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The Impact of Intellectual Capital on Business Efficiency and Financial Success in Creative SMEs

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Abstract
Purpose: This study examines the role of Intellectual Capital (IC)—including Human Capital (HC), Structural Capital (SC), and Relationship Capital (RC)—as a moderating variable in the relationship between business efficiency and financial performance, measured by Return on Assets (ROA) and Return on Sales (ROS), in Creative Economy-based Micro, Small, and Medium Enterprises (MSMEs) in Palembang City.
Method: Utilizing financial data from MSMEs between 2020 and 2023, this research employs a quantitative approach and survey method. The study population consists of 1,233 MSMEs across 15 creative economy subcategories, guided by the Department of Industry and Trade of Palembang City. A sample of 400 respondents was selected using Slovin's formula and purposive sampling. Data were collected through direct interviews and questionnaires, analyzed via the Panel Least Squares Method.
Results: The findings reveal that business efficiency significantly influences ROA but not ROS. Human capital enhances the impact of business efficiency on both ROA and ROS, while customer capital does not strengthen this relationship. Structural capital boosts the effect of business efficiency on ROA but not on ROS.
Limitations: This study is confined to Palembang City and the creative economy MSME sector, necessitating cautious generalization to other regions or sectors. Future research could explore additional moderating variables beyond IC.
Contribution: The study contributes to understanding IC's role in enhancing business efficiency and its subsequent impact on the financial performance of creative economy-based MSMEs.
Novelty: This research highlights the critical importance of managing human capital and structural capital to improve financial outcomes, providing new insights into factors influencing the performance of creative economy MSMEs.
Keywords: Intellectual Capital, Business Efficiency, Financial Performance, Small and Medium Enterprises, Creative Economy
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1. Introduction

The creative economy, emerging in the U.S. in the early 21st century, emphasizes intellectual property as an asset for revenue, job creation, and economic growth, driven by creative industries involving creators and innovators. The term "creative industries" originated from the UK's DCMS in the 1990s to broaden the perception of cultural industries (Cunningham, 2002; Garnham, 2005)

Defined by creativity and talent, these industries include advertising, design, film, music, and publishing (DCMS, 1998)

The UNCTAD (BPS, 2015) noted significant global contributions from creative industries, driven by the digital revolution. (Ernst, 2019) valued it at $2.3 trillion. Unlike traditional economies, creative industries focus on non-standard, unique outputs. Indonesia's creative economy was valued at Rp 852 trillion in 2015 and grew to Rp 1,105 trillion by 2018, employing over 17 million and contributing Rp 21.5 billion in exports (Bekraf, 2018)

Table 1. Performance Achievements of the Creative Economy Sector in 2019

No	Strategic Objective	Strategic Objective Performance Indicator	Target	Realization	Achievement %
1	Creative economy growth	Creative economy GDP growth (%)	5,30	5,10	96,23
2	Employment absorption	Employment absorption (million people)	17,20	19,01	110,52
3	Creative product export value	Gross Export Value (billion USD)	21,50	22,07	102,65

Source: BPS as of December 31, 2019

Based on Table 1.1, strategic targets included: (1) Creative economy GDP growth target of 5.30% with a realization of 5.10% (96.23% achievement), (2) Employment target of 17.20 million, with realization at 19.01 million (110.52% achievement), and (3) Creative product export target of 21.50 billion USD, with realization at 22.07 billion USD (102.65% achievement).

Efficiency, defined as optimal resource use (Perry & Green, 1997; Worthington & Dollery, 2000) is crucial for IKM to boost performance and recover from crises like COVID-19. Business performance, measured by costs, standards, and objectives (Özer, 2012), is linked to financial health, including comparisons (Bernardin & Russell, 2013), asset use, and income generation (Codjia, 2010; McMahon, 2001) Financial indicators such as Sales Growth, ROA, ROCE, ROI, and ROE gauge company efficiency.

In 2022, Palembang had 245 large and medium industries, with 80,307 micro and small enterprises in 2019 (Selatan, 2021) The development of micro and small industries is detailed in Table 1.2 from the same report.

Table 2. Summary of the Number of Enterprises and Production Value in the Micro and Small Industry By Regency/City in South Sumatra Province, 2017-2019

Regency/ Municipality	**Number of Establishments (unit)**			**Regency/ Municipality**	**Production Value (Thousand Rupiahs)**		
	2017	**2018**	**2019**		**2017**	**2018**	**2019**
(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(8)**	**(9)**	**(10)**
Ogan Komering Ulu	1263	1885	1725	Ogan Komering Ulu	149.465.607	188.568.002	202.642.064

Ogan Komering Ilir	8308	1276 4	6046	Ogan Komering Ilir	738.279.466	1.464.994.073	486.572.094
Muara Enim	3364	4435	4738	Muara Enim	341.542.620	409.523.433	795.570.080
Lahat	2445	1393	3290	Lahat	189.884.796	198.820.672	347.946.773
Musi Rawas	3528	2926	3845	Musi Rawas	400.697.626	313.322.260	528.392.040
Musi Banyuasin	2731	1385	3164	Musi Banyuasin	422.112.220	307.053.407	1.072.411.430
Banyuasin	6028	6233	3946	Banyuasin	965.108.248	2.248.440.123	1.371.677.653
OKU Selatan	1803	1921	3870	OKU Selatan	140.681.033	113.200.819	258.861.209
OKU Timur	9929	8369	1027 7	OKU Timur	826.714.326	749.999.614	1.054.840.562
Ogan Ilir	9441	1043 4	2042 1	Ogan Ilir	620.336.048	844.251.828	672.001.237
Empat Lawang	1451	1405	2114	Empat Lawang	99.232.155	73.073.721	70.180.211
Penukal Abab Lematang Ilir	726	606	1213	Penukal Abab Lematang Ilir	286.261.966	67.660.609	159.234.468
Musi Rawas Utara	584	517	1186	Musi Rawas Utara	27.824.172	26.933.956	62.183.308
Palembang	1391 1	1560 9	8881	Palembang	2.251.779 .949	5.108.971.299	1.254.062.185
Prabumulih	1459	1072	2642	Prabumulih	221.779.949	103.441.150	244.295.880
Pagar Alam	1063	1032	1150	Pagar Alam	539.368.482	126.986.894	122.835.011
Lubuk Linggau	1834	1578	1799	Lubuk Linggau	250.799.294	258.548.339	203.852.857
Sumatera Selatan	**6986 8**	**7356 4**	**8030 7**	**Sumatera Selatan**	**8.471.867 .957**	**12.603.790.199**	**8.907.559.062**

