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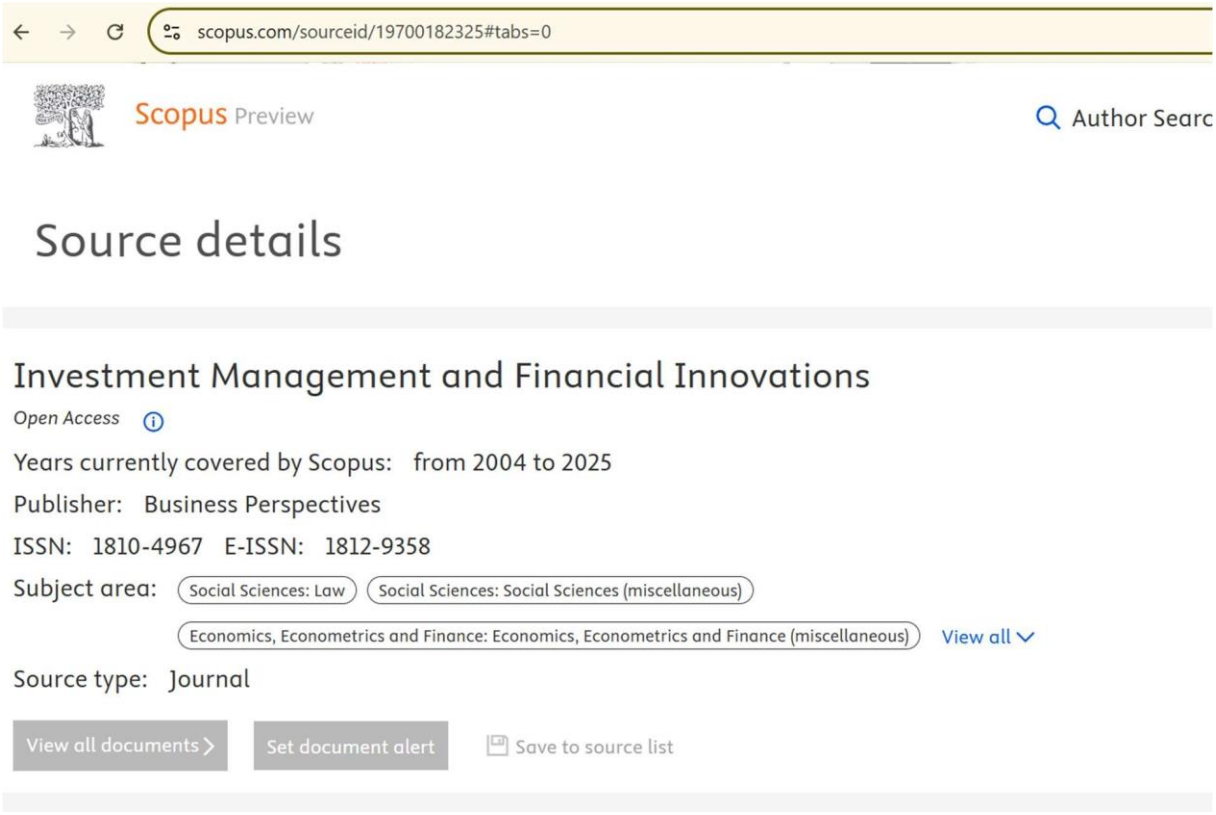

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We have carefully followed all the instructions. The cover letter has been fully completed with the required details, including university affiliations, ORCID, and signatures from each author. We've made sure that each author has marked at least four contributions according to the authorship guidelines.

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Thank you for your guidance, and we look forward to your feedback on the revised manuscript.

Kind regards,
Assoc. Prof. Dr. Susanti Widhiastuti
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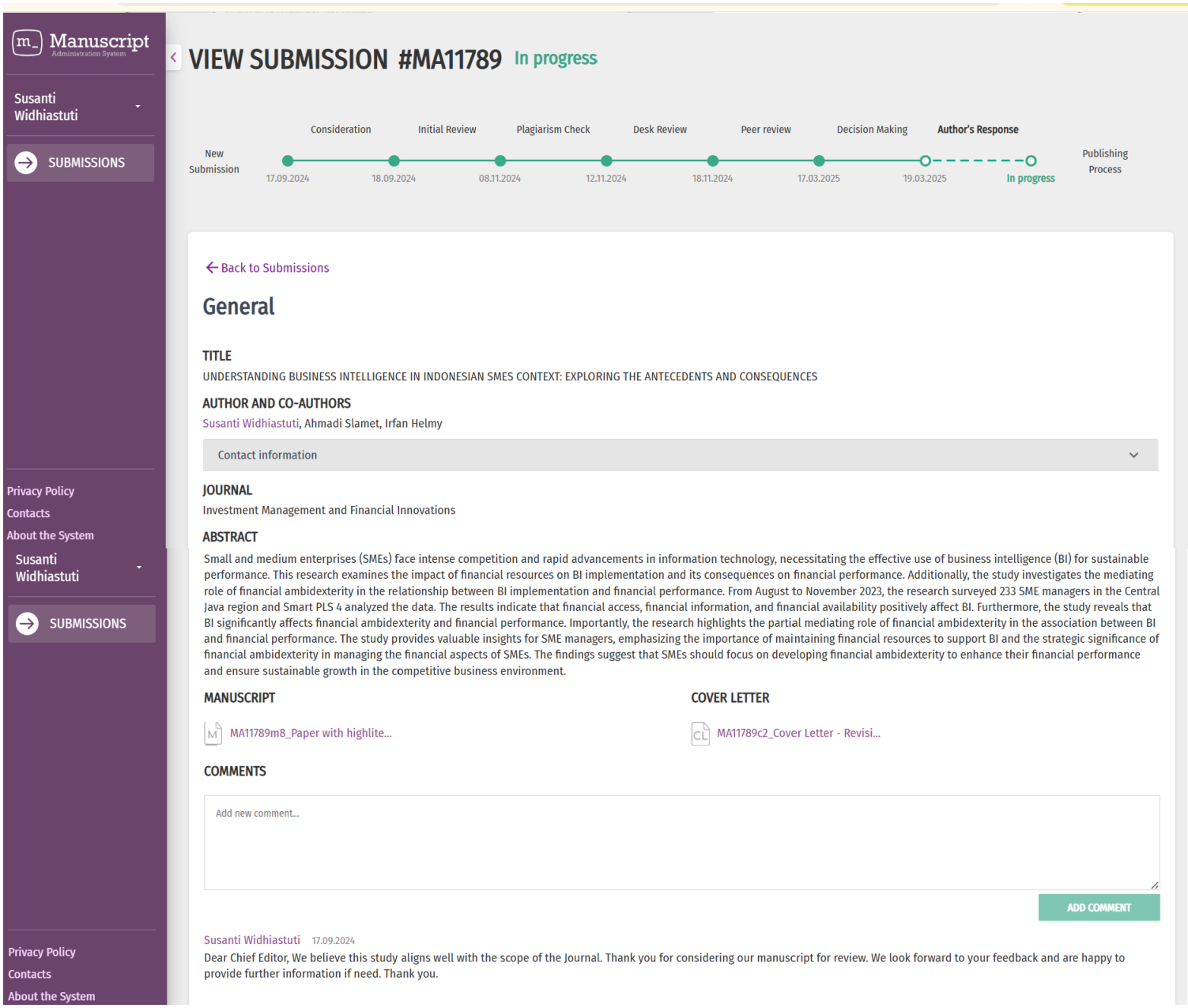

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Dear Editor,

Attached is the manuscript titled **"UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES"** to be considered for publication in the **«Investment Management and Financial Innovations»** journal.

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"UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES"

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ABSTRACT

Small and medium enterprises (SMEs) face intense competition and rapid advancements in information technology, necessitating the effective use of business intelligence (BI) for sustainable performance. This research examines the impact of financial resources on BI implementation and its consequences on financial performance. Additionally, the study investigates the mediating role of financial ambidexterity in the relationship between BI implementation and financial performance. From August to November 2023, the research surveyed 233 SME managers in the Central Java region and Smart PLS 4 analyzed the data. The results indicate that financial access, financial information, and financial availability positively affect BI. Furthermore, the study reveals that BI significantly affects financial ambidexterity and financial performance. Importantly, the research highlights the partial mediating role of financial ambidexterity in the association between BI and financial performance. The study provides valuable insights for SME managers, emphasizing the importance of maintaining financial resources to support BI and the strategic significance of financial ambidexterity in managing the financial aspects of SMEs. The findings suggest that SMEs should focus on developing financial ambidexterity to enhance their financial performance and ensure sustainable growth in the competitive business environment.

Keywords: Financial Resources, Business Intelligence, Financial Stability, Financial Flexibility, SMEs Performance

JEL Classification: L26, O34, P42

1. INTRODUCTION

Digital transformation is critical for small and medium enterprises (SMEs) to survive in increasingly fierce business competition. SMEs that successfully embrace information and communication technology can boost operational efficiency, expand market reach, and enhance customer interactions (Asandimitra et al., 2024; Bagale et al., 2023). In this context, business intelligence (BI) has a pivotal role in making strategic decisions by data analytics. BI in the business context refers to the use of a data analysis system and processes to make informed business decisions. It is often considered a tool or practice more suitable for large enterprises due to its complexity and implementation costs (Wei & Pardo, 2022). However, Popovič (2019) stated that this paradigm has shifted, and small businesses increasingly recognize the benefits of BI that they can accrue. BI technology is becoming more affordable and user-friendly. Small businesses now have access to tools that can help optimize their operations and make smarter decisions based on data.

Previous studies have revealed that adopting business intelligence positively influences small business performance (Huang et al., 2022; Khaddam et al., 2023). The analytic data from BI not only help managers in formulating more effective marketing strategies and personalized customer services but also supports optimalization of budgetary performance (Bhatiasevi & Naglis, 2020). According to Wang et al. (2022) BI plays a crucial role in unearthing vital financial data, analyzing expenditure trends, and providing financial insights that facilitate better decision-making. BI can be applied to enhance operational efficiency by providing a profound understanding of the entire business process (Huang et al., 2022). Thus, implementing BI has become a key factor to improve business performance. However, despite its benefits, recent research reveals that BI has an insignificant impact on SME performance and indicates an inconsistency in previous studies. For instance, Ghasemaghaei & Calic (2020) stated that the volume of big data in BI does not affects financial performance. Similarly, Bhatiasevi & Naglis, conducted a survey involving 220 SME managers in Thailand that actively utilizing BI in their business operations. The findings of the study revealed that there is insignificant relationship between BI usage and financial performance. They argue that most of SMEs fail to maintain their financial resource. The main problem is not only related to capital, but also how agile management is to manage financial information in decision making strategy. Therefore, it is important to understand how financial resources are managed for BI implementation and performance improvement. In addition, Paradza & Daramola (2021) conclude that there is still a lack of research understanding of how SMEs implement BI and its effects on company performance.

This current study proposes to examine the relationship between financial resources and BI and their influence on financial performance. Prior studies conclude that financial resources are critical to provide BI implementation (Baños-Caballero et al., 2016). However, not all businesses with financial support are able to utilize Business Intelligence (BI) to improve performance. For instance, a study by Lateef & Keikhosrokiani (2023) revealed that organizational resources has insignificant impact on the success of BI implementation in SMEs. They argued that SMEs managers should carefully maintain financial resource to perform BI. Furthermore, present study also tests the mediating role of financial ambidexterity in the BI-financial performance connection. Based on dynamic capability theory, organizations must possess the ability to adapt, integrate, and reconfigure their resources and capabilities in response to dynamic environments (O'Reilly & Tushman, 2008). As a strategic management tool, business intelligence is instrumental in providing organizations with valuable insights derived from data, enabling them to make informed decisions and adapt to changing market conditions. Financial resources encompass the availability, accessibility, and quality of financial information. Adequate financial resources can improve the capacity of SMEs to implement business intelligence effectively. Financial ambidexterity, as a mediating variable, refers to the ability of SMEs to flexibly manage their financial resources, face uncertainty, and respond quickly to changes in market conditions. This research expects that SMEs with appropriate financial resources can effectively implement BI and enhance financial performance. Additionally, BI can enhance financial ambidexterity that, in turn, increases financial performance.

This research significantly contributes to the existing body of knowledge on BI in SMEs by addressing a notable gap in the literature. While prior studies predominantly focused on technological determinants, management support, and innovation capabilities (Salisu et al., 2021), this research extends the understanding by delving into the influence of financial resources on BI implementation in small businesses. This study offers a practical suggestion for SME managers regarding improving financial performance by optimizing financial resources and using BI. This study also highlighted the roles of ambidexterity in financial strategy that impact SMEs' financial performance.

2. LITERATURE REVIEW

1.1. Business Intelligence

Business Intelligence (BI) is a managerial tool used to assist organizations in managing and refining business information to make better decisions based on collected data (Torres, 2018; Wamba-Taguimdje, 2020) . BI encompasses a set of methodologies, processes, architectures, and technologies that work together to transform raw data into meaningful and valuable information (Nuseir, 2021). This information provides insights and supports more effective decision-making strategically, tactically, and operationally (Bhatiasevi & Naglis, 2020; Huang et al., 2022). Previous studies have investigated factors influencing the implementation process of business intelligence in small businesses, such as corporate policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers focus on the impact of BI implementation, including improved operational efficiency (Ghasemaghaei & Calic, 2020), more accurate decision-making, and overall company performance improvement (Wamba-Taguimdje, 2020).

Small businesses increasingly adopt business intelligence-based solutions to enhance efficiency and productivity. Through real-time visualization and the ability to export reports, business owners can easily monitor and analyze their performance (Chen, 2021). Mobile optimization allows business owners to access crucial information anytime, anywhere. It can be concluded that small businesses that adopt BI can integrate their operations into the platform that offering all-in-one solutions that cover all the information to improve sales management, customer relations, team scheduling, projects, and business outcomes.

1.2. Financial Resources

Every company will strive intensively to gain access to various financial resources amid market turbulence to achieve significant financial growth. This is especially true for small businesses that require funding to finance operational needs and company investments (Ismail, 2022). The importance of access to financial resources not only serves as a support in market competition, as revealed by (Khan, 2020), but also involves the ability to identify the right opportunities in financial decision-making, debt management, and the efficient use of financial resources during investment and development (Maldonado-Guzmán, 2022). In the framework of sustainable competitive advantage, financial resources are recognized as a critical element, enabling companies to conduct day-to-day transactions and manage financial functions smoothly (Salehi, 2019).

Furthermore, financial resources are also acknowledged as an optimal source for identifying opportunities and improving organizational performance (Edward et al., 2023; Ismail, 2022). Based

on previous literature, financial resources in a company are generally divided into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to the ability of an entity, such as a small business, to obtain the necessary funds and financial services to operate (Cowling, 2018). Businesses with financial access can acquire the capital to start or expand their operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Next, financial availability is conceptualized as the availability of financial resources in the company, including capital, liquidity, and the company's ability to meet financial obligations (Pártlová, 2018). Financial information quality is the availability of accurate, reliable, and relevant financial information, which is the foundation for making good decisions (Gonzales & Wareham, 2019). The quality of this financial information is essential to support transparency, accountability, and trust from various parties. Companies that focus on improving the quality of their financial information tend to make better decisions.

1.3. Financial Ambidexterity

In high business uncertainty, every company must possess agility, known as organizational ambidexterity. Researchers agree that organizational ambidexterity is a concept that refers to an organization's ability to simultaneously pursue and optimize two dimensions often considered contradictory in a business context: exploration strategy and exploitation strategy (Ansah, 2022; Costanzo, 2019). Exploration activities lean towards developing innovations, pursuing new opportunities, and adapting to changes in the external environment. Exploitation activities involve experimentation, discovery, and new learning. Organizational ambidexterity is required for organization to combining exploration and exploitation strategy (Herzallah, 2017). In other words, organizations must be innovative and efficient simultaneously. This concept acknowledges that long-term success depends not only on relentless innovative exploration but also on maintaining and enhancing existing competitive advantages.

Financial ambidexterity becomes crucial as business strategy to response to uncertain business circumstances (Dolz, 2019; Malki, 2022). Based on dynamic capability thoery, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility. Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to

adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). Organizations face a dilemma between maintaining financial stability to mitigate risks and increasing financial flexibility to cope with uncertainty.

Previous research results indicate that actions supporting financial stability, such as debt reduction or cost savings, may reduce financial flexibility (Hao et al., 2022). Conversely, taking significant risks for specific business growth opportunities can threaten financial stability if not carefully managed. Organizations that successfully achieve financial ambidexterity can benefit from both sides, reducing excessive financial risks and capitalizing on growth opportunities (Teng et al., 2021). This requires intelligent financial management, careful monitoring of the business environment, and flexibility in financial decision-making.

1.4. Financial Performance

Financial performance refers to the overall financial health of a company and its ability to generate profits, which measures how well a company can use its assets from its primary mode of business to generate revenues (Baños-Caballero et al., 2016; Gonzales & Wareham, 2019). It is evaluated using financial statements, such as the balance sheet, income statement, statement of cash flows, and financial performance indicators, quantifiable metrics used to measure a company's financial health. Financial performance analysis includes the analysis and interpretation of financial statements to diagnose a business's profitability and financial soundness. For SMEs, financial performance is essential to various stakeholders, including investors, shareholders, lenders, and regulators. It indicates the company's ability to generate a return on investment and repay loans (Baños-Caballero et al., 2016). A solid financial performance analysis can show detailed information on a business's strengths and weaknesses and give a good sense of its direction. It is also crucial for internal managers to understand how well the company is doing and to identify areas for improvement (Baños-Caballero et al., 2016; Rosa, 2018). Financial performance evaluation in SMEs is a comprehensive evaluation of the company's overall financial standing, and it plays a vital role in decision-making, strategic planning, and attracting investment. By analyzing financial statements and using various financial ratios and metrics, SMEs can gain valuable insights into their financial health and make informed decisions to drive growth and success.

1.5. Financial Access and Business Intelligence

The adoption of BI in small businesses is influenced by various factors, with financial access being a significant consideration. Research indicates that SMEs often encounter challenges related to insufficient financial resources to cover the initial investment required for BI practise (Fatoki, 2021). The availability of financial resources can have a substantial impact on the success and development of business intelligence in small enterprises (Kumarasamy, 2018; Rosa, 2018). Small businesses that have the ability to access external funding can allocate funds for the implementation of BI systems (Chu, 2021).

The access to the capital can expedite the implementation process by providing the necessary resources, such as software, hardware, and training for employees (Bokpin, 2018; Chu, 2021). If small businesses can secure loans with low-interest rates, it can alleviate the financial burden associated with investing in business intelligence technology (Balsmeier, 2018). Low-interest rates can assist small businesses in allocating more funds toward the development and optimization of business intelligence systems. According to previous study, this research proposes hypothesis:

H1: Financial access has a significant impact on business intelligence in SMEs.

1.6. Financial Availability and Business Intelligence

Financial availability reflects the extent to which funds and financial resources are available to support company operations (Memon, 2020). In the context of implementing business intelligence in SMEs, the level of financial availability can have a significant impact on a company's ability to successfully adopt and integrate the technology (Owusu, 2019). Consistent availability of funds enables SMEs to plan business intelligence projects well and allocate adequate budgets to ensure successful implementation. The level of funding availability also reflects the level of financial flexibility of SMEs in facing changes and challenges that may arise during the implementation of business intelligence (Pártlová, 2018; Stjepić, 2021).

The availability of funds allows SMEs to provide training to employees regarding the use of business intelligence technology (Becerra-Godínez, 2020). This is crucial so that team members have the necessary skills to understand and utilize the features offered. After implementation, maintaining and updating business intelligence systems requires ongoing investment (Strohmeier, 2021). The availability of funds ensures the operational continuity and effectiveness of the system. SMEs with a high level of financial availability have a greater ability to adapt to strategic changes or business opportunities that may arise during or after implementation (Krey, 2022; Raj, 2019). In other words, the availability of sufficient funds provides flexibility and freedom to carry out

projects without too many limitations, thereby increasing the chances of successful implementation of business intelligence. Thus, this research proposes hypothesis:

H2: Financial availability has a significant impact on business intelligence in SMEs.

1.7. Financial Information Quality and Business Intelligence

The accuracy of financial information is a key element in the analysis and decision-making within the realm of business intelligence (Visinescu et al., 2017). Ensuring that the data processed by business intelligence systems provides an accurate and reliable overview of the company's financial condition. The utilization of technology and financial tools plays a crucial role in enhancing the accuracy and completeness of financial information. The success of business intelligence implementation in SMEs can be influenced by the extent to which technology and financial tools help maintain the quality of financial information (Corcoran, 2016; Gonzales & Wareham, 2019). Ease and speed of access to financial information play a significant role in supporting rapid responses to market changes or business conditions (Kowalczyk, 2015). Business intelligence implementation becomes more effective when information can be easily and quickly accessed.

The quality of financial information has a significant impact on the implementation of business intelligence in SMEs (Khaddam et al., 2023). Accurate financial information, supported by technology and financial tools, as well as timely and easy access, forms a strong foundation for an effective business intelligence system (Guo, 2021). Consistency in methods and procedures of financial reporting ensures that the data used in the analysis and decision-making processes is consistent and reliable. Therefore, the quality of financial information is key to enhancing the effectiveness and success of business intelligence implementation in the SME environment. Based previous research, hypothesis of this study:

H3: Financial information quality has a significant impact on business intelligence in SMEs.

1.8. Business intelligence and Financial Performance

Business intelligence plays a very important role in the management of small businesses. Companies can design more effective strategies by utilizing information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards (Huang et al., 2022; Memon et al., 2020). Additionally, through implementing the right BI solutions, small businesses can make optimal use of resources and identify growth opportunities.

The importance of business intelligence is not only limited to operational management, but also has a significant impact on financial performance (Wei & Pardo, 2022). By using careful data analysis, small companies can understand the factors that influence revenue, costs, and profitability (Memon et al., 2020). This allows them to identify areas that require special attention, optimize investments and improve operational efficiency (Alzghoul et al., 2022). However, recent study also highlighted the crucial roles of agile managerial strategy on implementing BI that in turn, increase financial performance (Bhatiasevi & Naglis, 2020). Based in previous literature, this study proposes hypothesis:

H4: Business intelligence has a significant impact on financial performance in SMEs.

1.9. Business Intelligence and Financial Ambidexterity

In today's dynamic business landscape, achieving financial ambidexterity is paramount for companies seeking sustainable success (Nuseir, 2021). Financial ambidexterity involves maintaining stability in the face of uncertainties while simultaneously fostering the flexibility to adapt swiftly to changing market conditions. BI can have a significant impact on financial ambidexterity, encompassing the financial stability and financial flexibility of the company. Companies that effectively manage BI can access real-time financial data and conduct deeper analyses, enabling management to make more accurate decisions (Wamba-Taguimdje, 2020). According to Popovič (2019), faster and more accurate information allows companies to respond quickly to changes in market conditions or business opportunities. The expedited decision-making process can enhance flexibility in allocating resources to the most strategic areas. BI can assist companies in understanding the strengths and weaknesses of competitors, as well as industry trends, helping them identify potential risks and opportunities (Chen, 2021; Vallurupalli, 2018). The optimal implementation of BI by companies can integrate information from various sources, improve the identification of opportunities and risks, and effectively respond to market changes, all of which can enhance financial ambidexterity. , this study proposes hypothesis:

H5: Business intelligence has a significant impact on financial performance in SMEs.

1.10. Financial Ambidexterity and Firm Performance

Financial ambidexterity indicates company's ability to maintain financial stability while retaining the flexibility to adapt to changes and market opportunities (Hao et al., 2022). Costanzo (2019) stated that financial ambidexterity strategy aims to achieve the right balance between stability and adaptability The ability to adapt quickly to changes in the market and business

opportunities is at the core of financial ambidexterity. Financial flexibility allows companies to respond to market changes with appropriate strategies, which can enhance long-term financial performance (Valaskova, 2021). Financial flexibility enables companies to allocate resources to the most strategic areas based on current business needs (Callegari, 2021). This can improve efficiency and productivity, positively impacting financial performance. On the other hand, companies with strong financial stability can gain the trust of investors and have a competitive edge in the financial market (Kumarasamy, 2018). This can create easier access to capital and support a robust financial performance. Present study proposes hypothesis:

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

1.11. Mediating Role of Financial Ambidexterity

This study investigates how financial ambidexterity acts as a mediator, connecting the impact of BI on financial performance. According to dynamic capability theory, companies implementing BI can access accurate information about their operations, market conditions, and competitors (Guo, 2021). This mechanism can increase financial ambidexterity, meaning that better BI management results in excellent information for managers to decide on financial strategies to maintain stability or implement flexibility (Gonzales & Wareham, 2019). Previous research has identified a gap, suggesting that BI alone might not directly enhance financial performance. The mediating role of financial ambidexterity is introduced to address this gap, emphasizing the need for more agile and skilful management in using information for business decision-making (Bhatiasevi & Naglis, 2020). Therefore, this research proposes the following hypotheses:

H7: Financial ambidexterity mediates the relationship between BI and financial performance in SMEs.

