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The Role of Business Analysis Capability in Enhancing Organizational Agility and Performance: The Mediating Effect of Information Quality and Innovation Capability in the Manufacturing Industry in Batam City

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Abstract: This study aims to analyze the role of business analysis capability in improving organizational agility and performance in manufacturing industry in Batam City, by considering information quality and innovation capability as mediating variables. Using descriptive quantitative approach, data were obtained from 274 respondents through questionnaires and analyzed using Smart PLS. The results showed that business analysis capability has a significant influence on information quality and innovation capability, which in turn improve organizational agility. Organizational agility is shown to contribute positively to organizational performance, especially in responding to market changes quickly and efficiently. This research confirms the importance of developing business analysis capabilities integrated with information technology and strategic innovation to support the competitiveness of the manufacturing industry in the midst of global market dynamics.

Keyword: Business Analysis Capability, Organizational Agility, Organizational Performance, Information Quality, Innovation Capability

INTRODUCTION

In the era of advanced globalization, the manufacturing industry faces increasingly complex competitive dynamics. Transformations triggered by the technological revolution, digitalization, and changing global market needs have forced companies to continuously adapt to remain relevant and competitive (Kumar et al., 2024). Beyond the requirement to meet market demands with high efficiency, manufacturing companies must also respond to unforeseen changes such as demand fluctuations, emerging technologies, and changes in government policies and regulations (Abdallah et al., 2021). To accelerate economic growth, Indonesia has adopted an Industry 4.0 strategy, which includes the establishment of the Indonesia Digital Industry Center 4.0 (Wolok et al., 2023). This initiative is part of the effort to enhance the manufacturing sector's contribution to the national economy, which also serves as the backbone of the ASEAN economy, contributing 20.27% to the regional GDP (Wolok et

al. (2023); Saputra et al. (2023)). As the largest economy in Southeast Asia, Indonesia faces the challenge of ensuring its manufacturing sector remains competitive on the global stage, including in Batam City.

According to BP Batam (2024), Batam City plays a strategic role in supporting the growth of Indonesia's national manufacturing sector. As a leading industrial area, Batam has experienced rapid development since the 1990s, with the number of industrial zones increasing from 9 in 1997 to 31 in 2024. Positioned as one of Indonesia's premier industrial hubs, Batam has become a key player in driving the growth of the national manufacturing sector. Thanks to its strategic location along international borders, Batam has become home to various export-oriented manufacturing companies, establishing itself as one of the main pillars driving the national economy (Mandagie et al., 2024). According to Haryo Limanseto (2023), a spokesperson for the Coordinating Ministry for Economic Affairs of Batam City, this growth has made a significant contribution to both the local and national economy. In 2022, Batam's economic growth reached 6.84%, exceeding the national growth rate of 5.31%. However, to remain competitive and relevant, manufacturing companies in Batam need to develop strategies that are not only reactive but also proactive, data-driven, and innovative to support more strategic decision-making.

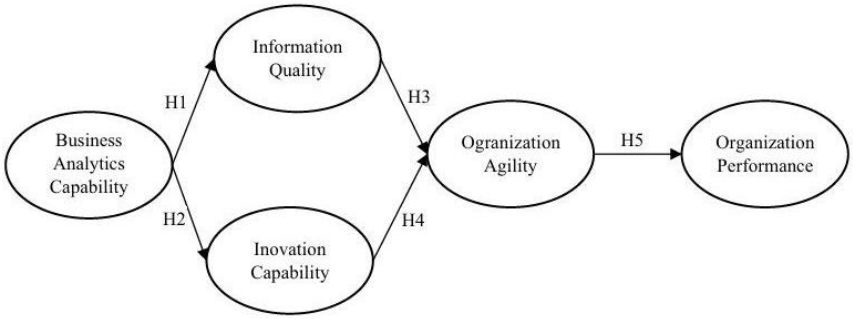
Organizational performance reflects a company's ability to achieve its strategic objectives effectively and efficiently. It is a critical factor in the success of manufacturing companies, influenced by various elements. The implementation of strategic management positively contributes to performance improvement by addressing strengths, weaknesses, opportunities, and threats (Trisusanti et al., 2023). In the context of the manufacturing industry, organizational performance serves as a key determinant of success amidst intense competition and dynamic market changes. One of the primary dimensions of organizational performance is financial growth, which includes revenue increases, net profit growth, cost reduction, and effective working capital management (Bidin et al., 2021). Additionally, operational efficiency is a vital indicator, requiring companies to maximize output with minimal resources through cost-effective production processes, productivity enhancement, and technology optimization (Jillali & Belkasseh, 2022).

One approach that companies can adopt is the development of business analytics capability. Business analytics capability is crucial for organizations seeking a competitive advantage in today's data-driven environment (Komolafe et al., 2024). can inform decision-making. By leveraging analytics technologies, companies can uncover hidden patterns and trends in data, predict changes in market needs, and optimize overall business processes (Madhal et al. (2020); Komolafe et al. (2024)). Research by Ibeh et al. (2024) reviews various analytics techniques, such as descriptive, predictive, and prescriptive analytics, which empower organizations to make accurate decisions and optimize operations. Furthermore, Patil & Kulkarni (2022) emphasize that business analytics fosters innovation and enhances organizational performance by enabling leaders to predict trends and identify opportunities. Consequently, companies that effectively utilize business analytics can gain a significant competitive advantage, particularly in uncertain business environments (Alanudin et al., 2024).

Business analytics capability, supported by flexible infrastructure, has directly contributed to improving organizational agility, which is critical for adapting to market changes and enhancing company performance (Chen & Siau (2020); Alaskar (2023)). Organizational agility refers to a company's ability to respond quickly and effectively to external changes, recognized as a key success factor in navigating dynamic markets (Desalegn et al., 2024). According to research by Nguyen et al. (2024) agile organizations are more likely to adapt to market changes, positively influencing organizational performance, accelerating innovation, and improving operational efficiency. However, the impact of business analytics capability on organizational agility is closely linked to mediating variables such as information quality and

innovation capability (Alaskar (2023); Elazhary et al. (2023)). These findings highlight the complex interaction between technological, organizational, and environmental factors in driving organizational agility, underscoring the need for a holistic approach to leveraging business analytics capability to enhance organizational performance and adaptability in dynamic markets.