Source: BPS, Annual Micro and Small Industry Survey, 2017-2019

Based on Table 1.2, the number of micro and small enterprises (IKM) in Palembang increased by 6,728 businesses, while the production value decreased by 3,854,909,114. In comparison, for the leather industry:

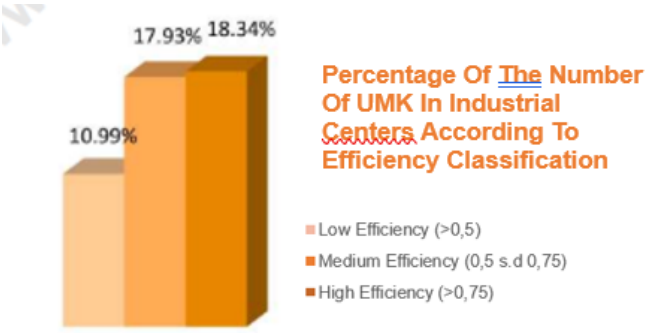
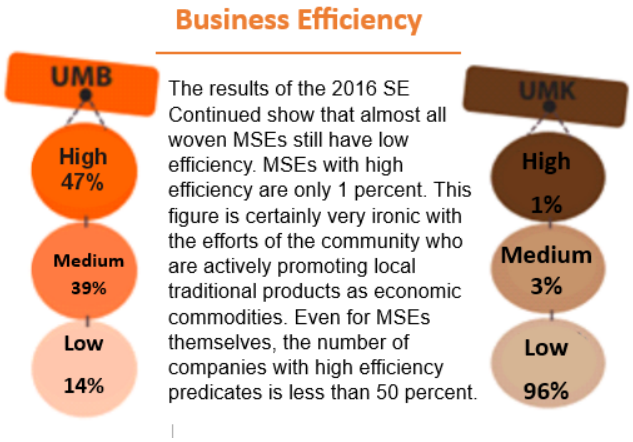


Figure 1. Graph of Average Efficiency of Large and Medium Enterprises (UMB) and Micro and Small Enterprises (UMK) in the Leather Industry
Source: Analysis of the 2016 Extended SE Results, BPS

Based on Figure 1.3, the average business efficiency in the leather industry in Indonesia is 0.6634 for UMB and 0.6385 for UMK, indicating minimal differences in efficiency between the two. In comparison, when looking at the average for the Weaving Industry:



Source: Analysis of the 2016 Extended SE Results, BPS

Figure 2. Average Efficiency of Large and Medium Enterprises (UMB) and Micro and Small Enterprises (UMK) in the Weaving Industry

This study highlights the need to Kamasak (2017); Khan, Yang, and Waheed (2019). SMEs often face limited resources and look for low-risk strategies to stay competitive (Anwar, Khan, & Khan, 2018). Zulkarnain, Zakaria, Haryono, and Murniati (2021) analyzed the level of economic efficiency in the use of production factors in cassava farming, as well as assessed the risks associated with cassava farming in Lampung Province.

The research aims to address several key questions regarding the financial performance of creative economy SMEs. It seeks to determine whether business efficiency has a significant impact on ROA (Return on Assets) and ROS (Return on Sales). Additionally, the study explores if Human Capital, Customer Capital, and Structural Capital enhance the relationship between business efficiency and these financial metrics. The overarching objective is to provide empirical evidence on how business efficiency and Intellectual Capital (IC) contribute to the financial performance of SMEs in the creative economy sector.

2. Literature review

2.1.1. Trade-Off Theory

The Trade-Off Theory by DeAngelo and Masulis (1980) suggests that optimal capital structure balances the benefits, like tax shields from debt, and costs, such as bankruptcy and agency costs, (S. C. Myers, 2001).Companies should use debt up to the point where tax benefits equal financial distress costs. This theory incorporates factors like taxes, agency costs, and financial distress while assuming market efficiency. High-profit firms often increase debt to minimize taxes, enhancing ROA, ROS, and ROI. However, full application of this theory is rare among financial managers. In this study, Debt-To-Equity Ratio (RDE) illustrates how firms balance debt and equity to improve financial performance. Intellectual Capital strengthens operational efficiency's impact on financial outcomes by aiding effective resource management.

2.1.2. *Pecking Order Theory*

The Pecking Order Theory, outlined by Myers (1984), explains why profitable firms often have lower debt levels, prioritizing internal over external financing. Companies use internal funds first and resort to debt when needed, using equity as a last option due to higher external funding costs and information asymmetry. Shyam-Sunder and Myers (1999) confirmed that firms prefer safer debt over equity, as managers, with better internal knowledge, may issue overvalued stock, impacting investors negatively. This theory supports the idea that effective use of internal resources, including Intellectual Capital (IC), enhances business efficiency and financial performance. Companies with strong Human Capital can better manage debt and equity, boosting overall operational efficiency.

2.1.3. *Resources-Based View Theory*

The Resource-Based View (RBV) theory Barney (1991) emphasizes that both tangible and intangible resources are essential for sustained high performance. Recent studies highlight the greater importance of intangible resources, like Intellectual Capital (IC), in SMEs for profitability and competitive advantage (Anwar et al., 2018; Oppong & Pattanayak, 2019; Songling, Ishtiaq, Anwar, & Ahmed, 2018). IC—comprising Human Capital, Structural Capital, and Customer Capital—is critical as it provides unique, valuable, and inimitable advantages (Sardo & Serrasqueiro, 2018) According to RBV, firms that leverage their resources efficiently achieve superior financial outcomes, such as improved ROA and ROS. Efficient resource management reduces waste and boosts productivity, enhancing overall performance. Skilled Human Capital and effective Structural Capital help firms maximize efficiency, thereby supporting better financial results.

2.1.4. Medium Creative Industry (MCI)

SME performance has been examined in various domains such as growth, profitability, capital markets, and working capital management. Lu and Beamish (2006) found that internationalization strategies positively impacted growth but negatively influenced profitability in Japanese SMEs. Salman and Yazdanfar (2012) highlighted that sales growth and productivity positively affected the profitability of Swedish micro-enterprises, while firm size had a negative effect. Margaretha and Supartika (2016) identified that company size and past profitability negatively impacted Indonesian SMEs' profitability, whereas productivity had a positive influence.

