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Business process maturity assessment in micro, small, and medium-sized enterprises

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Abstract

This research looks at how developed the business processes are in micro, small, and medium enterprises (MSMEs) in Indonesia, focusing on how leadership commitment, process documentation, employee skills, and performance measurement affect organizational agility as a moderating factor. The study employed quantitative research methods, collecting data from a total of 235 respondents representing MSMEs in Indonesia. The results were obtained using multiple linear regression analysis, which examined how the independent variables are directly connected to the dependent variable of business process maturity, while the influence of organizational agility was assessed through interaction terms. Our findings reveal that leadership commitment, process documentation, employee competence, and performance measurement had positive and significant impacts on business process maturity among MSMEs. Likewise, the analysis reveals that organizational agility positively moderates the relationship between internal antecedents and structured as well as mature business processes, which shows that MSMEs' agility enhances their inclination to convert internal abilities to processed business activities. This paper is the first to look at how organizational agility affects the link between the business process maturity of MSMEs and their performance, a topic that hasn't been widely studied, especially in emerging economies. It is a holistic model that recognizes the importance of visionary capabilities in relation to running highly efficient processes. The results indicate that enhancing both leadership and operational capabilities would be a priority area for business process maturity among MSMEs. This knowledge must help MSMEs become more resilient and competitive, contributing to the economy and being sustainable.

Keywords: Business process maturity, Leadership commitment, MSMEs, Organizational agility, Process documentation.

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1. Introduction

Importance of MSMEs for the developing economy of the world, including the developing economies. Micro, Small and Medium Enterprises (MSMEs) play a significant role in the economic development of India as well as the world [1]. Although critical, MSMEs do not have business processes that can be considered 'fit for purpose [2-5]. Found that SMEs generally lack process modeling, resulting in inefficiencies and inconsistencies. Gupta et al. [6] indicated that due to the immaturity of the MSME process, competitiveness and capacity for quick response are missing. Planned business processes are considered as the means to sustain the growth and innovation of small SMEs. [7, 8]. Additionally, the findings of Liu et al. [9] highlight that high-performing organizations are ones that have mature practices in productivity and market responsiveness [9]. This uncovers an interesting phenomenon- that while such MSMEs may be significant for the economy, the level of maturity in the business processes is extremely diverse, and on a number of occasions, sub-optimal.

Overall, the main challenges for MSME access to finance are related to the fact that the business process is out of synch with the strategy of the organization. The fragmented approach of MSMEs to WM process management has been documented in several investigations. Defying the MSME workflow challenges, Bhardwaj et al. [10] posit that MSMEs frequently operate without written workflow processes, leading to poor coordination and decision making. McKendry et al. [11] agreed that one of the biggest problems is the lack of commitment from, say, the management, to formalize and advance business workflow. Note that measuring performance in MSMEs is sometimes ignored or poorly implemented, hampering the need for continuous improvement [12]. Furthermore, Sari et al. [13] highlight that staff competence is important, but without proper process documentation and performance measures, they work less effectively. This requires identification of critical blocks- barriers, which block business process maturity across the MSMEs as a whole.

Indeed, this work leaned on the Business Process Orientation (BPO) model and maturity frameworks from Benrqya et al. [14] and Garrido et al. [15] that included holistic measures of process maturity stages. The theoretical underpinning of this theoretical foundation is also in line with process management theories, which highlight that leadership, documentation, human capital and measurement systems are important drivers of process maturity [16, 17]. A theory of organizational agility, Overby et al. [18] and as well as applied to find the moderating effect of it, in order to provide understanding on how responsiveness and flexibility can mature the process landscape in a dynamic environment.

This research is unique in that it introduces an integrative structure to explore the interlinks among four physical antecedents: leadership commitment, process documentation, employee enablement, and performance measurement with BPM, while concurrently examining the moderating role of organizational agility. Existing studies have largely taken these factors separately and have not taken their combined influence in a dynamic manner. For instance, McCormack et al. [19] showed maturity levels, but they did not examine agility as a moderator of these relationships. Stachowiak and Oleśków-Szłapka [20] also considered agility, but no maturity framework was presented. The current gap illustrates the need for a new philosophy towards agility as a strategic enabler for the overall maturity of A/B testing in the business.