3. METHODOLOGY

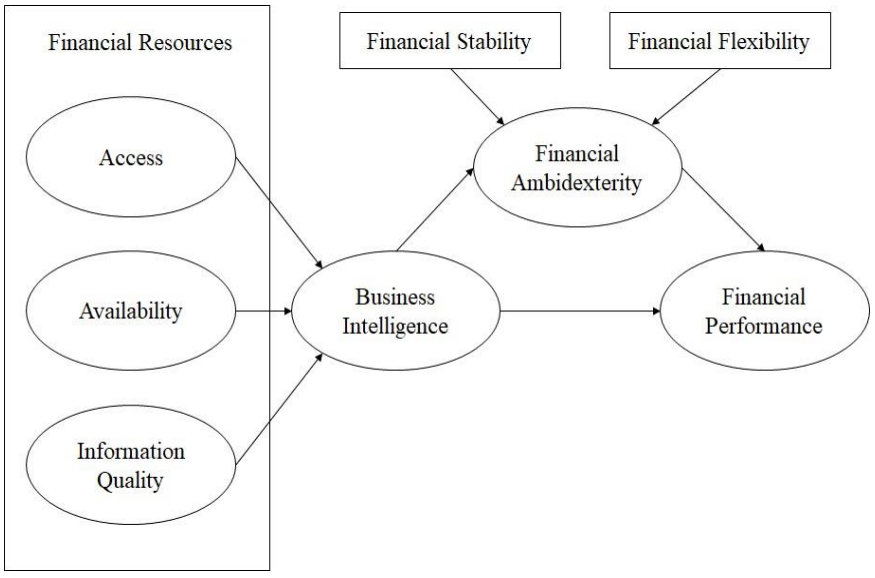
1.12. Participant

This research constitutes a survey focused on owner-managers of Small and Medium Enterprises (SMEs) situated in the Central Java region, which stands out as one of the provinces in Indonesia witnessing the highest growth in small businesses. The survey employed a data collection technique involving the completion of questionnaires by 290 SMEs owner-managers who acted as respondents between August and November 2023. The survey engaged a total of 233 SMEs, reflecting a commendable response rate of 73.44%. Throughout the survey process, we received

invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and facilitated communication with the SMEs. Notably, a significant portion of the studied SMEs are business units affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents span various industry sectors, with the highest proportions coming from the service sector (35%) and the food & beverage sector (35%). Manufacturing and retail contribute 25% and 20%, respectively. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

Figure 1: Conceptual Model



1.13. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and

information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS AND DISCUSSION

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler, 1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI) AVE = 0.812 CR = 0.911 CA = 0.822	BI1	0.740	2,79	0.071
	BI3	0.749	3,07	0.033
	BI4	0.788	3,02	0.046
	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037

Variables	Constructs	Loading Factor	Mean	SD
Financial Performance (FP) AVE = 0.723 CR = 0.856 CA = 0.756	FP1	0.756	3,14	0.015
	FP2	0.754	3,12	0.024
	FP3	0.801	2,77	0.026
	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS) AVE = 0.821 CR = 0.923 CA = 0.762	FS1	0.811	3,26	0.033
	FS2	0.866	2,88	0.071
	FS3	0.838	3,21	0.078
	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF) AVE = 0.753 CR = 0.865 CA = 0.731	FF1	0.875	3,36	0.040
	FF2	0.788	3,34	0.010
	FF3	0.867	2,62	0.071
	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA) AVE = 0.675 CR = 0.776 CA = 0.812	FA1	0.850	3,51	0.029
	FA2	0.827	2,63	0.073
	FA3	0.752	3,51	1.017
	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI) AVE = 0.852 CR = 0.875 CA =0.812	FI1	0.703	3,07	0.062
	FI2	0.769	2,95	1.049
	FI3	0.775	2,74	0.072
	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC) AVE = 0.845 CR = 0.902 CA =0.864	FC1	0.856	3,21	0.038
	FC2	0.845	3,4	0.086
	FC3	0.840	3,15	0.058
	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on BI. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on BI, which means that H1, H2, and H3 were supported. Furthermore, the test results show that BI has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of BI on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	p-Values	Hypothesis
Financial Access→ BI	0.768	0.340	2.259	0.025	H1: Supported
Financial Availability→ BI	0.243	0.056	4.339	0.000	H2: Supported
Financial Information Quality → BI	0.335	0.121	2.768	0.016	H3: Supported
BI → Financial Ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
BI→ Financial Performance	0.365	0.111	3.288	0.001	H5: Supported

Financial Ambidexterity → Financial Performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
BI → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

This study examines the connection between financial resources dimension and BI. The effect of BI on performance also empirically examined trough financial ambidexterity as a mediating variable. As a result, this study confirmed that financial availability and financial access shares positive influence on BI. In contrast, financial information quality is not related to the BI implementation. This study also empirically found that BI significantly affect financial performance. In addition, according to indirect effect test, the financial ambidexterity displays a significant mediating effect on the connection between BI and financial performance.

The current study revealed that two dimensions of financial resources, financial access and financial availability, demonstrate a positive influence on the implementation of BI in the context of SMEs. The successful implementation of BI in small businesses is laboriously contingent on their ability to have financial access. SMEs with financial access can proactively seek external funding to acquire crucial information and support for their BI improvement. Additionally, access to finance is better positioned to have loans at lower interest rates and featuring simplified processes with minimal requirements. SMEs with financial access can secure financial support directly correlates with their strategy to invest in expanding their BI infrastructure and operations. Financial availability also plays a significant role in the development of BI in SMEs. Furthermore, financial availability has a critical effect on the BI in SMEs. Despite limited finances, BI can help small businesses to generate in-depth data analysis to understand customer behavior, market trends, and other factors that can impact their business performance. Business intelligence implementation often requires an initial investment in technology infrastructure and software. Small businesses with limited financial availability may experience obstacles in purchasing or implementing solutions that require high costs. Therefore, financial availability will have a significant impact on the implementation of BI in small businesses. On the other hand, financial information quality has an insignificant effect on BI. This research suggests that numerous small businesses struggle to produce sufficient financial reports due to the limited skills of employees. Furthermore, most owner-managers are high school graduates who may have a limited understanding of financial information.

This study has empirically found that BI is significantly related to financial ambidexterity and financial performance. BI implementation in SMEs provides information that is useful for managers to improve financial performance. SMEs can design more effective strategies by using information

obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards. This will support the company's efforts to achieve optimal financial performance. Beside, BI implementation is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. One of the obstacles to using BI in small businesses is that managers are not prepared for the volume of data that is too high, so reliable skills are needed to determine financing strategies. Additionally, a test of the mediating effect revealed that the BI-financial performance connection is mediated by financial ambidexterity. The use of BI in small businesses needs to be accompanied by manager skills in managing finances- as a financial ambidexterity. Managers will utilize the output from using BI to control finances, increase flexibility, and maintain stability per the conditions of the company's business environment. This research empirically proves that BI significantly impacts financial ambidexterity, which in turn significantly impacts small businesses' financial performance.

5. CONCLUSION

This research provides support that SMEs with financial resources will have a positive impact on BI implementation. The financial resources that reflects the financial access, financial availability, and quality of financial information have an significant influence to the ability of SMEs to implement and develop BI. Furthermore, BI implementation in small businesses can increase financial performance. On the other hand, by relying on dynamic capability theory, this research proves that financial ambidexterity can channel the link between BI and financial performance. SME managers skilled at balancing financial stability and flexibility decisions can be essential to BI's success and improving financial performance.

This study provides an implication both theoretically and in practice. In theory, the result brings a novel avenue regarding how financial resources affect BI implementation in SMEs. This research also contributes to scrutinising the inconsistencies found in the previous works, specifically in the connection between BI and financial performance (Bhatiasevi & Naglis, 2020; Ghasemaghaei & Calic, 2020; Paradza & Daramola, 2021). By supporting dynamic capability theory, this study claimed that financial ambidexterity mediates BI and financial performance relationship. Practically, this empirical research sheds light on SME managers to improve financial performance. The implementation of BI is affected by financial resources. Thus, SME managers suggested improving financial resources by providing appropriate financial access, financial availability, and financial information quality. In addition, financial ambidexterity plays a central role in the success of BI implementation in SMEs. Managers should pay attention to a strategy and

the skill to manage financial stability and flexibility simultaneously. This BI strategy will help SMEs improve competitive advantages in the technology information era and, in turn, increase sustainability performance.

This researcher has several research limitations that need to be considered for further research. First, the small businesses that participated in this research came from different types of businesses (manufacturing, retail, services, IT, food and beverage). These differences in business types impact the need and use of BI in business and the development strategy. Therefore, it is recommended that further research focus on one type of business, for example, retail business, IT and services. Second, this research was conducted using a survey technique with a cross-sectional approach, so it is impossible to determine the temporal interaction between variables. This research suggests a longitudinal approach to establishing a true cause-and-effect relationship.

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RINCIAN BUKTI KORESPONDENSI

No	Perihal	Tanggal
2.	Koreksi dan Masukan Editor (tahap 1)	18 September 2024
3.	Bukti Balasan peneliti revisi tahap 1	23 September 2024

MA11789: Notification on Submission

1 pesan

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Kepada: susantiwidhiastuti86@gmail.com

18 September 2024 pukul 13.51

Dear Susanti Widhiastuti,

the manuscript UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES, submitted to Investment Management and Financial Innovations Journal, needs to be revised.

Comments: When finalizing the article in accordance with the requirements of the journal, please pay special attention to the fact that in the journals of our publishing house, we consider three types of articles - a research paper, which is a final report on the finished original experimental study (the structure is Abstract, Introduction, Literature review, Method, Results, Discussion, Conclusion); a theoretical paper, which is devoted to the theoretical study of the problem corresponding to the journal's scope (structure: Abstract, Introduction, Theoretical Basis, Results, Discussion, Conclusion); and a review paper, which is a study of a specific scientific problem, corresponding to the journal's scope and conducted on the basis of scientific publications (structure: Abstract, Introduction, Literature review, Generalization of the main statements, Discussion, Conclusion).

The length of the article (maximum) should be up to 6,000 words (not including the abstract, list of sources and appendices). Divide the material into sections correctly. Clearly and concretely formulate the purpose of the study!

The article's title should be specific, indicate the purpose of the study, and correlate with it. The article's purpose is indicated in the abstract, at the end of the literature review, and in the Conclusion.

Abstract (its volume is 150-250 words, but abstracts are welcome, in which the volume approaches 200-250 words) should have the following sequence of material presentation - relevance, purpose, method, result, and conclusion. This is exactly the sequence that should be. Most of the abstract should be devoted to the result. Give a quantitative description of the result. Do not enter in the Abstract and do not use (and in the conclusions as well) unestablished abbreviations.

Keywords should be chosen responsibly. You should not give the term and then also its abbreviation. The number of keywords is limited (about 8-10 words on average). They should not be repeated, just as they should not repeat the words from the article's title. Basically it should be words, not phrases. They should reflect the main idea and content of the article.

JEL Classification codes should be clarified. Their number is on average 2-4, and they should be placed in order from the main (important) to the secondary ones.

The Introduction is a half-page - a page of text devoted to the relevance of the research topic and the formulation of the SCIENTIFIC problem (within which this research is conducted) as a whole. There is no need for a literature review here. It is not necessary to tell how the research will be conducted, how the article is structured, what is the purpose of the research and what tasks the authors will solve. But if you have a review or theoretical article, then please, after formulating the scientific problem, formulate the purpose of the study here.

The Literature review should include 30-40-50 analyzed sources. It should begin with a few introductory sentences. The sequence of the text must have logic (it is not determined by the place of the mentioned work on the shelf). It must be subordinated to the purpose of the study. Do not start each paragraph with a reference to the source. Do not structure the text in such a way that one paragraph is an analysis of one source. The review should be concluded with 2-3 generalizing sentences. Then the purpose of the study should be formulated. After that, formulate hypotheses (right here, all together, and do not insert text between them). Of course, if you foresee them. As for the hypotheses, they should be formulated clearly and unambiguously! They should be clear and not repeat each other.

As for a research article, after the hypotheses there should be a Methods section (the Methods section is not required in a review article, and it is not mandatory in a theoretical one). Here (in the Method section), the algorithm (procedure) of the study should be written, as well as the primary data for calculations should be given or the sources of their receipt should be indicated. This should be done following the logic of the academic presentation of the material. The entire text should be carefully worked out here. Variables in formulas must have established designations. They should be explained.

Further, the main section of the article is the RESULT (in the review article it is the Generalization of the main statements). Here, not only the results obtained (analytics, systematization, calculations...) should be given, but also their economic interpretation, explanation, and justification should be given. If hypotheses were foreseen, then give the results of their verification.

The Discussion section should include a discussion of the results of the study, a comparison with previous ones, a discussion of why the authors have such results, and an identification of future prospects.

The Conclusions should have the following logic - indicate the purpose of the study, briefly demonstrate the obtained result, and indicate what conclusions should be drawn from it. Do not cite sources in the Conclusions, and do not repeat sentences from the abstract here. Don't start chapters with subsections.

Don't break sections into a bunch of subsections. Captions for figures and tables should be clear and understandable, even if they are shown in the context of the article. Do not indicate under the figures and tables that this is your (author's) development or your own calculations, because it should be so a priori. Column and row names in tables should be clear and complete. Carefully study each sentence, each paragraph and the entire text of the article.

Please take a look at the examples of already published articles.

Business Perspectives - Issue #3

The deadline for revisions is 2024-09-25

To revise a manuscript please don’t forget to log in to the system and to upload a revised manuscript!

Kind regards,

Valeria Matiukhina
Managing Editor
Journal Investment Management and Financial Innovations

MA11789: Notification on Submission

susanti widhiastuti <susantiwidhiastuti86@gmail.com> 20 September 2024 pukul 20.23
Kepada: v.matiukhina@manuscript-adminsystem.com

Dear,

Valeria Matiukhina

Managing Editor

Journal Investment Management and Financial Innovation

Thank you for your detailed feedback and the opportunity to revise our manuscript.

We will carefully review all your comments and revise the manuscript accordingly.

Specifically, we will ensure that the article structure, word count, and content meet the journal's requirements. We will also improve the abstract to include relevance, purpose, method, result, and conclusion in the recommended sequence, with an emphasis on quantitative descriptions of the results.

We aim to submit the revised version well before the deadline of September 26, 2024.

Thank you once again for your guidance.

Kind regards,

Assoc. Prof. Dr. Susanti Widhiastuti, S.E., M.M.

BUKTI BALASAN PENELITI REVIEW TAHAP 1

MA11789: Notification on Submission

susanti widhiastuti <susantiwidhiastuti86@gmail.com> 23 September 2024 pukul 16.10
Kepada: v.matiukhina@manuscript-adminsystem.com

Dear,
Prof. Valeria Matiukhina,

I hope this email finds you well.
We have carefully revised the manuscript in response to your feedback and have uploaded the revised version to the system. The following documents are attached for your consideration:
1) Clean Paper
2) Paper with Highlights – The highlighted sections (in yellow) indicate the changes made.
3) Author Comments – Our responses to the editor's suggestions.
Thank you for your valuable input, and we appreciate your continued guidance throughout this process. Please let us know if any further adjustments are required.

Assoc. Prof. Dr. Susanti Widhiastuti
Univ. IPWIJA , Jakarta, Indonesia

Pada Jum, 20 Sep 2024 pukul 15.12 <v.matiukhina@manuscript-adminsystem.com> menulis:
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BUKTI BALASAN PENELITI REVIEW TAHAP 1

AUTHORS RESPONSE FOR EDITOR COMMENT

Editor Comments 1#

When finalizing the article in accordance with the requirements of the journal, please pay special attention to the fact that in the journals of our publishing house, we consider three types of articles - a research paper, which is a final report on the finished original experimental study (the structure is Abstract, Introduction, Literature review, Method, Results, Discussion, Conclusion); a theoretical paper, which is devoted to the theoretical study of the problem corresponding to the journal's scope (structure: Abstract, Introduction, Theoretical Basis, Results, Discussion, Conclusion); and a review paper, which is a study of a specific scientific problem, corresponding to the journal's scope and conducted on the basis of scientific publications (structure: Abstract, Introduction, Literature review, Generalization of the main statements, Discussion, Conclusion).

Author Response

Thank you for your feedback. I have adjusted my paper to align with the journal's guidelines for a research paper, including the appropriate sections: (Abstract, Introduction, Literature Review and Hypothesis, Method, Results, Discussion, Conclusion).

Editor Comments 2#

The length of the article (maximum) should be up to 6,000 words (not including the abstract, list of sources and appendices). Divide the material into sections correctly. Clearly and concretely formulate the purpose of the study!

Author Response

I would like to inform you that the length of my article is currently 5,680 words, excluding the abstract, list of sources, and appendices. I will ensure that the material is divided into sections appropriately and that the purpose of the study is clearly and concretely formulated (see introduction-with track changed).

Editor Comments 3#

Abstract (its volume is 150-250 words, but abstracts are welcome, in which the volume approaches 200-250 words) should have the following sequence of material presentation - relevance, purpose, method, result, and conclusion. This is exactly the sequence that should be. Most of the abstract should be devoted to the result. Give a quantitative description of the result. Do not enter in the Abstract and do not use (and in the conclusions as well) unestablished abbreviations.

Keywords should be chosen responsibly. You should not give the term and then also its abbreviation. The number of keywords is limited (about 8-10 words on average). They should not be repeated, just as they should not repeat the words from the article's title. Basically it should be words, not phrases. They should reflect the main idea and content of the article.

Author Response:

Thank you for your constructive feedback regarding the abstract and keywords of my manuscript. I have revised the abstract to ensure it follows the specified sequence of relevance, purpose, method, result, and conclusion. The revised abstract contains 176 words and emphasizes the results, providing a quantitative description as requested.

Editor Comments 3#

JEL Classification codes should be clarified. Their number is on average 2-4, and they should be placed in order from the main (important) to the secondary ones.

Author Comments:

Thank for your comment. We have JEL classification : G00, G300.

Editor Comments 4#

The Introduction is a half-page - a page of text devoted to the relevance of the research topic and the formulation of the SCIENTIFIC problem (within which this research is conducted) as a whole. There is no need for a literature review here. It is not necessary to tell how the research will be conducted, how the article is structured, what is the purpose of the research and what tasks the authors will solve.

But if you have a review or theoretical article, then please, after formulating the scientific problem, formulate the purpose of the study here.

Author Comment:

We have revised the Introduction section to focus on the relevance of the research topic and the formulation of the scientific problem, as directed. We have avoided literature reviews and details regarding the methodology or objectives of the research (see paper with highlite).

Editor Comments 5#

The Literature review should include 30-40-50 analyzed sources. It should begin with a few introductory sentences. The sequence of the text must have logic (it is not determined by the place of the mentioned work on the shelf). It must be subordinated to the purpose of the study. Do not start each paragraph with a reference to the source. Do not structure the text in such a way that one paragraph is an analysis of one source. The review should be concluded with 2-3 generalizing sentences. Then the purpose of the study should be formulated. After that, formulate hypotheses (right here, all together, and do not insert text between them). Of course, if you foresee them. As for the hypotheses, they should be formulated clearly and unambiguously! They should be clear and not repeat each other.

Author Comment:

Thank you for your valuable comments. The Literature Review has been revised, structured logically to align with the study's purpose, and concludes with clear hypotheses.

Editor Comments 5#

As for a research article, after the hypotheses there should be a Methods section (the Methods section is not required in a review article, and it is not mandatory in a theoretical one). Here (in the Method section), the algorithm (procedure) of the study should be written, as well as the primary data for calculations should be given or the sources of their receipt should be indicated. This should be done following the logic of the academic presentation of the material. The entire text should be carefully worked out here. Variables in formulas must have established designations. They should be explained.

Author Comment:

We appreciate your feedback regarding the Methods section. We will ensure that this section clearly outlines the study's quantitative method procedures, including the primary data sources for calculations. The text will follow a logical academic presentation, and carefully define and explain all variables used. This study used Smart PLS software to analyse the data.

Editor Comments 6#

Further, the main section of the article is the RESULT (in the review article it is the Generalization of the main statements). Here, not only the results obtained (analytics, systematization, calculations...) should be given, but also their economic interpretation, explanation, and justification should be given. If hypotheses were foreseen, then give the results of their verification.

Author Response:

Thank you for your insights regarding the Results section. We have provide the explanation, and justification regarding the hypotheses assessment result, with the comprehensive analysis.

Editor Comments 7#

The Discussion section should include a discussion of the results of the study, a comparison with previous ones, a discussion of why the authors have such results, and an identification of future prospects.

Author Response:

We have improved the discussion section. This study addresses inconsistencies in earlier research and confirms the mediating role of financial ambidexterity in the relationship between BI and financial performance, as suggested by dynamic capability theory. Additionally, the discussion outlines practical implications for SME managers and highlights future research directions.

Editor Comments 8#

The Conclusions should have the following logic - indicate the purpose of the study, briefly demonstrate the obtained result, and indicate what conclusions should be drawn from it. Do not cite

sources in the Conclusions, and do not repeat sentences from the abstract here. Don't start chapters with subsections.

Don't break sections into a bunch of subsections. Captions for figures and tables should be clear and understandable, even if they are shown in the context of the article. Do not indicate under the figures and tables that this is your (author's) development or your own calculations, because it should be so a priori. Column and row names in tables should be clear and complete. Carefully study each sentence, each paragraph and the entire text of the article.

Author Response:

Thank you for your feedback. We have revised the Conclusion section to follow the specified structure: it begins by restating the study's purpose, briefly presents the results, and highlights the key conclusions

"UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES "

Authors:

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ABSTRACT

In a rapidly evolving business landscape, small and medium enterprises (SMEs) must navigate fierce competition and technological advancements, making the effective use of business intelligence critical for sustainable performance. However, SMEs still encounter challenges in implementing BI, which can hinder their ability to enhance financial performance. This research examines the impact of business intelligence on SMEs' financial performance, with financial ambidexterity as the mediating variable. This study also investigates the link between financial resources (financial access, financial information, and financial availability) and business intelligence implementation. This study surveyed 233 SME managers in Central Java between August and November 2023. This study used Smart PLS to analyse the data and test the proposed hypotheses. The results demonstrate that financial access, financial information, and financial availability positively affect business intelligence. Furthermore, the findings highlight the role of financial ambidexterity in mediating the association between business intelligence and financial performance. The study offers vital insights for SME managers, stressing the importance of maintaining financial resources that support business intelligence and the strategic role of financial ambidexterity in financial management.

Keywords: Financial Resources, Business Intelligence, Financial Stability, Financial Flexibility, SMEs Performance.

JEL Classification: G00, G300.

1. INTRODUCTION

Digital transformation is critical for small and medium enterprises (SMEs) to survive in increasingly fierce business competition. SMEs that successfully embrace information and communication technology can boost operational efficiency, expand market reach, and enhance customer interactions (Asandimitra et al., 2024; Bagale et al., 2023). In this context, business intelligence (BI) has a pivotal role in making strategic decisions by data analytics. BI in the business context refers to the use of a data analysis system and processes to make informed business decisions. It is often considered a tool or practice more suitable for large enterprises due to its complexity and implementation costs (Wei & Pardo, 2022). However, Popovič (2019) stated that this paradigm has shifted, and small businesses increasingly recognize the benefits of BI that they can accrue. BI technology is becoming more affordable and user-friendly. Small businesses now have access to tools that can help optimize their operations and make smarter decisions based on data.

Previous studies have revealed that adopting business intelligence positively influences small business performance (Huang et al., 2022; Khaddam et al., 2023). The analytic data from BI not only help managers in formulating more effective marketing strategies and personalized customer services but also supports optimization of budgetary performance (Bhatiasevi & Naglis, 2020). According to Wang et al. (2022) BI plays a crucial role in unearthing vital financial data, analysing expenditure trends, and providing financial insights that facilitate better decision-making. BI can be applied to enhance operational efficiency by providing a profound understanding of the entire business process (Huang et al., 2022). Thus, implementing BI has become a key factor to improve business performance. However, despite its benefits, recent research reveals that BI has an insignificant impact on SME performance and indicates an inconsistency in previous studies. For instance, Ghasemaghaei & Calic (2020) stated that the volume of big data in BI does not affects financial performance. Similarly, Bhatiasevi & Naglis (2018) conducted a survey involving 220 SME managers in Thailand that actively utilizing BI in their business operations. The findings of the study revealed that there is insignificant relationship between BI usage and financial performance. They argue that most of SMEs fail to maintain their financial resource. The main problem is not only related to capital, but also how agile management is to manage financial information in decision making strategy. In addition, Paradza & Daramola (2021) conclude that there is still a lack of research understanding of how SMEs implement BI and its effects on company performance.

This current study proposes to scrutinize the relationship between BI and financial performance by investigates the mediating role of financial ambidexterity. In this study, financial ambidexterity is defined as an organization's ability to simultaneously manage two financial dimensions: financial stability and financial flexibility (Ansah, 2022; Malki, 2022). Financial stability involves maintaining a healthy financial balance and avoiding risks that could disrupt operations, including managing liquidity, debt, and reserves (Morgan & Pontines, 2017). In contrast, financial flexibility refers to the capacity to adapt to market changes and seize business opportunities, allowing for quick resource allocation in response to evolving situations (Baños-Caballero et al., 2016). SMEs management must navigate the challenge of balancing financial stability to mitigate risks with the need for financial flexibility to address uncertainties. Dynamic capability theory emphasizes an organization's ability to adapt and reconfigure its resources in response to changing environments (O'Reilly & Tushman, 2008). In this context, BI provides critical insights for informed decision-making, enhancing financial ambidexterity. This capability enables effective resource management and responsiveness to market changes, ultimately mediating the positive impact of BI on financial performance and allowing firms to navigate uncertainties and seize opportunities.

Furthermore, this research also examines financial resources as an antecedent of BI in SMEs context. Prior studies conclude that financial resources are critical to provide BI implementation (Baños-Caballero et al., 2016). Financial resources encompass the availability, accessibility, and quality of financial information. Adequate financial resources can improve the capacity of SMEs to implement business intelligence effectively. However, not all businesses with financial support are able to utilize BI to improve performance. For instance, a study by Lateef & Keikhosrokiani (2023) found that organizational resources have an insignificant impact on the success of BI implementation in SMEs. They emphasized that SME managers need to strategically manage and maintain their financial resources to enhance the effectiveness of BI initiative. This study suggests that SMEs with financial resources can successfully use Business Intelligence (BI) to improve their financial performance. Additionally, BI can help these businesses to balance their financial stability and flexibility, which also enhances their financial performance.

This research significantly contributes to the existing body of knowledge on BI in SMEs by addressing a notable gap in the literature. While prior studies predominantly focused on technological determinants, management support, and innovation capabilities (Salisu et al., 2021), this research extends understanding by examining how SME management can effectively manage financial resources to enhance performance through the implementation of Business Intelligence

(BI) and their financial ambidexterity. This study provides practical contribution for SME managers, such as optimizing their financial resource allocation and actively using BI tools to improve decision-making. Additionally, it highlights the important role of ambidexterity in financial strategies that directly impact the financial performance of SMEs.

2. LITERATURE REVIEW AND HYPOTHESIS

1.1. Business Intelligence

Business Intelligence (BI) is a managerial tool used to assist organizations in managing and refining business information to make better decisions based on collected data (Torres, 2018; Wamba-Taguimdje, 2020) . BI encompasses a set of methodologies, processes, architectures, and technologies that work together to transform raw data into meaningful and valuable information (Nuseir, 2021). This information provides insights and supports more effective decision-making strategically, tactically, and operationally (Bhatiasevi & Naglis, 2020; Huang et al., 2022). Previous studies have investigated factors influencing the implementation process of business intelligence in small businesses, such as corporate policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers focus on the impact of BI implementation, including improved operational efficiency (Ghasemaghaei & Calic, 2020), more accurate decision-making, and overall company performance improvement (Wamba-Taguimdje, 2020).

Small businesses increasingly adopt business intelligence-based solutions to enhance efficiency and productivity. Through real-time visualization and the ability to export reports, business owners can easily monitor and analyze their performance (Chen, 2021). Mobile optimization allows business owners to access crucial information anytime, anywhere. It can be concluded that small businesses that adopt BI can integrate their operations into the platform that offering all-in-one solutions that cover all the information to improve sales management, customer relations, team scheduling, projects, and business outcomes.