Access to financing remains a significant challenge for SMEs (Afande, 2015; Albuquerque, Quirós, & Justino, 2017; Algifari, 2009). According to the Pecking Order Theory (POT), firms prioritize internal funding, followed by debt and equity (Matias & Serrasqueiro, 2017; Proença, Laureano, & Laureano, 2014). SMEs often rely on internal funding and short-term debt due to limited external financing options. This contributes to social benefits like improved healthcare and education, making the enhancement of SME profitability vital for policymakers to foster sustainable economic growth.

2.1.5. Financial Performance

The study of firm performance can be categorized into five main areas: growth and performance, capital markets and profitability, working capital and performance, cash flow and profit, and capital structure and profitability. Previous studies have often focused on profitability and growth. For instance, Lu and Beamish (2006) explored the differential impact of internationalization strategies on growth and return on sales (ROS) in Japanese SMEs, finding positive effects on growth but negative ones on profitability. Salman and Yazdanfar (2012) analyzed factors affecting micro-enterprise profitability in Sweden and found that sales growth and productivity had positive effects, while firm size negatively impacted profitability.

ROA and ROS are common measures of performance. ROA assesses how efficiently a firm utilizes assets to generate profit, while ROS evaluates profit generated per unit of sales (Gitman, Juchau, & Flanagan, 2015; Penman, 2013). High ROA indicates effective asset utilization, while higher ROS reflects efficient cost management and operational success. Together, these metrics provide comprehensive insights into a firm's operational and financial efficiency, especially relevant for creative SMEs.

2.1.6. Business Efficiency

This study examines operational efficiency in creative economy-based SMEs, emphasizing optimal use of resources like capital, labor, and technology to maximize output (Farrell, 1957) Efficiency comprises technical (maximizing output with given inputs) and allocative (optimal input use for profit maximization) dimensions. Creative industries, including design and media, require not just cost reduction but innovation and value creation (Development, 2013) Key efficiency factors include:

- Innovation and Creativity: Essential for product differentiation and market competitiveness (Schiuma & Carlucci, 2010)
- A comprehensive analysis of innovation encompasses technological, process, and product innovations, while also examining adaptive strategies such as flexible business models, employee

empowerment, and customer-centric approaches. The study by Nosike, Ojobor, and Nosike (2024) indicates that companies adopting process and technological innovations, along with significant changes to their business models, achieve higher levels of resilience.

- Efficiency is often assessed using methods like DEA and SFA (Coelli, Rao, O'donnell, & Battese, 2005). Challenges include limited access to capital and dynamic market demands (Freeman & Soete, 1997). The study leverages financial ratios as efficiency proxies, including:
- Fixed Assets Ratio (RFA): Evaluates asset utilization (Penman, 2013).
- Current Assets Ratio (RCA): Indicates liquidity and short-term obligation management (Brigham, Gapenski, & Ehrhardt, 1998).
- Inventory Ratio (RI): Assesses inventory management effectiveness (Stewart, 1997)
- Receivables Ratio (RR): Measures collection efficiency (Ross, Westerfield, & Jordan, 2014)
- Equity to Liabilities Ratio (REL): Reflects financial health and leverage (Damodaran, 2012)
- Total Debt to Assets Ratio (RDA) and Debt to Equity Ratio (RDE): Examine leverage levels and debt dependency (Brealey, Myers, & Allen, 2011)

These ratios provide insight into asset management, financial stability, and overall operational performance. Empirical research shows varying outcomes in assessing SMEs' financial performance using balance sheet ratios as indicators of operational efficiency.

2.1.7. *Intellectual Capital*

This study highlights the importance of intellectual capital in enhancing business efficiency and financial performance in SMEs within creative economies, such as Palembang. Human capital boosts skills, productivity, and operational efficiency (Johansen, Ringdal, & Thøring, 2001; Onkelinx, Manolova, & Edelman, 2016). Structural capital supports processes and technologies for profitability (Haris, Yao, Tariq, Malik, & Javaid, 2019; Stam, 2005). Customer capital aids sustainability through market knowledge and loyalty (Leal-Millán, Roldán, Leal-Rodríguez, & Ortega-Gutiérrez, 2016).

The study by Awadari and Kanwal (2019) contributes to the formulation of policies and programs by highlighting the importance of including employees as key stakeholders in the design and planning of organizational changes. IC is conceptually complex and often managed vaguely (Bonits, 1996; Calabrese, Costa, & Menichini, 2013). Stewart (1997) defines it as intellectual assets creating value. Studies reveal mixed results; while many show IC positively impacts efficiency (Z. Wang, Wang, Cao, & Ye, 2016), others find relational and structural capital more impactful (Yaseen, Dajani, & Hasan, 2016). Effective use of IC ensures competitive advantage and operational success (Cheng & Krumwiede, 2017a; Donate, Peña, & Sánchez de Pablo, 2016).

2.1.8. The Relationship Between Efficiency and Financial Performance

Financial performance, evident in financial statements, is assessed through ratio analysis to determine liquidity and profitability, with strong performance indicated by meeting or exceeding industry standards (Madushanka & Jathurika, 2018). Efficiency, essential in performance evaluation, is measured by maximizing output, minimizing costs, or maximizing profit, indicating technical (Färe & Lovell, 1978). Tan, Floros, and Anchor (2017) found that higher risk increased profitability (ROA, ROE) in Chinese banks, while greater competition reduced it, and higher cost efficiency led to lower ROA. Overall, efficiency reflects optimal resource use, while financial performance, measured by ROA and ROS, shows success in achieving goals, with Intellectual Capital moderating this relationship (Kaplan & Norton, 1992).

2.1.9. The Moderating Role of Intellectual Capital on Business Efficiency and Financial Performance

Intellectual Capital (IC) significantly moderates the relationship between business efficiency and financial performance, involving elements like knowledge and customer relations. Research by Cheng and Krumwiede (2017b); Z. Wang et al. (2016) showed IC's moderating role in Taiwan's tech industry, while Mention and Bontis (2013) and Barathi Kamath (2007) found similar effects in Belgium and India. High IC strengthens the positive impact of business efficiency on financial

performance by fostering innovation and competitive advantage, whereas low IC limits these benefits. Studies, including Maji and Laha (2021) and Amin, Usman, Sohail, and Aslam (2018), highlight that strong management of IC and Knowledge Assets (KA) enhances business performance and efficiency.