Information quality is a critical element in the decision-making process. Data generated through business analytics must meet specific characteristics such as accuracy, relevance, consistency, and accessibility to be transformed into useful information (Khong et al., 2023). High-quality information enables better decision-making and supports innovation processes within organizations (Awulor et al., 2022). Good information quality enhances an organization's effectiveness in responding to market opportunities and challenges (Putri et al., 2023). On the other hand, innovation capability provides companies with the ability to create solutions that are relevant to market needs (A. M. Silva, 2020). For instance, a study by Anderson et al. (2022) demonstrated how innovation based on analytical insights can optimize internal processes and support strategic decision-making to improve competitiveness. Similarly, Komolafe et al. (2024) highlighted the importance of innovation in emerging markets, where business analytics plays a crucial role in predicting market trends and identifying new business opportunities for companies. Furthermore, research by Ochuba et al. (2024) indicated that integrating business analytics into business models enables companies to gain deeper insights into customer needs, improve operational processes, and adapt more quickly to market changes, ultimately supporting sustainable growth. Thus, innovation driven by insights from business analytics makes a significant contribution to an organization's success in maintaining its competitiveness in dynamic markets. The manufacturing industry context in Batam City offers an intriguing opportunity to examine the relationships between business analytics capability, organizational agility, information quality, innovation capability, and organizational performance. With business orientations that span both domestic and international markets, manufacturing companies in Batam face various challenges and opportunities that require adaptive and innovative strategic approaches. Therefore, this study aims to investigate and analyze the relationships between: (1) business analytics capability and information quality, (2) business analytics capability and innovation capability, (3) information quality and organizational agility, (4) innovation capability and organizational agility, and (5) organizational agility and organizational performance.



Source: WANASIDA et al. (2021)

Figure 1. Research Model Framework

Based on the research model above, the following research hypothesis is formed:
H1: Business analytics capability significantly influenced information quality.
H2: Business analytics capability significantly influenced innovation capability.
H3: Information quality significantly influenced organization agility.
H4: Innovation capability significantly influenced organization agility.
H5: Organization agility significantly influenced organization performance.

METHOD

This research adopts a descriptive quantitative approach and is carried out within manufacturing companies located in Batam City. The primary data required for the study were gathered using a questionnaire designed in Google Forms (G-Form). The questionnaire included a series of structured questions targeting the variables under investigation, namely Business Analytics Capability, Information Quality, Innovation Capability, Organizational Agility, and Organizational Performance. The distribution of the questionnaire employed a purposive sampling method, where the respondents, consisting of employees and managers, were selected based on specific criteria, particularly relevant work experience. This criterion was applied to ensure the accuracy and reliability of the data obtained.

In line with the recommendations of Hair et al. (2019), a minimum sample size of 250 respondents was established. This guideline adheres to the rule of requiring a sample size at least 10 times greater than the number of indicators used in the research model to achieve robust statistical analysis. The data collected were subsequently analyzed using Smart PLS (Partial Least Squares), which facilitated a comprehensive examination of both the outer model and the inner model.

The outer model analysis focused on assessing the validity and reliability of the constructs, ensuring that the measurement indicators accurately represent the variables being studied. Meanwhile, the inner model analysis was utilized to evaluate the relationships and interactions between the latent variables, both directly and indirectly. This analytical approach provided detailed insights into the factors influencing organizational performance within the manufacturing sector, highlighting the interplay of key capabilities and organizational attributes.

RESULTS AND DISCUSSION

Based on the results of the questionnaire distributed to respondents working in the manufacturing industry in Batam City, data was collected from 274 respondents. Of this total, the majority were male, accounting for 146 respondents, while female respondents numbered 128. The age group of 22–27 years dominated participation in the questionnaire, with 98 respondents. Additionally, most respondents had a bachelor's degree, totaling 180 individuals, indicating a relatively high level of education among the workforce in this sector. The manufacturing industry in this study was categorized into five main sectors: food and beverages, textiles and apparel, electronics, furniture, and automotive. Respondents from the textiles and apparel sector accounted for the highest number, with 73 respondents, followed by electronics with 61 respondents, furniture with 48 respondents, automotive with 47 respondents, and food and beverages with 45 respondents. This categorization reflects the diversity of the manufacturing industry in Batam City and the distribution of the workforce across its various sectors.

In terms of job positions, most respondents held the position of officer, representing 61 respondents. Regarding work experience, the majority of respondents had 1–3 years of experience, totaling 129 individuals, indicating that the workforce with early to mid-level experience is quite dominant. Meanwhile, most respondents worked in companies that had been operating for 6–9 years, totaling 109 respondents. This data provides deeper insights into the demographic profile and characteristics of the workforce in Batam City's manufacturing industry. This information is highly valuable for understanding the labor structure, sectoral distribution, work experience, and educational background of the workforce in the region.

Tabel 1. Respondent Demographics

Characteristics	Details	Quality	Percentage
Gender	Male	146	53.3%
	Female	128	46.7%
Age	18-22 Years	43	15.7%
	22-27 Years	98	35.8%
	28-32 Years	83	30.3%
	>32 Years	50	18.2%
Educational Background	High School	46	16.8%
	Associate's Degree	43	15.7%
	Bachelor's Degree	180	65.7%
	Master's Degree	5	1.8%
Types of Manufacturing Industries	Food and Beverages	45	16.4%
	Textiles and Apparel	73	26.6%
	Electronics	61	22.3%
	Furniture	48	17.5%
	Automotive	47	17.2%
Job Profile	Manager	25	9.1%
	Supervisor	45	16.4%
	Operator	58	21.2%
	Technician	52	19%
	Engineer	33	12%
	Officer	61	22.3%
Work Experience	< 1 Year	27	9.9%
	1-3 Year	129	47.1%
	4-6 Year	93	33.9%
	> 6 Year	25	9.1%
Company Establishment Duration	1-3 Year	23	8.4%
	4-6 Year	63	23%
	6-9 Year	109	39.8%
	> 9 Year	79	28.8%

Source: Data by author (2025)

According to Hair et al. (2019), data is considered free from Common Method Bias (CMB) or Common Method Variance (CMV) if the Variance Inflation Factor (VIF) value is less than 5. This indicates that the data is not influenced by CMB or CMV, allowing the analysis of Smart PLS calculation results to proceed without obstacles. The data above shows that the VIF values are below 5, confirming that the calculation can continue.