This research seeks to investigate how the strength of leadership commitment, process documentation, employee competency, and performance measurement influence the maturity of the business process and whether organizational agility has a moderating influence on the walk-and-talk perspective. This will have implications for the long-run sustainability of MSMEs by enhancing process alignment, internal capabilities, and dynamic capabilities of the firms, resulting in a strong MSME business ecosystem.

2. Literature Review

2.1. The Impact of the Commitment of Leadership on Business Process Maturity

The drive towards business process maturity builds on the influential role of leadership commitment, shaping the strategic direction and operational consistency of MSMEs. To help with structured process development, committed leaders give vision, ensure resources and create an environment of continuous improvement. Argue that leadership involvement is the critical building block for organizations evolving from ad-hoc processes to mature, integrated organizations [21]. Another research conducted by Broman et al. [22] shows that support from upper management could significantly improve the alignment between business strategies and process management practices. Similarly, leader commitment enhances accountability and entices staff to engage in furthering the processes, which in turn, Helfat and Raubitschek [23] identify as playing a central role in expediting the institutionalization of such workflows in a standardized manner. In the context of MSME, Ghobakhloo [24] identifies a direct relationship between transformational leadership and both organizational learning and operational performance, each a marker of process maturity. In fact, further argue that the best-designed business processes are useless if there is no commitment from the leadership, such as no ownership and no follow-through [25]. Not a supporting factor for maturity per se, but a strategic driver of business process maturity that is quite prevalent in MSMEs with resource constraints, where most changes start at the top. Therefore, the hypothesis suggesting a significant positive effect of commitment to leadership on the maturity of business processes is anchored in theory and empirics.

H_1: Leadership commitment has a significant positive influence on business process maturity in MSMEs.

2.2. Impact of Process Documentation on Business Process Maturity

It ensures clarity, standardization, and consistency in your operational activities and is the cornerstone that will help you create mature business processes. The process documentation helps in promoting a culture of accountability and process improvement in MSMEs by enabling organizations to document workflows, roles and responsibilities, and performance metrics. Witt [26] explains, the organizations that invest sufficient resources in documenting their processes are likely to be better at business process maturity because of their increased levels of transparency and repeatability. vom Brocke et al. [27] discuss that process documentation improves knowledge transfer, reduces mistakes and supports compliance, which are

features of mature process systems. Khanfar and Khanfar [28] documented processes become a reference framework for training, performance evaluations and technology assimilation that is crucial to have to align operations with the strategic priorities. Because MSMEs often have a low level of institutional memory, well-documented processes mitigate the risks associated with reliance on certain individuals and ensure stability despite variations in the workforce [29, 30]. All these advantages lead to orderly and responsive workflows in a mature process landscape. Thus, the empirical evidence and theoretical grounding justify the hypothesis that process documentation has a direct and positive effect on the business process maturity of MSMEs.

H_2: Process documentation has a significant positive influence on business process maturity in MSMEs.

2.3. The Impact of Employee Competence on Maturity of Business Processes

It is commonly accepted that employee competence is one of the lesser-known yet critical driving forces behind business process maturity, especially for MSMEs for whom human capital is the beating heart of operational activity. Employee competence refers to knowledge, skills, and attitudes in executing business processes and the ability to adapt to changes in processes. We are grateful to de Rosemann et al. [31] and Szelągowski and Berniak-Woźny [32] for expanding upon BPM maturity and emphasizing that workforce capabilities should be addressed in all phases of BPM research, practice, and education to allow enterprises to develop from informal to optimized process organizations. Explain that process alignment and process standardization are functions of employee awareness of process objectives and the ability to work together, therefore, both elements serve as maturity markers [33, 34]. In MSMEs, where there is always a lack of processes and resources are limited to devote to end-to-end automation, the human impact is even higher. Establish that employee skill is positively related to successful BPM initiative execution in dynamic settings [35, 36]. Also, determined that continuous employee training and sharing process knowledge cause markedly better process outcomes and create the necessary prerequisites for attaining high maturity levels [37, 38]. This way, employee proficiency augments the execution of the processes day-to-day and expedites the internalization of standardized and repeated practice. From these results, it can be concluded that in MSMEs competence of employees has a strong influence on business process maturity both conceptually and empirically.