1.2. Financial Resources

Every company will strive intensively to gain access to various financial resources amid market turbulence to achieve significant financial growth. This is especially true for small businesses that require funding to finance operational needs and company investments (Ismail, 2022). The importance of access to financial resources not only serves as a support in market competition, as revealed by (Khan, 2020), but also involves the ability to identify the right

opportunities in financial decision-making, debt management, and the efficient use of financial resources during investment and development (Maldonado-Guzmán, 2022). In the framework of sustainable competitive advantage, financial resources are recognized as a critical element, enabling companies to conduct day-to-day transactions and manage financial functions smoothly (Salehi, 2019).

Furthermore, financial resources are also acknowledged as an optimal source for identifying opportunities and improving organizational performance (Edward et al., 2023; Ismail, 2022). Based on previous literature, financial resources in a company are generally divided into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to the ability of an entity, such as a small business, to obtain the necessary funds and financial services to operate (Cowling, 2018). Businesses with financial access can acquire the capital to start or expand their operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Next, financial availability is conceptualized as the availability of financial resources in the company, including capital, liquidity, and the company's ability to meet financial obligations (Pártlová, 2018). Financial information quality is the availability of accurate, reliable, and relevant financial information, which is the foundation for making good decisions (Gonzales & Wareham, 2019). The quality of this financial information is essential to support transparency, accountability, and trust from various parties. Companies that focus on improving the quality of their financial information tend to make better decisions.

1.3. Financial Ambidexterity

In high business uncertainty, every company must possess agility, known as organizational ambidexterity. Researchers agree that organizational ambidexterity is a concept that refers to an organization's ability to simultaneously pursue and optimize two dimensions often considered contradictory in a business context: exploration strategy and exploitation strategy (Ansah, 2022; Costanzo, 2019). Exploration activities lean towards developing innovations, pursuing new opportunities, and adapting to changes in the external environment. Exploitation activities involve experimentation, discovery, and new learning. Organizational ambidexterity is required for organization to combining exploration and exploitation strategy (Herzallah, 2017). In other words, organizations must be innovative and efficient simultaneously. This concept acknowledges that long-term success depends not only on relentless innovative exploration but also on maintaining and enhancing existing competitive advantages.

Financial ambidexterity becomes crucial as business strategy to response to uncertain business circumstances (Dolz, 2019; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility. Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). Organizations face a dilemma between maintaining financial stability to mitigate risks and increasing financial flexibility to cope with uncertainty.

Previous research results indicate that actions supporting financial stability, such as debt reduction or cost savings, may reduce financial flexibility (Hao et al., 2022). Conversely, taking significant risks for specific business growth opportunities can threaten financial stability if not carefully managed. Organizations that successfully achieve financial ambidexterity can benefit from both sides, reducing excessive financial risks and capitalizing on growth opportunities (Teng et al., 2021). This requires intelligent financial management, careful monitoring of the business environment, and flexibility in financial decision-making.

1.4. Financial Performance

Financial performance refers to the overall financial health of a company and its ability to generate profits, which measures how well a company can use its assets from its primary mode of business to generate revenues (Baños-Caballero et al., 2016; Gonzales & Wareham, 2019). It is evaluated using financial statements, such as the balance sheet, income statement, statement of cash flows, and financial performance indicators, quantifiable metrics used to measure a company's financial health. Financial performance analysis includes the analysis and interpretation of financial statements to diagnose a business's profitability and financial soundness. For SMEs, financial performance is essential to various stakeholders, including investors, shareholders, lenders, and regulators. It indicates the company's ability to generate a return on investment and repay loans (Baños-Caballero et al., 2016). A solid financial performance analysis can show detailed information on a business's strengths and weaknesses and give a good sense of its direction. It is

also crucial for internal managers to understand how well the company is doing and to identify areas for improvement (Baños-Caballero et al., 2016; Rosa, 2018). Financial performance evaluation in SMEs is a comprehensive evaluation of the company's overall financial standing, and it plays a vital role in decision-making, strategic planning, and attracting investment. By analyzing financial statements and using various financial ratios and metrics, SMEs can gain valuable insights into their financial health and make informed decisions to drive growth and success.

1.5. Financial Access and Business Intelligence

The adoption of BI in small businesses is influenced by various factors, with financial access being a significant consideration. Research indicates that SMEs often encounter challenges related to insufficient financial resources to cover the initial investment required for BI practise (Fatoki, 2021). The availability of financial resources can have a substantial impact on the success and development of business intelligence in small enterprises (Kumarasamy, 2018; Rosa, 2018). Small businesses that have the ability to access external funding can allocate funds for the implementation of BI systems (Chu, 2021).

The access to the capital can expedite the implementation process by providing the necessary resources, such as software, hardware, and training for employees (Bokpin, 2018; Chu, 2021). If small businesses can secure loans with low-interest rates, it can alleviate the financial burden associated with investing in business intelligence technology (Balsmeier, 2018). Low-interest rates can assist small businesses in allocating more funds toward the development and optimization of business intelligence systems. According to previous study, this research proposes hypothesis:

H1: Financial access has a significant impact on business intelligence in SMEs.

1.6. Financial Availability and Business Intelligence

Financial availability reflects the extent to which funds and financial resources are available to support company operations (Memon, 2020). In the context of implementing business intelligence in SMEs, the level of financial availability can have a significant impact on a company's ability to successfully adopt and integrate the technology (Owusu, 2019). Consistent availability of funds enables SMEs to plan business intelligence projects well and allocate adequate budgets to ensure successful implementation. The level of funding availability also reflects the level of financial flexibility of SMEs in facing changes and challenges that may arise during the implementation of business intelligence (Pártlová, 2018; Stjepić, 2021).

The availability of funds allows SMEs to provide training to employees regarding the use of business intelligence technology (Becerra-Godínez, 2020). This is crucial so that team members have the necessary skills to understand and utilize the features offered. After implementation, maintaining and updating business intelligence systems requires ongoing investment (Strohmeier, 2021). The availability of funds ensures the operational continuity and effectiveness of the system. SMEs with a high level of financial availability have a greater ability to adapt to strategic changes or business opportunities that may arise during or after implementation (Krey, 2022; Raj, 2019). In other words, the availability of sufficient funds provides flexibility and freedom to carry out projects without too many limitations, thereby increasing the chances of successful implementation of business intelligence. Thus, this research proposes hypothesis:

H2: Financial availability has a significant impact on business intelligence in SMEs.

1.7. Financial Information Quality and Business Intelligence

The accuracy of financial information is a key element in the analysis and decision-making within the realm of business intelligence (Visinescu et al., 2017). Ensuring that the data processed by business intelligence systems provides an accurate and reliable overview of the company's financial condition. The utilization of technology and financial tools plays a crucial role in enhancing the accuracy and completeness of financial information. The success of business intelligence implementation in SMEs can be influenced by the extent to which technology and financial tools help maintain the quality of financial information (Corcoran, 2016; Gonzales & Wareham, 2019). Ease and speed of access to financial information play a significant role in supporting rapid responses to market changes or business conditions (Kowalczyk, 2015). Business intelligence implementation becomes more effective when information can be easily and quickly accessed.

The quality of financial information has a significant impact on the implementation of business intelligence in SMEs (Khaddam et al., 2023). Accurate financial information, supported by technology and financial tools, as well as timely and easy access, forms a strong foundation for an effective business intelligence system (Guo, 2021). Consistency in methods and procedures of financial reporting ensures that the data used in the analysis and decision-making processes is consistent and reliable. Therefore, the quality of financial information is key to enhancing the effectiveness and success of business intelligence implementation in the SME environment. Based previous research, hypothesis of this study:

H3: Financial information quality has a significant impact on business intelligence in SMEs.

1.8. Business intelligence and Financial Performance

Business intelligence plays a very important role in the management of small businesses. Companies can design more effective strategies by utilizing information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards (Huang et al., 2022; Memon et al., 2020). Additionally, through implementing the right BI solutions, small businesses can make optimal use of resources and identify growth opportunities. The importance of business intelligence is not only limited to operational management, but also has a significant impact on financial performance (Wei & Pardo, 2022). By using careful data analysis, small companies can understand the factors that influence revenue, costs, and profitability (Memon et al., 2020). This allows them to identify areas that require special attention, optimize investments and improve operational efficiency (Alzghoul et al., 2022). However, recent study also highlighted the crucial roles of agile managerial strategy on implementing BI that in turn, increase financial performance (Bhatiasevi & Naglis, 2020). Based in previous literature, this study proposes hypothesis:

H4: Business intelligence has a significant impact on financial performance in SMEs.

1.9. Business Intelligence and Financial Ambidexterity

In today's dynamic business landscape, achieving financial ambidexterity is paramount for companies seeking sustainable success (Nuseir, 2021). Financial ambidexterity involves maintaining stability in the face of uncertainties while simultaneously fostering the flexibility to adapt swiftly to changing market conditions. BI can have a significant impact on financial ambidexterity, encompassing the financial stability and financial flexibility of the company. Companies that effectively manage BI can access real-time financial data and conduct deeper analyses, enabling management to make more accurate decisions (Wamba-Taguimdje, 2020). According to Popovič (2019), faster and more accurate information allows companies to respond quickly to changes in market conditions or business opportunities. The expedited decision-making process can enhance flexibility in allocating resources to the most strategic areas. BI can assist companies in understanding the strengths and weaknesses of competitors, as well as industry trends, helping them identify potential risks and opportunities (Chen, 2021; Vallurupalli, 2018). The optimal implementation of BI by companies can integrate information from various sources, improve the identification of opportunities and risks, and effectively respond to market changes, all of which can enhance financial ambidexterity. , this study proposes hypothesis:

H5: Business intelligence has a significant impact on financial performance in SMEs.

1.10. Financial Ambidexterity and Firm Performance

Financial ambidexterity indicates company's ability to maintain financial stability while retaining the flexibility to adapt to changes and market opportunities (Hao et al., 2022). Costanzo (2019) stated that financial ambidexterity strategy aims to achieve the right balance between stability and adaptability The ability to adapt quickly to changes in the market and business opportunities is at the core of financial ambidexterity. Financial flexibility allows companies to respond to market changes with appropriate strategies, which can enhance long-term financial performance (Valaskova, 2021). Financial flexibility enables companies to allocate resources to the most strategic areas based on current business needs (Callegari, 2021). This can improve efficiency and productivity, positively impacting financial performance. On the other hand, companies with strong financial stability can gain the trust of investors and have a competitive edge in the financial market (Kumarasamy, 2018). This can create easier access to capital and support a robust financial performance. Present study proposes hypothesis:

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

1.11. Mediating Role of Financial Ambidexterity

This study investigates how financial ambidexterity acts as a mediator, connecting the impact of BI on financial performance. According to dynamic capability theory, companies implementing BI can access accurate information about their operations, market conditions, and competitors (Guo, 2021). This mechanism can increase financial ambidexterity, meaning that better BI management results in excellent information for managers to decide on financial strategies to maintain stability or implement flexibility (Gonzales & Wareham, 2019). Previous research has identified a gap, suggesting that BI alone might not directly enhance financial performance. The mediating role of financial ambidexterity is introduced to address this gap, emphasizing the need for more agile and skilful management in using information for business decision-making (Bhatiasevi & Naglis, 2020). Therefore, this research proposes the following hypotheses:

H7: Financial ambidexterity mediates the relationship between BI and financial performance in SMEs.

3. METHODOLOGY

1.12. Participant

This research constitutes a survey focused on owner-managers of Small and Medium Enterprises (SMEs) situated in the Central Java region, which stands out as one of the provinces in Indonesia witnessing the highest growth in small businesses. The survey employed a data collection technique involving the completion of questionnaires by 290 SMEs owner-managers who acted as respondents between August and November 2023. The survey engaged a total of 233 SMEs, reflecting a commendable response rate of 73.44%. Throughout the survey process, we received invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and facilitated communication with the SMEs. Notably, a significant portion of the studied SMEs are business units affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents span various industry sectors, with the highest proportions coming from the service sector (35%) and the food & beverage sector (35%). Manufacturing and retail contribute 25% and 20%, respectively. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

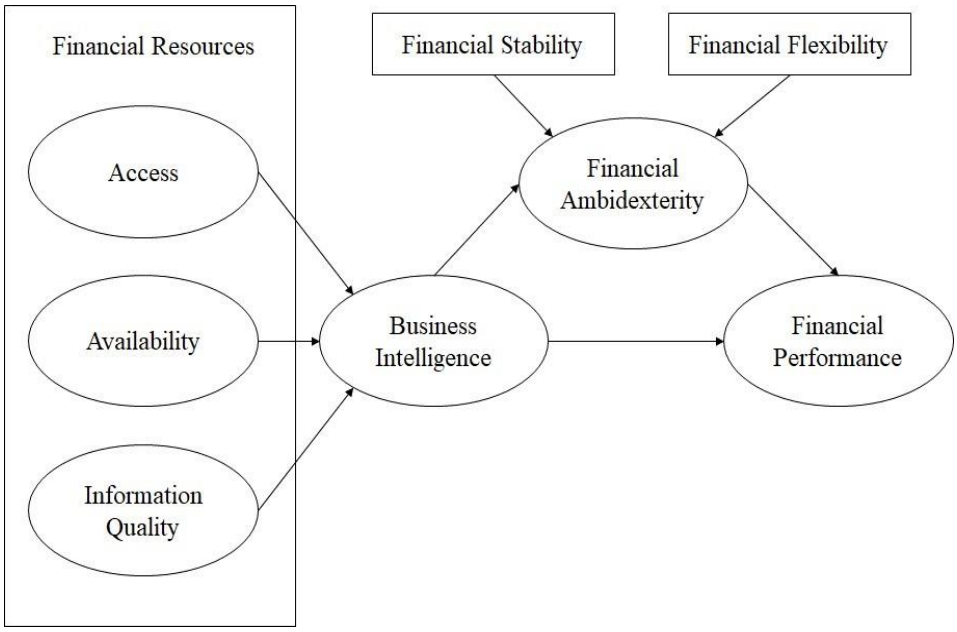

Figure 1. Conceptual Model

1.13. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler,

1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI)	BI1	0.740	2,79	0.071
AVE = 0.812	BI3	0.749	3,07	0.033
CR = 0.911	BI4	0.788	3,02	0.046
CA = 0.822	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037
Financial Performance (FP)	FP1	0.756	3,14	0.015
AVE = 0.723	FP2	0.754	3,12	0.024
CR = 0.856	FP3	0.801	2,77	0.026
CA = 0.756	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS)	FS1	0.811	3,26	0.033
AVE = 0.821	FS2	0.866	2,88	0.071
CR = 0.923	FS3	0.838	3,21	0.078
CA = 0.762	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF)	FF1	0.875	3,36	0.040
AVE = 0.753	FF2	0.788	3,34	0.010
CR = 0.865	FF3	0.867	2,62	0.071
CA = 0.731	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA)	FA1	0.850	3,51	0.029
AVE = 0.675	FA2	0.827	2,63	0.073
CR = 0.776	FA3	0.752	3,51	1.017
CA = 0.812				

Variables	Constructs	Loading Factor	Mean	SD
	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI)	FI1	0.703	3,07	0.062
AVE = 0.852	FI2	0.769	2,95	1.049
CR = 0.875	FI3	0.775	2,74	0.072
CA =0.812	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC)	FC1	0.856	3,21	0.038
AVE = 0.845	FC2	0.845	3,4	0.086
CR = 0.902	FC3	0.840	3,15	0.058
CA =0.864	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on BI. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on BI, which means that H1, H2, and H3 were supported. Furthermore, the test results show that BI has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of BI on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	p-Values	Hypothesis
Financial Access→ BI	0.768	0.340	2.259	0.025	H1: Supported
Financial Availability→ BI	0.243	0.056	4.339	0.000	H2: Supported
Financial Information Quality → BI	0.335	0.121	2.768	0.016	H3: Supported
BI → Financial Ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
BI→ Financial Performance	0.365	0.111	3.288	0.001	H5: Supported
Financial Ambidexterity → Financial Performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
BI → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

5. DISCUSSION

This study examines the connection between financial resources dimension and BI. The effect of BI on performance also empirically examined trough financial ambidexterity as a mediating variable. As a result, this study confirmed that financial availability, financial information, and financial access have a positive influence on BI. This study also empirically found that BI significantly affect financial performance. In addition, according to indirect effect test, the financial ambidexterity demonstrates a significant mediating effect on the connection between BI and financial performance.

The current study revealed that three dimensions of financial resources, financial access, financial information, and financial availability, demonstrate a positive influence on the implementation of BI in the context of SMEs. The successful implementation of BI in small businesses is laboriously contingent on their ability to have financial access. SMEs with financial

access can proactively seek external funding to acquire crucial information and support for their BI improvement. Additionally, access to finance is better positioned to have loans at lower interest rates and featuring simplified processes with minimal requirements. SMEs with financial access can secure financial support directly correlates with their strategy to invest in expanding their BI infrastructure and operations. Financial availability also plays a significant role in the development of BI in SMEs. Furthermore, financial availability has a critical effect on the BI in SMEs. Despite limited finances, BI can help small businesses to generate in-depth data analysis to understand customer behaviour, market trends, and other factors that can impact their business performance. Business intelligence implementation often requires an initial investment in technology infrastructure and software. Small businesses with limited financial availability may experience obstacles in purchasing or implementing solutions that require high costs. Therefore, financial availability will have a significant impact on the implementation of BI in small businesses. In addition, the quality of financial information plays a critical role in the successful implementation of business intelligence in SMEs. Accurate, timely, and easily accessible financial data, supported by consistent reporting methods, ensures reliable decision-making and enhances the overall effectiveness of business intelligence systems.

This study has empirically found that BI is significantly related to financial ambidexterity and financial performance. BI implementation in SMEs provides information that is useful for managers to improve financial performance. SMEs can design more effective strategies by using information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards. This will support the company's efforts to achieve optimal financial performance. Beside, BI implementation is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. One of the obstacles to using BI in small businesses is that managers are not prepared for the volume of data that is too high, so reliable skills are needed to determine financing strategies. Additionally, a test of the mediating effect revealed that the BI-financial performance connection is mediated by financial ambidexterity. The use of BI in small businesses needs to be accompanied by manager skills in managing finances- as a financial ambidexterity. Managers will utilize the output from using BI to control finances, increase flexibility, and maintain stability per the conditions of the company's business environment. This research empirically proves that BI significantly impacts financial ambidexterity, which in turn significantly impacts small businesses' financial performance.

CONCLUSION

This research provides support that SMEs with financial resources have a positive impact on BI implementation. The financial resources that reflects the financial access, financial availability, and quality of financial information have an significant influence to the ability of SMEs to implement and develop BI. Furthermore, BI implementation in small businesses can increase financial performance. On the other hand, by relying on dynamic capability theory, this research proves that financial ambidexterity can channel the link between BI and financial performance. SME managers skilled at balancing financial stability and flexibility decisions can be essential to BI's success and improving financial performance.

This study provides an implication both theoretically and in practice. In theory, the result brings a novel avenue regarding how financial resources affect BI implementation in SMEs. This research also contributes to scrutinising the inconsistencies found in the previous works, specifically in the connection between BI and financial performance (Bhatiasevi & Naglis, 2020; Ghasemaghaei & Calic, 2020; Paradza & Daramola, 2021). By supporting dynamic capability theory, this study claimed that financial ambidexterity mediates BI and financial performance relationship. Practically, this empirical research sheds light on SME managers to improve financial performance. The implementation of BI is affected by financial resources. Thus, SME managers suggested improving financial resources by providing appropriate financial access, financial availability, and financial information quality. In addition, financial ambidexterity plays a central role in the success of BI implementation in SMEs. Managers should pay attention to a strategy and the skill to manage financial stability and flexibility simultaneously. This BI strategy will help SMEs improve competitive advantages in the technology information era and, in turn, increase sustainability performance.

This researcher has several research limitations that need to be considered for further research. First, the small businesses that participated in this research came from different types of businesses (manufacturing, retail, services, IT, food and beverage). These differences in business types impact the need and use of BI in business and the development strategy. Therefore, it is recommended that further research focus on one type of business, for example, retail business, IT and services. Second, this research was conducted using a survey technique with a cross-sectional approach, so it is impossible to determine the temporal interaction between variables. This research suggests a longitudinal approach to establishing a true cause-and-effect relationship.

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"UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES "

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ABSTRACT

In a rapidly evolving business landscape, small and medium enterprises (SMEs) must navigate fierce competition and technological advancements, making the effective use of business intelligence critical for sustainable performance. However, SMEs still encounter challenges in implementing BI, which can hinder their ability to enhance financial performance. This research examines the impact of business intelligence on SMEs' financial performance, with financial ambidexterity as the mediating variable. This study also investigates the link between financial resources (financial access, financial information, and financial availability) and business intelligence implementation. This study surveyed 233 SME managers in Central Java between August and November 2023. This study used Smart PLS to analyse the data and test the proposed hypotheses. The results demonstrate that financial access, financial information, and financial availability positively affect business intelligence. Furthermore, the findings highlight the role of financial ambidexterity in mediating the association between business intelligence and financial performance. The study offers vital insights for SME managers, stressing the importance of maintaining financial resources that support business intelligence and the strategic role of financial ambidexterity in financial management.

Keywords: Financial Resources, Business Intelligence, Financial Stability, Financial Flexibility, SMEs Performance.

JEL Classification: G00, G300.

1. INTRODUCTION

Digital transformation is critical for small and medium enterprises (SMEs) to survive in increasingly fierce business competition. SMEs that successfully embrace information and communication technology can boost operational efficiency, expand market reach, and enhance customer interactions (Asandimitra et al., 2024; Bagale et al., 2023). In this context, business intelligence (BI) has a pivotal role in making strategic decisions by data analytics. BI in the business context refers to the use of a data analysis system and processes to make informed business decisions. It is often considered a tool or practice more suitable for large enterprises due to its complexity and implementation costs (Wei & Pardo, 2022). However, Popovič (2019) stated that this paradigm has shifted, and small businesses increasingly recognize the benefits of BI that they can accrue. BI technology is becoming more affordable and user-friendly. Small businesses now have access to tools that can help optimize their operations and make smarter decisions based on data.

Previous studies have revealed that adopting business intelligence positively influences small business performance (Huang et al., 2022; Khaddam et al., 2023). The analytic data from BI not only help managers in formulating more effective marketing strategies and personalized customer services but also supports optimization of budgetary performance (Bhatiasevi & Naglis, 2020). According to Wang et al. (2022) BI plays a crucial role in unearthing vital financial data, analysing expenditure trends, and providing financial insights that facilitate better decision-making. BI can be applied to enhance operational efficiency by providing a profound understanding of the entire business process (Huang et al., 2022). Thus, implementing BI has become a key factor to improve business performance. However, despite its benefits, recent research reveals that BI has an insignificant impact on SME performance and indicates an inconsistency in previous studies. For instance, Ghasemaghaei & Calic (2020) stated that the volume of big data in BI does not affects financial performance. Similarly, Bhatiasevi & Naglis (2018) conducted a survey involving 220 SME managers in Thailand that actively utilizing BI in their business operations. The findings of the study revealed that there is insignificant relationship between BI usage and financial performance. They argue that most of SMEs fail to maintain their financial resource. The main problem is not only related to capital, but also how agile management is to manage financial information in decision making strategy. In addition, Paradza & Daramola (2021) conclude that there is still a lack of research understanding of how SMEs implement BI and its effects on company performance.

This current study proposes to scrutinize the relationship between BI and financial performance by investigates the mediating role of financial ambidexterity. In this study, financial ambidexterity is defined as an organization's ability to simultaneously manage two financial dimensions: financial stability and financial flexibility (Ansah, 2022; Malki, 2022). Financial stability involves maintaining a healthy financial balance and avoiding risks that could disrupt operations, including managing liquidity, debt, and reserves (Morgan & Pontines, 2017). In contrast, financial flexibility refers to the capacity to adapt to market changes and seize business opportunities, allowing for quick resource allocation in response to evolving situations (Baños-Caballero et al., 2016). SMEs management must navigate the challenge of balancing financial stability to mitigate risks with the need for financial flexibility to address uncertainties. Dynamic capability theory emphasizes an organization's ability to adapt and reconfigure its resources in response to changing environments (O'Reilly & Tushman, 2008). In this context, BI provides critical insights for informed decision-making, enhancing financial ambidexterity. This capability enables effective resource management and responsiveness to market changes, ultimately mediating the positive impact of BI on financial performance and allowing firms to navigate uncertainties and seize opportunities.

Furthermore, this research also examines financial resources as an antecedent of BI in SMEs context. Prior studies conclude that financial resources are critical to provide BI implementation (Baños-Caballero et al., 2016). Financial resources encompass the availability, accessibility, and quality of financial information. Adequate financial resources can improve the capacity of SMEs to implement business intelligence effectively. However, not all businesses with financial support are able to utilize BI to improve performance. For instance, a study by Lateef & Keikhosrokiani (2023) found that organizational resources have an insignificant impact on the success of BI implementation in SMEs. They emphasized that SME managers need to strategically manage and maintain their financial resources to enhance the effectiveness of BI initiative. This study suggests that SMEs with financial resources can successfully use Business Intelligence (BI) to improve their financial performance. Additionally, BI can help these businesses to balance their financial stability and flexibility, which also enhances their financial performance.

This research significantly contributes to the existing body of knowledge on BI in SMEs by addressing a notable gap in the literature. While prior studies predominantly focused on technological determinants, management support, and innovation capabilities (Salisu et al., 2021), this research extends understanding by examining how SME management can effectively manage financial resources to enhance performance through the implementation of Business Intelligence

(BI) and their financial ambidexterity. This study provides practical contribution for SME managers, such as optimizing their financial resource allocation and actively using BI tools to improve decision-making. Additionally, it highlights the important role of ambidexterity in financial strategies that directly impact the financial performance of SMEs.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Business Intelligence

Business Intelligence (BI) is a managerial tool used to assist organizations in managing and refining business information to make better decisions based on collected data (Torres, 2018; Wamba-Taguimdje, 2020) . BI encompasses a set of methodologies, processes, architectures, and technologies that work together to transform raw data into meaningful and valuable information (Nuseir, 2021). This information provides insights and supports more effective decision-making strategically, tactically, and operationally (Bhatiasevi & Naglis, 2020; Huang et al., 2022). Previous studies have investigated factors influencing the implementation process of business intelligence in small businesses, such as corporate policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers focus on the impact of BI implementation, including improved operational efficiency (Ghasemaghaei & Calic, 2020), more accurate decision-making, and overall company performance improvement (Wamba-Taguimdje, 2020).