Tabel 2. CMB/CMV Test Result

Indicator	VIF
BAC1	1.500
BAC2	1.827
BAC3	1.535
BAC4	1.669
BAC5	1.774
IC1	1.818
IC2	1.547
IC3	1.433
IC4	1.560
IC5	1.727
IQ1	1.639
IQ2	1.599
IQ3	1.497
IQ4	1.551
IQ5	1.884
OA1	1.557
OA2	1.506
OA3	1.510
OA4	1.437
OA5	1.642
OP1	1.877
OP2	1.597
OP3	1.406
OP4	1.685
OP5	1.697

Source: Data by author (2025)

Outer Model Test

Validity Test

Hair et al. (2019) stated that the rule of thumb for outer loading is that values greater than 0.6 are considered valid, indicating that the corresponding indicators effectively represent the construct being measured. Based on the results above, all outer loading values meet this threshold, demonstrating that the measurement model is valid and the indicators reliably capture the intended constructs.

Tabel 3. Outer Loadings Test Result

Indicator	Business Analytics Capability	Information Quality	Inovation Capability	Organization Performance	Organization Agility
BAC1	0.737				
BAC2	0.799				
BAC3	0.724				
BAC4	0.763				
BAC5	0.758				
IC1			0.812		

IC2		0.713		
IC3		0.694		
IC4		0.729		
IC5		0.770		
IQ1	0.772			
IQ2	0.733			
IQ3	0.727			
IQ4	0.743			
IQ5	0.801			
OA1				0.758
OA2				0.721
OA3				0.748
OA4				0.700
OA5				0.776
OP1			0.804	
OP2			0.756	
OP3			0.700	
OP4			0.777	
OP5			0.766	

Source: Data by author (2025)

The rule of thumb for assessing convergent validity based on AVE is that the AVE value should be greater than 0.5 (Ghozali, 2021). Based on the results above, it can be concluded that the data meets the convergent validity criteria as the AVE value is above 0.5 and its valid.

Tabel 4. Validity Test Result

Indicator	Average Variance Extracted (AVE)
Business Analytics Capability	0.572
Information Quality	0.571
Inovation Capability	0.555
Organization Performance	0.580
Organization Agility	0.549

Source: Data by author (2025)

Discriminant validity refers to the principle that indicators (manifest variables) of different constructs should not exhibit strong correlations with one another. It can be evaluated using three criteria, and if any of these criteria are fulfilled, it suggests that the data meets the requirements for discriminant validity. In this test result, only the cross-loading criterion meets the requirements for discriminant validity. The cross-loading values indicate the correlation of each indicator. Cross-loading requires that each indicator should cluster under its respective variable, with a minimum value of 0.7 (Ghozali, 2021). Based on the table, it is evident that all indicators show a correlation value of at least 0.7.

Tabel 5. Discriminant Validity Test Result

Indicator	Business Analytics Capability	Inovation Capability	Information Quality	Organization Agility	Organization Performance
BAC1	0.737	0.624	0.646	0.602	0.624
BAC2	0.799	0.648	0.735	0.590	0.633
BAC3	0.724	0.616	0.646	0.614	0.623
BAC4	0.763	0.636	0.667	0.570	0.599
BAC5	0.758	0.546	0.671	0.463	0.500
IC1	0.658	0.812	0.682	0.712	0.721
IC2	0.550	0.713	0.581	0.626	0.622
IC3	0.554	0.694	0.594	0.631	0.609
IC4	0.655	0.729	0.641	0.605	0.636
IC5	0.603	0.770	0.598	0.644	0.640
IQ1	0.660	0.685	0.772	0.673	0.682
IQ2	0.630	0.632	0.733	0.606	0.586
IQ3	0.670	0.574	0.727	0.541	0.524
IQ4	0.700	0.626	0.743	0.617	0.625
IQ5	0.703	0.624	0.801	0.536	0.594
OA1	0.568	0.625	0.601	0.758	0.689
OA2	0.517	0.644	0.536	0.721	0.637
OA3	0.533	0.681	0.603	0.748	0.676
OA4	0.607	0.600	0.614	0.700	0.639
OA5	0.561	0.653	0.570	0.776	0.686
OP1	0.622	0.688	0.641	0.705	0.804
OP2	0.601	0.672	0.612	0.682	0.756
OP3	0.569	0.622	0.571	0.679	0.700
OP4	0.616	0.685	0.634	0.698	0.777
OP5	0.591	0.637	0.584	0.655	0.766

Source: Data by author (2025)

Reliability Test

Reliability testing is conducted to demonstrate the consistency and accuracy of the instrument in measuring constructs. In PLS-SEM, reliability is assessed using two methods: Cronbach's Alpha and Composite Reliability. According to Hair et al. (2019) the rule of thumb for this test is that the Cronbach's Alpha and Composite Reliability values for each construct should be greater than 0.6. Based on the results below, it can be concluded that both Cronbach's Alpha and Composite Reliability have values greater than 0.7, indicating that all constructs are reliable.

Tabel 6. Composite Reliability Test Result

Indicator	Cronbach's Alpha	Composite Reliability
Business Analytics Capability	0.813	0.870
Information Quality	0.812	0.869

Inovation Capability	0.798	0.861
Organization Performance	0.818	0.873
Organization Agility	0.794	0.859

Source: Data by author (2025)

Inner Model Test

The influence between variables is considered significant if it meets the criteria outlined in the Rule of Thumb by Hair et al. (2019), which states that the T-statistic must be greater than 1.96 and the P-value must be less than 0.05. The results presented provide a direct evaluation of whether there is an influence between the variables being studied. The determination of this influence is based on values obtained from bootstrapping calculations.