H_3: Employee competence has a significant positive influence on business process maturity in MSMEs.

2.4. Business Process Maturity Level Affected by Performance Measurement

There, performance measurement is a core mechanism for the management and improvement of business processes and functions, as it acts as an organizational feedback loop, capturing the information needed for continuous improvement and strategic alignment. The performance measurement systems in MSMEs provide visibility into process outcomes, resource utilization and bottlenecks, which are critical attributes in MSMEs. As per Chen et al. [39] and Arora et al. [40], new balanced performance metrics provide decision support for evidence-based decisions, helping the organization improve workflows and maturity. Moreover, according to Ghobakhloo [24], performance measurement serves as a driver for the standardization and formalization of business processes, which are both fundamental components of process maturity. KPI and balanced scorecards enable MSMEs to identify and track the consistency and effectiveness of their operations over time, thereby creating a sense of accountability and ownership of the process among the employees Pettersen and Schulman [29]. Kollenscher et al. [21] discovered that organizations that take a systematic approach to measuring and analyzing the performance of their processes are better equipped to identify inefficiencies and put best practices in place, thereby shortening their trajectory to maturity. Moreover, process performance measurement leads to cross-functional collaboration and strategic alignment between strategic goals and process performance execution, which is a characteristic of advanced maturity stages of processes [41]. Hence, we can postulate that performance measurement positively affects business process maturity of MSMEs, particularly in environments where continuous improvement is critical for competitiveness and sustaining the business.

H_4: Performance measurement has a significant positive influence on business process maturity in MSMEs.

2.5. Organizational Agility as a Moderator

Organizational agility is an adaptive capability that translates leadership commitment to results as it quickly turns top-down support into practical actions for process maturity improvement. Adapting leadership strategies and practices very rapidly possible through high agility leads to faster best practice and process improvement although it can take over certain period of time [42, 43]. Moreover, since process documentation renders business activities consistent, it is necessary but insufficient without agility, enabling companies to make up-to-date and better processes according to dynamic market conditions and increasing performances [44]. But organizational agility substantiates the relationship between employee competence and business process maturity, by providing employees with the opportunity to utilize their skills in an adaptable environment, they are able to accelerate the development of mature processes [45, 46]. Finally, agility further solidifies the link between performance measurement and business process maturity, allowing organizations to rapidly adjust their performance measurements in one fell swoop as situations and data shift, which facilitates the iterative optimization of business processes [47, 48]. Thus, organizational agility serves as a significant facilitator in strengthening the influence of leadership commitment, process documentation, employee competence, and performance measurement on business process maturity in MSMEs.

H_5: Organizational agility positively moderates the relationship between leadership commitment and business process maturity.

$H_{6:}$ Organizational agility positively moderates the relationship between process documentation and business process maturity.

$H_{7:}$ Organizational agility positively moderates the relationship between employee competence and business process maturity.

$H_{8:}$ Organizational agility positively moderates the relationship between performance measurement and business process maturity.

3. Method

This research uses a quantitative method to assess the effect of leadership commitment, process documentation, employee competence, and performance measurement on business process maturity in Indonesian Micro, Small, and Medium Enterprises (MSMEs), in which organizational agility acts as the moderator variable. As identified by Roger Bougie [49] and Creswell et al. [50], a quantitative approach shall be appropriate to measure and analyze the statistical relationship among variables using structured data. A survey-based design was implemented for this study, where primary data were gathered from MSME actors through a structured questionnaire. Hypotheses are tested using SPSS software and the strength of the relationships between variables are determined by conducting the empirical analysis. Such a methodological approach is aligned with other studies on business process management and organizational behavior in developing economy contexts [51, 52].