Small businesses increasingly adopt business intelligence-based solutions to enhance efficiency and productivity. Through real-time visualization and the ability to export reports, business owners can easily monitor and analyze their performance (Chen, 2021). Mobile optimization allows business owners to access crucial information anytime, anywhere. It can be concluded that small businesses that adopt BI can integrate their operations into the platform that offering all-in-one solutions that cover all the information to improve sales management, customer relations, team scheduling, projects, and business outcomes.

2.2. Financial Resources

Every company will strive intensively to gain access to various financial resources amid market turbulence to achieve significant financial growth. This is especially true for small businesses that require funding to finance operational needs and company investments (Ismail, 2022). The importance of access to financial resources not only serves as a support in market competition, as revealed by (Khan, 2020), but also involves the ability to identify the right

opportunities in financial decision-making, debt management, and the efficient use of financial resources during investment and development (Maldonado-Guzmán, 2022). In the framework of sustainable competitive advantage, financial resources are recognized as a critical element, enabling companies to conduct day-to-day transactions and manage financial functions smoothly (Salehi, 2019).

Furthermore, financial resources are also acknowledged as an optimal source for identifying opportunities and improving organizational performance (Edward et al., 2023; Ismail, 2022). Based on previous literature, financial resources in a company are generally divided into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to the ability of an entity, such as a small business, to obtain the necessary funds and financial services to operate (Cowling, 2018). Businesses with financial access can acquire the capital to start or expand their operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Next, financial availability is conceptualized as the availability of financial resources in the company, including capital, liquidity, and the company's ability to meet financial obligations (Pártlová, 2018). Financial information quality is the availability of accurate, reliable, and relevant financial information, which is the foundation for making good decisions (Gonzales & Wareham, 2019). The quality of this financial information is essential to support transparency, accountability, and trust from various parties. Companies that focus on improving the quality of their financial information tend to make better decisions.

2.3. Financial Ambidexterity

In high business uncertainty, every company must possess agility, known as organizational ambidexterity. Researchers agree that organizational ambidexterity is a concept that refers to an organization's ability to simultaneously pursue and optimize two dimensions often considered contradictory in a business context: exploration strategy and exploitation strategy (Ansah, 2022; Costanzo, 2019). Exploration activities lean towards developing innovations, pursuing new opportunities, and adapting to changes in the external environment. Exploitation activities involve experimentation, discovery, and new learning. Organizational ambidexterity is required for organization to combining exploration and exploitation strategy (Herzallah, 2017). In other words, organizations must be innovative and efficient simultaneously. This concept acknowledges that long-term success depends not only on relentless innovative exploration but also on maintaining and enhancing existing competitive advantages.

Financial ambidexterity becomes crucial as business strategy to response to uncertain business circumstances (Dolz, 2019; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility. Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). Organizations face a dilemma between maintaining financial stability to mitigate risks and increasing financial flexibility to cope with uncertainty.

Previous research results indicate that actions supporting financial stability, such as debt reduction or cost savings, may reduce financial flexibility (Hao et al., 2022). Conversely, taking significant risks for specific business growth opportunities can threaten financial stability if not carefully managed. Organizations that successfully achieve financial ambidexterity can benefit from both sides, reducing excessive financial risks and capitalizing on growth opportunities (Teng et al., 2021). This requires intelligent financial management, careful monitoring of the business environment, and flexibility in financial decision-making.

2.4. Financial Performance

Financial performance refers to the overall financial health of a company and its ability to generate profits, which measures how well a company can use its assets from its primary mode of business to generate revenues (Baños-Caballero et al., 2016; Gonzales & Wareham, 2019). It is evaluated using financial statements, such as the balance sheet, income statement, statement of cash flows, and financial performance indicators, quantifiable metrics used to measure a company's financial health. Financial performance analysis includes the analysis and interpretation of financial statements to diagnose a business's profitability and financial soundness. For SMEs, financial performance is essential to various stakeholders, including investors, shareholders, lenders, and regulators. It indicates the company's ability to generate a return on investment and repay loans (Baños-Caballero et al., 2016). A solid financial performance analysis can show detailed information on a business's strengths and weaknesses and give a good sense of its direction. It is

also crucial for internal managers to understand how well the company is doing and to identify areas for improvement (Baños-Caballero et al., 2016; Rosa, 2018). Financial performance evaluation in SMEs is a comprehensive evaluation of the company's overall financial standing, and it plays a vital role in decision-making, strategic planning, and attracting investment. By analyzing financial statements and using various financial ratios and metrics, SMEs can gain valuable insights into their financial health and make informed decisions to drive growth and success.

2.5. Financial Access and Business Intelligence

The adoption of BI in small businesses is influenced by various factors, with financial access being a significant consideration. Research indicates that SMEs often encounter challenges related to insufficient financial resources to cover the initial investment required for BI practise (Fatoki, 2021). The availability of financial resources can have a substantial impact on the success and development of business intelligence in small enterprises (Kumarasamy, 2018; Rosa, 2018). Small businesses that have the ability to access external funding can allocate funds for the implementation of BI systems (Chu, 2021).

The access to the capital can expedite the implementation process by providing the necessary resources, such as software, hardware, and training for employees (Bokpin, 2018; Chu, 2021). If small businesses can secure loans with low-interest rates, it can alleviate the financial burden associated with investing in business intelligence technology (Balsmeier, 2018). Low-interest rates can assist small businesses in allocating more funds toward the development and optimization of business intelligence systems. According to previous study, this research proposes hypothesis:

H1: Financial access has a significant impact on business intelligence in SMEs.

2.6. Financial Availability and Business Intelligence

Financial availability reflects the extent to which funds and financial resources are available to support company operations (Memon, 2020). In the context of implementing business intelligence in SMEs, the level of financial availability can have a significant impact on a company's ability to successfully adopt and integrate the technology (Owusu, 2019). Consistent availability of funds enables SMEs to plan business intelligence projects well and allocate adequate budgets to ensure successful implementation. The level of funding availability also reflects the level of financial flexibility of SMEs in facing changes and challenges that may arise during the implementation of business intelligence (Pártlová, 2018; Stjepić, 2021).

The availability of funds allows SMEs to provide training to employees regarding the use of business intelligence technology (Becerra-Godínez, 2020). This is crucial so that team members have the necessary skills to understand and utilize the features offered. After implementation, maintaining and updating business intelligence systems requires ongoing investment (Strohmeier, 2021). The availability of funds ensures the operational continuity and effectiveness of the system. SMEs with a high level of financial availability have a greater ability to adapt to strategic changes or business opportunities that may arise during or after implementation (Krey, 2022; Raj, 2019). In other words, the availability of sufficient funds provides flexibility and freedom to carry out projects without too many limitations, thereby increasing the chances of successful implementation of business intelligence. Thus, this research proposes hypothesis:

H2: Financial availability has a significant impact on business intelligence in SMEs.

2.7. Financial Information Quality and Business Intelligence

The accuracy of financial information is a key element in the analysis and decision-making within the realm of business intelligence (Visinescu et al., 2017). Ensuring that the data processed by business intelligence systems provides an accurate and reliable overview of the company's financial condition. The utilization of technology and financial tools plays a crucial role in enhancing the accuracy and completeness of financial information. The success of business intelligence implementation in SMEs can be influenced by the extent to which technology and financial tools help maintain the quality of financial information (Corcoran, 2016; Gonzales & Wareham, 2019). Ease and speed of access to financial information play a significant role in supporting rapid responses to market changes or business conditions (Kowalczyk, 2015). Business intelligence implementation becomes more effective when information can be easily and quickly accessed.

The quality of financial information has a significant impact on the implementation of business intelligence in SMEs (Khaddam et al., 2023). Accurate financial information, supported by technology and financial tools, as well as timely and easy access, forms a strong foundation for an effective business intelligence system (Guo, 2021). Consistency in methods and procedures of financial reporting ensures that the data used in the analysis and decision-making processes is consistent and reliable. Therefore, the quality of financial information is key to enhancing the effectiveness and success of business intelligence implementation in the SME environment. Based previous research, hypothesis of this study:

H3: Financial information quality has a significant impact on business intelligence in SMEs.

2.8. Business intelligence and Financial Performance

Business intelligence plays a very important role in the management of small businesses. Companies can design more effective strategies by utilizing information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards (Huang et al., 2022; Memon et al., 2020). Additionally, through implementing the right BI solutions, small businesses can make optimal use of resources and identify growth opportunities. The importance of business intelligence is not only limited to operational management, but also has a significant impact on financial performance (Wei & Pardo, 2022). By using careful data analysis, small companies can understand the factors that influence revenue, costs, and profitability (Memon et al., 2020). This allows them to identify areas that require special attention, optimize investments and improve operational efficiency (Alzghoul et al., 2022). However, recent study also highlighted the crucial roles of agile managerial strategy on implementing BI that in turn, increase financial performance (Bhatiasevi & Naglis, 2020). Based in previous literature, this study proposes hypothesis:

H4: Business intelligence has a significant impact on financial performance in SMEs.

2.9. Business Intelligence and Financial Ambidexterity

In today's dynamic business landscape, achieving financial ambidexterity is paramount for companies seeking sustainable success (Nuseir, 2021). Financial ambidexterity involves maintaining stability in the face of uncertainties while simultaneously fostering the flexibility to adapt swiftly to changing market conditions. BI can have a significant impact on financial ambidexterity, encompassing the financial stability and financial flexibility of the company. Companies that effectively manage BI can access real-time financial data and conduct deeper analyses, enabling management to make more accurate decisions (Wamba-Taguimdje, 2020). According to Popovič (2019), faster and more accurate information allows companies to respond quickly to changes in market conditions or business opportunities. The expedited decision-making process can enhance flexibility in allocating resources to the most strategic areas. BI can assist companies in understanding the strengths and weaknesses of competitors, as well as industry trends, helping them identify potential risks and opportunities (Chen, 2021; Vallurupalli, 2018). The optimal implementation of BI by companies can integrate information from various sources, improve the identification of opportunities and risks, and effectively respond to market changes, all of which can enhance financial ambidexterity. , this study proposes hypothesis:

H5: Business intelligence has a significant impact on financial performance in SMEs.

2.10. Financial Ambidexterity and Firm Performance

Financial ambidexterity indicates company's ability to maintain financial stability while retaining the flexibility to adapt to changes and market opportunities (Hao et al., 2022). Costanzo (2019) stated that financial ambidexterity strategy aims to achieve the right balance between stability and adaptability The ability to adapt quickly to changes in the market and business opportunities is at the core of financial ambidexterity. Financial flexibility allows companies to respond to market changes with appropriate strategies, which can enhance long-term financial performance (Valaskova, 2021). Financial flexibility enables companies to allocate resources to the most strategic areas based on current business needs (Callegari, 2021). This can improve efficiency and productivity, positively impacting financial performance. On the other hand, companies with strong financial stability can gain the trust of investors and have a competitive edge in the financial market (Kumarasamy, 2018). This can create easier access to capital and support a robust financial performance. Present study proposes hypothesis:

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

2.11. Mediating Role of Financial Ambidexterity

This study investigates how financial ambidexterity acts as a mediator, connecting the impact of BI on financial performance. According to dynamic capability theory, companies implementing BI can access accurate information about their operations, market conditions, and competitors (Guo, 2021). This mechanism can increase financial ambidexterity, meaning that better BI management results in excellent information for managers to decide on financial strategies to maintain stability or implement flexibility (Gonzales & Wareham, 2019). Previous research has identified a gap, suggesting that BI alone might not directly enhance financial performance. The mediating role of financial ambidexterity is introduced to address this gap, emphasizing the need for more agile and skilful management in using information for business decision-making (Bhatiasevi & Naglis, 2020). Therefore, this research proposes the following hypotheses:

H7: Financial ambidexterity mediates the relationship between BI and financial performance in SMEs.

3. METHODOLOGY

3.1. Participant

This research constitutes a survey focused on owner-managers of Small and Medium Enterprises (SMEs) situated in the Central Java region, which stands out as one of the provinces in Indonesia witnessing the highest growth in small businesses. The survey employed a data collection technique involving the completion of questionnaires by 290 SMEs owner-managers who acted as respondents between August and November 2023. The survey engaged a total of 233 SMEs, reflecting a commendable response rate of 73.44%. Throughout the survey process, we received invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and facilitated communication with the SMEs. Notably, a significant portion of the studied SMEs are business units affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents span various industry sectors, with the highest proportions coming from the service sector (35%) and the food & beverage sector (35%). Manufacturing and retail contribute 25% and 20%, respectively. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

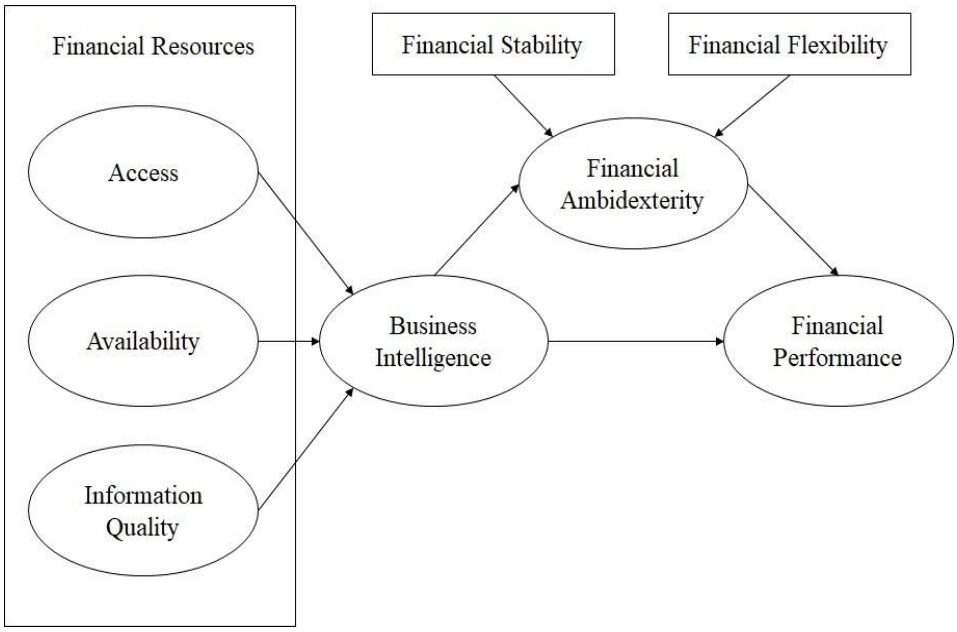

Figure 1. Conceptual Model

3.2. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler,

1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI)	BI1	0.740	2,79	0.071
AVE = 0.812	BI3	0.749	3,07	0.033
CR = 0.911	BI4	0.788	3,02	0.046
CA = 0.822	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037
Financial Performance (FP)	FP1	0.756	3,14	0.015
AVE = 0.723	FP2	0.754	3,12	0.024
CR = 0.856	FP3	0.801	2,77	0.026
CA = 0.756	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS)	FS1	0.811	3,26	0.033
AVE = 0.821	FS2	0.866	2,88	0.071
CR = 0.923	FS3	0.838	3,21	0.078
CA = 0.762	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF)	FF1	0.875	3,36	0.040
AVE = 0.753	FF2	0.788	3,34	0.010
CR = 0.865	FF3	0.867	2,62	0.071
CA = 0.731	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA)	FA1	0.850	3,51	0.029
AVE = 0.675	FA2	0.827	2,63	0.073
CR = 0.776	FA3	0.752	3,51	1.017
CA = 0.812				

Variables	Constructs	Loading Factor	Mean	SD
	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI)	FI1	0.703	3,07	0.062
AVE = 0.852	FI2	0.769	2,95	1.049
CR = 0.875	FI3	0.775	2,74	0.072
CA =0.812	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC)	FC1	0.856	3,21	0.038
AVE = 0.845	FC2	0.845	3,4	0.086
CR = 0.902	FC3	0.840	3,15	0.058
CA =0.864	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on BI. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on BI, which means that H1, H2, and H3 were supported. Furthermore, the test results show that BI has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of BI on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	p-Values	Hypothesis
Financial Access→ BI	0.768	0.340	2.259	0.025	H1: Supported
Financial Availability→ BI	0.243	0.056	4.339	0.000	H2: Supported
Financial Information Quality → BI	0.335	0.121	2.768	0.016	H3: Supported
BI → Financial Ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
BI→ Financial Performance	0.365	0.111	3.288	0.001	H5: Supported
Financial Ambidexterity → Financial Performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
BI → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

5. DISCUSSION

This study examines the connection between financial resources dimension and BI. The effect of BI on performance also empirically examined trough financial ambidexterity as a mediating variable. As a result, this study confirmed that financial availability, financial information, and financial access have a positive influence on BI. This study also empirically found that BI significantly affect financial performance. In addition, according to indirect effect test, the financial ambidexterity demonstrates a significant mediating effect on the connection between BI and financial performance.

The current study revealed that three dimensions of financial resources, financial access, financial information, and financial availability, demonstrate a positive influence on the implementation of BI in the context of SMEs. The successful implementation of BI in small businesses is laboriously contingent on their ability to have financial access. SMEs with financial

access can proactively seek external funding to acquire crucial information and support for their BI improvement. Additionally, access to finance is better positioned to have loans at lower interest rates and featuring simplified processes with minimal requirements. SMEs with financial access can secure financial support directly correlates with their strategy to invest in expanding their BI infrastructure and operations. Financial availability also plays a significant role in the development of BI in SMEs. Furthermore, financial availability has a critical effect on the BI in SMEs. Despite limited finances, BI can help small businesses to generate in-depth data analysis to understand customer behaviour, market trends, and other factors that can impact their business performance. Business intelligence implementation often requires an initial investment in technology infrastructure and software. Small businesses with limited financial availability may experience obstacles in purchasing or implementing solutions that require high costs. Therefore, financial availability will have a significant impact on the implementation of BI in small businesses. In addition, the quality of financial information plays a critical role in the successful implementation of business intelligence in SMEs. Accurate, timely, and easily accessible financial data, supported by consistent reporting methods, ensures reliable decision-making and enhances the overall effectiveness of business intelligence systems.

This study has empirically found that BI is significantly related to financial ambidexterity and financial performance. BI implementation in SMEs provides information that is useful for managers to improve financial performance. SMEs can design more effective strategies by using information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards. This will support the company's efforts to achieve optimal financial performance. Beside, BI implementation is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. One of the obstacles to using BI in small businesses is that managers are not prepared for the volume of data that is too high, so reliable skills are needed to determine financing strategies. Additionally, a test of the mediating effect revealed that the BI-financial performance connection is mediated by financial ambidexterity. The use of BI in small businesses needs to be accompanied by manager skills in managing finances- as a financial ambidexterity. Managers will utilize the output from using BI to control finances, increase flexibility, and maintain stability per the conditions of the company's business environment. This research empirically proves that BI significantly impacts financial ambidexterity, which in turn significantly impacts small businesses' financial performance.

6. CONCLUSION

This research provides support that SMEs with financial resources have a positive impact on BI implementation. The financial resources that reflects the financial access, financial availability, and quality of financial information have an significant influence to the ability of SMEs to implement and develop BI. Furthermore, BI implementation in small businesses can increase financial performance. On the other hand, by relying on dynamic capability theory, this research proves that financial ambidexterity can channel the link between BI and financial performance. SME managers skilled at balancing financial stability and flexibility decisions can be essential to BI's success and improving financial performance.

This study provides an implication both theoretically and in practice. In theory, the result brings a novel avenue regarding how financial resources affect BI implementation in SMEs. This research also contributes to scrutinising the inconsistencies found in the previous works, specifically in the connection between BI and financial performance (Bhatiasevi & Naglis, 2020; Ghasemaghaei & Calic, 2020; Paradza & Daramola, 2021). By supporting dynamic capability theory, this study claimed that financial ambidexterity mediates BI and financial performance relationship. Practically, this empirical research sheds light on SME managers to improve financial performance. The implementation of BI is affected by financial resources. Thus, SME managers suggested improving financial resources by providing appropriate financial access, financial availability, and financial information quality. In addition, financial ambidexterity plays a central role in the success of BI implementation in SMEs. Managers should pay attention to a strategy and the skill to manage financial stability and flexibility simultaneously. This BI strategy will help SMEs improve competitive advantages in the technology information era and, in turn, increase sustainability performance.

This researcher has several research limitations that need to be considered for further research. First, the small businesses that participated in this research came from different types of businesses (manufacturing, retail, services, IT, food and beverage). These differences in business types impact the need and use of BI in business and the development strategy. Therefore, it is recommended that further research focus on one type of business, for example, retail business, IT and services. Second, this research was conducted using a survey technique with a cross-sectional approach, so it is impossible to determine the temporal interaction between variables. This research suggests a longitudinal approach to establishing a true cause-and-effect relationship.

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RINCIAN BUKTI KORESPONDENSI

No	Perihal	Tanggal
4.	Koreksi dan Masukan Editor & Reviewer (tahap 2)	4 Oktober 2024
5.	Bukti Balasan peneliti revisi tahap 2	9 Oktober 2024

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MA11789: Notification on Submission

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Dear Susanti Widhiastuti,

the manuscript UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES, submitted to Investment Management and Financial Innovations Journal, needs to be revised.

Comments: The authors should comply with the requirements and recommendations. Once again, we kindly ask you to implement each comment.

When finalizing the manuscript in accordance with the requirements of the journal, please pay special attention to the fact that this is a research paper, which is a final report on the finished original experimental study (the structure is Abstract, Introduction, Literature review, Method, Results, Discussion, and Conclusion).

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The length of the manuscript (maximum) should be up to 6,000 words (not including the abstract, list of sources and appendices). Divide the material into sections correctly. Clearly and specifically formulate the purpose of the study! The article's title should be specific, indicate the purpose of the study, and correlate with it. The article's purpose is indicated in the abstract, at the end of the literature review, and in the Conclusion.

The Abstract (its volume is 150-250 words, but abstracts are welcome, in which the volume approaches 200-250 words) should have the following sequence of presentation of the material - relevance, purpose, method, result, and conclusion. This is exactly the sequence that should be. Most of the Abstract should be devoted to the result. Give a quantitative description of the result. Do not enter in the abstract and do not use (also in conclusions) unestablished abbreviations.

Keywords should be chosen responsibly. You should not give the term, and then also its abbreviation. Their number is limited (about 8-10 words on average). They should not be repeated, just as they should not repeat the words from the article's title. Basically it should be words, not phrases. They should reflect the main idea and content of the article.

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The Introduction is a half-page - a page of text devoted to the relevance of the research topic and the formulation of the SCIENTIFIC problem (in which this research is being conducted) as a whole. You should not conduct a literature review here. There is no need for a literature review here. It is not necessary to tell how the research will be conducted, how the article is structured, what is the purpose of the research and what tasks the authors will solve.

The Literature review should include 30-40-50 analyzed sources. It should begin with a few introductory sentences. The sequence of the text must have logic (it is not determined by the place of the mentioned work on the shelf). It must be subordinated to the purpose of the study. Do not start each paragraph with a reference to the source. Do not structure the text in such a way that one paragraph is an analysis of one source. The review should be concluded with 2-3 generalizing sentences. Then the purpose of the study should be formulated. After that, formulate hypotheses (right here, all together,

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Carefully study each sentence, each paragraph, and the entire text of the article.

The deadline for revisions is 2024-10-10

To revise a manuscript please don’t forget to log in to the system and to upload a revised manuscript!

Kind regards,

Valeria Matiukhina
Managing Editor
Journal Investment Management and Financial Innovations

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MA11789: Notification on Submission

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Dear Prof. Valeria Matiukhina,

I hope this message finds you well. We have diligently completed the revisions according to the journal's author guidelines and formatting requirements. I have submitted the revised file (attached with this message) through the journal system. I sincerely apologize for any oversight in the previous submission.
If there are any remaining issues, please let us know, and we will be more than happy to make the necessary adjustments promptly.
Thank you for your understanding and support.

Best regards,
Assoc. Prof. Dr. Susanti Widhiastuti,
Universitas IPWIJA
[Kutipan teks disembunyikan]

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BUKTI BALASAN REVIEW/ KOREKSI TAHAP 2

ARTIKEL PASCA REVISI TAHAP 2

"EXPLORING THE LINK BETWEEN BUSINESS INTELLIGENCE AND FINANCIAL PERFORMANCE IN SMES"

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ABSTRACT

Amid advancements in information technology, business intelligence has emerged as a vital tool for enhancing decision making, particularly for small and medium enterprises (SMEs). Drawing on dynamic capability theory, this study investigates the impact of business intelligence on SMEs financial performance, with ambidexterity as a mediating variable. This research also explores the influence of three key elements of financial resources -financial access, availability, and information quality- on the implementation of business intelligence. Data from a survey of 233 SMEs managers in Central Java, Indonesia, were collected in 2023. Smart PLS 3 was used to analyse the data and test the proposed hypotheses. The findings indicate that business intelligence positively impacts financial performance. Furthermore, financial ambidexterity emerges as a crucial mediating factor, channeling the relationship between business intelligence and financial performance. Financial resources also demonstrate a positive influence on the adoption of business intelligence. This study suggests that the success of financial performance in SMEs depends on their ability to effectively leverage business intelligence, which in turn fosters financial ambidexterity. Moreover, financial resources act as a significant signal for successful business intelligence implementation. These findings reinforce the strategic role of ambidexterity in the management of SMEs and provide valuable guidance for managers on the importance of balancing resources and technology adoption to ensure longterm business success.

Keywords: financial resources, business intelligence, financial ambidexterity, financial performance.

JEL Classification: G40, D91, L25, M15

1. INTRODUCTION

Digitalization has become a crucial element for small businesses to navigate increasingly competitive business environments. Digital transformation enables small business to enhance operational efficiency, expand market reach, and strengthen customer interactions (Asandimitra et al., 2024; Bagale et al., 2023). Technologies such as BI offer strategic solutions for gathering and analysing data to support more effective and efficient decision-making. Although BI is often associated with large corporations due to its complexity and high implementation costs (Wei & Pardo, 2022), recent studies indicate that this technology is becoming more affordable and user-friendly for small businesses (Popovič et al., 2019). However, despite these opportunities, research shows that the impact of BI on SMEs performance is not always consistent. For example, a study by Bhatiasevi & Naglis (2020) in Thailand found that BI adoption among SMEs did not significantly contribute to improved financial performance. Other research also indicates that large volumes of data in BI do not always lead to higher financial performance (Ghasemaghaei & Calic, 2020). This suggests that other factors need to be considered in BI implementation, especially in the context of effective financial resource management (Alsibhawi et al., 2023). In this research, we focus on the role of financial ambidexterity as a key factor that can mediate the relationship between BI and SMEs financial performance. Based on dynamic capability theory, financial ambidexterity is defined as an organization's ability to simultaneously maintain financial stability -such as managing liquidity, debt, and financial reserves- and financial flexibility to adapt to market changes and exploit business opportunities (Baños-Caballero et al., 2016; Morgan & Pontines, 2017). This ability is crucial for SMEs to remain competitive in dynamic and uncertain economic situations. Additionally, this study also examines how the dimensions of financial resources (availability, access, and information quality) influence BI implementation in SMEs. The availability and quality of financial information play a significant role in supporting BI implementation (Baños-Caballero et al., 2016). However, constraints often arise not only from limited capital but also from the inability of SME managers to optimally manage financial information to support strategic decision-making (Lateef & Keikhosrokiani, 2023). SME managers need the ability to allocate financial resources strategically so that BI implementation is truly effective in improving their business performance. This research contributes to the existing literature by filling a gap in previous studies, which have generally focused more on technological factors and managerial support in BI adoption (Salisu et al., 2021). This study provides practical guidance for SME managers in maximizing better financial resource management to support BI implementation, which can ultimately improve the company's financial performance.