Tabel 7. Path Coefficients Test Result

Hypothesis	Sample Mean (M)	T Statistics (|O/STDEV|)	P Values	Conclusion
Business Analytics Capability -> Information Quality	0.890	34.230	0.000	Significant
Business Analytics Capability -> Inovation Capability	0.814	15.176	0.000	Significant
Information Quality -> Organization Agility	0.233	2.916	0.004	Significant
Inovation Capability -> Organization Agility	0.668	9.720	0.000	Significant
Organization Agility -> Organization Performance	0.895	29.393	0.000	Significant

Source: Data by author (2025)

Based on the bootstrapping calculation results above, it can be concluded that all influences between variables are significant as they meet the Rule of Thumb criteria.

H1: Business analytics capability significantly influenced information quality

The relationship between Business Analytics Capability and Information Quality is very strong, with a sample mean (M) value of 0.890, indicating a positive relationship. With a T-statistic of 34.230 and a P-value of 0.000, the relationship between business analytics capability and information quality in the manufacturing industry in Batam City is significant.

H2: Business analytics capability significantly influenced innovation capability

The relationship between Business Analytics Capability and Innovation Capability shows a positive correlation with a sample mean (M) of 0.814. This relationship is significant, as indicated by a T-statistic of 15.176 and a P-value of 0.000. This demonstrates that the relationship between Business Analytics Capability and Innovation Capability in the manufacturing industry in Batam City has a significant impact.

H3: Information quality significantly influenced organization agility

The relationship between Information Quality and Organization Agility shows a positive correlation with a sample mean (M) of 0.233. This relationship is significant, as indicated by a T-statistic of 2.916 and a P-value of 0.004. This demonstrates that the relationship between Information Quality and Organization Agility in the manufacturing industry in Batam City has a significant impact.

H4: Innovation capability significantly influenced organization agility

The relationship between Innovation Capability and Organization Agility is very strong, with a sample mean (M) value of 0.668, indicating a positive relationship. With a T-statistic of 9.720 and a P-value of 0.000, the relationship between Inovation Capability and Organization Agility in the manufacturing industry in Batam City is significant.

H5: Organization agility significantly influenced organization performance

The relationship between the last variables also shows a positive correlation between Organization Agility and Organization Performance, with a sample mean (M) of 0.895. The relationship between Organization Agility and Organization Performance in the manufacturing industry in Batam City is significant, with a T-statistic of 29.393 and a P-value of 0.000.

In assessing a structural model with PLS, it is important to examine the R-Square values for each endogenous latent variable as an indicator of the model's predictive power. According to the criteria set by Hair et al., the R-Square values are categorized into three groups: a weak category for values greater than 0.25, a moderate category for values greater than 0.50, and a strong category for values greater than 0.75. These categories help evaluate how well the model explains the variance in each endogenous variable, with higher R-Square values indicating stronger explanatory power.

Tabel 8. Square Test Result

Variabel	R Square
Information Quality	0.794
Inovation Capability	0.661
Organization Performance	0.808
Organozation Agility	0.764

Source: Data by author (2025)

Based on the results above, the R-square value for the latent variable information quality is 0.794, which falls into the "strong" category. This indicates that the business analytics capability can explain 79.4% of the variability, while 20.6% is explained by other unmeasured variables. The R-square value for the latent variable innovation capability is 0.661, which falls into the "moderate" category. This indicates that business analytics capability can explain 66.1% of the variability, while 33.9% is explained by other unmeasured variables. The R-square value for organization performance is 0.808, which falls into the "strong" category.

This indicates that the variability in organization performance can be explained by organization agility by 80.8%, with 19.2% explained by other unmeasured variables. The R-square value for organization agility is 0.764, which also falls into the "strong" category. This indicates that the variability in organization agility can be explained by information quality and innovation capability by 76.4%, with 23.6% explained by other unmeasured variables.The Standardized Root Mean Square Residual (SRMR) measures the difference between the observed correlation and the correlation matrix implied by the model.

It acts as an indicator of how well the correlation matrix matches the model. According to Hu & Bentler (1999), an SRMR value under 0.1 indicates a good fit between the model and the data. The results show that the SRMR value meets this threshold, confirming that the model fits the data well.

Tabel 9. SRMR Test Result

	Saturated Model	Estimated Model
SRMR	0.063	0.074

Source: Data by author (2025)

Discussion

The Effect of Business Analytics Capability on Information Quality

Research highlights that Business Analytics Capability has a significant influence on Information Quality. Robust data analytics capabilities empower organizations to convert raw data into high-value, quality information essential for strategic decisions (Madhala et al. (2024); Khong et al. (2023)). The quality of data plays a fundamental role in building these capabilities and driving business performance, with key elements such as accuracy, reliability, and timeliness being particularly important (Sazu & Jahan (2022); Khong et al. (2023)). However, challenges such as data incompleteness can lead to inaccurate predictive analyses (Nugroho, 2023). To address these issues, organizations must implement robust data governance frameworks and foster a data-driven culture (Khan, 2024). The application of data analytics spans various sectors, including finance, healthcare, and human resources, with future trends focusing on real-time analysis, machine learning integration, and cognitive analytics (Sazu & Jahan, 2022). Despite challenges in data quality, privacy, and infrastructure, data analytics remains a powerful tool for optimizing operations and driving strategic decision-making (Sazu & Jahan, 2022).

The statistical evidence supporting this relationship, such as a high sample mean and significant T-statistics reinforces the idea that investing in analytics infrastructure and competencies is essential. In practice, this means leveraging tools like data visualization software, predictive analytics, and advanced data integration techniques to enhance the completeness and consistency of information. For industries like manufacturing in Batam City, high information quality derived from robust analytics capabilities leads to better operational efficiency and more informed business decisions, creating a competitive advantage in the market.