3.1. Research Design

It uses a causal research design and seeks to understand the influence of the independent variables (leadership commitment, process documentation, employee competence and performance measurement) on the dependent variable (business process maturity) with an organizational agility moderator. According to Creswell et al. [50] and Hair et al. [53], causal design is a way for researchers to assess the degree to which variation in the independent variable results in a significant change in the outcome variable. This study was conducted in Indonesia on MSMEs from different sectors using structured questionnaires with a Likert scale. We respond to this question by means of a survey method, aligned with prior empirical studies on business processes maturity and organizational behavior [54, 55].

3.2. Population and sample

The population in this research was MSMEs that running in Indonesia with various sectors, such as food and beverages, retail, services and manufacturing. The sampling method adopted is purposive sampling since the first respondent is selected deliberately whether he or she meets a characteristic (business size and management role). It is a common approach in analogous studies investigating MSMEs' organizational behavior [24, 56]. Out of 210 distributed questionnaires, 210 were returned and 186 redistributed for analysis, which met the minimum requirement to do a multivariate analysis.

Table 1.
MSME sample characteristics.

Category	Description	Frequency	Percentage (%)
Business Sector	Manufacturing, Retail, Services, Food	186	100%
Business Size	Micro, Small, Medium	50, 80, 56	27%, 43%, 30%
Respondent Position	Owner/Manager, Supervisor	132, 54	71%, 29%
Years of Operation	< 3 years, 3–10 years, >10 years	40, 94, 52	22%, 51%, 27%

3.3. Data collection

A structured online and offline survey was used to collect data from decision-makers of MSMEs (owners or managers). The items were measured on a five-point Likert scale, 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire was pilot-tested on 30 MSME respondents, after which its reliability was calculated based on Cronbach's Alpha >0.7 threshold [53]. In addition, as in prior studies in similar contexts[57], this method contributes to assuring the consistency and clarity of the instrument [58].

3.4. Variables and Measurement

All variables in this study are operationalized based on previously validated instruments that have been adapted to the MSME context in Indonesia [59]. Four indicators adapted from Ghobakhloo [24]. The process documentation is measured using the indicators as suggested. vom Brocke et al. [27] Items from Leyer and Moormann [60] are used to measure employee competence; items measuring performance measurement are adopted from Bougoulia and Glykas [37]. Business process maturity are measured with the dimensions of McCormack et al. [19], and organizational agility with the constructs.

Table 2.
Identification and operationalization of variables.

Variable	Indicator Example
Leadership Commitment	Top management support for BPM initiatives
Process Documentation	Existence and clarity of documented workflows
Employee Competence	Staff's ability to execute and improve business processes
Performance Measurement	Use of KPIs for monitoring and evaluating process outputs
Business Process Maturity	Standardization, integration, and optimization of processes
Organizational Agility	Responsiveness to market and environmental changes

3.5. Data Analysis

Data were analyzed through SPSS version 26. This was followed by profiling respondents using descriptive analysis and validity and reliability tests for all measurement items. Hypothesis testing was preceded by classical assumption tests of normality, multicollinearity, and heteroscedasticity [61]. Direct effects (H1–H4) were tested using multiple linear regression, while moderated regression analysis (MRA) was used to test the moderating effects of organizational agility (H5–H8). SPSS was then nominated for application in the analysis process of data, mainly due to its strength in analyzing the related data of social science and its application in related empirical research for business process and organizational behavior [53]. A significance level of 0.05 was applied, and interaction terms were considered according to standard procedures in moderated regression modeling.