2.1.10. Hypothesis Development

1. **Business Efficiency on Financial Performance (ROA)**
   Business efficiency is key to enhancing Return on Assets (ROA), which reflects how well a company uses its assets to generate profit. This is especially important for creative industry SMEs with limited resources. Studies, such as Sufian and Habibullah (2010) in Asia's banking sector and Sun and Chang (2011) in Taiwan, show a positive link between efficiency and ROA. This aligns with the Resource-Based View (Barney, 1991), suggesting that optimal resource use fosters competitive advantage and boosts financial performance. Thus, business efficiency is hypothesized to significantly impact ROA in creative SMEs.
   H1: Business efficiency has a significant effect on financial performance (ROA) in creative economy-based MCIs.
2. **Business Efficiency on Financial Performance (ROS)**
   Return on Sales (ROS) reflects a company's efficiency in generating profit from sales. Higher ROS indicates better cost management and larger profit margins. Studies by Bishop, Haiyong, and Qi (2007) in Chinese manufacturing and Becker and Gerhart (1996) in U.S. banking show that operational efficiency positively correlates with ROS. This supports the Trade-Off Theory (DeAngelo & Masulis, 1980), which emphasizes balancing cost reduction with value enhancement for optimal results. Therefore, increased business efficiency is hypothesized to significantly improve ROS in creative economy SMEs.
   H2: Business efficiency has a significant effect on ROS in creative economy-based MCIs.
3. **Human Capital Moderates Business Efficiency on Financial Performance (ROA)**
   Human Capital, encompassing employee knowledge and skills, boosts productivity and ROA. Hitt, Bierman, Shimizu, and Kochhar (2001) showed its positive impact on operational efficiency and financial performance, while W. Y. Wang and Chang (2005) found it moderates efficiency and financial performance in Taiwan's high-tech firms. The Resource-Based View (Barney, 1991) highlights Human Capital as a strategic asset for competitive advantage. Thus, it is hypothesized that Human Capital enhances the impact of business efficiency on ROA in creative economy SMEs.
   H3: Human Capital moderates the effect of Business Efficiency on ROA in creative economy-based SMEs.
4. **Customer Capital Moderates Business Efficiency on Financial Performance (ROA)**
   Customer Capital, which includes relationships with customers and partners, boosts feedback, loyalty, and value. Mention and Bontis (2013) and Clarke, Seng, and Whiting (2011) found that it strengthens the link between operational efficiency and financial performance, enhancing ROA. The Resource-Based View (Barney, 1991) supports that well-managed customer assets provide a competitive advantage. Thus, it is hypothesized that Customer Capital enhances the impact of business efficiency on ROA in creative economy SMEs.
   H4: Customer Capital moderates the effect of Business Efficiency on ROA in creative economy-based SMEs.
5. **Capital Structure Moderates Business Efficiency on Financial Performance (ROA)**
   An optimal capital structure, balancing debt and equity, enhances operational efficiency and ROA. Chen, Cheng, and Hwang (2005) and Barathi Kamath (2007) found that structural capital boosts the link between efficiency and ROA. The Trade-Off Theory (DeAngelo & Masulis, 1980) supports that an optimal structure enhances firm value. Thus, it is hypothesized that an appropriate capital structure strengthens the impact of business efficiency on ROA in creative economy SMEs.
   H5: Capital Structure strengthens the effect of Business Efficiency on ROA in creative economy-based SMEs.
6. **Human Capital Moderates Business Efficiency on Financial Performance (ROS)**

High Human Capital helps companies adapt and improve operational efficiency, boosting Return on Sales (ROS). Hitt et al. (2001) and W. Y. Wang and Chang (2005) found that Human Capital enhances efficiency and moderates its effect on financial performance, including ROS. The Resource-Based View (Barney, 1991) views skilled human resources as strategic assets for competitiveness. Thus, it is hypothesized that Human Capital strengthens the effect of business efficiency on ROS in creative economy SMEs.

H6: Human Capital moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.

7. **Customer Capital Moderates Business Efficiency on Financial Performance (ROS)**

Customer Capital strengthens business efficiency by enhancing customer relationships and loyalty, positively impacting ROS. Studies by Clarke et al. (2011); Mention and Bontis (2013) show its moderating role between efficiency and ROS. The Resource-Based View (Barney, 1991) supports customer relationships as a competitive advantage. Thus, it is hypothesized that Customer Capital enhances the effect of business efficiency on ROS in creative economy SMEs.

H7: Customer Capital moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.

8. **Capital Structure Moderates Business Efficiency on Financial Performance (ROS)**

A balanced capital structure boosts financial flexibility for operational efficiency, enhancing ROS. Barathi Kamath (2007); Chen et al. (2005) showed structural capital moderates the link between efficiency and ROS. The Trade-Off Theory (DeAngelo & Masulis, 1980) supports that optimal structure improves efficiency and performance. Thus, capital structure is hypothesized to strengthen the impact of efficiency on ROS in creative economy SMEs.

H8: Capital Structure moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.

2.2 Research Framework

The research analysis framework is as follows:

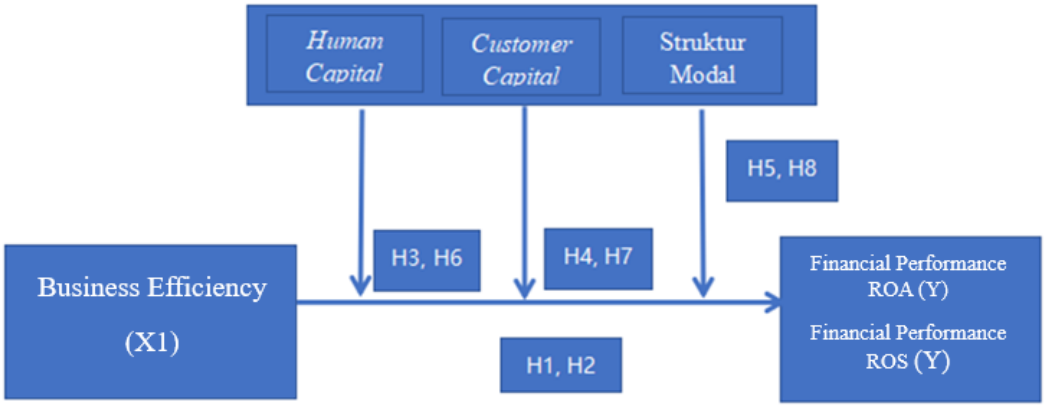


Figure 3. modified (Barathi Kamath, 2007; Bishop et al., 2007; Clarke et al., 2011; Goddard, Tavakoli, & Wilson, 2005; Liu, 2017; Lu & Beamish, 2006; Maji & Laha, 2021; Mention & Bontis, 2013; Sufian & Habibullah, 2010; Sun & Chang, 2011; W. Y. Wang & Chang, 2005)

2.3 Research Hypotheses

The hypotheses of this research are stated as follows:

H1: Business Efficiency significantly affects ROA in creative economy-based SMEs.