2. LITERATURE REVIEW AND HYPOTHESIS

Business intelligence plays a pivotal role in modern management, enabling organizations to navigate complex data landscapes effectively. BI is a managerial tool that assists organizations in managing and refining business information to make better decisions based on collected data (Torres, 2018; Wamba-Taguimdje, 2020). BI encompasses a range of methodologies, processes, architectures, and technologies that work together to transform raw data into meaningful and valuable information (Nuseir, 2021). Through real-time visualization and the ability to export reports, business owners can easily monitor and analyse their performance (Chen, 2021). Mobile optimization enables business owners to access critical information anytime and anywhere. Small businesses adopting BI can integrate their operations into platforms that offer comprehensive solutions for sales management, customer relationships, team scheduling, project management, and overall business outcomes (Edward et al., 2023; Rosa, 2018). This information provides insights that support strategic, tactical, and operational decision-making more effectively (Bhatiasevi & Naglis, 2020; Huang et al., 2022). Previous research has investigated the factors influencing the BI implementation process in small businesses, such as company policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers have focused on the impacts of BI implementation, including improvements in operational efficiency, decision-making accuracy, and overall business performance (Ghasemaghaei & Calic, 2020; Wamba-Taguimdje, 2020).

Every company will aggressively seek financial resources to navigate market uncertainty and drive substantial growth, using these resources to support strategic initiatives like business intelligence. In this study, financial resources in a company are categorized into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to a SMEs ability to obtain necessary funds and financial services for operation (Cowling, 2018), enabling them to acquire capital for starting or expanding operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Financial availability encompasses the resources within the company, including capital and liquidity, that allow it to meet financial obligations (Owusu, 2019; Pártlová, 2018). Lastly, financial information quality pertains to the availability of accurate, reliable, and relevant financial data, which is essential for informed decision-making (Gonzales & Wareham, 2019). The three dimensions of financial resources play a crucial role in the effective utilization of BI in small businesses. Financial access enables businesses to secure the necessary funding to invest in BI tools and technologies, enhancing their operational capabilities (Maharaj & Doorasamy, 2024; Pártlová, 2018)(Khan, 2020; Maldonado-Guzmán, 2022). Financial availability ensures that

companies have the liquidity to maintain ongoing BI initiatives and adapt to changing market conditions (Khan, 2020; Maldonado-Guzmán, 2022). Lastly, high-quality financial information is vital for driving informed decision-making, allowing businesses to leverage BI effectively to analyse data, optimize processes, and ultimately improve their financial performance (Gonzales & Wareham, 2019). Therefore, these dimensions collectively determine the effectiveness of small businesses in implementing BI strategies and reaping their associated benefits.

In the face of dynamic market conditions, effective financial management becomes essential for small businesses to navigate uncertainties and seize opportunities. This is where financial ambidexterity plays a crucial role, as it reflects to a company's ability to maintain financial strategy to market changes (Callegari, 2021; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility (O'Reilly & Tushman, 2008). Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). This concept is particularly important for SMEs to balance healthy financial stability with the flexibility needed to face market challenges and seize opportunities (Dolz, 2019; Husien et al., 2020). BI plays a vital role in reinforcing financial ambidexterity, as the real-time information it generates enables management to make strategic decisions more quickly and accurately (Wamba-Taguimdje, 2020). For instance, Popovič (2019) illustrates that faster and more accurate information allows companies to respond more effectively to changes in market conditions or business opportunities, enhancing the flexibility of resource allocation to the most strategic areas. In this study, financial ambidexterity acts as a mediator between BI and financial performance, ensuring that generated information is utilized for strategic decisions that balance the exploration of new opportunities and the management of financial risks (Bhatiasevi & Naglis, 2020; Boronat-Navarro et al., 2021; Hao et al., 2022). The study aims to examine how financial access, the availability of funds, and the quality of financial information affect the implementation of business intelligence in SMEs. Additionally, this research will explore how financial ambidexterity acts as a mediator linking BI to the financial performance of SMEs in Indonesia. By understanding these

dynamics, the study seeks to contribute to the broader discourse on effective financial management strategy within the SME sector. Based on this literature review, the following hypotheses can be formulated:

H1: Financial access has a significant impact on business intelligence in SMEs.

H2: Financial availability has a significant impact on business intelligence in SMEs.

H3: Financial information quality has a significant impact on business intelligence in SMEs.

H4: Business intelligence has a significant impact on financial performance in SMEs.

H5: Business intelligence has a significant impact on financial performance in SMEs.

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

H7: Financial ambidexterity mediates the relationship between BI and financial performance in SMEs.

3. METHODOLOGY

1.1. Participant

This research involves a survey focused on SMEs owner-managers in Central Java, a province in Indonesia known for its rapid growth in small businesses. Data was collected through questionnaires completed by 290 owner-managers between August and November 2023, engaging a total of 233 SMEs and achieving a commendable response rate of 73.44%. We received invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and supported communication with the SMEs. Notably, many of the studied SMEs are affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents span various industry sectors, with the highest proportions coming from the service sector (35%) and the food & beverage sector (35%). Manufacturing and retail contribute 25% and 20%, respectively. In terms of technology adoption, the majority of respondents (45.24%) report a

moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

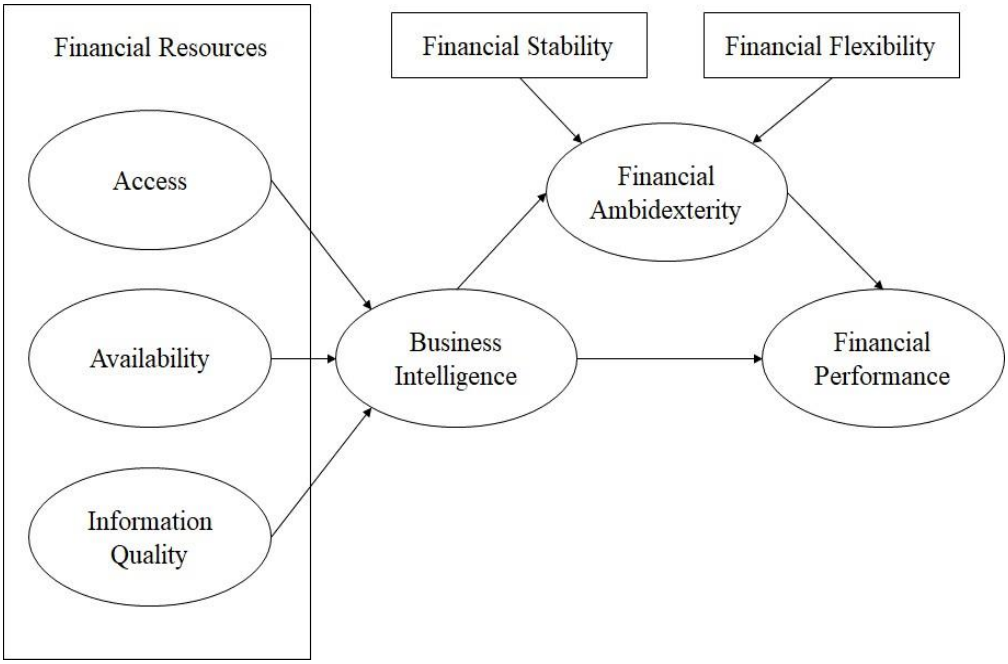

Figure 1. Conceptual Model

1.2. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and

financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler, 1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI) AVE = 0.812 CR = 0.911 CA = 0.822	BI1	0.740	2,79	0.071
	BI3	0.749	3,07	0.033
	BI4	0.788	3,02	0.046
	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037
Financial Performance (FP) AVE = 0.723 CR = 0.856 CA = 0.756	FP1	0.756	3,14	0.015
	FP2	0.754	3,12	0.024
	FP3	0.801	2,77	0.026
	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS) AVE = 0.821 CR = 0.923 CA = 0.762	FS1	0.811	3,26	0.033
	FS2	0.866	2,88	0.071
	FS3	0.838	3,21	0.078
	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067

Variables	Constructs	Loading Factor	Mean	SD
Financial Flexibility (FF) AVE = 0.753 CR = 0.865 CA = 0.731	FF1	0.875	3,36	0.040
	FF2	0.788	3,34	0.010
	FF3	0.867	2,62	0.071
	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA) AVE = 0.675 CR = 0.776 CA = 0.812	FA1	0.850	3,51	0.029
	FA2	0.827	2,63	0.073
	FA3	0.752	3,51	1.017
	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI) AVE = 0.852 CR = 0.875 CA =0.812	FI1	0.703	3,07	0.062
	FI2	0.769	2,95	1.049
	FI3	0.775	2,74	0.072
	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC) AVE = 0.845 CR = 0.902 CA =0.864	FC1	0.856	3,21	0.038
	FC2	0.845	3,4	0.086
	FC3	0.840	3,15	0.058
	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and

discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on BI. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on BI, which means that H1, H2, and H3 were supported. Furthermore, the test results show that BI has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of BI on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	p-Values	Hypothesis
Financial Access→ BI	0.768	0.340	2.259	0.025	H1: Supported
Financial Availability→ BI	0.243	0.056	4.339	0.000	H2: Supported
Financial Information Quality → BI	0.335	0.121	2.768	0.016	H3: Supported
BI → Financial Ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
BI→ Financial Performance	0.365	0.111	3.288	0.001	H5: Supported
Financial Ambidexterity → Financial Performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
BI → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

5. DISCUSSION

The findings of this study illuminate the significant impact of BI on financial performance, with financial ambidexterity serving as a mediating variable. A comprehensive analysis revealed that BI exerts a substantial effect on financial performance (β = 0.655, p-values = 0.044). Furthermore, the indirect effect test confirmed that financial ambidexterity plays a vital role in mediating the relationship between BI and financial performance (β = 0.531, p-values = 0.018). This study also delves into the relationship between financial resource dimensions and BI, yielding

important results. Specifically, the analysis indicates that financial availability (β = 0.243, *p*-values = 0.000), financial information (β = 0.335, *p*-values = 0.016), and financial access (β = 0.768, *p*-values = 0.025) all positively influence BI.

Firstly, the results indicate that BI implementation has a statistically significant impact on financial performance. In the context of SMEs, BI provides information that is useful for managers to improve financial performance. These findings suggest that SMEs can design more effective strategies by using information obtained from BI strategies, including information about customers, market trends and internal operations, and integrated dashboards. This will support the company's efforts to achieve optimal financial performance. Such result in line with previous study (Chen, 2021; Huang et al., 2022) which underscores the critical of BI implementation in improving financial performance. The result reveals that BI is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. Additionally, a test of the mediating effect showed that the BI-financial performance connection is mediated by financial ambidexterity. This means that the effectiveness of BI in enhancing financial performance depends significantly on how well managers in small businesses can balance financial stability and flexibility. The results align with past studies (Boronat-Navarro et al., 2021; Husien et al., 2020) that state the use of BI in small businesses needs to be accompanied by managerial skills in managing finances, as a form of financial ambidexterity. Financial ambidexterity encompasses both maintaining a solid financial foundation and being agile enough to respond to new opportunities and challenges.

Furthermore, the current study revealed that three dimensions of financial resources demonstrate a positive influence on the implementation of BI. First, the successful implementation of BI is significantly related to the financial access. This findings is supported by previous researches that suggest higher financial access can provide external funding to acquire crucial information and support for their BI improvement (Bokpin, 2018; Chu, 2021; Fatoki, 2021).They argue that access to finance impacts better positioned to have loans at lower interest rates and featuring simplified processes with minimal requirements. SMEs with financial access can secure financial support directly correlates with their strategy to invest in expanding their BI infrastructure and operations. Second, financial availability also has a significant effect on BI implementation. While there are many affordable options available, having sufficient financial resources improve efficacy for developing BI. Past research also found that the development of BI often requires an initial investment in technology infrastructure and software, so having adequate funds can enhance the success and effectiveness of BI usage in a business (Becerra-Godínez, 2020; Owusu, 2019).

Therefore, financial availability will have a significant impact on the implementation of BI in small businesses. Finally, the quality of financial information plays a critical role in the successful implementation of business intelligence in SMEs. Ensuring that the data processed by business intelligence systems provides an accurate and reliable overview of the company's financial condition. The utilization of technology and financial tools plays a crucial role in enhancing the accuracy and completeness of financial information. In line, ease and speed of access to financial information play a significant role in supporting rapid responses to market changes or business conditions (Kowalczyk, 2015). Business intelligence implementation becomes more effective when information can be easily and quickly accessed (Gonzales & Wareham, 2019). Prioritizing the quality of financial information is essential for SMEs to maximize the effectiveness of business intelligence.

CONCLUSION

This study focused on the effect of BI on financial performance trough financial ambidexterity as a mediating variable. The findings revealed that BI significantly affect financial performance. In addition, according to indirect effect test, the financial ambidexterity demonstrates a significant mediating effect on the connection between BI and financial performance. This study also examines the connection between financial resources dimension and BI. The result confirmed that financial availability, financial information, and financial access have a positive influence on BI.

BI plays a crucial role in enhancing financial performance, particularly for SMEs. This study demonstrates that the implementation of BI significantly impacts the financial outcomes of companies. BI provides valuable information to management, enabling better decision-making regarding customers, market trends, and internal operations. Thus, BI can be an invaluable tool for SMEs striving to achieve optimal financial performance. Moreover, the success of BI in improving financial performance heavily relies on management's ability to balance financial stability and flexibility, known as financial ambidexterity. Companies need to maintain long-term financial health while being agile enough to adapt quickly to changes in the business environment. The combination of BI implementation and financial ambidexterity is essential for maximizing results.

Additionally, the research identifies three dimensions of financial resources that influence the successful implementation of BI. Sufficient financial availability is necessary for investing in BI technology and infrastructure, while the quality of accurate and up-to-date financial information is

critical for supporting data-driven decision-making. Ease of access to external financing can also expedite the BI implementation process. Therefore, companies with adequate financial resources and easy access to funding will find it easier to implement BI effectively

Practically, this empirical research sheds light on SME managers to improve financial performance. The implementation of BI is affected by financial resources. Thus, SME managers suggested improving financial resources by providing appropriate financial access, financial availability, and financial information quality. In addition, financial ambidexterity plays a central role in the success of BI implementation in SMEs. Managers should pay attention to a strategy and the skill to manage financial stability and flexibility simultaneously. This BI strategy will help SMEs improve competitive advantages in the technology information era and, in turn, increase sustainability performance.

This researcher has several research limitations that need to be considered for further research. First, the small businesses that participated in this research came from different types of businesses (manufacturing, retail, services, IT, food and beverage). These differences in business types impact the need and use of BI in business and the development strategy. Therefore, it is recommended that further research focus on one type of business, for example, retail business, IT and services. Second, this research was conducted using a survey technique with a cross-sectional approach, so it is impossible to determine the temporal interaction between variables. This research suggests a longitudinal approach to establishing a true cause-and-effect relationship.

AUTHOR CONTRIBUTIONS

Conceptualization: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.
Data curation: Susanti Widhiastuti, Slamet Ahmadi.
Formal Analysis: Irfan Helmy.
Funding Acquisition: Susanti Widhiastuti, Slamet Ahmadi.
Investigation: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.
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RINCIAN BUKTI KORESPONDENSI

No	Perihal	Tanggal
6.	Koreksi dan Masukan Editor & Reviewer (tahap 3)	6 Desember 2024
7.	Bukti Balasan peneliti revisi tahap 3	11 Desember 2024

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MA11789: Notification on Submission

6 Desember 2024 pukul 21.43

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Dear Susanti Widhiastuti,

the manuscript UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES, submitted to Investment Management and Financial Innovations Journal,

needs to be revised.

Comments: The text of the article should be proofread. For example, the first sentence of the Abstract - "Amid

advancements in information technology, business intelligence has emerged as a vital tool for enhancing decision making,

particularly for small and medium enterprises (SMEs). " And why specifically for SMEs? Is this really so? Most likely, it is

not so. Do the authors really use dynamic capability theory in the study? The authors write "...three key elements of

financial resources -financial access, availability, and information quality...". Are these really elements? Are they really

key? How do the authors interpret business intelligence in the study? What enterprises were studied? The results of the

study are actually not presented in the Abstract. There are no specifics.

It is desirable to remove this in the Introduction - "This study provides practical guidance for SME managers in maximizing

better financial resource management to support BI implementation, which can ultimately improve the company's financial performance.".

Carefully write out the Conclusions.

The deadline for revisions is 2024-12-12

To revise a manuscript please don’t forget to log in to the system and to upload a revised manuscript!

Kind regards,

Valeria Matiukhina
Managing Editor
Journal Investment Management and Financial Innovations

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MA11789: Notification on Submission

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Dear Editor,

Investment Management and Financial Innovations

We sincerely appreciate the constructive feedback and insightful comments provided by Editors and the reviewers. These suggestions have been invaluable in improving the quality and clarity of our manuscript. We have carefully addressed all the comments and revised the manuscript accordingly, ensuring that it aligns with the journal's standards. Additionally, we have summarized our responses to the reviewers' and editor's feedback in the attached file titled "Author Responses." The revised manuscript has also been submitted through the journal system.

In this email, we have attached the following files for your reference:

1. Author Responses
2. Revised Paper (Anonymized, without authors)
3. Revised Paper (with full authorship)

We hope the revisions meet your expectations and look forward to your feedback.

BALASAN PENELITI REVIEW / KOREKSI TAHAP 3

Thank you for your time and consideration.

Best regards,
Assoc. Prof. Dr. Susanti Widhiastuti

Universitas IPWIJA _ Jakarta

[Kutipan teks disembunyikan]

3 lampiran

2. Revised Paper (anonym-without authors).doc
293K

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BUKTI BALASAN PENELITI ATAS KOREKSI/ REVIEW TAHAP 3

AUTHOR COMMENTS

We are grateful for the Editor and reviewer's constructive comments, which have significantly contributed to improving our manuscript. We are committed to implementing these revisions to enhance the quality and clarity of our study.

Comment 1: The text of the article should be proofread.

Response:

We sincerely appreciate the reviewer's attention to the quality of our manuscript. We acknowledge the importance of thorough proofreading to enhance the clarity and readability of the article. We have reviewed the manuscript to correct grammatical errors, typos, and improve sentence structures.

Comment 2: And why specifically for SMEs? Is this really so? Most likely, it is not so.

Response:

*Thank you for this valuable comment. Generally, I agree that Business Intelligence (BI) is not exclusively relevant to SMEs; it is widely utilized across organizations of various sizes (we have revised the sentences) (**Abstract, page 1: paragraph 1).** However, BI has become increasingly significant for SMEs. Once considered the domain of large corporations due to its complexity and cost (Wei & Pardo, 2022), recent advancements have made BI more accessible and user-friendly for small businesses, effectively addressing resource constraints (Popovič et al., 2019). Reports highlight a growing trend of BI adoption among SMEs as it becomes more affordable. For instance, Ragazou et al. (2023) underscore how SMEs are utilizing BI to enhance decision-making and efficiency. Particularly in industries such as retail and hospitality, SMEs leverage BI to understand customer behavior, optimize inventory, enhance operational efficiency, streamline decision-making, and improve financial performance (Ali et al., 2017; Stjepi, 2021). We have revised the text to reflect this broader applicability while maintaining the study's focus on SMEs. This context underlines the critical relevance of exploring BI within the SME sector.*

Supported References:

Wei, R., & Pardo, C. (2022). Artificial intelligence and SMEs: How can B2B SMEs leverage AI platforms to integrate AI technologies? *Industrial Marketing Management*, *107*, 466–483. https://doi.org/https://doi.org/10.1016/j.indmarman.2022.10.008

Popovič, A., Puklavec, B., & Oliveira, T. (2019). Justifying business intelligence systems adoption in SMEs: Impact of systems use on firm performance. *Industrial Management and Data Systems*, *119*(1), 210–228. https://doi.org/10.1108/IMDS-02-2018-0085

Ragazou, K., Passas, I., Garefalakis, A., & Zopounidis, C. (2023). Business intelligence model empowering SMEs to make better decisions and enhance their competitive advantage. *Discover Analytics*, *1*(2).

https://doi.org/10.1007/s44257-022-00002-3
Ali, S., Miah, S., & Khan, S. (2017). ANALYSIS OF INTERACTION BETWEEN BUSINESS INTELLIGENCE AND SMES: LEARN FROM EACH OTHER. *Journal of Information Systems and Technology Management*, *14*(2), 151–168. https://doi.org/10.4301/S1807-17752017000200002

Comment 3: Do the authors really use dynamic capability theory in the study?

Response:

We appreciate the reviewer's inquiry regarding our theoretical framework. Yes, dynamic capability theory is a central component of our study. It is thoroughly discussed in the ***Introduction (Page 2, Paragraph 3)*** *and further elaborated in the* ***Literature Review (Page 4, Paragraph 3-4)****. This theory, as cited from Khurana et al. (2022) and O'Reilly & Tushman (2008), explains how SMEs adapt and reconfigure their resources in rapidly changing environments. It underpins our examination of how financial ambidexterity enables SMEs to balance financial stability and flexibility, thereby enhancing the effectiveness of BI implementation on financial performance. In line, Resorce based view (RBV) theory also highlights financial resources as critical competitive advantages (Paradza & Daramola, 2021), while dynamic capability theory explains how SMEs reconfigure resources to thrive in dynamic environments. This capability helps SMEs balance short-term stability with long-term adaptability, enabling effective BI utilization for financial improvements.*

Supported References:

Khurana, I., Dutta, D. K., & Singh Ghura, A. (2022). SMEs and digital transformation during a crisis: The emergence of resilience as a second-order dynamic capability in an entrepreneurial ecosystem. *Journal of Business Research*, *150*, 623–641. https://doi.org/https://doi.org/10.1016/j.jbusres.2022.06.048
O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, *28*, 185–206. https://doi.org/https://doi.org/10.1016/j.riob.2008.06.002

Comment 4: "...three key elements of financial resources - financial access, availability, and information quality...". Are these really elements? Are they really key?

Response:

Thank you for bringing this point to our attention. We assert that these three are indeed key elements of financial resources crucial for successful BI implementation in SMEs. While they are not dimensions, they represent important aspects of financial resources.This is supported by prior literature (Ismail, 2022; Ruggiero, 2018), as discussed in the ***Introduction (Page 2, Paragraph 3)*** *and the* ***Literature Review (Page 4, Paragraph 2)****.*

- ✓ *Financial Access allows SMEs to obtain necessary funding for investing in BI technologies (Maharaj & Doorasamy, 2024).*
- ✓ *Financial Availability ensures SMEs have adequate internal funds to sustain BI initiatives (Owusu, 2019).*
- ✓ *Financial Information Quality provides reliable data essential for effective decision-making through BI (Gonzales & Wareham, 2019).*

These elements are considered key because they directly influence the capability of SMEs to implement and leverage BI for improving financial performance.

Supported References:

Ismail, I. J. (2022). Entrepreneurs' Dynamic Capabilities, Financial Resource Development and Financial Performance Among Small and Medium Enterprises in Emerging Markets: Experience from Tanzania. In *Contributions to Finance and Accounting* (pp. 15–36). https://doi.org/10.1007/978-3-031-04980-4_2

Ruggiero, P. (2018). CSR strategic approach, financial resources and corporate social performance: The mediating effect of innovation. *Sustainability (Switzerland)*, *10*(10). https://doi.org/10.3390/su10103611

Maharaj, A., & Doorasamy, M. (2024). SME resilience: Critical financial planning success factors post-COVID-19. *Investment Management and Financial Innovations*, *21*(3), 64–73. https://doi.org/10.21511/imfi.21(3).2024.06

Owusu, J. (2019). Financial literacy as a moderator linking financial resource availability and SME growth in Ghana. *Investment Management and Financial Innovations*, *16*(1), 154–166. https://doi.org/10.21511/imfi.16(1).2019.12

Gonzales, R., & Wareham, J. (2019). Analysing the impact of a business intelligence system and new conceptualizations of system use. *Journal of Economics, Finance and Administrative Science*, *24*(48), 345–368. https://doi.org/10.1108/JEFAS-05-2018-0052

Comment 5: How do the authors interpret business intelligence in the study?

Response:

We are grateful for the opportunity to clarify our interpretation of Business Intelligence. BI is interpreted as a managerial tool that enables SMEs to transform raw data into meaningful insights for strategic decision-making. BI encompasses methodologies, processes, and technologies that support data analysis and visualization, facilitating better integration of operations and informed decisions (Nuseir, 2021). For SMEs, BI is instrumental in enhancing efficiency, monitoring performance, and formulating effective strategies (Lateef & Keikhosrokiani, 2023).

BI adoption in SMEs is characterized by its simplicity and adaptability to the unique needs of small businesses. BI integrates methodologies, technologies, and processes to transform raw data into actionable insights (Nuseir, 2021). SMEs benefit from real-time data visualization and report generation, allowing business owners to monitor performance effectively (Chen, 2021). Mobile optimization further empowers SMEs by

providing access to critical information anytime, enabling seamless integration of operations and decision-making (Lateef & Keikhosrokiani, 2023). Platforms equipped with BI offer comprehensive solutions for sales management, customer relationships, project management, and operational efficiency (Edward et al., 2023; Rosa, 2018), enhancing strategic, tactical, and operational decision-making (Bhatiasevi & Naglis, 2020; Huang et al., 2022).

Literature Review (Page 4, Paragraph 1-2).