4. Result

4.1. Descriptive statistics

The descriptive statistics of the key research variables are shown in Table 3. It is seen that the mean scores are relatively high for all variables, which show a general perception among respondents. The mean value for Employee Competence was the highest (M = 4.18, SD = 0.51), suggesting that the employees of the sampled organizations are competent. Retention-Refinement of Structural Processes (M = 4.16, SD = 0.55) and captured Organizational Agility (M = 4.14, SD = 0.58) concluded, showing how organizations can remain evolving but with well-established and form-oriented practices. Leadership Commitment indicated that top-level management was a consistent supporter of KMS (M = 4.12, SD = 0.57). Performance Measurement (M = 4.09, SD = 0.54) and Process Documentation (M = 4.05, SD = 0.62) obtained marginally lower but still above mid-point means, indicating well-established practices. Overall, the constructs have a standard deviation between 0.51 and 0.62, indicating a moderate level of agreement among respondents across variables.

Table 3.
Descriptive Statistics of Research Variables.

Variable	N	Min.	Max.	Mean	Std. Dev.
Leadership Commitment	186	2	5	4.12	0.57
Process Documentation	186	2	5	4.05	0.62
Employee Competence	186	2	5	4.18	0.51
Performance Measurement	186	2	5	4.09	0.54
Business Process Maturity	186	2	5	4.14	0.58
Organizational Agility	186	2	5	4.16	0.55

4.2. Validity and Reliability Test

The results of the validity and reliability tests for each of the constructs used in the study are presented in Table 4. All items for each variable have a corrected item-total correlation of more than 0.30; hence, the items are said to be valid, and the items can measure what they should measure. Moreover, Cronbach's Alpha was calculated for the reliability of each variable and all values were above the threshold value of 0.70. The highest internal consistency was observed in Business Process Maturity ($\alpha = 0.891$), followed by Process Documentation ($\alpha = 0.884$), Performance Measurement ($\alpha = 0.876$), Leadership Commitment ($\alpha = 0.872$), Organizational Agility ($\alpha = 0.867$), and Employee Competence ($\alpha = 0.863$). These findings confirm that all measurement tools utilized in the research are valid and reliable, leading to that each construct demonstrated a high level of internal consistency.

Table 4.
Validity and reliability testing.

Variable	Number of Items	Cronbach's Alpha	All Items r > 0.30?
Leadership commitment	4	0.872	Yes
Process documentation	4	0.884	Yes
Employee competence	4	0.863	Yes
Performance measurement	4	0.876	Yes
Business process maturity	4	0.891	Yes
Organizational agility	4	0.867	Yes

4.3. Classical Assumption Testing

The results stemming from the classical assumption tests to ensure the validity of the regression analysis are outlined in Table 5. The Kolmogorov-Smirnov method normality test showed significance values for all variables > 0.05, meaning that the data were normally distributed. All the independent variables of the multicollinearity test (VIF) obtained values < 5, which indicates that there was no indication of multicollinearity among the predictors [62]. Moreover, the Glejser heteroscedasticity test produced significance values above 0.05, thereby assuring that the homoscedasticity assumption is satisfied. Incorporating these findings shows that the dataset meets the basic demands for trustworthy linear regression analysis.

Table 5.
Classical assumption test Summary.

Test	Result	Conclusion
Normality (Kolmogorov-Smirnov)	Sig > 0.05 for all variables	Normal distribution
Multicollinearity (VIF)	VIF < 5 for all predictors	No multicollinearity
Heteroscedasticity	Glejser Sig > 0.05	Homoscedasticity met

4.4. Hypothesis Testing (Direct Effect)

Table 6 shows the result of multiple linear regression analysis of the direct effects of the independent variables on the dependent variable. From the regression model, we can observe that all four predictors, leadership commitment, process documentation, employee competence, and Performance Measurement showed statistically significant positive impacts ($p < 0.01$) on the outcome variable[63]. In particular, Leadership Commitment had the largest standardized effect ($B = 0.281$, $t = 4.132$, $p < 0.001$), and Process Documentation had the next largest effect ($B = 0.245$, $t = 3.828$, $p < 0.001$), strengthening the notion of the essential role of structured leadership and the clarity of process documentation. It also indicates that Employee Competence ($B = 0.217$, $t = 3.014$, $p = 0.003$) and Performance Measurement ($B = 0.191$, $t = 2.768$, $p = 0.006$) in the model significantly, suggesting that human resource capability and performance tracking mechanisms played an important role [64]. Results endorse the theory that, while other entities can manipulate the target outcome, organizational features play a significant role in shaping it.