H2: Business Efficiency significantly affects ROS in creative economy-based SMEs.

H3: Human Capital moderates the effect of Business Efficiency on ROA in creative economy-based SMEs.

H4: Customer Capital moderates the effect of Business Efficiency on ROA in creative economy-based SMEs.
H5: Capital Structure strengthens the effect of Business Efficiency on ROA in creative economy-based SMEs.
H6: Human Capital moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.
H7: Customer Capital moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.
H8: Capital Structure moderates the effect of Business Efficiency on ROS in creative economy-based SMEs.

3. Research Methodology

This explanatory study at the Department of Industry and Trade in Palembang used 2020-2023 financial data from creative economy SMEs. It focused on testing relationships among variables using financial ratios like ROA and ROS as dependent variables, with other ratios as independents, and Intellectual Capital (IC) as a moderating variable. Data were collected through questionnaires, analyzed as panel data, which offers benefits like increased observations, reduced collinearity, and better efficiency (Djalal, 2006; Ekananda, 2016), allowing comprehensive, realistic analysis.

The study utilized purposive sampling on 1,233 creative SMEs in Palembang, analyzing financial data from 2020-2023. The Slovin formula was used to calculate the sample size, resulting in approximately 400 samples with a 4.11% margin of error. Data collection methods included interviews, questionnaires, and literature review. Statistical analysis was performed using Eviews 13 with the Panel Least Squares method, and hypothesis testing was conducted through panel data regression approaches, including Pooled Least Squares (PLS), Fixed Effects (FE), and Random Effects (RE). Supporting tests such as CHOW, Hausman, and Lagrange Multiplier were used for model selection. The econometric model involved regression equations with moderating variables (Intellectual Capital) to analyze ROA and ROS, evaluating the influence of business efficiency moderated by Human, Customer, and Structural Capital. Hypothesis testing included the determination coefficient (R^2), F-tests for simultaneous effects, and t-tests for partial effects to assess the significance of the variables.
The operational definitions of variables in this study are explained in Table 3.1 below:

Table 3. Operational Definitions of Variables

Variable	Definition	Indicator	Measurement
Financial Performance	Financial performance is defined as the analysis of financial statements that include account summaries and relate to income, expenses, profit/loss, and changes in assets and liabilities (Codjia, 2010)	- Return On Assets (ROA), the ratio of net profit to total assets; Relevance to Business Efficiency: ROA indicates how well assets are utilized to generate profit, so companies with higher ROA are considered more efficient. - Return On Sales (ROS), the ratio of net profit to total sales; Relevance to Business Efficiency: Higher ROS indicates greater operational efficiency in generating profit from sales.	Ratio
Business Efficiency	Efficiency measures resource utilization (Worthington & Dollery, 2000) in (Porcelli, 2009) Business Efficiency is	- Fixed Assets Ratio (RFA), ratio of fixed assets to total assets; - Current Assets Ratio (RCA), ratio of current assets to total	Ratio

Variable	Definition	Indicator	Measurement
	defined as the ability of SMEs to maximize the use of assets and resources to achieve optimal financial performance. The concept of efficiency in this study follows the measurement approach described by Muharram and Purvitasari in (Yuningrum, 2012), using three methods: 1. Ratio approach, 2. Regression approach, 3. Frontier approach. This study applies financial ratios to measure business efficiency.	assets; - Inventory Ratio (RI), ratio of inventory to current assets; - Receivables Ratio (RR), ratio of receivables to current assets; - Equity to total liabilities ratio (REL), ratio of equity to total liabilities; - Total debt to assets ratio (RDA), ratio of total debt to total assets; - Debt to equity ratio (RDE), ratio of total debt to equity;	
Capital (IC) as a Moderating Variable	IC, which includes structural capital, human capital, and relationship capital, is considered the best strategy for long-term sustainability and achieving high efficiency (Sharabati, Jawad, & Bontis, 2010). Structural capital measures the value associated with company infrastructure, including technology, systems, and processes. Indicators may include investments in technology, R&D expenses, or system efficiency.	- Human capital, measured by the number of employees with specialized skills and the involvement of external experts in specific production processes (Liu, 2017)- Customer capital, measured by indicators such as the number of customers, time taken to resolve customer issues, and the number of loyal (Jain, Vyas, & Roy, 2017). - Structural capital, calculated based on operational costs and revenue per employee, reflecting the efficiency of asset utilization (Sharabati et al., 2010)	Ratio

4. Results and discussions

4.1. Data Description

4.1.1. Respondent Description

The study involved 339 respondents from the predetermined sample size, with one questionnaire deemed invalid for processing. The overview of respondents in this research includes:

Table 4. Creative SMEs in Palembang City 2023

No.	Creative Industry Subsector	Number of SMEs
1	Culinary	217
2	Printing	5
3	Design	10
4	Handicrafts	64
5	Fashion	43
	Total	339

Source: Department of Industry and Trade, Palembang City, 2023

The respondents are part of creative economy-based IKMs in Palembang, supported by Disperindag (Department of Industry and Trade) and actively participating in programs facilitated by the agency. Financial data from 339 creative IKM actors were analyzed for the period from 2020 to 2023.

Table 5. Respondent Profile

Gender	Number	Percentage
Male	63	18,58
Female	276	81,42
Age		
17-27	64	18,88
28-38	136	40,12
29-49	93	27,43
>50	46	13,57
Education		
Elementary	1	0,29
Junior High	8	2,36
High School	135	39,82
Diploma	32	9,44
Bachelor's	152	44,84
Master's	11	3,24
Total	339	100

Source: Data processed 2024.

Table 4.2 shows that female respondents dominate the creative IKM sector, with 276 (81.42%) participants, compared to 63 males (18.58%). The average age of business owners is between 28-38 years (40.12%), representing a productive age for entrepreneurship. The majority of respondents have a bachelor's degree (S1), indicating sufficient educational background for entrepreneurship.

Table 6. Business Duration

Duration of Establishment	Number	Percentage
3-5 years	289	85,25
> 5 years	50	14,75
Total	339	100

Source: Data processed 2024.

Based on Table 4.3, most creative SMEs (small and medium enterprises) in Palembang have been established for 3-5 years, while only 50 SMEs have been operating for more than 5 years.