The Effect of Business Analytics Capability on Innovation Capability

Business analytics capabilities have a profound impact on innovation capability. They allow companies to utilize data driven insights for innovative solutions and better decision making (Alaskar (2023); Anderson et al. (2022)). Capabilities in process and management innovation are essential for building big data analytics abilities, which extend beyond simple technological investments (Henao-García et al., 2021). Business analytics improve environmental scanning and foster a data driven culture, both of which are key drivers of enhanced innovation results (Anderson et al., 2022). By utilizing data-driven analytics, organizations can make more informed decisions, reduce uncertainty in innovation processes, and accelerate the time-to-market for new initiatives. Accurate and relevant data offer clear views of market trends, customer behaviors, and industry needs, which, in turn, support the development of more effective innovation strategies (JAHAN & SAZU, 2022).

Data analytics and big data capabilities are essential for driving business innovation and growth across various industries. These tools enable organizations to enhance their product development workflows, from ideation to market release, by offering predictive insights into consumer preferences and market trends (Benjamin et al., 2024). Business analytics promotes innovation by refining environmental scanning and fostering a data-centric culture, both of which are critical for creating impactful new products (Anderson et al., 2022). The growth of big data analytics capabilities is supported by innovations in processes and management, highlighting that it requires more than just technological investments (Henao-García et al.,

2021). Effectively utilizing big data for business advancement necessitates strategies for proper data gathering, processing, analysis, and visualization, while also addressing challenges like data privacy and security (Ochuba et al., 2024). Embracing these data-driven strategies enables companies to gain valuable insights, optimize operations, and maintain a competitive advantage in their markets.

The statistical evidence, including high sample means and significant T-statistics, emphasizes that investing in business analytics infrastructure is key to fostering innovation. By utilizing tools like predictive modeling and real-time data processing, organizations can generate valuable insights that reduce uncertainty and speed up innovation. In Batam City's manufacturing sector, strong analytics capabilities enable businesses to stay ahead of market trends, improve product development, and make informed strategic decisions. This leads to enhanced innovation, better operational efficiency, and a stronger competitive position.

The Effect of Information Quality on Organization Agility

The effect of information quality on organizational agility is a key factor in today's fast-paced business world. High-quality data plays a crucial role in improving the accuracy, reliability, and timeliness of decision-making within data-driven organizations. Well-designed information systems foster collective intelligence and enhance organizational agility by promoting collaboration, knowledge sharing, and quick adaptability to market shifts (Mignenan et al., 2024). Research shows that business intelligence systems are strongly linked to agility in sensing, application, and decision-making (Hamdan & Rahman, 2021). Furthermore, the evolution of organizational agility research highlights its significance in shaping organizational responses to various challenges, including information systems, business intelligence, market orientation, and strategic alignment (Roblek et al., 2022). These findings emphasize the importance of investing in adaptable and collaborative information systems to boost performance and stay competitive in rapidly changing environments.

Accurate and high-quality information is fundamental for effective decision-making within organizations, enabling them to adapt to rapidly changing environments and make well-informed choices (Khong et al. (2023); Awulor et al. (2022)). Management information systems play a crucial role in delivering precise and timely data, which is essential for maintaining efficient business processes (Awulor et al., 2022). To stay aligned with technological progress, organizations must capitalize on the extensive data available online and through social media platforms to inform strategic decision-making (Putri et al., 2023). However, the sheer volume of data presents significant challenges in preserving information quality (IQ), particularly for legacy organizations that predate the digital era (Struijk et al., 2023). By implementing IQ strategies that integrate advanced technologies with strong governance frameworks, organizations can support their digital transformation efforts, minimize resistance to change among employees, and improve overall operational efficiency (Struijk et al., 2023). In conclusion, maintaining high-quality information is vital for organizations to remain flexible and make impactful decisions in uncertain and complex environments.

Statistical evidence, such as significant T-statistics, highlights the importance of high-quality information in boosting organizational agility. With accurate data and real-time processing, businesses can quickly adapt to market changes and make informed decisions. In Batam City's manufacturing sector, quality information enables faster responses to trends and customer needs, improving decision-making and innovation. This agility enhances efficiency and helps organizations maintain a competitive edge in a rapidly changing environment.

The Effect of Innovation Capability on Organization Agility

The relationship between innovation capability and organizational agility is vital, as innovation enables businesses to quickly adapt and respond to changes in the market. Organizations with strong innovation capabilities can develop new products, processes, or business models more efficiently, maintaining their competitive edge (Goncalves et al., 2020). Innovation cultivates a flexible culture that supports creative problem-solving and faster decision-making, which are essential for agility (Elazhary et al., 2023). Cultural factors, particularly an 'Agile culture' that merges Clan and Adhocracy characteristics, are essential for driving digital innovation and organizational agility (Goncalves et al., 2020). IT governance and capabilities play a significant role in shaping organizational agility, especially in dynamic markets, while innovation capability tends to have a stronger influence in stable conditions (Elazhary et al., 2023). The ability to innovate within an organization is critical for achieving competitive success, influenced by various internal and external factors (Silva & Cirani, 2020).

Enhanced innovation capability boosts organizational agility by allowing quicker responses to emerging opportunities and challenges. It gives teams the freedom to experiment with fresh ideas, adapt to changing customer needs, and rapidly improve products or services. This adaptability helps organizations stay competitive, particularly in industries where rapid changes are common and agility is key to success (Arsawan et al., 2022). Moreover, innovation and agility work hand in hand, as organizations that innovate often rely on agility to test, scale, and implement their ideas effectively. Therefore, firms that focus on strengthening their innovation capabilities can better adjust to market shifts, minimize risks, and seize new opportunities, positioning themselves for long-term growth and success (Findsrud, 2020). Statistical evidence highlights the importance of innovation capability in enhancing organizational agility. In Batam City's manufacturing sector, strong innovation enables quicker responses to market changes and customer needs, fostering faster decision-making and adaptability. This agility improves efficiency and helps businesses stay competitive in a rapidly evolving environment.

The Effect of Organization Agility on Organization Performance

Organizational agility is essential for improving performance, especially in fast-paced and competitive markets. It enables organizations to quickly and effectively adapt to market shifts, customer needs, and external changes (Deshati, 2023). This adaptability allows businesses to adjust strategies, processes, and resources in real-time, maintaining competitiveness and efficiency (Atkinson et al., 2020). Agile organizations are more capable of driving innovation, enhancing operational efficiency, and making informed decisions, all of which positively influence performance. Their capacity to swiftly respond to new opportunities and challenges promotes a culture of continuous improvement and growth (Koçyiğit & Akkaya, 2020).