Table 6.
Regression Analysis Results (Direct Effects)

Variable	Unstandardized B	Std. Error	t-value	Sig. (p)
(C)	1.014	0.243	4.174	0
Leadership Commitment	0.281	0.068	4.132	0
Process Documentation	0.245	0.064	3.828	0
Employee Competence	0.217	0.072	3.014	0.003
Performance Measurement	0.191	0.069	2.768	0.006

4.5. Moderation testing (Organizational Agility)

The results of moderated regression analysis, which is carried out to test whether Organizational Agility moderates the relationship between independent variables and dependent variable, is shown in Table 7. All four predictors' interaction terms are statistically significant, suggesting a moderating effect of organizational agility on these relationships. In particular, Leadership Commitment × Organizational Agility was significant ($\beta = 0.152$, $t = 2.98$, $p = 0.003$), indicating that higher levels of agility amplify the positive effect of leadership on the dependent variable [65]. In the same manner, Process Documentation × Organizational Agility ($\beta = 0.133$, $t = 2.333$, $p = 0.021$), Employee Competence × Organizational Agility ($\beta = 0.142$, $t = 2.582$, $p = 0.011$), and Performance Measurement × Organizational Agility ($\beta = 0.128$, $t = 2.207$, $p = 0.029$) all exert significant moderating effects. The discovery suggests that the impact of internal organizational practices on performance outcomes is positively influenced in agile organizational contexts.

Table 7.
Moderated Regression Analysis

Interaction Term	β Coefficient	Std. Error	t-value	Sig. (p)
Leadership Commitment × Organizational Agility	0.152	0.051	2.98	0.003
Process Documentation × Organizational Agility	0.133	0.057	2.333	0.021
Employee Competence × Organizational Agility	0.142	0.055	2.582	0.011
Performance Measurement × Organizational Agility	0.128	0.058	2.207	0.029

4.6. Discussion

Results: These insights may serve as information in determining the factors that influence the maturity of business processes in micro, small, and medium enterprises (MSMEs) in Indonesia. The findings validate that leadership commitment, business process documentation, employee competence, and performance measurement significantly and positively affect the business process maturity level. Furthermore, organizational agility acts as a substantial moderator in these relationships, where it amplifies the effects of these variables on process maturity.

The substantial impact observed for leadership commitment on business process maturity is consistent with the developed body of literature emphasizing the role of leadership as a critical factor influencing various strategic and operational outcomes. Al-Mashari et al. [66] also suggest that businesses spread across diverse verticals can be effectively pursued through a transfer of business process development in appreciative collaboration between continuous improvement, resource distribution, and change management within the organization. Such a finding is consistent with the work of McCormack et al. [19], which also highlights leadership as a key enabler in attaining business process excellence. In MSMEs, when resources and formal systems are in limited supply, it is the vision and ownership of the leaders that go a long way in driving process orientation and maturity. The present research supports the impact of leadership commitment on better alignment of business objectives, efficient process execution and long-run sustainability, in line with results presented by Al-Mashari et al. [66], showing that successful reengineering of the process rests with leadership.

It indicates that the documented process acts as an enabler for the institutionalization of knowledge and has a good impact on the maturity of business processes. It serves as a source of truth to ensure that organizational activities are not person-dependent and can be replicated, audited, and improved in a systematic way. This means that having documentation in the form of flows, SOPs, and process assets is paramount to understanding, measuring, and improving business processes [67]. Formal documentation is not new and has been well documented in the literature but is not summarized specifically for the case of Indonesian MSMEs, which largely relies on tacit knowledge for operations, and was chosen as a critical component to drive knowledge transfer, standardization and scalability. This is consistent with findings [68] who noted that process maturity demands not only execution but also a structured framework of process monitoring & control. Hence, documentation plays an important role in linking informal practices with Formal practices that help MSMEs to raise the maturity level of operations.