Table 7. Descriptive Statistics

	Mean	*Median*	*Min*	*Max*	*Standard Deviation*
ROA	1.824	1.57	0.44	5.21	0.96
ROS	2.153	1.9	-4.17	6.54	0.836
EU	3.036	2.54	0.6	8.84	1.64
HC	2.16	2	1	4	0.707
CC	2.028	2	1	4	0.536
MS	0.858	0.75	0.25	2.95	0.469

Source: Data processed 2024.
Notes:

ROA = Return on Assets, ROS = Return on Sales, EU = Business Efficiency, HC = Human Capital
CC = Customer Capital, MS = Capital Structure

Table 4.4 analysis of research variables shows key statistical values for the observed period. The mean indicates the average value for each variable, giving a central overview of the data. ROA has a mean of 1.824%, showing average profitability relative to assets, while ROS averages 2.153%, indicating profit per unit of sales. EU's mean of 3.036 suggests a general efficiency level in resource management. HC and CC have means of 2.16 and 2.028, reflecting moderate contributions to business efficiency, while MS averages 0.858, representing the proportion of capital structure.

The median represents the middle value in the data, unaffected by outliers. ROA and ROS medians are 1.57 and 1.9, respectively, while EU's median is 2.54, indicating the mid-range of operational efficiency. HC and CC medians at 2 show balanced contributions in most samples, and MS's median of 0.75 reflects moderate capital structure levels.

Minimum and maximum values highlight the range of data. ROA varies from 0.44 to 5.21, indicating differing profitability. ROS ranges from -4.17 to 6.54, showing the span from loss-making to highly profitable firms. EU ranges from 0.6 to 8.84, pointing to significant operational efficiency differences. HC and CC range between 1 and 4, and MS varies from 0.25 to 2.95, showing structural capital diversity.

Standard deviation (SD) measures data spread. ROA's SD of 0.96 suggests moderate variability in asset-based profitability. ROS's SD of 0.836 shows limited sales profit variation. EU's SD of 1.64 indicates significant differences in efficiency across firms. HC and CC have SDs of 0.707 and 0.536, reflecting some variation in their contributions, while MS's SD of 0.469 shows a moderate range in capital structure.

Overall, ROA and ROS variations indicate financial performance differences among firms. EU shows notable variability in operational efficiency, while HC, CC, and MS show more limited, yet meaningful, variations that support business efficiency and financial outcomes.

4.1.2. Panel Data Testing

4.1.2.1. Chow Test (F Statistic)

In panel data testing to determine which model is better, dummy variables can be added to identify whether the intercepts are different, which can be tested using the F-statistic. The F-test is used to assess whether the panel data regression technique with Fixed Effects is better compared to the panel data regression model without dummy variables by examining the residual sum of squares (RSS).

Table 8. Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.542	(338,101)	0.000
Cross-section Chi-square	1573.324	338	0.000

Source: Data processed using Eviews 13

Based on the Chow test results, the Prob. value of 0.000 < 0.05 indicates that it can be concluded that the test uses the Fixed Effects model.

4.1.2.2. Hausman Test

In addition to the Chow test, the Hausman test is performed to select between the Fixed Effects or Random Effects models. The null hypothesis of the Hausman test states that there is no difference between the two estimations, enabling comparison based on these differences. The Hausman statistic follows a Chi-Square distribution with degrees of freedom equal to the number of independent variables. Since the Hausman Statistic is < 0.05, the Random Effects model is chosen.

Table 9. Results of Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	*Chi-Sq. Statistic*	*Chi-Sq. d.f.*	Prob.
Cross-section random	574.225	8	0.000

Source: Data processed using Eviews 13

4.1.2.3. *Lagrange Multiplier (LM) Test*

The test to determine whether the appropriate model is the random effects or common effects model was developed by Breusch-Pagan. The significance of the random effects is based on residual values from the Ordinary Least Squares (OLS) method (Agus, 2009).

Table 10. Results of LM Test

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	*Time*	*Both*
Breusch-Pagan	202.956 (0.000)	0.769 (0.380)	203.725 (0.000)

Source: Processed Data from Eviews 13, 2024

The LM Statistic test results indicate that the cross-section value in the Breusch-Pagan test is < 0.05, suggesting that the best model to use is the Random Effects model.

Table 11. Results of Panel Data Approach Testing

TEST	**Prob**	**Explanation**
Uji Chow	0.000	FEM
Uji Hausman	0.000	REM
LM Test	0.000	REM

Source: Processed Data from Eviews 13, 2024

Based on the panel data approach test results, the LM test shows a probability value of 0.000. This indicates that the appropriate model approach for this study is the LM Test with a random effects model.

4.2. Hypothesis Testing

4.2.1. Coefficient of Determination (R^2) Test

The coefficient of determination (R^2) is used to measure how well independent variables can explain the dependent variable. This coefficient indicates the extent to which total variation in the dependent

variable can be explained by the variables in the regression model. The value of R^2 ranges between 0 and 1, where an R^2 value approaching 1 implies that the model's variables effectively represent the issue being studied by explaining the variations in the dependent variable. An R^2 value equal to or close to zero indicates that the model's variables do not adequately explain the variation in the dependent variable.

Table 12. Coefficient of Determination (R^2) Test

Weighted Statistics			
R-squared	0.411	*Mean dependent var*	0.988
Adjusted R-squared	0.407	*S.D. dependent var*	0.647
S.E. of regression	0.497	*Sum squared resid*	333.194
F-statistic	117.262	*Durbin-Watson stat*	1.661
Prob(F-statistic)	0.000		

Source: Processed Data Eviews 13, 2024

The results from the coefficient of determination table show an R-square value of 0.411, indicating that the Efficiency variable and IC as moderation explain 41.1% of the variation in performance, while the remainder is influenced by variables outside the model.

4.2.2. Simultaneous Regression Test (F Test)

This test is conducted to determine whether all independent variables collectively influence the dependent variable (goodness of fit model).

Table 13. Results of f Test

Weighted Statistics			
R-squared	0.411	*Mean dependent var*	0.988
Adjusted R-squared	0.407	*S.D. dependent var*	0.647
S.E. of regression	0.497	*Sum squared resid*	333.194
F-statistic	117.262	*Durbin-Watson stat*	1.661
Prob(F-statistic)	0.000		

Source: Processed Data using Eviews 13

The F-statistic table shows a value of $0.000 < 0.05$, indicating that the variables of business efficiency and IC have a simultaneous effect on performance.