Supported References:

Nuseir, M. T. (2021). How the Business Intelligence in the New Startup Performance in UAE During COVID-19: The Mediating Role of Innovativeness. In *Studies in Systems, Decision and Control* (Vol. 334, pp. 63–79). https://doi.org/10.1007/978-3-030-67151-8_4

Lateef, M., & Keikhosrokiani, P. (2023). Predicting Critical Success Factors of Business Intelligence Implementation for Improving SMEs' Performances: a Case Study of Lagos State, Nigeria. *Journal of the Knowledge Economy*, *14*(3), 2081–2106. https://doi.org/10.1007/s13132-022-00961-8

Chen, Y. (2021). Business Intelligence Capabilities and Firm Performance: A Study in China. *International Journal of Information Management*, *57*. https://doi.org/10.1016/j.ijinfomgt.2020.102232

Edward, M. Y., Fuad, E. N., Ismanto, H., Atahau, A. D. R., & Robiyanto. (2023). Success factors for peer-to-peer lending for SMEs: Evidence from Indonesia. *Investment Management and Financial Innovations*, *20*(2), 16–25. https://doi.org/10.21511/imfi.20(2).2023.02

Bhatiasevi, V., & Naglis, M. (2020). Elucidating the determinants of business intelligence adoption and organizational performance. *Information Development*, *36*(1), 78–96. https://doi.org/10.1177/0266666918811394

Comment 6: What enterprises were studied?

Response:

We appreciate the reviewer's interest in our study sample. The research involved 233 SMEs located in Central Java, Indonesia, spanning various sectors such as services, food and beverage, manufacturing, and retail. These SMEs often utilize social media, internet platforms, and IT solutions, highlighting the relevance of BI in supporting their digital transformation efforts.

Detailed descriptions are provided in the ***Methodology (Page 6, Paragraph 2)****.*

a) *Service Sector: Includes travel agencies, event management companies, and beauty salons.*
b) *Food & Beverage Sector: Encompasses cafes, restaurants, and catering businesses.*
c) *Manufacturing Sector: Features furniture producers and local crafts businesses.*
d) *Retail Sector: Consists of small clothing stores and grocery shops.*

Comment 7: The results of the study are actually not presented in the Abstract. There are no specific.

Response:

Thank you for your detail comments. We have provided abstract with specific numeric of statistical result.

Comment 8: It is desirable to remove this in the Introduction - "

This study provides practical guidance for SME managers in maximizing better financial resource management to support BI implementation, which can ultimately improve the company's financial performance."

Response:

We appreciate the reviewer's suggestion to refine the Introduction. We will remove the mentioned sentence from the ***Introduction (Page 2, Paragraph 5)*** *to maintain focus on the study's theoretical contributions and research objectives.*

Comment 9: Carefully write out the Conclusions.

Response:

Thank you for your valuable feedback on the conclusions. We have carefully crafted the conclusion section to ensure it succinctly summarizes the key findings while addressing both theoretical and practical implications. We have also emphasized the study's contributions, the role of mediating variables, and its alignment with relevant theories. Furthermore, we acknowledged the limitations of the research and provided clear recommendations for future studies. We believe this approach reflects a balanced and thoughtful conclusion that aligns with the overall objectives of the study.

Conclusion (Page 12, Paragraph 2).

ARTIKEL SUBMIT PASCA REVISI 3

"EXPLORING THE LINK BETWEEN BUSINESS INTELLIGENCE AND FINANCIAL PERFORMANCE IN SMES"

Authors:

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ABSTRACT

In the era of rapid technological advancement, business intelligence (BI) has become an essential tool for enhancing decision-making processes across all business scales, including small and medium enterprises (SMEs). This study examines the impact of BI on SMEs' financial performance, with financial ambidexterity serving as a mediating variable. Additionally, the study explores the influence of three key elements of financial resources—financial access, availability, and information quality—on the successful implementation of BI. Data were collected from a survey of 233 SME managers in Central Java, Indonesia, conducted between December 2023 and February 2024. Smart PLS 3 was used to analyse the data and test the proposed hypotheses. The findings revealed that BI significantly affects financial performance (β=0.655, p=0.044). Furthermore, the indirect effect analysis confirmed that financial ambidexterity plays a crucial role in mediating the relationship between BI and financial performance (β=0.531, p=0.018). Additionally, the results confirmed that financial resources positively influence BI implementation, with financial availability (β=0.243, p=0.000), financial information quality (β=0.335, p=0.016), and financial access (β= 0.768, p=0.025) all showing significant effects. This study highlights the critical role of BI and financial ambidexterity in enhancing financial performance and underscores the importance of financial resources for successful BI implementation in SMEs.

Keywords: financial resources, business intelligence, financial ambidexterity, financial performance.

JEL Classification: G40, D91, L25, M15

1. INTRODUCTION

Digitalization is essential for SMEs to enhance efficiency, expand markets, and strengthen customer interactions. Among the tools enabling this transformation, business intelligence (BI) has emerged as a key solution for data analysis and decision-making. Once limited to large corporations due to its complexity and cost (Wei & Pardo, 2022), recent advancements have made it accessible and user-friendly for small businesses, addressing resource constraints (Popovič et al., 2019). Reports highlight the increasing adoption of BI by SMEs as it becomes more affordable. For example, Ragazou et al. (2023) emphasize the growing trend of SMEs utilizing BI to enhance decision-making and efficiency. In industries such as retail and hospitality, SMEs leverage BI to understand customer behavior, optimize inventory, enhance operational efficiency, streamline decision-making, and ultimately improve financial performance (Ali et al., 2017; Stjepi, 2021).

Previous studies have examined the relationship between BI adoption and organizational performance. Ragazou et al. (2023) demonstrated that BI tools enhance decision-making and efficiency, leading to improved outcomes. However, the impact of BI on SME performance remains inconsistent, with studies showing contradictory findings. For instance, Bhatiasevi and Naglis (2020) found that BI adoption among SMEs in Thailand did not significantly improve financial performance. Similarly, Ghasemaghaei and Calic (2020) observed that managing large volumes of BI data does not necessarily lead to better financial outcomes. They argue that SMEs have limited ability to align BI adoption with effective financial resource management. This inconsistency highlights a gap in understanding why BI adoption does not significantly impact the financial performance of SMEs, warranting further investigation.

To address this gap, this study examines financial ambidexterity as a mediating factor between BI adoption and SME financial performance. Based on resource-based view (RBV) and dynamic capability theory, financial ambidexterity reflects an organization's ability to balance financial stability—managing liquidity and reserves—with flexibility to adapt to changes and seize opportunities (Baños-Caballero et al., 2016; Morgan & Pontines, 2017). RBV highlights financial resources as critical competitive advantages (Paradza & Daramola, 2021), while dynamic capability theory explains how SMEs reconfigure resources to thrive in dynamic environments (Khurana et al., 2022). This capability helps SMEs balance short-term stability with long-term adaptability, enabling effective BI utilization for financial improvements.

Additionally, this research examines how key aspects of financial resources—availability, access, and information quality—influence BI implementation in SMEs. The financial availability, financial access, and quality of financial information play a pivotal role in enabling effective BI utilization (Baños-Caballero et al., 2016). However, challenges such as limited capital and the inability of SME managers to optimize financial information for strategic decisions (Lateef & Keikhosrokiani, 2023). Given these challenges, exploring how financial resources influence BI implementation is essential to identify actionable strategies for SMEs to overcome resource limitations and unlock the full potential of BI for performance improvement.

2. LITERATURE REVIEW AND HYPOTHESIS

Business intelligence plays a pivotal role in modern management, enabling organizations to navigate complex data landscapes effectively. BI is a managerial tool that assists organizations in managing and refining business information to make better decisions based on collected data (Torres, 2018; Wamba-Taguimdje, 2020). BI encompasses a range of methodologies, processes, architectures, and technologies that work together to transform raw data into meaningful and valuable information (Nuseir, 2021). Through real-time visualization and the ability to export reports, business owners can easily monitor and analyse their performance (Chen, 2021). Moreover, mobile optimization allows SMEs to access critical information anytime and anywhere, enabling better integration of operations and decision-making processes (Lateef & Keikhosrokiani, 2023). Mobile optimization enables business owners to access critical information anytime and anywhere. Small businesses adopting BI can integrate their operations into platforms that offer comprehensive solutions for sales management, customer relationships, team scheduling, project management, and overall business outcomes (Edward et al., 2023; Rosa, 2018). This information provides insights that support strategic, tactical, and operational decision-making more effectively (Bhatiasevi & Naglis, 2020; Huang et al., 2022).

However, while BI adoption has been widely regarded as beneficial, challenges persist in ensuring its effective implementation within SMEs, particularly under resource constraints. Previous research has investigated the factors influencing the BI implementation process in small businesses, such as company policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers have focused on the impacts of BI implementation, including improvements in operational efficiency, decision-making accuracy, and overall business performance (Ghasemaghaei & Calic, 2020; Wamba-Taguimdje, 2020). According to Lateef & Keikhosrokiani (2023), many small SMEs that invest significantly in innovation

recognize that BI systems enable them to reduce production costs and maintain competitiveness. These systems support companies in making strategic decisions to enhance profitability, lower expenses, strengthen customer relationships, and drive the growth and success of SMEs. By leveraging BI, businesses can achieve greater efficiency and make informed decisions that positively influence their overall performance. Nevertheless, the inconsistent impact of BI on SME financial performance suggests that certain mediating factors, such as financial resource management, may play a critical role.

Every company will aggressively seek financial resources to navigate market uncertainty and drive substantial growth, using these resources to support strategic initiatives like business intelligence. In this study, a keys of financial resources are categorized into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to a SMEs ability to obtain necessary funds and financial services for operation (Cowling, 2018), enabling them to acquire capital for starting or expanding operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Financial availability encompasses the resources within the company, including capital and liquidity, that allow it to meet financial obligations (Owusu, 2019; Pártlová, 2018). Lastly, financial information quality pertains to the availability of accurate, reliable, and relevant financial data, which is essential for informed decision-making (Gonzales & Wareham, 2019). The three key elements of financial resources play a crucial role in the effective utilization of BI in small businesses. Financial access enables businesses to secure the necessary funding to invest in BI tools and technologies, enhancing their operational capabilities (Maharaj & Doorasamy, 2024; Pártlová, 2018)(Khan, 2020; Maldonado-Guzmán, 2022). Financial availability ensures that companies have the liquidity to maintain ongoing BI initiatives and adapt to changing market conditions (Khan, 2020; Maldonado-Guzmán, 2022). Lastly, high-quality financial information is vital for driving informed decision-making, allowing businesses to leverage BI effectively to analyse data, optimize processes, and ultimately improve their financial performance (Gonzales & Wareham, 2019). Therefore, these dimensions collectively determine the effectiveness of small businesses in implementing BI strategies and reaping their associated benefits.

In the face of dynamic market conditions, effective financial management becomes essential for small businesses to navigate uncertainties and seize opportunities. This is where financial ambidexterity plays a crucial role, as it reflects to a company's ability to maintain financial strategy to market changes (Callegari, 2021; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility (O'Reilly & Tushman,

2008). Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). This concept is particularly important for SMEs to balance healthy financial stability with the flexibility needed to face market challenges and seize opportunities (Dolz, 2019; Husien et al., 2020). BI plays a vital role in reinforcing financial ambidexterity, as the real-time information it generates enables management to make strategic decisions more quickly and accurately (Wamba-Taguimdje, 2020). For instance, Popovič et al. (2019) illustrates that faster and more accurate information allows companies to respond more effectively to changes in market conditions or business opportunities, enhancing the flexibility of resource allocation to the most strategic areas. In this study, financial ambidexterity acts as a mediator between BI and financial performance, ensuring that generated information is utilized for strategic decisions that balance the exploration of new opportunities and the management of financial risks (Bhatiasevi & Naglis, 2020; Boronat-Navarro et al., 2021; Hao et al., 2022). The study aims to examine how financial access, the availability of funds, and the quality of financial information affect the implementation of business intelligence in SMEs. Additionally, this research will explore how financial ambidexterity acts as a mediator linking BI to the financial performance of SMEs in Indonesia. By understanding these dynamics, the study seeks to contribute to the broader discourse on effective financial management strategy within the SME sector. Based on this literature review, the following hypotheses can be formulated:

H1: Financial access has a significant impact on business intelligence in SMEs.

H2: Financial availability has a significant impact on business intelligence in SMEs.

H3: Financial information quality has a significant impact on business intelligence in SMEs.

H4: Business intelligence has a significant impact on financial performance in SMEs.

H5: Business intelligence has a significant impact on financial performance in SMEs.

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

H7: Financial ambidexterity mediates the relationship between BI and financial performance in SMEs.

3. METHODOLOGY

1.1. Participant

This research involves a survey focused on SMEs owner-managers in Central Java, a province in Indonesia known for its rapid growth in small businesses. Data was collected through questionnaires completed by 290 owner-managers between August and November 2023, engaging a total of 233 SMEs and achieving a commendable response rate of 73.44%. We received invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and supported communication with the SMEs. Notably, many of the studied SMEs are affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents represent various sectors, with the largest proportions from the service sector (35%) and food & beverage sector (35%). Examples of service SMEs include travel agencies, event management companies, and beauty salons. The food & beverage sector includes cafes, restaurants, and catering businesses. The manufacturing sector (14%) features furniture producers and local crafts businesses, while the retail sector (16%) consists of small clothing stores and grocery shops. These businesses often leverage social media, internet platforms, and IT solutions in their operations. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

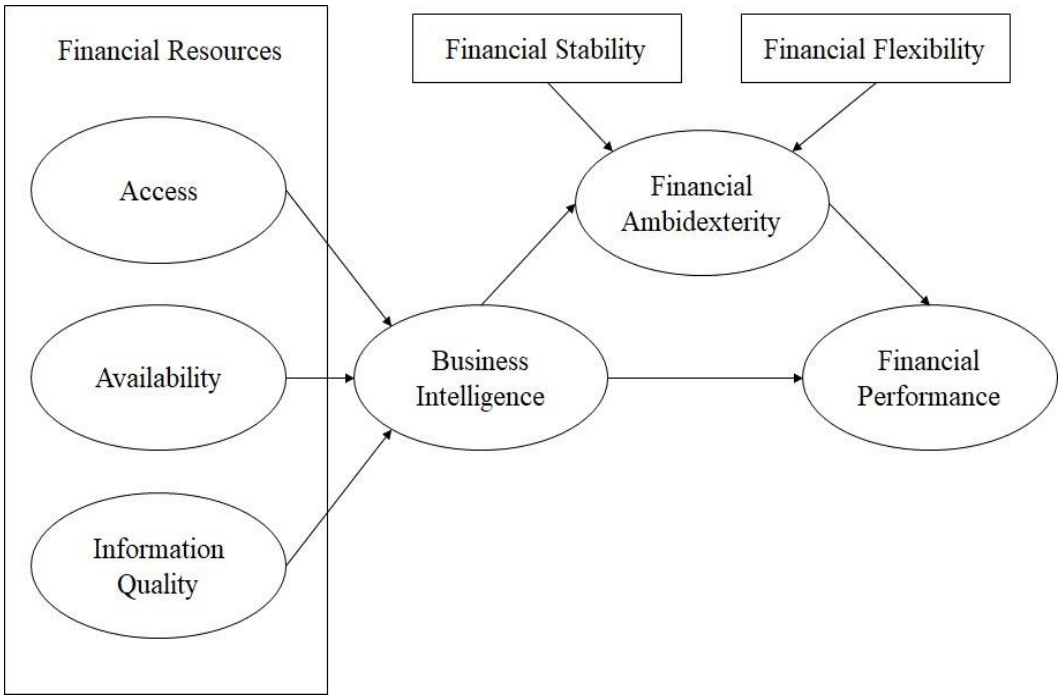

Figure 1. Conceptual Model

1.2. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research.

This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler, 1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI)	BI1	0.740	2,79	0.071
AVE = 0.812	BI3	0.749	3,07	0.033
CR = 0.911	BI4	0.788	3,02	0.046
CA = 0.822	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037
Financial Performance (FP)	FP1	0.756	3,14	0.015
AVE = 0.723	FP2	0.754	3,12	0.024
CR = 0.856	FP3	0.801	2,77	0.026
CA = 0.756	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS)	FS1	0.811	3,26	0.033
AVE = 0.821	FS2	0.866	2,88	0.071
CR = 0.923	FS3	0.838	3,21	0.078
CA = 0.762	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF)	FF1	0.875	3,36	0.040
AVE = 0.753	FF2	0.788	3,34	0.010
CR = 0.865	FF3	0.867	2,62	0.071
CA = 0.731	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA)	FA1	0.850	3,51	0.029

Variables	Constructs	Loading Factor	Mean	SD
AVE = 0.675	FA2	0.827	2,63	0.073
CR = 0.776	FA3	0.752	3,51	1.017
CA = 0.812	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI)	FI1	0.703	3,07	0.062
AVE = 0.852	FI2	0.769	2,95	1.049
CR = 0.875	FI3	0.775	2,74	0.072
CA =0.812	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC)	FC1	0.856	3,21	0.038
AVE = 0.845	FC2	0.845	3,4	0.086
CR = 0.902	FC3	0.840	3,15	0.058
CA =0.864	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE

Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on BI. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on BI, which means that H1, H2, and H3 were supported. Furthermore, the test results show that BI has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of BI on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	ρ -Values	Hypothesis
Financial Access→ BI	0.768	0.340	2.259	0.025	H1: Supported
Financial Availability→ BI	0.243	0.056	4.339	0.000	H2: Supported
Financial Information Quality → BI	0.335	0.121	2.768	0.016	H3: Supported
BI → Financial Ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
BI→ Financial Performance	0.365	0.111	3.288	0.001	H5: Supported
Financial Ambidexterity → Financial Performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
BI → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

5. DISCUSSION

The findings of this study illuminate the significant impact of BI on financial performance, with financial ambidexterity serving as a mediating variable. A comprehensive analysis revealed that BI exerts a substantial effect on financial performance (β = 0.655, *p*-values = 0.044). Furthermore, the indirect effect test confirmed that financial ambidexterity plays a vital role in mediating the relationship between BI and financial performance (β = 0.531, *p*-values = 0.018). This study also delves into the relationship between financial resource dimensions and BI, yielding important results. Specifically, the analysis indicates that financial availability (β = 0.243, *p*-values = 0.000), financial information (β = 0.335, *p*-values = 0.016), and financial access (β = 0.768, *p*-values = 0.025) all positively influence BI.

First, the results affirm that BI implementation has a statistically significant impact on financial performance. In SMEs, BI provides managers with actionable insights to optimize financial outcomes. By leveraging information on customers, market trends, internal operations, and integrated dashboards, SMEs can develop more effective strategies. These findings align with prior studies (Chen, 2021; Huang et al., 2022), which underscore the critical role of BI in enhancing financial performance. BI equips managers with real-time and accurate data that serve as a basis for informed decision-making.

The result reveals that BI is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. Additionally, a test of the mediating effect showed that the BI-financial performance connection is mediated by financial ambidexterity. This means that the effectiveness of BI in enhancing financial performance depends significantly on how well managers in small businesses can balance financial stability and flexibility. The results align with past studies (Boronat-Navarro et al., 2021; Husien et al., 2020) that state the use of BI in small businesses have to be accompanied by managerial skills in managing finances, as a form of financial ambidexterity. Financial ambidexterity encompasses both maintaining a solid financial foundation and being agile enough to respond to new opportunities and challenges.

Moreover, the mediating effect of financial ambidexterity illustrates that the effectiveness of BI depends on managers' ability to balance financial stability and flexibility. This aligns with previous research (Boronat-Navarro et al., 2021; Husien et al., 2020), which emphasizes the need for managerial skills to effectively manage finances in SMEs. Financial ambidexterity involves maintaining a solid financial foundation while remaining agile to seize new opportunities and address challenges. This balance enables SMEs to maximize the benefits of BI in dynamic market environments.

The study also highlights the critical influence of key elements of financial resource on BI implementation. First, financial access plays a significant role, as greater access to external funding enables SMEs to invest in and enhance their BI systems. This is consistent with prior research (Bokpin, 2018; Chu, 2021; Fatoki, 2021), which indicates that financial access facilitates loans with favorable terms, simplifying the process for SMEs to expand their BI infrastructure. Second, financial availability is essential for BI development. While many cost-effective BI options exist, adequate financial resources improve implementation efficacy. Previous studies (Becerra-Godínez, 2020; Owusu, 2019) have shown that investments in technology infrastructure and software are

often prerequisites for successful BI adoption, emphasizing the importance of sufficient funding in supporting these initiatives. Lastly, financial information quality is critical to successful BI implementation. Accurate and reliable financial data ensure that BI systems provide meaningful insights into a company's financial condition. This finding aligns with previous research (Gonzales & Wareham, 2019)which highlights the importance of accurate, timely information in supporting rapid responses to market changes or operational needs. High-quality financial information enables SMEs to enhance the efficiency and effectiveness of their BI systems.

CONCLUSION

This study demonstrates the transformative impact of BI on SMEs' financial performance, with financial ambidexterity playing as mediating variable. Drawing from dynamic capability theory, the findings confirm that BI significantly enhances financial performance by equipping SMEs with timely and actionable insights. These insights enable managers to optimize operations, adapt to market demands, and develop effective strategies. The mediating role of financial ambidexterity highlights that the success of BI in improving financial outcomes relies on SMEs' ability to balance financial stability with flexibility. This dual capability is essential for navigating uncertainties and seizing emerging opportunities in dynamic market environments.

The study also integrates the RBV theory to explore the role of financial resources—access, availability, and information quality—in supporting BI implementation. The results indicate that financial access facilitates investment in BI tools and technologies, while financial availability ensures the sustainability of these initiatives. Furthermore, high-quality financial information enhances the effectiveness of BI systems by providing reliable data for decision-making. These findings align with prior research, underscoring that adequate financial resources and managerial expertise are prerequisites for successful BI adoption and utilization.

This research contributes to the theoretical discourse by linking BI, financial ambidexterity, and financial resource dimensions within the SME context. It extends dynamic capability theory by illustrating how BI, coupled with financial ambidexterity, enables SMEs to achieve superior financial performance. Practically, the findings emphasize the need for SME managers to prioritize financial resource optimization and skill development in financial management. Policymakers and advisors should support initiatives that enhance SMEs' access to funding, promote financial literacy, and encourage BI adoption to drive sustained growth and competitiveness.

This researcher has several research limitations that need to be considered for further research. First, the small businesses that participated in this research came from different types of businesses (manufacturing, retail, services, IT, food and beverage). These differences in business types impact the need and use of BI in business and the development strategy. Therefore, it is recommended that further research focus on one type of business. Second, this research was conducted using a survey technique with a cross-sectional approach, so it is impossible to determine the temporal interaction between variables. This research suggests a longitudinal approach to establishing a true cause-and-effect relationship.

AUTHOR CONTRIBUTIONS

Conceptualization: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.

Data curation: Susanti Widhiastuti, Slamet Ahmadi.

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Funding Acquisition: Susanti Widhiastuti, Slamet Ahmadi.

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Writing – original draft: Susanti Widhiastuti

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RINCIAN BUKTI KORESPONDENSI

No	Perihal	Tanggal
8.	Koreksi dan Masukan Editor & Reviewer (tahap 4)	6 Januari 2025
9.	Bukti Balasan peneliti revisi tahap 4	11 Januari 2025

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MA11789: Notification on Submission

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Dear Susanti Widhiastuti,

the manuscript UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES, submitted to Investment Management and Financial Innovations Journal, needs to be revised.

Comments: The authors should comply with the requirements and recommendations. Once again, we carefully ask you to implement each comment.

Do not introduce unspecified abbreviations into articles.

The Abstract should indicate why this selection was made and its relevance.

The Introduction is miswritten. This is not a Literature Review, and it shouldn't be held here. The text starting with the sentence- "To address this gap, this study..." should be deleted here.

A Literature Review should have a logic for analyzing previous scientific achievements, its plan, and a logic for presenting the material. To do this, you should first work through all the previously selected scientific works, form a general vision of the previous scientific landscape in the problematic under study, and show this landscape to the reader with references to the sources. Sources should be mentioned when they are somehow relevant to creating this landscape. The review should be completed with 2-3 summary sentences. Then you should formulate the purpose of the study, and then all the hypotheses.

The Conclusions should have the following logic - indicate the purpose of the study, briefly demonstrate the obtained result, and indicate what conclusions should be drawn from it.

The deadline for revisions is 2025-01-13

To revise a manuscript please don’t forget to log in to the system and to upload a revised manuscript!

Kind regards,

Valeria Matiukhina
Managing Editor
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MA11789: Notification on Submission

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Dear Prof. Valeria Matiukhina,

Thank you for your feedback on our manuscript.
We have carefully addressed all the comments and implemented the necessary revisions as requested.
We have revised the Abstract to clarify the study's rationale and relevance, restructured the Introduction to focus solely on context, and removed elements that belong to the Literature Review. The Literature Review has been reorganized to present a clear scientific landscape, ending with a summary, study purpose, and hypotheses. The Conclusions now align with the recommended structure, summarizing the purpose, findings, and implications. The updated manuscript, with highlighted changes in yellow, has been submitted through the system before the deadline.
We appreciate your time and consideration and look forward to any further suggestions you may have.

Best regard,

Assoc. Prof. Susanti Widhiastuti
Universitas IPWIJA
[Kutipan teks disembunyikan]

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BALASAN PENELITI ATAS REVIEW TAHAP 4

"EXPLORING THE LINK BETWEEN BUSINESS INTELLIGENCE AND FINANCIAL PERFORMANCE IN SMES"

ABSTRACT

The utilization of business intelligence has become increasingly crucial for small and medium-sized enterprises (SMEs) to remain competitive amid rapid advancements in information technology and heightened business uncertainty. This study analyzes the influence of business intelligence on the financial performance of SMEs, focusing on the mediating role of financial ambidexterity. Additionally, it examines how financial access, financial availability, and financial information quality enable effective business intelligence adoption. Data were collected from a survey of 233 SME managers in Central Java, Indonesia, conducted between December 2023 and February 2024. Smart PLS 3 was used to analyse the data and test the proposed hypotheses. The findings revealed that business intelligence significantly affects financial performance (β=0.655, p=0.044). Furthermore, the indirect effect analysis confirmed that financial ambidexterity plays a crucial role in mediating the relationship between business intelligence and financial performance (β=0.531, p=0.018). Additionally, the results confirmed that financial resources positively influence business intelligence implementation, with financial availability (β=0.243, p=0.000), financial information quality (β=0.335, p=0.016), and financial access (β= 0.768, p=0.025) all showing significant effects. This study highlights the critical role of business intelligence and financial ambidexterity in enhancing financial performance and underscores the importance of financial resources for successful business intelligence implementation in SMEs.

Keywords: financial resources, business intelligence, financial ambidexterity, financial performance.

