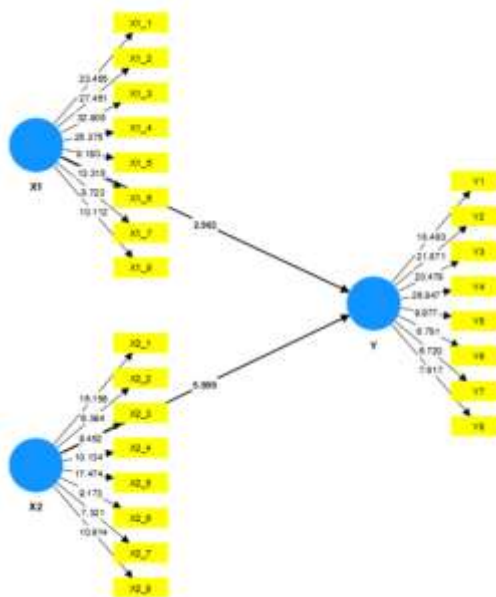


Figure 2. Significance value (t-count).



Table 3 shows the influence of open innovation on business sustainability by looking at the value estimate of the original sample (O) of 0.321. This figure shows that open innovation has a positive influence of 32.1% on business sustainability; if open innovation increases, then business sustainability will also increase. The critical point value $t_{(count)}$ is 2.963 (>1.96), and the p-value is 0.002, which is smaller than $\alpha = 0.05$, which means it is significant. In Table

3, it can also be seen that the value estimate path coefficient is 0.644. This figure shows that intellectual capital has a positive influence of 64.4% on business sustainability; if intellectual capital increases, then business sustainability will also increase. The critical point value $t_{(count)}$ is 5.999, which means it is greater than 1.96, and the p-value is 0.000, which is smaller than $\alpha = 0.05$, which means it is significant.

Table 3. Hypothesis testing results.

Hypothesis	Variable	Initial sample	T statistics	P value	Information
H1	Open innovation → Business sustainability	0.321	2.963	0.003	Accepted
H2	Intellectual capital → Business sustainability	0.644	5.999	0.000	Accepted

Open innovation is a new paradigm in innovation management that emphasizes the importance of collaboration and knowledge exchange with external parties to improve the company's internal capabilities. This is different from the traditional paradigm, in which companies focus on internal research and development to produce innovation. By accessing external knowledge and technology, companies can speed up the process of developing new products and services. By combining knowledge and technology from various sources, companies can produce higher-quality innovations. By involving external parties in the innovation process, companies can reduce the risk of failure and increase the chances of success. There are several ways to implement open innovation: Collaboration with other companies: Companies can collaborate with other companies to develop new products and services. Technology acquisition: Companies can acquire technology from other companies; Technology licensing: Companies can license their technology to other companies; Involvement in communities: Companies can get involved in research and development communities to gain access to the latest knowledge and technologies. Furniture MSMEs that implement open innovation

have better performance than those that do not. This shows that open innovation can help furniture MSMEs increase their competitiveness and achieve success. Some examples of implementing open innovation by furniture MSMEs include working with designers to develop new products, attending trade shows to learn about the latest trends, establishing relationships with new suppliers and customers, and participating in training and development programs to improve employee skills. Open innovation is an effective strategy to improve the performance of furniture MSMEs. By implementing open innovation, furniture MSMEs can access and utilize external knowledge and technology to improve their internal capabilities, speed up the innovation process, improve the quality of innovation, and reduce the risk of failure (Hemmati, 2020; Jaspersen, 2020; Chen, 2020).

Intellectual capital is defined as the intangible assets owned by a company, which can be categorized into three main components: 1. Human capital: Knowledge, skills, and experience possessed by a company's employees. 2. Structural capital: Structured intangible assets, such as patents, trademarks, copyrights, and industrial designs. 3. Relational capital: The network of relationships and



collaborations a company has with customers, suppliers, and other partners. Research shows that furniture MSMEs that have high intellectual capital perform better than those with low levels. Employees who have high knowledge, skills, and experience can produce higher-quality products and services. Structured intangible assets can give companies a competitive advantage in the market. A strong network of relationships and collaboration can help companies gain access to new resources and opportunities. Here are some examples of how intellectual capital can improve the performance of furniture MSMEs, including knowledge of market trends: Furniture MSMEs that have knowledge of market trends can develop products and services that suit customer needs, furniture MSMEs that have employees with high design skills can produce products more attractive and innovative, a strong brand can help furniture MSMEs to attract customers and increase market share, strong relationships with suppliers can help furniture MSMEs to get quality raw materials at competitive prices and collaboration with partners can help furniture MSMEs to access new technology and expanding market reach. It is important to note that intellectual capital is not just about owning intangible assets but also about how a company manages and utilizes those assets. Furniture MSMEs that want to improve their performance need to develop strategies to identify, develop, and protect their intellectual capital, create a culture that values knowledge and learning, and build systems and processes to manage their intellectual capital effectively. By managing intellectual capital effectively, furniture MSMEs can improve their performance and achieve a competitive advantage in the market (Christmann, 2021; Delmas, 2022).

5. Conclusion

Open Innovation and intellectual capital have a positive and significant influence on the sustainability of the MSME furniture business in Banjarmasin City.

Furniture MSMEs in Banjarmasin City need to increase open innovation and intellectual capital to achieve business sustainability.

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