4.2.3. Partial Regression Test (t Test)

Hypothesis testing in this study was conducted using a one-tailed test to determine the direction of the relationships between variables, assessing whether they have a positive or negative impact. Through partial regression analysis, the influence of each independent variable on the dependent variable was individually examined. The results are presented in Table 4.11, detailing the ROA test outcomes.

Table 14. Results of ROA Testing

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
EU	0.148	0.035	4.167	0.000
EU_CC	0.007	0.009	0.716	0.474
EU_HC	0.115	0.012	9.497	0.000
EU_MS	0.076	0.017	4.327	0.000
C	0.463	0.131	3.528	0.000

Source: Data processed using Eviews 13, 2024

Notes:
EU = Business Efficiency
EU_CC = Customer Capital moderates Business Efficiency
EU_HC = Human Capital moderates Business Efficiency
EU_MS = Capital Structure moderates Business Efficiency
C = constant or intercept

Based on the data analysis using Eviews 13, the following results were obtained: a. Business Efficiency (EU) has a coefficient value of 0.148 and a prob. value of 0.000 < 0.05, indicating that business efficiency significantly affects ROA. Thus, H1 is accepted. b. Human Capital moderating the relationship between business efficiency and ROA (EU_HC) shows a coefficient value of 0.115 and a prob. value of 0.000 < 0.05, supporting H2. This means Human Capital significantly strengthens the relationship between business efficiency and ROA. c. Customer Capital moderating business efficiency and ROA (EU_CC) results in a coefficient of 0.007 and a prob. value of 0.474 > 0.05, leading to the rejection of H3. This indicates that Customer Capital does not moderate the relationship between business efficiency and performance. d. Capital Structure moderating business efficiency and ROA (EU_MS) has a coefficient value of 0.076 and a prob. value of 0.000 < 0.05, supporting H4. This implies that Capital Structure significantly strengthens the relationship between business efficiency and ROA.

Table 15. Results of ROS Testing

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
EU	-0.010	0.046	-0.218	0.827
EU_CC	-0.009	0.012	-0.756	0.450
EU_HC	0.047	0.016	2.992	0.003
EU_MS	-0.007	0.023	-0.323	0.747
C	1.665	0.170	9.770	0.000

Source: Data processed using Eviews 13, 2024
Notes:
EU = Business Efficiency
EU_CC = Customer Capital moderates Business Efficiency
EU_HC = Human Capital moderates Business Efficiency
EU_MS = Capital Structure moderates Business Efficiency
C = constant or intercept

Based on data analysis using Eviews 13, the following results were obtained: a. Business Efficiency (EU) has a coefficient value of -0.010 and a prob. value of 0.827 > 0.05, indicating that business efficiency does not affect ROS. Thus, H5 is rejected. b. Human Capital moderates the relationship between business efficiency and ROS (EU_HC) with a coefficient value of 0.047 and a prob. value of 0.003 < 0.05, supporting H6. This shows that Human Capital significantly strengthens the relationship between business efficiency and ROS. c. Customer Capital moderating the relationship between business efficiency and ROS (EU_CC) results in a coefficient of -0.009 and a prob. value of 0.450 > 0.05, leading to the rejection of H7. This indicates that Customer Capital does not moderate the relationship between business efficiency and ROS. d. Capital Structure moderating business efficiency and ROS (EU_MS) shows a coefficient of -0.007 and a prob. value of 0.747 > 0.05, leading to the rejection of H8. This implies that Capital Structure does not moderate the relationship between business efficiency and ROS. Table 4.13. Below is a summary of the hypothesis test results as follows:

Table 16. Summary of Hypothesis Test Results

Hypothesis	**Prob.**	**Explanation**
The effect of Business Efficiency on Financial Performance (ROA))	0.000	H1 Supported

Hypothesis	Prob.	Explanation
The effect of Business Efficiency on Financial Performance (ROS)	0.827	H2 Not Supported
Human Capital strengthens the relationship between Business Efficiency and Financial Performance (ROA)	0.000	H3 Supported
Customer Capital strengthens the relationship between Business Efficiency and Financial Performance (ROA)	0.474	H4 Not Supported
Capital Structure strengthens the relationship between Business Efficiency and Financial Performance (ROA)	0.000	H5 Supported
Human Capital strengthens the relationship between Business Efficiency and Financial Performance (ROS)	0.000	H6 Supported
Customer Capital strengthens the relationship between Business Efficiency and Financial Performance (ROS)	0.450	H7 Not Supported
Capital Structure strengthens the relationship between Business Efficiency and Financial Performance (ROS)	0.747	H8 Not Supported

Source: Data processed, 2024

4.3. Discussion

4.3.1. The Effect of Business Efficiency on Financial Performance (ROA)

Operational efficiency significantly impacts ROA by optimizing asset use, reducing waste, and boosting productivity, crucial for creative SMEs with limited resources (Chen et al., 2005; W. Y. Wang & Chang, 2005). Efficiency leads to more output from the same input, lowers costs, and increases net profit, enhancing ROA.

The Resource-Based View (RBV) supports these findings, highlighting that effective resource management drives competitive advantage and financial performance. However, efficiency's impact may be limited if intellectual capital isn't well-utilized or external challenges exist (Pulic, 2004; Ting & Lean, 2009).

Authorities should provide training, technology support, and affordable financing to help SMEs improve efficiency, maximize resource use, and enhance ROA.

4.3.2. The Effect of Business Efficiency on Financial Performance (ROS)

Efficiency efforts did not positively impact ROS, showing a negative effect due to:

1) Improper Cost Cuts: Reductions in labor or material quality can lower product quality, impacting sales (Becker & Gerhart, 1996)
2) High Overheads: Fixed costs may erode margins despite efficiency improvements (Chen et al., 2005)
3) Delayed Returns: Initial investments in efficiency may not immediately boost ROS (Huselid, 1995)
4) Neglect of Innovation: Over-focus on efficiency may sideline innovation.
5) Market Challenges: Poor market conditions can limit efficiency's impact.
6) Management Inefficiencies: Ineffective strategies hinder ROS gains.

RBV supports the need for strategic management of resources for true competitive advantage (Huselid, 1995). While some findings align with (Chen et al., 2005), this study differs from (Bishop et al., 2007), which linked efficiency to better ROS.

Authorities should provide training and funding to help IKM balance efficiency with maintaining product quality and long-term ROS improvement.