JEL Classification: G40, D91, L25, M15

1. INTRODUCTION

Digitalization is essential for SMEs to enhance efficiency, expand markets, and strengthen customer interactions. Among the tools enabling this transformation, business intelligence has emerged as a key solution for data analysis and decision-making. Once limited to large corporations due to its complexity and cost (Wei & Pardo, 2022), recent advancements have made it accessible and user-friendly for small businesses, addressing resource constraints (Popovič et al., 2019). Reports highlight the increasing adoption of business intelligence by SMEs as it becomes more affordable. For example, Ragazou et al. (2023) emphasize the growing trend of SMEs utilizing business intelligence to enhance decision-making and efficiency. In industries such as retail and hospitality, SMEs leverage business intelligence to understand customer behavior, optimize inventory, enhance operational efficiency, streamline decision-making, and ultimately improve financial performance (Ali et al., 2017; Stjepi, 2021).

Despite its potential benefits, the adoption of business intelligence by SMEs faces significant challenges, particularly in resource-constrained environments. Several studies have explored how SMEs implement business to achieve financial improvements, yet findings remain inconsistent. For example, while some research indicates that business enhances financial performance (Popovič et al., 2019), other studies highlight limited or uncertain impacts, especially in SMEs with insufficient financial management capabilities (Bhatiasevi & Naglis, 2018; Ghasemaghaei & Calic, 2020). These findings suggest that factors like the ability to balance financial resources effectively play a critical role in determining the success of business implementation.

This study examines financial ambidexterity as a mediating factor between business intelligence adoption and SME financial performance. Based on resource-based view (RBV) and dynamic capability theory, financial ambidexterity reflects an organization's ability to balance financial stability—managing liquidity and reserves—with flexibility to adapt to changes and seize opportunities (Baños-Caballero et al., 2016; Morgan & Pontines, 2017). RBV highlights financial resources as critical competitive advantages (Paradza & Daramola, 2021), while dynamic capability theory explains how SMEs reconfigure resources to thrive in dynamic environments (Khurana et al., 2022). This capability helps SMEs balance short-term stability with long-term adaptability, enabling effective business intelligence utilization for financial improvements.

Additionally, this research examines how key aspects of financial resources—availability, access, and information quality—influence business intelligence implementation in SMEs. The

financial availability, financial access, and quality of financial information play a pivotal role in enabling effective business intelligence utilization (Baños-Caballero et al., 2016). However, challenges such as limited capital and the inability of SME managers to optimize financial information for strategic decisions (Lateef & Keikhosrokiani, 2023). Given these challenges, exploring how financial resources influence business intelligence implementation is essential to identify actionable strategies for SMEs to overcome resource limitations and unlock the full potential of business intelligence for performance improvement.

2. LITERATURE REVIEW AND HYPOTHESIS

Business intelligence is a technological system designed to collect, process, and analyze large datasets into actionable information to support business decision-making. Research indicates that the use of business intelligence enhances operational efficiency, decision-making strategies, and market competitiveness (Chen & Lin, 2021; Salisu et al., 2021). Liu et al. (2022) highlight that effective business intelligence implementation improves financial performance by enabling more accurate and faster data-driven decision-making. Additionally, business intelligence helps businesses respond to dynamic changes in the business environment (Yang et al., 2022; Salisu et al., 2021). It can be concluded that business intelligence is a vital tool for enhancing operational efficiency, decision-making, and financial performance, while also enabling businesses to remain competitive and adaptive in a dynamic environment.

The adoption of business intelligence is becoming increasingly important for small businesses in today's competitive landscape. SMEs adopting business intelligence can integrate their operations into platforms that offer comprehensive solutions for sales management, customer relationships, team scheduling, project management, and overall business outcomes (Edward et al., 2023; Rosa, 2018). This information provides insights that support strategic, tactical, and operational decision-making more effectively (Bhatiasevi & Naglis, 2020; Huang et al., 2022). However, while business intelligence adoption has been widely regarded as beneficial, challenges persist in ensuring its effective implementation within SMEs, particularly under resource constraints. Thus, addressing these challenges is essential to fully leverage the potential of business intelligence in enhancing SME performance.

Previous research has investigated the factors influencing the business intelligence implementation process in small businesses, such as company policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers have focused on the impacts of business intelligence implementation, including improvements in

operational efficiency, decision-making accuracy, and overall business performance (Ghasemaghaei & Calic, 2020; Wamba-Taguimdje, 2020). However, the impact of business intelligence on SME performance remains inconsistent, with studies showing contradictory findings. For instance, Bhatiasevi and Naglis (2020) found that business intelligence adoption among SMEs in Thailand did not significantly improve financial performance. Similarly, Ghasemaghaei and Calic (2020) observed that managing large volumes of business intelligence data does not necessarily lead to better financial outcomes. They argue that SMEs have limited ability to align business intelligence adoption with effective financial resource management. This inconsistency highlights a gap in understanding why business intelligence adoption does not significantly impact the financial performance of SMEs, warranting further investigation.

In the face of dynamic market conditions, effective financial management becomes essential for small businesses to navigate uncertainties and seize opportunities. This is where financial ambidexterity plays a crucial role, as it reflects to a company's ability to maintain financial strategy to market changes (Callegari, 2021; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility (O'Reilly & Tushman, 2008). Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). This concept is particularly important for SMEs to balance healthy financial stability with the flexibility needed to face market challenges and seize opportunities (Dolz, 2019; Husien et al., 2020). business intelligence plays a vital role in reinforcing financial ambidexterity, as the real-time information it generates enables management to make strategic decisions more quickly and accurately (Wamba-Taguimdje, 2020). For instance, Popovič et al. (2019) illustrates that faster and more accurate information allows companies to respond more effectively to changes in market conditions or business opportunities, enhancing the flexibility of resource allocation to the most strategic areas. In this study, financial ambidexterity acts as a mediator between business intelligence and financial performance, ensuring that generated information is utilized for strategic

decisions that balance the exploration of new opportunities and the management of financial risks (Bhatiasevi & Naglis, 2020; Boronat-Navarro et al., 2021; Hao et al., 2022).

In addition, every company will aggressively seek financial resources to navigate market uncertainty and drive substantial growth, using these resources to support strategic initiatives like business intelligence. In this study, a keys of financial resources are categorized into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to a SMEs ability to obtain necessary funds and financial services for operation (Cowling, 2018), enabling them to acquire capital for starting or expanding operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Financial availability encompasses the resources within the company, including capital and liquidity, that allow it to meet financial obligations (Owusu, 2019; Pártlová, 2018). Lastly, financial information quality pertains to the availability of accurate, reliable, and relevant financial data, which is essential for informed decision-making (Gonzales & Wareham, 2019). The three key elements of financial resources play a crucial role in the effective utilization of business intelligence in small businesses. Financial access enables businesses to secure the necessary funding to invest in business intelligence tools and technologies, enhancing their operational capabilities (Maharaj & Doorasamy, 2024; Pártlová, 2018)(Khan, 2020; Maldonado-Guzmán, 2022). Financial availability ensures that companies have the liquidity to maintain ongoing business intelligence initiatives and adapt to changing market conditions (Khan, 2020; Maldonado-Guzmán, 2022). Lastly, high-quality financial information is vital for driving informed decision-making, allowing businesses to leverage business intelligence effectively to analyse data, optimize processes, and ultimately improve their financial performance (Gonzales & Wareham, 2019). Therefore, these dimensions collectively determine the effectiveness of small businesses in implementing business intelligence strategies and reaping their associated benefits.

The study aims to examine how financial access, the availability of funds, and the quality of financial information affect the implementation of business intelligence in SMEs. Additionally, this research will explore how financial ambidexterity acts as a mediator linking business intelligence to the financial performance of SMEs in Indonesia. By understanding these dynamics, the study seeks to contribute to the broader discourse on effective financial management strategy within the SME sector. Based on this literature review, the following hypotheses can be formulated:

H1: Financial access has a significant impact on business intelligence in SMEs.

H2: Financial availability has a significant impact on business intelligence in SMEs.

H3: Financial information quality has a significant impact on business intelligence in SMEs.

H4: Business intelligence has a significant impact on financial performance in SMEs.

H5: Business intelligence has a significant impact on financial performance in SMEs.

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

H7: Financial ambidexterity mediates the relationship between business intelligence and financial performance in SMEs.

3. METHODOLOGY

1.1. Participant

This research involves a survey focused on SMEs owner-managers in Central Java, a province in Indonesia known for its rapid growth in small businesses. Data was collected through questionnaires completed by 290 owner-managers between August and November 2023, engaging a total of 233 SMEs and achieving a commendable response rate of 73.44%. We received invaluable assistance from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and supported communication with the SMEs. Notably, many of the studied SMEs are affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) holding a high school education, and approximately 20% holding a bachelor degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents represent various sectors, with the largest proportions from the service sector (35%) and food & beverage sector (35%). Examples of service SMEs include travel agencies, event management companies, and beauty salons. The food & beverage sector includes cafes, restaurants, and catering businesses. The manufacturing sector (14%) features furniture producers and local crafts businesses, while the retail sector (16%) consists of small clothing stores and grocery shops. These businesses often leverage social media, internet platforms, and IT solutions in their operations. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate at 25%. About 29.76% of respondents report a low level of technology adoption. Business age distribution is fairly even, with the 6-10 years' group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

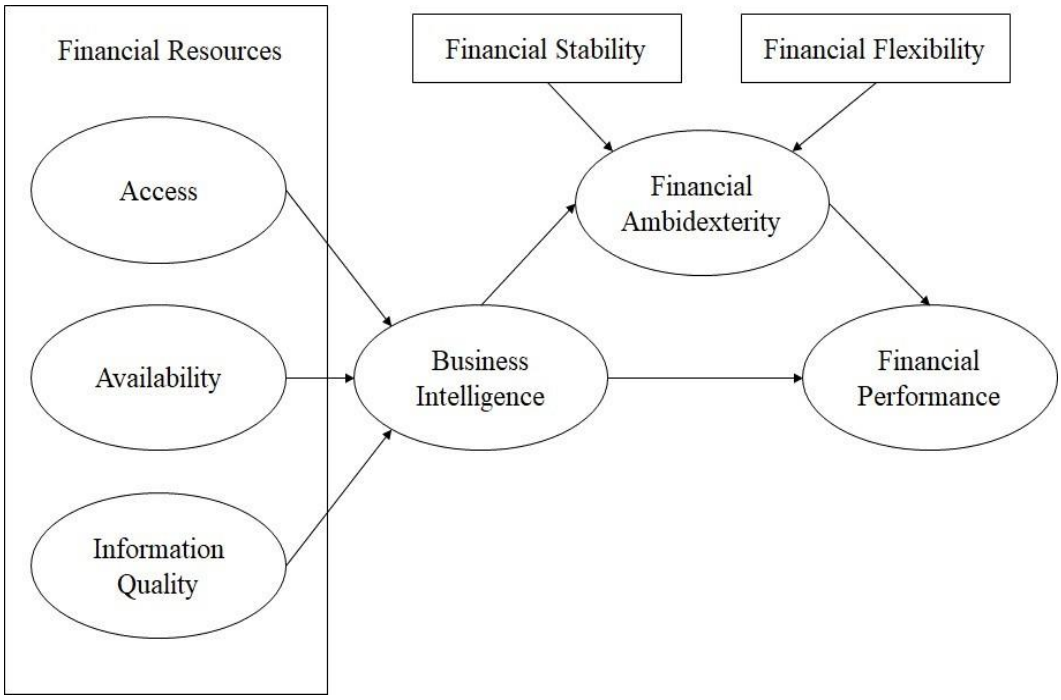

Figure 1. Conceptual Model

1.2. Measurement

The variables used in this research employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang (2022). The financial availability variable referred to research by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang (2022).

4. RESULTS

This research examines the connection between financial resources and business intelligence, as well as investigating the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the

empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with SRMR score 0.65, less than 0.06) (Hu & Bentler, 1998)and the NFI value 0.87, is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

4.3. Measurement Model Assessment

The assessment of measurement model conducted to test the constructs validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in the following table:

Table 1. Evaluation of Loading factor, Cronbach's Alpha, Composite Reliability, and Convergent Validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI) AVE = 0.812 CR = 0.911 CA = 0.822	BI1	0.740	2,79	0.071
	BI3	0.749	3,07	0.033
	BI4	0.788	3,02	0.046
	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037
Financial Performance (FP) AVE = 0.723 CR = 0.856 CA = 0.756	FP1	0.756	3,14	0.015
	FP2	0.754	3,12	0.024
	FP3	0.801	2,77	0.026
	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS) AVE = 0.821 CR = 0.923 CA = 0.762	FS1	0.811	3,26	0.033
	FS2	0.866	2,88	0.071
	FS3	0.838	3,21	0.078
	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF) AVE = 0.753 CR = 0.865 CA = 0.731	FF1	0.875	3,36	0.040
	FF2	0.788	3,34	0.010
	FF3	0.867	2,62	0.071
	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068

Variables	Constructs	Loading Factor	Mean	SD
Financial Availability (FA)	FA1	0.850	3,51	0.029
AVE = 0.675	FA2	0.827	2,63	0.073
CR = 0.776	FA3	0.752	3,51	1.017
CA = 0.812	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI)	FI1	0.703	3,07	0.062
AVE = 0.852	FI2	0.769	2,95	1.049
CR = 0.875	FI3	0.775	2,74	0.072
CA =0.812	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC)	FC1	0.856	3,21	0.038
AVE = 0.845	FC2	0.845	3,4	0.086
CR = 0.902	FC3	0.840	3,15	0.058
CA =0.864	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Notes: SD, AVE, CR, CA

Table 2. Discriminant Validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	**0.699**							
Financial Ambidexterity (FA)	0.618	**0.773**						
Financial Access (FAC)	0.089	0.345	**0.830**					
Financial Availability (FAV)	0.103	0.307	0.742	**0.823**				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	**0.848**			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	**0.775**		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	**0.742**	
Finacial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	**0.667**

Table 1 shows that based on the criteria set by Henseler et al. (2009) all variables in the research model have met the cut-off value for average variance extracted (AVE> 0.5), composite reliability (CR> 0.8) and Cronbach Alpha (CA> 0.7). Furthermore, table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfilment of discriminant validity. This research also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in the table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA and AVE values are greater than 0.8, 0.7 and 0.5, which provides assessment of reliability, convergent validity and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of Second-Order Constructs.

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

4.4. Structural Model Assessment

The structural model testing in this research (see table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this research examines the influence of the financial resources dimension on business intelligence. The research results showed that financial access (β=0.768, ρ=0.025), financial availability (β=0.243, ρ=0.000) and financial information quality (β=0.335, ρ=0.016) have a significant influence on business intelligence, which means that H1, H2, and H3 were supported. Furthermore, the test results show that business intelligence has a significant effect on financial ambidexterity (β=0.655, ρ=0.044) and financial performance (β=0.365, ρ=0.001). Therefore, H4 and H5 can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β=0.812, ρ=0.001), supporting for H6. According to specific indirect effect, financial ambidexterity has partially mediated the influence of business intelligence on financial performance (β=0.531, ρ=0.018). These results prove that H7 is accepted.

Table 4. Structural Model Assessment

Variables	Path Coefficient	*SD*	*t*-Statistics	ρ -Values	Hypothesis
Financial access→ Business intelligence	0.768	0.340	2.259	0.025	H1: Supported
Financial availability→ Business intelligence	0.243	0.056	4.339	0.000	H2: Supported
Financial information quality → Business intelligence	0.335	0.121	2.768	0.016	H3: Supported
Business intelligence → Financial ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
Business intelligence → Financial performance	0.365	0.111	3.288	0.001	H5: Supported
Financial ambidexterity → Financial performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
Business intelligence → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

5. DISCUSSION

The findings of this study illuminate the significant impact of business intelligence on financial performance, with financial ambidexterity serving as a mediating variable. A comprehensive analysis revealed that business intelligence exerts a substantial effect on financial performance (β = 0.655, *p*-values = 0.044). Furthermore, the indirect effect test confirmed that

financial ambidexterity plays a vital role in mediating the relationship between business intelligence financial performance (β = 0.531, *p*-values = 0.018). This study also delves into the relationship between financial resource dimensions and business intelligence, yielding important results. Specifically, the analysis indicates that financial availability (β = 0.243, *p*-values = 0.000), financial information (β = 0.335, *p*-values = 0.016), and financial access (β = 0.768, *p*-values = 0.025) all positively influence business intelligence.

First, the results affirm that business intelligence implementation has a statistically significant impact on financial performance. In SMEs, business intelligence provides managers with actionable insights to optimize financial outcomes. By leveraging information on customers, market trends, internal operations, and integrated dashboards, SMEs can develop more effective strategies. These findings align with prior studies (Chen, 2021; Huang et al., 2022), which underscore the critical role of business intelligence in enhancing financial performance. business intelligence equips managers with real-time and accurate data that serve as a basis for informed decision-making.

The result reveals that business intelligence is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision making. Additionally, a test of the mediating effect showed that the business intelligence-financial performance connection is mediated by financial ambidexterity. This means that the effectiveness of business intelligence in enhancing financial performance depends significantly on how well managers in small businesses can balance financial stability and flexibility. The results align with past studies (Boronat-Navarro et al., 2021; Husien et al., 2020) that state the use of business intelligence in small businesses have to be accompanied by managerial skills in managing finances, as a form of financial ambidexterity. Financial ambidexterity encompasses both maintaining a solid financial foundation and being agile enough to respond to new opportunities and challenges.

Moreover, the mediating effect of financial ambidexterity illustrates that the effectiveness of business intelligence depends on managers' ability to balance financial stability and flexibility. This aligns with previous research (Boronat-Navarro et al., 2021; Husien et al., 2020), which emphasizes the need for managerial skills to effectively manage finances in SMEs. Financial ambidexterity involves maintaining a solid financial foundation while remaining agile to seize new opportunities and address challenges. This balance enables SMEs to maximize the benefits of business intelligence in dynamic market environments.

The study also highlights the critical influence of key elements of financial resource on business intelligence implementation. First, financial access plays a significant role, as greater

access to external funding enables SMEs to invest in and enhance their business intelligence systems. This is consistent with prior research (Bokpin, 2018; Chu, 2021; Fatoki, 2021), which indicates that financial access facilitates loans with favorable terms, simplifying the process for SMEs to expand their business intelligence infrastructure. Second, financial availability is essential for business intelligence development. While many cost-effective business intelligence options exist, adequate financial resources improve implementation efficacy. Previous studies (Becerra-Godínez, 2020; Owusu, 2019) have shown that investments in technology infrastructure and software are often prerequisites for successful business intelligence adoption, emphasizing the importance of sufficient funding in supporting these initiatives. Lastly, financial information quality is critical to successful business intelligence implementation. Accurate and reliable financial data ensure that business intelligence systems provide meaningful insights into a company's financial condition. This finding aligns with previous research (Gonzales & Wareham, 2019)which highlights the importance of accurate, timely information in supporting rapid responses to market changes or operational needs. High-quality financial information enables SMEs to enhance the efficiency and effectiveness of their business intelligence systems.

CONCLUSION

This study aimed to examine the impact of business intelligence on financial performance in SMEs, with financial ambidexterity as a mediating variable. The findings confirm that business intelligence significantly enhances financial performance by equipping managers with actionable insights to optimize operations, adapt to market demands, and develop effective strategies. By utilizing business intelligence, SMEs can make informed decisions based on accurate and timely data, leading to improved financial outcomes. The study also emphasizes the importance of financial ambidexterity in mediating the relationship between business intelligence and financial performance. This suggests that the effectiveness of business intelligence depends on the ability of SME managers to balance financial stability with flexibility. Financial ambidexterity allows SMEs to navigate uncertainties and seize opportunities, enhancing their adaptability in dynamic market environments. In addition, this research highlights the critical role of financial resources in supporting the implementation of business intelligence. Adequate access to funding and the availability of financial resources enable SMEs to invest in business intelligence systems, while high-quality financial information ensures that these systems provide meaningful insights to guide strategic decisions. These elements collectively contribute to the effective adoption of business intelligence.

This study contributes to the theoretical discourse by linking business intelligence, financial ambidexterity, and financial resource dimensions, offering insights into how these elements interact to improve financial performance in SMEs. From a practical perspective, the findings underline the importance of developing managerial skills in financial management, optimizing financial resources, and prioritizing investments in business intelligence. Policymakers and advisors should support initiatives that improve access to funding, promote financial literacy, and encourage the adoption of business intelligence technologies. This research has several limitations that provide avenues for future studies. The diverse industries represented in this study may lead to variations in the needs and applications of business intelligence. Future research should focus on a single industry to gain more specific insights. Furthermore, the use of a cross-sectional approach limits the ability to establish causal relationships. A longitudinal design is recommended to better understand the temporal interactions among the variables.

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Writing – review and editing: Slamet Ahmadi, Irfan Helmy

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19th of March, 2025

Susanti Widhiastuti
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ACCEPTANCE LETTER

Dear Susanti Widhiastuti,

We are pleased to inform you that your manuscript "EXPLORING THE LINK BETWEEN BUSINESS INTELLIGENCE AND FINANCIAL PERFORMANCE IN SMES", co-authored with Slamet Ahmadi, Irfan Helmy, has been double blind peer-reviewed and accepted for publication in the international journal "Investment Management and Financial Innovations", which is scheduled to be published in Volume 22 Issue 2, 2025.

With cordial regards,
Valeria Matiukhina

Managing Editor
International research journal
"Investment Management and Financial Innovations"

E-mail: v.matiukhina@businessperspectives.org

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Manuscript Administration System <noreply@manuscript-adminsystem.com> 24 Maret 2025 pukul 13.27
Kepada: susantiwidhiastuti86@gmail.com

Dear Susanti Widhiastuti,

The manuscript UNDERSTANDING BUSINESS INTELLIGENCE IN INDONESIAN SMES CONTEXT: EXPLORING THE ANTECEDENTS AND CONSEQUENCES submitted to Investment Management and Financial Innovations is agreed for publication on 24.03.2025

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Subject: Correction Request for Proofreading

Dear Prof. Valeria Matiukhina,
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Thank you for your confirmation regarding the publication of our manuscript. After reviewing the proofreading file, we noticed two errors that need to be corrected before the final publication:

1) The correct title of the accepted manuscript is:
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2) There is a mistake in the co-author's name order. The data you provided has the **first name and last name reversed**. The correct information **should be:**
First Name: Slamet
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We kindly ask you to correct this information in the final version of the publication.Thank you very much for your attention and assistance. We look forward to the publication of our manuscript.

Best regards,
Associate Prof. Dr. Susanti Widhiastuti
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Dear authors,

Your article “Exploring the link between business intelligence and financial performance in SMES” has been published on the 8th of April, 2025. (in Issue 2, 2025 of IMFI journal)

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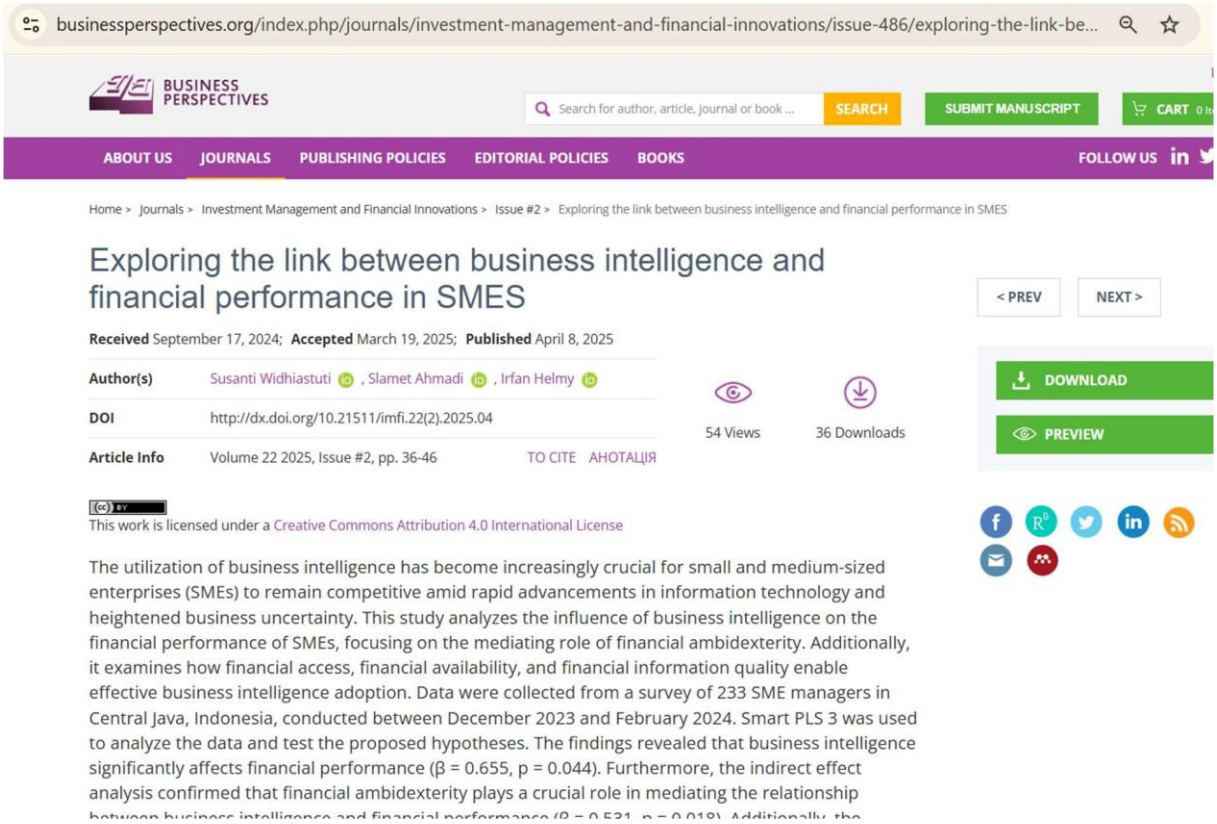

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EXPLORING THE LINK BETWEEN BUSINESS INTELLIGENCE AND FINANCIAL PERFORMANCE IN SMEs

Abstract

The utilization of business intelligence has become increasingly crucial for small and medium-sized enterprises (SMEs) to remain competitive amid rapid advancements in information technology and heightened business uncertainty. This study analyzes the influence of business intelligence on the financial performance of SMEs, focusing on the mediating role of financial ambidexterity. Additionally, it examines how financial access, financial availability, and financial information quality enable effective business intelligence adoption. Data were collected from a survey of 233 SME managers in Central Java, Indonesia, conducted between December 2023 and February 2024. Smart PLS 3 was used to analyze the data and test the proposed hypotheses. The findings revealed that business intelligence significantly affects financial performance (β = 0.655, p = 0.044). Furthermore, the indirect effect analysis confirmed that financial ambidexterity plays a crucial role in mediating the relationship between business intelligence and financial performance (β = 0.531, p = 0.018). Additionally, the results confirmed that financial resources positively influence business intelligence implementation, with financial availability (β = 0.243, p = 0.000), financial information quality (β = 0.335, p = 0.016), and financial access (β = 0.768, p = 0.025) all showing significant effects. This study highlights the critical role of business intelligence and financial ambidexterity in enhancing financial performance and underscores the importance of financial resources for successful business intelligence implementation in SMEs.