The relationship between agility and performance is particularly noticeable in industries that experience rapid changes, such as technology, manufacturing, and services (Devie et al., 2023). Companies with high agility in these fields are able to adjust their operations, introduce new products, and enter new markets more effectively than those with less agility. Moreover, organizational agility is strongly connected to employee engagement and satisfaction. Empowering employees to make decisions and participate in innovation enhances their motivation and productivity, which in turn improves overall performance (Makori et al., 2022). Agility also promotes collaboration and knowledge sharing, resulting in more effective strategy implementation and better organizational outcomes. In conclusion, organizational agility is crucial for achieving superior performance. It enables companies to adapt quickly, maintain competitiveness, and foster a culture of ongoing innovation, all of which contribute to long-term success and profitability (Bangura & Lourens (2024); Devie et al. (2023)).

The test results show that organizational agility plays a crucial role in boosting organizational performance. Agility enables businesses to respond promptly and effectively to changes in the market, customer demands, and external factors. This adaptability allows organizations to adjust their strategies, processes, and resources in real-time. In Batam City's manufacturing sector, where market conditions are constantly changing, companies with high agility can quickly shift their operations, introduce new products, and expand into new markets, giving them a competitive edge. This leads to improved operational efficiency, better decision-making, and overall performance.

CONCLUSION

This research shows that business analytics capability plays a crucial role in improving information quality, innovation capability, organizational agility, and organizational performance in the manufacturing sector in Batam City. The results of statistical analysis reveal that business analytics capabilities not only generate accurate, relevant and reliable information but also contribute to the development of innovative solutions that are relevant to market dynamics. This enables organizations to improve operational efficiency, make better strategic decisions, and respond quickly to market changes. In the context of the manufacturing industry in Batam, high quality information supports a faster and more adaptive innovation process, creating a competitive advantage in a constantly evolving market. Furthermore, this study confirms that organizational agility is a key variable that links information quality and innovation capability with organizational performance. Agility enables firms to quickly and efficiently adjust to changes in the external environment and customer needs. By leveraging innovation capabilities supported by data-driven insights, organizations can develop new products, services, and processes that not only meet market demands but also accelerate business growth. Overall, this research provides strategic insights for manufacturing companies to enhance their competitiveness by integrating business analytics capabilities, improving information quality, and optimizing their agility and innovation capabilities.

REFERENCE

Abdallah, Y. O., Shehab, E., & Al-Ashaab, A. (2021). Digital Transformation Challenges in the Manufacturing Industry. *Advances in Manufacturing Technology*, *15*, 9–14. https://doi.org/10.3233/ATDE210004

Alanudin, D., Soetjipto, B. W., & Subroto, A. (2024). The Transformative Impact of Business Analytics Adoption on Competitive Advantage in the E-Commerce Industry: A Strategic Perspective. *Migration Letters*, *21*(3), 1330–1353. https://migrationletters.com/index.php/ml/article/view/8478

Alaskar, T. H. (2023). Innovation Capabilities as a Mediator between Business Analytics and Firm Performance. *Sustainability (Switzerland)* , *15*(6). https://doi.org/10.3390/su15065522

Anderson, C. K., Serra, A. A., & Abrahamsen, L. C. (2022). Impact of big data analytics & machine learning on innovation of manufacturing companies. *Business & IT*, *12*(1), 116–124. https://doi.org/10.14311/bit.2022.01.14

Arsawan, I. W. E., Hariyanti, N. K. D., Atmaja, I. M. A. D. S., Suhartanto, D., & Koval, V. (2022). Developing Organizational Agility in SMEs: An Investigation of Innovation's Roles and Strategic Flexibility. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3). https://doi.org/10.3390/joitmc8030149

Atkinson, P., Hezaji, M., Nazarian, A., & Abasi, A. (2020). Attaining organizational agility through competitive intelligence: the roles of strategic flexibility and organizational innovation. *UNIVERSITY OF FORWARD THINKING WESTMINSTER*.

Awulor, R. I., Mallam-Obi, R. L., & Chukwu, N. M. (2022). Enhancing organisational

decision-making through management information system. *Journal of Global Social Sciences*, *3*(11), 115–133. https://doi.org/10.31039/jgss.v3i11.71

Bangura, S., & Lourens, M. E. (2024). Organisational agility a leverage to firm's performance: an integrative review. *International Journal of Research in Business and Social Science (2147- 4478)*, *13*(3), 77–84. https://doi.org/10.20525/ijrbs.v13i3.3092

Benjamin, L. B., Amajuoyi, P., & Adeusi, K. B. (2024). Leveraging data analytics for informed product development from conception to launch. *GSC Advanced Research and Reviews*, *19*(2), 230–248. https://doi.org/10.30574/gscarr.2024.19.2.0180

Bidin, R., Razak, M. N. F., Mohamad, B., Osman, M. N., Bakar, M. S. A., Tham, J. S., Atan, R., Handayati, P., & Utaberta, N. (2021). Halal Industry ' s Organizational Performance Factors : A Systematic Literature Review. *SOCIAL SCIENCES & HUMANITIES*, *29*(4), 2545–2568.