4.3.3. Human Capital Moderating the Effect of Business Efficiency on Financial Performance (ROA)

Human Capital significantly enhances the link between business efficiency and ROA, indicating its vital role in boosting operational productivity and resource use. Skilled employees drive innovation,

efficient processes, and adaptability, improving financial performance (Hitt et al., 2001; W. Y. Wang & Chang, 2005). This supports the Resource-Based View (RBV), emphasizing internal resources like Human Capital as key for competitive advantage. Training programs and incentives for workforce development are essential for SMEs to optimize resources and achieve better ROA.

4.3.4. Customer Capital Moderating the Effect of Business Efficiency on Financial Performance (ROA)

Customer Capital did not significantly enhance the effect of business efficiency on ROA. While it supports long-term customer relationships, its impact on ROA is limited compared to internal resource management (Clarke et al., 2011; Ting & Lean, 2009). Creative SMEs should focus on managing internal processes to boost financial performance. The Resource-Based View (RBV) suggests that internal capabilities are more crucial for ROA. Support through CRM training and tools can help SMEs better utilize Customer Capital strategically.

4.3.5. Capital Structure Moderating the Effect of Business Efficiency on Financial Performance (ROA)

Capital structure strengthens the link between business efficiency and ROA by balancing debt and equity, reducing costs, and enhancing financial flexibility (Jensen & Meckling, 1976; Modigliani & Miller, 1958). The Trade-Off Theory supports this, balancing debt benefits with risks like bankruptcy (Myers, 1984). Excessive debt increases risk, lowering efficiency (Harris & Raviv, 1991). Authorities should assist SMEs with financing options and training to manage capital effectively, promoting sustainable ROA growth.

4.3.6. Human Capital Moderating the Effect of Business Efficiency on Financial Performance (ROS)

Human Capital positively impacts and strengthens the relationship between business efficiency and ROS. Investments in Human Capital enhance productivity, resource use, and adaptability, leading to higher ROS (Hitt et al., 2001; Youndt, Subramaniam, & Snell, 2004). This aligns with the Resource-Based View (RBV), which sees Human Capital as a strategic asset essential for competitive advantage. However, without supportive structures, its impact may be limited (Ployhart & Moliterno, 2011). Authorities should provide training, incentives, and educational collaboration to optimize Human Capital in SMEs for improved ROS.

4.3.7. Customer Capital Moderating the Effect of Business Efficiency on Financial Performance (ROS)

Customer Capital did not strengthen the link between business efficiency and ROS due to:

1. Ineffective Strategies: Without strategic use, even strong Customer Capital may not boost ROS (Ting & Lean, 2009)
2. High Costs: Loyalty programs can reduce profit margins (Clarke et al., 2011)
3. Service Quality Issues: Efficiency efforts that compromise quality harm customer relationships.
4. Dynamic Markets: Changing customer preferences limit Customer Capital's impact (Mention & Bontis, 2013)
5. Management Complexity: Poor Customer Capital management curtails benefits.

This aligns with the Resource-Based View (RBV), which stresses that Customer Capital only boosts ROS when managed strategically. Authorities should support SMEs with training and CRM tools to leverage Customer Capital for better ROS.

4.3.8. Capital Structure Moderating the Effect of Business Efficiency on Financial Performance (ROS)

Customer Capital did not strengthen the relationship between business efficiency and ROS due to:

1) Ineffective Strategies: Without strategic management, even strong Customer Capital may not enhance ROS (Ting & Lean, 2009)
2) High Costs: Loyalty programs can reduce profit margins (Clarke et al., 2011)

3) Quality Compromises: Efficiency efforts that sacrifice service can harm sales.
4) Dynamic Markets: Market shifts may limit Customer Capital's impact (Mention & Bontis, 2013)
5) Complex Management: Poor handling of Customer Capital reduces benefits.
6) Short-Term Focus: Overlooking long-term value weakens ROS impact.

This aligns with the Resource-Based View (RBV), which highlights that Customer Capital only boosts performance if managed well. Authorities should support SMEs with training and CRM tools to optimize Customer Capital for better ROS.

5. Conclusion

5.1. Conclusion

This study aims to measure and analyze the role of intellectual capital in moderating the impact of operational efficiency on the financial performance of creative economy-based SMEs in Palembang. The findings reveal several key insights regarding the effect of operational efficiency and the moderating role of intellectual capital on the financial performance of these SMEs:

1. The first hypothesis, which states that operational efficiency significantly impacts ROA, is supported by the results.
2. Conversely, the second hypothesis, asserting that operational efficiency significantly impacts ROS, is not supported.
3. The third hypothesis, suggesting that human capital enhances the impact of operational efficiency on ROA, is supported.
4. However, the fourth hypothesis, which states that customer capital strengthens the impact of operational efficiency on ROA, is not supported by the data.
5. The fifth hypothesis, indicating that capital structure amplifies the impact of operational efficiency on ROA, is supported by the findings.
6. The sixth hypothesis, which claims that human capital enhances the impact of operational efficiency on ROS, is also supported.
7. The seventh hypothesis, proposing that customer capital enhances the impact of operational efficiency on ROS, is not supported by the results.
8. Similarly, the eighth hypothesis, which suggests that capital structure strengthens the impact of operational efficiency on ROS, is also not supported.

These findings provide valuable insights into the factors influencing the financial performance of creative economy-based SMEs and highlight the importance of managing human capital and capital structure to enhance efficiency and financial outcomes.

5.2. Limitation

This study has several limitations. First, it focuses only on creative economy SMEs in Palembang, limiting generalizability to other regions. Second, it uses cross-sectional data, which does not capture changes over time. Third, the study's focus on intellectual capital as a moderating variable may overlook other influential factors like technology or the business environment. Future research should include broader regions, longitudinal data, and more comprehensive variables for a holistic understanding.

5.3. Suggestion

Several recommendations are provided based on the study's findings and limitations. For SMEs, continuous employee training and skill enhancement are essential to boost operational efficiency and financial performance. Focusing on product and service innovation and investing in R&D can meet market demands and maintain competitiveness, while strengthening customer relationships through feedback and quality service will enhance loyalty and efficiency. The Industry and Trade Office should offer training programs to improve management and innovation skills, increase funding access through interest subsidies, and facilitate broader market access through exhibitions and digital marketing. Local governments are encouraged to develop supportive policies, reduce bureaucracy, create infrastructure like innovation centers, and run promotional campaigns for local SMEs to enhance market visibility. Future research should explore additional dimensions of intellectual capital,

conduct regional comparative analyses, and adopt comprehensive methodologies considering business environment and technology impacts.

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