Keywords financial resources, business intelligence, financial ambidexterity, financial performance

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INTRODUCTION

Digitalization is essential for SMEs to enhance efficiency, expand markets, and strengthen customer interactions. Among the tools enabling this transformation, business intelligence has emerged as a key solution for data analysis and decision-making. Once limited to large corporations due to its complexity and cost (Wei & Pardo, 2022), recent advancements have made it accessible and user-friendly for small businesses, addressing resource constraints (Popovič et al., 2019). Reports highlight the increasing adoption of business intelligence by SMEs as it becomes more affordable. For example, Ragazou et al. (2023) emphasize the growing trend of SMEs utilizing business intelligence to enhance decision-making and efficiency. In industries such as retail and hospitality, SMEs leverage business intelligence to understand customer behavior, optimize inventory, enhance operational efficiency, streamline decision-making, and ultimately improve financial performance (Ali et al., 2017; Stjepi, 2021).

Despite its potential benefits, the adoption of business intelligence by SMEs faces significant challenges, particularly in resource-constrained environments. Several studies have explored how SMEs im-

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plement business to achieve financial improvements, yet findings remain inconsistent. For example, while some research indicates that business enhances financial performance (Popovič et al., 2019), other studies highlight limited or uncertain impacts, especially in SMEs with insufficient financial management capabilities (Bhatiasevi & Naglis, 2018; Ghasemaghaei & Calic, 2020). These findings suggest that factors like the ability to balance financial resources effectively play a critical role in determining the success of business implementation.

This study examines financial ambidexterity as a mediating factor between business intelligence adoption and SME financial performance. Based on the resource-based view (RBV) and dynamic capability theory, financial ambidexterity reflects an organization's ability to balance financial stability – managing liquidity and reserves – with the flexibility to adapt to changes and seize opportunities (Baños-Caballero et al., 2016; Morgan & Pontines, 2017). RBV highlights financial resources as critical competitive advantages (Paradza & Daramola, 2021), while dynamic capability theory explains how SMEs reconfigure resources to thrive in dynamic environments (Khurana et al., 2022). This capability helps SMEs balance short-term stability with long-term adaptability, enabling effective business intelligence utilization for financial improvements.

Additionally, this study examines how key aspects of financial resources – availability, access, and information quality – influence business intelligence implementation in SMEs. The financial availability, financial access, and quality of financial information play a pivotal role in enabling effective business intelligence utilization (Baños-Caballero et al., 2016). However, there are challenges such as limited capital and the inability of SME managers to optimize financial information for strategic decisions (Lateef & Keikhosrokiani, 2023). Given these challenges, exploring how financial resources influence business intelligence implementation is essential to identify actionable strategies for SMEs to overcome resource limitations and unlock the full potential of business intelligence for performance improvement.

1. LITERATURE REVIEW AND HYPOTHESES

Business intelligence is a technological system designed to collect, process, and analyze large datasets into actionable information to support business decision-making. Research indicates that the use of business intelligence enhances operational efficiency, decision-making strategies, and market competitiveness (Chen & Lin, 2021; Salisu et al., 2021). Liu et al. (2022) highlight that effective business intelligence implementation improves financial performance by enabling more accurate and faster data-driven decision-making. Additionally, business intelligence helps businesses respond to dynamic changes in the business environment (Salisu et al., 2021). It can be concluded that business intelligence is a vital tool for enhancing operational efficiency, decision-making, and financial performance, while also enabling businesses to remain competitive and adaptive in a dynamic environment.

The adoption of business intelligence is becoming increasingly important for small businesses in today's competitive landscape. SMEs adopting business intelligence can integrate their operations into platforms that offer comprehensive solutions for sales management, customer relationships, team scheduling, project management, and overall business outcomes (Edward et al., 2023; Rosa, 2018). This information provides insights that support strategic, tactical, and operational decision-making more effectively (Bhatiasevi & Naglis, 2020; Huang et al., 2022). However, while business intelligence adoption has been widely regarded as beneficial, challenges persist in ensuring its effective implementation within SMEs, particularly under resource constraints. Thus, addressing these challenges is essential to fully leverage the potential of business intelligence in enhancing SME performance.

Previous research has investigated the factors influencing the business intelligence implementation process in small businesses, such as company policies, organizational culture, management support, and engagement (Memon et al., 2020). Furthermore, some researchers have focused on

the impacts of business intelligence implementation, including improvements in operational efficiency, decision-making accuracy, and overall business performance (Ghasemaghaei & Calic, 2020; Wamba-Taguimdje, 2020). However, the impact of business intelligence on SME performance remains inconsistent, with studies showing contradictory findings. For instance, Bhatiasevi and Naglis (2020) found that business intelligence adoption among SMEs in Thailand did not significantly improve financial performance. Similarly, Ghasemaghaei and Calic (2020) observed that managing large volumes of business intelligence data does not necessarily lead to better financial outcomes. They argue that SMEs have limited ability to align business intelligence adoption with effective financial resource management. This inconsistency highlights a gap in understanding why business intelligence adoption does not significantly impact the financial performance of SMEs, warranting further investigation.

In the face of dynamic market conditions, effective financial management becomes essential for small businesses to navigate uncertainties and seize opportunities. This is where financial ambidexterity plays a crucial role, as it reflects a company's ability to maintain financial strategy to market changes (Callegari, 2021; Malki, 2022). Based on dynamic capability theory, financial ambidexterity in this study is conceptualized as an organization's ability to simultaneously manage two different financial dimensions: financial stability and financial flexibility (O'Reilly & Tushman, 2008). Financial stability refers to an organization's ability to maintain a healthy financial balance and avoid risks that could threaten operational continuity (Nguyen, 2021; Valaskova, 2021). This includes maintaining sufficient liquidity, managing debt wisely, and having adequate financial reserves to deal with unexpected situations. On the other hand, financial flexibility includes an organization's ability to adapt to market changes, business opportunities, or economic challenges (Baños-Caballero et al., 2016). This includes the ability to quickly allocate resources to the most strategic areas or take necessary actions to respond to changing situations (Jameson, 2021; Salehi, 2016). This concept is particularly important for SMEs to balance healthy financial stability with the flexibility needed to face market challenges and seize opportunities (Dolz, 2019; Husien et al., 2020). Business intelligence plays a vital role in reinforcing financial ambidexterity, as the real-time information it generates enables management to make strategic decisions more quickly and accurately (Wamba-Taguimdje, 2020). For instance, Popovič et al. (2019) illustrate that faster and more accurate information allows companies to respond more effectively to changes in market conditions or business opportunities, enhancing the flexibility of resource allocation to the most strategic areas. In this study, financial ambidexterity acts as a mediator between business intelligence and financial performance, ensuring that generated information is utilized for strategic decisions that balance the exploration of new opportunities and the management of financial risks (Bhatiasevi & Naglis, 2020; Boronat-Navarro et al., 2021; Hao et al., 2022).

In addition, every company will aggressively seek financial resources to navigate market uncertainty and drive substantial growth, using these resources to support strategic initiatives like business intelligence. In this study, the keys of financial resources are categorized into financial access, financial availability, and financial information quality (Ismail, 2022; Ruggiero, 2018). Financial access refers to an SME's ability to obtain necessary funds and financial services for operation (Cowling, 2018), enabling them to acquire capital for starting or expanding operations (Maharaj & Doorasamy, 2024; Regasa, 2021). Financial availability encompasses the resources within the company, including capital and liquidity, that allow it to meet financial obligations (Owusu, 2019; Pártlová, 2018). Lastly, financial information quality pertains to the availability of accurate, reliable, and relevant financial data, which is essential for informed decision-making (Gonzales & Wareham, 2019). The three key elements of financial resources play a crucial role in the effective utilization of business intelligence in small businesses. Financial access enables businesses to secure the necessary funding to invest in business intelligence tools and technologies, enhancing their operational capabilities (Maharaj & Doorasamy, 2024; Pártlová, 2018; Khan, 2020; Maldonado-

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Guzmán, 2022). Financial availability ensures that companies have the liquidity to maintain ongoing business intelligence initiatives and adapt to changing market conditions (Khan, 2020; Maldonado-Guzmán, 2022). Lastly, high-quality financial information is vital for driving informed decision-making, allowing businesses to leverage business intelligence effectively to analyze data, optimize processes, and ultimately improve their financial performance (Gonzales & Wareham, 2019). Therefore, these dimensions collectively determine the effectiveness of small businesses in implementing business intelligence strategies and reaping their associated benefits.

The study aims to examine how financial access, the availability of funds, and the quality of financial information affect the implementation of business intelligence in SMEs. Additionally, this study will explore how financial ambidexterity acts as a mediator linking business intelligence to the financial performance of SMEs in Indonesia. By understanding these dynamics, the study seeks to contribute to the broader discourse on effective financial management strategy within the SME sector. Based on this literature review, the following hypotheses can be formulated:

H1: Financial access has a significant impact on business intelligence in SMEs.

H2: Financial availability has a significant impact on business intelligence in SMEs.

H3: Financial information quality has a significant impact on business intelligence in SMEs.

H4: Business intelligence has a significant impact on financial performance in SMEs.

H5: Business intelligence has a significant impact on financial performance in SMEs.

H6: Financial ambidexterity has a significant impact on firm performance in SMEs.

H7: Financial ambidexterity mediates the relationship between business intelligence and financial performance in SMEs.

2. METHODOLOGY

2.1 Participants

This study involves a survey focused on SME owner-managers in Central Java, a province in Indonesia known for its rapid growth in small businesses. Data were collected through questionnaires completed by 290 owner-managers between August and November 2023, engaging a total of 233 SMEs and achieving a commendable response rate of 73.44%. Invaluable assistance was received from the consulting team at CIS Central Java and the Ministry of Cooperatives and SMEs of Indonesia, who facilitated licensing, provided crucial data, and supported communication with the SMEs. Notably, many of the studied SMEs are affiliated with CIS Central Java.

According to the characteristics of the respondents, 71.35% are male, while 28.65% are female. The largest segment of respondents (33.18%) aged under 25 years, followed by the 25-35 years age group (30.23%). The majority of respondents (35%) hold a high school education, and approximately 20% hold a bachelor's degree. The majority of respondents (40%) represent micro-businesses (1-10 employees), with small businesses (11-50 employees) following closely at 35%. Respondents represent various sectors, with the largest proportions from the service sector (35%) and food & beverage sector (35%). Examples of service SMEs include travel agencies, event management companies, and beauty salons. The food & beverage sector includes cafes, restaurants, and catering businesses. The manufacturing sector (14%) features furniture producers and local crafts businesses, while the retail sector (16%) consists of small clothing stores and grocery shops. These businesses often leverage social media, internet platforms, and IT solutions in their operations. In terms of technology adoption, the majority of respondents (45.24%) report a moderate level, followed by a high adoption rate of 25%. About 29.76% of respondents report a low level of technology adoption. The business age distribution is fairly even, with the 6-10 years group having the highest representation (30%), followed by the 1-5 years and 16 years and above groups, each at 25%.

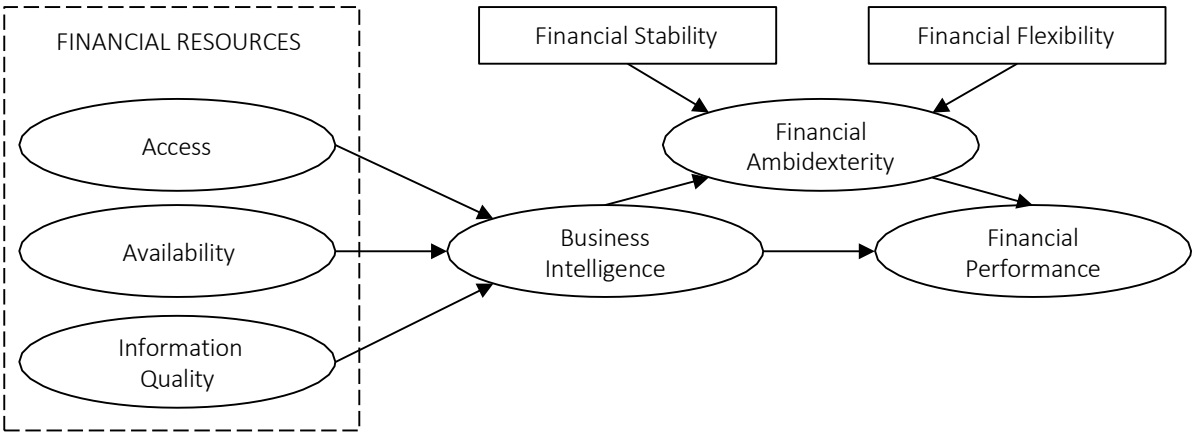

Figure 1. Conceptual model

2.2. Measurement

The variables used in this study employ a self-reported questionnaire with a 5-Likert scale of "strongly agree" to "strongly disagree". The measurement of the business intelligence variable in this research uses the 15-item indicator used by Huang et al. (2022). The financial availability variable referred to the study by Memon et al. (2020) uses 6-item indicators. Financial access and information quality are measured respectively with 5-item indicators modified from research (Ivanich & Kotey, 2006). Next, the measurement of the financial ambidexterity variable was modified from research (Mom et al., 2018) to become a 5-item indicator of financial stability and a 5-item indicator of financial flexibility. The financial performance variable refers to financial performance in this research using the 10-item indicator developed by Huang et al. (2022).

3. RESULTS

This study examines the connection between financial resources and business intelligence, and investigates the mediating effect of financial adaptability in the business intelligence and financial performance relationship. The initial phase involves scrutinizing the measurement model to assess the validity and reliability of constructs, while the subsequent phase entails assessing the structural model to test the relationship between independent and dependent variables within the empirical model. This study employs Smart PLS version 3 to test the hypothesis of the research. This study provides the model fit assessment with an SRMR score of 0.65, less than 0.06 (Hu & Bentler, 1998), and an NFI value of 0.87 is above 0.09 (Bentler & Bonett, 1980). Thus, it can be claimed for a significant model fit.

3.1. Measurement model assessment

The assessment of the measurement model was conducted to test the constructs' validity and reliability (Hair et al., 2017). The indicator construct is valid if the outer loading value of the construct indicator is above 0.7 The results of the analysis show that several business intelligence and financial performance variable items were removed from the research model (BI2, BI7, BI8, BI11, BI14, FP5, and FP7) because the loading factor value was <0.7. Based on testing, the validity and reliability of the variables can be seen in Table 1.

Table 1. Evaluation of loading factor, Cronbach's alpha, composite reliability, and convergent validity

Variables	Constructs	Loading Factor	Mean	SD
Business Intelligence (BI) AVE = 0.812 CR = 0.911 CA = 0.822	BI1	0.740	2,79	0.071
	BI3	0.749	3,07	0.033
	BI4	0.788	3,02	0.046
	BI5	0.712	2,74	0.084
	BI6	0.737	3,41	1.083
	BI9	0.796	2,63	0.055
	BI10	0.701	3,37	0.013
	BI12	0.701	2,62	0.046
	BI13	0.741	3,55	0.017
	B115	0.787	2,66	0.037

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Table 1 (cont.). Evaluation of loading factor, Cronbach's alpha, composite reliability, and convergent validity

Variables	Constructs	Loading Factor	Mean	SD
Financial Performance (FP) AVE = 0.723 CR = 0.856 CA = 0.756	FP1	0.756	3,14	0.015
	FP2	0.754	3,12	0.024
	FP3	0.801	2,77	0.026
	FP4	0.784	3,43	0.035
	FP6	0.759	3,13	0.060
	FP8	0.837	3,2	0.040
	FP9	0.816	3,05	0.040
	FP10	0.766	2,81	0.034
Financial Stability (FS) AVE = 0.821 CR = 0.923 CA = 0.762	FS1	0.811	3,26	0.033
	FS2	0.866	2,88	0.071
	FS3	0.838	3,21	0.078
	FS4	0.731	3,46	0.077
	FS5	0.721	3,3	0.067
Financial Flexibility (FF) AVE = 0.753 CR = 0.865 CA = 0.731	FF1	0.875	3,36	0.040
	FF2	0.788	3,34	0.010
	FF3	0.867	2,62	0.071
	FF4	0.826	2,96	0.019
	FF5	0.882	2,87	1.068
Financial Availability (FA) AVE = 0.675 CR = 0.776 CA = 0.812	FA1	0.850	3,51	0.029
	FA2	0.827	2,63	0.073
	FA3	0.752	3,51	1.017
	FA4	0.835	2,91	0.050
	FA5	0.942	2,64	0.009
	FA6	0.755	2,81	0.048
Financial Information Quality (FI) AVE = 0.852 CR = 0.875 CA =0.812	FI1	0.703	3,07	0.062
	FI2	0.769	2,95	1.049
	FI3	0.775	2,74	0.072
	FI4	0.877	3,42	0.058
	FI5	0.708	2,73	0.064
Financial Access (FC) AVE = 0.845 CR = 0.902 CA =0.864	FC1	0.856	3,21	0.038
	FC2	0.845	3,4	0.086
	FC3	0.840	3,15	0.058
	FC4	0.900	2,66	0.021
	FC5	0.754	3,07	1.050

Table 1 shows that based on the criteria set by Henseler et al. (2009), all variables in the research model have met the cut-off value for average variance extracted (AVE > 0.5), composite reliability (CR > 0.8), and Cronbach Alpha (CA > 0.7). Furthermore, Table 2 indicates that the square root of the AVE was greater than the construct inter-correlation with other constructs, which ensures the fulfillment of discriminant validity. This study also conducted validity and reliability tests for second-order constructs. A repeated indicator approach is used to estimate models with higher-order constructs (financial ambidexterity). The result in Table 3 showed that the loading factor value, which indicates the strength of the relationship between the first and higher-order construct, exceeds the minimum limit, namely 0.7. On the other hand, the CR, CA, and AVE values are greater than 0.8, 0.7, and 0.5, which provides an assessment of reliability, convergent validity, and discriminant validity. Thus, the 5-item financial stability indicator and the 5-item financial flexibility indicator, as a whole, can be used to measure the financial ambidexterity variable.

Table 3. Assessment of second-order constructs

Construct	Dimensions	Outer loading	CA	CR	AVE
Financial Ambidexterity	Financial Stability	0.861	0.882	0.878	0.782
	Financial Flexibility	0.903			

3.2. Structural model assessment

The structural model testing in this research (see Table 4) aims to explain the direct and indirect influences between exogenous and endogenous variables. First, this study examines the influence of the financial resources dimension on business intelligence. The research results showed that financial access (β = 0.768, ρ = 0.025), financial availability (β = 0.243, ρ = 0.000), and financial information quality (β = 0.335, ρ = 0.016) have a significant influence on business intelligence,

Table 2. Discriminant validity

Variables	BI	FA	FAC	FAV	FF	FP	FS	IQ
Business Intelligence (BI)	0.699							
Financial Ambidexterity (FA)	0.618	0.773						
Financial Access (FAC)	0.089	0.345	0.830					
Financial Availability (FAV)	0.103	0.307	0.742	0.823				
Financial Flexibility (FF)	0.004	0.483	0.631	0.717	0.848			
Financial Performance (FP)	0.503	0.708	0.108	0.148	0.035	0.775		
Financial Stability (FS)	0.489	0.451	0.097	0.095	0.193	0.602	0.742	
Financial Information Quality (IQ)	0.148	0.077	0.376	0.358	0.356	0.221	0.222	0.667

Table 4. Structural model assessment

Variables	Path Coefficient	SD	*t*-Statistics	ρ -Values	Hypothesis
Financial access → Business intelligence	0.768	0.340	2.259	0.025	H1: Supported
Financial availability→ Business intelligence	0.243	0.056	4.339	0.000	H2: Supported
Financial information quality → Business intelligence	0.335	0.121	2.768	0.016	H3: Supported
Business intelligence → Financial ambidexterity	0.655	0.323	2.028	0.044	H4: Supported
Business intelligence → Financial performance	0.365	0.111	3.288	0.001	H5: Supported
Financial ambidexterity → Financial performance	0.812	0.239	3.397	0.001	H6: Supported
Specific Indirect Effect					
Business intelligence → Financial Ambidexterity→ Financial Performance	0.531	0.223	2.381	0.018	H7: Supported

which means that *H1*, *H2*, and *H3* were supported. Furthermore, the test results show that business intelligence has a significant effect on financial ambidexterity (β = 0.655, ρ = 0.044) and financial performance (β = 0.365, ρ = 0.001). Therefore, *H4* and *H5* can be accepted. Financial ambidexterity also displays a significant influence on financial performance (β = 0.812, ρ = 0.001), supporting *H6*. According to the specific indirect effect, financial ambidexterity has partially mediated the influence of business intelligence on financial performance (β = 0.531, ρ = 0.018). These results prove that *H7* is accepted.

4. DISCUSSION

The findings of this study illuminate the significant impact of business intelligence on financial performance, with financial ambidexterity serving as a mediating variable. A comprehensive analysis revealed that business intelligence exerts a substantial effect on financial performance (β = 0.655, *p*-values = 0.044). Furthermore, the indirect effect test confirmed that financial ambidexterity plays a vital role in mediating the relationship between business intelligence and financial performance (β = 0.531, *p*-values = 0.018). This study also delves into the relationship between financial resource dimensions and business intelligence, yielding important results. Specifically, the analysis indicates that financial availability (β = 0.243, *p*-values = 0.000), financial information (β = 0.335, *p*-values = 0.016), and financial access (β = 0.768, *p*-values = 0.025) all positively influence business intelligence.

First, the results affirm that business intelligence implementation has a statistically significant impact on financial performance. In SMEs, business intelligence provides managers with actionable insights to optimize financial outcomes. By leveraging information on customers, market trends, internal operations, and integrated dashboards, SMEs can develop more effective strategies. These findings align with prior studies (Chen, 2021; Huang et al., 2022) that underscore the critical role of business intelligence in enhancing financial performance. business intelligence equips managers with real-time and accurate data that serve as a basis for informed decision-making.

The result reveals that business intelligence is very useful for managers in SMEs to get actual and updated information, which will be used as a basis for decision-making. Additionally, a test of the mediating effect showed that the business intelligence-financial performance connection is mediated by financial ambidexterity. This means that the effectiveness of business intelligence in enhancing financial performance depends significantly on how well managers in small businesses can balance financial stability and flexibility. The results align with past studies (Boronat-Navarro et al., 2021; Husien et al., 2020) that state the use of business intelligence in small businesses has to be accompanied by managerial skills in managing finances, as a form of financial ambidexterity. Financial ambidexterity encompasses both maintaining a solid financial foundation and being agile enough to respond to new opportunities and challenges.

Moreover, the mediating effect of financial ambidexterity illustrates that the effectiveness of business intelligence depends on managers' ability to balance financial stability and flexibility. This aligns with previous research (Boronat-Navarro et

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al., 2021; Husien et al., 2020), which emphasizes the need for managerial skills to effectively manage finances in SMEs. Financial ambidexterity involves maintaining a solid financial foundation while remaining agile to seize new opportunities and address challenges. This balance enables SMEs to maximize the benefits of business intelligence in dynamic market environments.

The study also highlights the critical influence of key elements of financial resources on business intelligence implementation. First, financial access plays a significant role, as greater access to external funding enables SMEs to invest in and enhance their business intelligence systems. This is consistent with prior research (Bokpin, 2018; Chu, 2021; Fatoki, 2021), which indicates that financial access facilitates loans with favorable terms, simplifying the process for SMEs to expand their business intelligence infrastructure. Second, financial availability is essential for business intelligence development. While many cost-effective business intelligence options exist, adequate financial resources improve implementation efficacy. Previous studies (Becerra-Godínez, 2020; Owusu, 2019) have shown that investments in technology infrastructure and software are often prerequisites for successful business intelligence adoption, emphasizing the importance of sufficient funding in supporting these initiatives. Lastly, financial information quality is critical to successful business intelligence implementation. Accurate and reliable financial data ensure that business intelligence systems provide meaningful insights into a company's financial condition. This finding aligns with previous research (Gonzales & Wareham, 2019) highlighting the importance of accurate, timely information in supporting rapid responses to market changes or operational needs. High-quality financial information enables SMEs to enhance the efficiency and effectiveness of their business intelligence systems.

5. CONCLUSION

This study aimed to examine the impact of business intelligence on financial performance in SMEs, with financial ambidexterity as a mediating variable. The findings confirm that business intelligence significantly enhances financial performance by equipping managers with actionable insights to optimize operations, adapt to market demands, and develop effective strategies. By utilizing business intelligence, SMEs can make informed decisions based on accurate and timely data, leading to improved financial outcomes. The study also emphasizes the importance of financial ambidexterity in mediating the relationship between business intelligence and financial performance. This suggests that the effectiveness of business intelligence depends on the ability of SME managers to balance financial stability with flexibility. Financial ambidexterity allows SMEs to navigate uncertainties and seize opportunities, enhancing their adaptability in dynamic market environments. In addition, this study highlights the critical role of financial resources in supporting the implementation of business intelligence. Adequate access to funding and the availability of financial resources enables SMEs to invest in business intelligence systems, while high-quality financial information ensures that these systems provide meaningful insights to guide strategic decisions. These elements collectively contribute to the effective adoption of business intelligence.

This study contributes to the theoretical discourse by linking business intelligence, financial ambidexterity, and financial resource dimensions, offering insights into how these elements interact to improve financial performance in SMEs. From a practical perspective, the findings underline the importance of developing managerial skills in financial management, optimizing financial resources, and prioritizing investments in business intelligence. Policymakers and advisors should support initiatives that improve access to funding, promote financial literacy, and encourage the adoption of business intelligence technologies. This study has several limitations that provide avenues for future research. The diverse industries represented in this study may lead to variations in the needs and applications of business intelligence. Future research should focus on a single industry to gain more specific insights. Furthermore, the use of a cross-sectional approach limits the ability to establish causal relationships. A longitudinal design is recommended to better understand the temporal interactions among the variables.

AUTHOR CONTRIBUTIONS

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Formal Analysis: Irfan Helmy.
Funding Acquisition: Susanti Widhiastuti, Slamet Ahmadi.
Investigation: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.
Methodology: Susanti Widhiastuti, Slamet Ahmadi.
Project administration: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.
Supervision: Susanti Widhiastuti, Slamet Ahmadi.
Validation: Susanti Widhiastuti, Slamet Ahmadi, Irfan Helmy.
Software: Irfan Helmy.
Visualisation: Susanti Widhiastuti, Slamet Ahmadi.
Writing – original draft: Susanti Widhiastuti.
Writing – review and editing: Slamet Ahmadi, Irfan Helmy.

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