Chen, X., & Siau, K. (2020). Business Analytics/Business Intelligence and IT Infrastructure: Impact on Organizational Agility. *Journal of Organizational and End User Computing*, *32*(4), 138–161. https://doi.org/10.4018/joeuc.2020100107

Desalegn, E. G., Guedes, M. J. C., Gomes, J. F. D. S., & Tebeka, S. M. (2024). Disentangling organizational agility from flexibility , adaptability , and versatility : a systematic review. *Future Business Journal*, *10*(117). https://doi.org/10.1186/s43093-024-00405-6

Deshati, E. (2023). Staying Ahead of the Curve: An Analysis of Strategic Agility and its Role in Ensuring Firm Survival in a Dynamic Business Environment. *European Scientific Journal, ESJ*, *19*(13), 28. https://doi.org/10.19044/esj.2023.v19n13p28

Devie, D., Kwistianus, H., Wellyani, C. V. P., & Goenadi, G. R. N. O. (2023). The Importance of Organizational Agility to Improve Performance: Evidence from the Hotel Industry in the Post-Covid-19 Era. *Binus Business Review*, *14*(3), 271–284. https://doi.org/10.21512/bbr.v14i3.9363

Elazhary, M., Popovič, A., Henrique de Souza Bermejo, P., & Oliveira, T. (2023). How Information Technology Governance Influences Organizational Agility: The Role of Market Turbulence. *Information Systems Management*, *40*(2), 148–168. https://doi.org/10.1080/10580530.2022.2055813

Elazhary, M., Popovič, A., Paulo, H. de S. B., & Oliveira, T. (2023). How Information Technology Governance Influences Organizational Agility: The Role of Market Turbulence. *Information Systems Management*, *40*(2), 148–168. https://doi.org/10.1080/10580530.2022.2055813

Findsrud, R. (2020). An Agile Approach to Service Innovation: Creating Valuable Service Innovation with Agile Resource Integration. *Journal of Creating Value*, *6*(2), 190–207. https://doi.org/10.1177/2394964320961886

Ghozali, I. (2021). *Partial Least Squares : Konsep, Teknik dan Aplikasi Menggunakan Program SmartPLS 3.2.9 untuk Penelitian Empiris. Partial Least Squares : Konsep, Teknik dan Aplikasi Menggunakan Program SmartPLS 3.2.9 untuk Penelitian Empiris. Semarang : Fakultas Ekonomika*.

Goncalves, D., Bergquist, M., Bunk, R., & Alänge, S. (2020). Cultural aspects of organizational agility affecting digital innovation. In *Journal of Entrepreneurship, Management and Innovation* (Vol. 16, Issue 4). https://doi.org/10.7341/20201641

Hair, J. F., Risher, 14 Jeffrey Joe, Sarstedt, M., & Ringle, C. M. (2019). The Results of PLS-SEM Article information. *Emerald Insight*, *31*(1), 2–24. https://doi.org/https://doi.org/10.1108/EBR-11-2018-0203

Hamdan, H., & Rahman, A. A. A. (2021). Effect of Business Intelligence System on Organizational Agility: Evidence From Syria. *Journal of Southwest Jiaotong University*, *56*(4), 288–299. https://doi.org/10.35741/issn.0258-2724.56.4.24

Henao-García, E., Arias-Pérez, J., & Lozada, N. (2021). Fostering big data analytics capability through process innovation: Is management innovation the missing link? *Business Information Review*, *38*(1), 28–39. https://doi.org/10.1177/0266382120984716

Hu, L., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. Structural Equation Modeling. *A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/https://doi.org/10.1080/10705519909540118

Ibeh, C. V., Asuzu, O. F., Olorunsogo, T., Elufioye, O. A., Nduubuisi, N. L., & Daraojimba, A. I. (2024). Business analytics and decision science: A review of techniques in strategic business decision making. *World Journal of Advanced Research and Reviews*, *21*(2), 1761–1769. https://doi.org/10.30574/wjarr.2024.21.2.0247

JAHAN, S. A., & SAZU, M. H. (2022). Innovation Management: Is Big Data Necessarily Better Data? *Management of Sustainable Development*, *14*(2), 27–33. https://doi.org/10.54989/msd-2022-0013

Jillali, S. A., & Belkasseh, M. (2022). Financial Performance: An Early Abandoned or Independently Sufficient Approach. (A Systematic Literature Review). *Archives of Business Research*, *10*(03), 191–216. https://doi.org/10.14738/abr.1003.12038

Khan, A. H. (2024). Effective Decision Making Using Data Analytics. *Interantional Journal of Scientific Research in Engineering and Management*, *08*(04), 1–5. https://doi.org/10.55041/ijsrem32598

Khong, I., Yusuf, N. A., Nuriman, A., & Yadila, A. B. (2023). Exploring the Impact of Data Quality on Decision-Making Processes in Information Intensive Organizations. *APTISI Transactions on Management (ATM)*, *7*(3), 253–260. https://doi.org/10.33050/atm.v7i3.2138

Koçyiğit, Y., & Akkaya, B. (2020). The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs. *Business Management and Strategy*, *11*(1), 110. https://doi.org/10.5296/bms.v11i1.16867

Komolafe, A. M., Aderotoye, I. A., Abiona, O. O., Adewusi, A. O., Obijuru, A., Modupe, O. T., & Oyeniran, O. C. (2024). Harnessing Business Analytics for Gaining Competitive Advantage in Emerging Markets: a Systematic Review of Approaches and Outcomes. *International Journal of Management & Entrepreneurship Research*, *6*(3), 838–862. https://doi.org/10.51594/ijmer.v6i3.939

Kumar, D. H., Noal, Alemumerga, Robson, Alemayehu, D., Atmosa, Chalchisa, S., & Derartu. (2024). Survey and Analysis of Current Manufacturing Trends in the Global Market: A Practical Investigation. *International Journal for Research in Applied Science and Engineering Technology*, *12*(4), 1892–1896. https://doi.org/10.22214/ijraset.2024.60221

Laulita, N. B. (2021). How Organizational Culture Moderate the Effect of Total Productive Maintenance Practice on Operational Performance? Evidences from Indonesian Mining Industry. *Jurnal Optimasi Sistem Industri*, *20*(2), 93–103.

Madhal, P., Li, H., & Helander, N. (2020). Organizational capabilities in data-driven value creation: A literature review. *SCITEPRESS - Science and Technology Publications*, *3*(November), 108–116. https://doi.org/10.5220/0010175601080116

Madhala, P., Li, H., & Helander, N. (2024). Developing data analytics capabilities: integrating the information systems success model and the resource-based view. *Industrial Management and Data Systems*, *124*(7), 2364–2387. https://doi.org/10.1108/IMDS-09-2023-0653

Makori, A., Maina, F., Obiero, B., Daniel, S., Njeri, R., Obonyo, S., Okwayo, B., & Okaka, W. (2022). Effect of Employee Agility on Organizational Performance (a Case Study of the State Department for Labour, Kenya). *Journal of Human Resource and Leadership*,

7(1), 38–58. https://doi.org/10.47604/jhrl.1537

Mandagie, W. C., Kristaung, R., & Rana, J. A. S. (2024). Optimizing manufacturing firm performance in Indonesia through strategic orientation and servitization. *Problems and Perspectives in Management*, *22*(1), 687–701. https://doi.org/10.21511/ppm.22(1).2024.54

Mignenan, V., Ahmat, M. M., & Bayock, E. D. (2024). Efficiency of Information Systems : Influence on Collective Intelligence and Organizational Agility. *International Journal of Business and Management*, *19*(6), 321–337. https://doi.org/10.5539/ijbm.v19n6p321

Nelson, A. (2021). The Effect of Implementation of Management Support Work Environment, Team Work, and Employee Development to Employee Engagement with Employee Motivation as Mediating Variable. *Management and Economic Journal (MEC-J)*, *5*(2), 131–142. https://doi.org/10.18860/mec-j.v5i2.11860

Nguyen, T., Le, C. V., Nguyen, M., Nguyen, G., Lien, T. T. H., & Nguyen, O. (2024). The organisational impact of agility: a systematic literature review. In *Management Review Quarterly*. Springer International Publishing. https://doi.org/10.1007/s11301-024-00446-9

Nugroho, H. (2023). A Review: Data Quality Problem in Predictive Analytics. *IJAIT (International Journal of Applied Information Technology)*, *7*(02), 79. https://doi.org/10.25124/ijait.v7i02.5980

Ochuba, N. A., Usman, F. O., Amoo, O. O., Okafor, E. S., & Akinrinola, O. (2024). Innovations in Business Models Through Strategic Analytics and Management: Conceptual Exploration for Sustainable Growth. *International Journal of Management & Entrepreneurship Research*, *6*(3), 554–566. https://doi.org/10.51594/ijmer.v6i3.844

Patil, M. H., & Kulkarni, D. A. (2022). The Role of Business Analytics for Enhancing Organizational Performance. *International Journal of Advanced Research in Science, Communication and Technology*, *2*(1), 282–287. https://doi.org/10.48175/ijarsct-7371

Putri, F. E., Iskandar, J., Asbari, M., Widodo, A., & Riyanto. (2023). The Role of Management Information Systems (MIS) in Decision Making. *Journal Of Communication Education*, *17*(1), 2365–2371. https://doi.org/10.58217/joce-ip.v17i1.280

Roblek, V., Dimovski, V., Mesko, M., & Peterlin, J. (2022). Evolution of organisational agility: a bibliometric study. *Kybernetes*, *51*(13), 119–137. https://doi.org/10.1108/K-11-2021-1137

Saputra, A. D., Aryani, Salsabilla, S., Zalva, R. P., Maharani, A., & Yanuardi, R. (2023). THE ROLE OF THE MANUFACTURING ON THE INDONESIAN ECONOMY. *Indonesian Journal of Multidisciplinary Sciences (IJoMS)*, *2*(1), 157–166.

Sazu, M. H., & Jahan, S. A. (2022). Can big data analytics improve the quality of decision-making in businesses? *Iberoamerican Business Journal*, *6*(1), 04–27. https://doi.org/10.22451/5817.ibj2022.vol6.1.11063

Silva, A. M. (2020). Innovation capability: a systematic literature review. *European Journal of Innovation Management*, *24*(3), 707–734. https://doi.org/10.1108/EJIM-09-2019-0263

Silva, J. J. Da, & Cirani, C. B. S. (2020). The capability of organizational innovation: Systematic review of literature and research proposals. *Gestao e Producao*, *27*(4), 1–16. https://doi.org/10.1590/0104-530X4819-20

Sentoso, A., & Putra, F. S. (2021). Analysis of the Ethical Effect of Leadership on Employee Performance and Moderated With Employee Engagement and Organizational Citizenship Behavior. *Business and Accounting Research (IJEBAR) Peer Reviewed-International Journal*, *5*(4), 447–456. https://jurnal.stie-aas.ac.id/index.php/IJEBAR

Sentoso, A., & Muchsinati, E. S. (2024). Determining Employee Engagement and Its Influence On Employee Performance At Holding State-Owned Enterprises Insurance and

Guarantees Riau Islands Region. *Jurnal Manajemen Dan Pemasaran Jasa*, *17*(1), 39–58. http://dx.doi.or

Setyawan, A., & Nelson, A. (2021). The Role of Organizational Culture in the Influence of HR Practices, Knowledge Management, and Talent Management on Organizational Performance. *Jurnal Dinamika Manajemen*, *12*(2), 275–284. https://doi.org/10.18848/1447- 9524/cgp/v10i01/59155

Struijk, M., Angelopoulos, S., Ou, C. X. J., & Davison, R. M. (2023). Navigating digital transformation through an information quality strategy: Evidence from a military organisation. *Information Systems Journal*, *33*(4), 912–952. https://doi.org/10.1111/isj.12430

Trisusanti, N., Arifuddin, H., & Umar, F. (2023). Implementation of Strategic Management in Improving Organizational Performance in Manufacturing Companies. *Indonesian Journal of Economics and Management*, *3*(3), 572–581. https://doi.org/10.35313/ijem.v3i3.5109

WANASIDA, A. S., BERNARTO, I., SUDIBJO, N., & PURWANTO, A. (2021). The Role of Business Capabilities in Supporting Organization Agility and Performance During the COVID-19 Pandemic: An Empirical Study in Indonesia. *Journal of Asian Finance, Economics and Business*, *8*(5), 897–0911. https://doi.org/10.13106/jafeb.2021.vol8.no5.0897

Wolok, E., Yapanto, L. M., Lapian, A. L. C. P., Wolok, T., & Aneta, A. (2023). Manufacturing Industry Strategy in Increasing the Acceleration of Economic Growth in Indonesia. *International Journal of Professional Business Review*, *8*(4), 1–10. https://doi.org/10.26668/businessreview/2023.v8i4.1927