In terms of employee competency, the research indicates there is a significant effect on business process maturity and this means that human resources are crucial to performing and advancing business activities. Skilled employees are more capable of adjusting to process changes, grasping cross-departmental processes, and participating in solving problems and finding new solutions [3, 69]. emphasized that the most skilled and most knowledgeable employees would bring a strong positive impact on organizational routines and capabilities. Additionally, the resource-based view [70] maintains that human capital is particularly valued as a resource, which can lead to competitive advantage and the results from this study support this view. With job roles in MSMEs overlapping and multitasking a common norm, employee competence not only serves to make processes more efficient but also provides the foundation for learning and continuous improvement of processes within an organization [71]. This demonstrates that performance measurement is an important factor in process maturity and emphasizes the need for effective metrics and evaluation mechanisms to ensure process optimization. The ability to measure performance effectively allows organizations to monitor their progress, identify areas of inefficiency, and ensure actions are in line with strategy. In Waruhiu [72] Balanced Scorecard framework, both financial and non-financial metrics are brought together in order to guide the management of business processes. The findings of this study is in accordance with the study of Balouei Jamkhaneh and Safaei Ghadikolaei [73] concluded that organizations that have solid performance measurement systems are more mature at managing their processes. Even for MSMEs, which may not have a sophisticated dashboard, simple indicators applied consistently can be of great benefit. As observed by Chithambo et al. [74], performance measurement improves in transparency, accountability and informed decision-making, which are critical pillars of enterprise processes maturity [75, 76]. One valuable contribution that comes out of this study is the role of organizational agility as a moderator. And then there's Agility, the ability of a firm to quickly sense, respond, and adapt to change, an enabler of a multiplier effect for the leadership, documentation, competence and measurement that you pass through the eyes to a result of business process maturity. Agility in dynamic environments can also be considered a continued necessity to survive, not just as one of the trends [77, 78]; thus, in the Indonesian MSME environment, this value will be very useful. These moderating findings imply that even with a high level of leadership commitment or strong documentation, the lack of agility may mitigate the effect on process maturity. These findings fit well within a dynamic capabilities framework [79] that argues that organizations must constantly integrate, build, and reconfigure internal and external competencies to respond to rapidly changing environments.

Agility moderating the above relationship denotes that visionary leadership impacts high in organizations with adaptive capabilities, which denotes that visionary leadership impacts high in organizations with adaptive capabilities. It complies with studies [80] which demonstrated that transformational leadership impacts agile organizations positively. Likewise, the moderating role of agility on documentation indicates that the importance of the formal records increases when an organization is able to rapidly deploy what it has documented in the context of changing circumstances [81]. This resonates with the theory of organizational ambidexterity, where the concept is to balance exploration and exploitation [82].

The findings suggest that agile organizations are able to more effectively leverage their human capital when agility acts as a moderator between employee competence and process maturity. This means that competent employees are not only efficient but can also innovate and respond to change in agile settings [83, 84]. Finally, we can conclude that agility improves the connection between the performance measurement and process maturity, which can imply that agile organizations are more likely to use the measurement data in a proactive way by taking actions based on the insights. Yoshikuni et al. [85] found evidence that IT-enabled agility amplifies the relationship between information and strategic outcomes.

5. Conclusion

Hence, this study aims to draw conclusions about the factors, including leadership commitment, process documentation, employee competence, and performance measurement, which are believed to contribute to business process maturity in

Indonesian MSMEs. Additionally, organizational agility acts as an important cross-variable moderator by enhancing the relationship between the core drivers and process development and execution. In conclusion, the results highlight the necessity of incorporating both structural and behavioral components in order to attain higher levels of process maturity, particularly within dynamic and resource-limited contexts. These findings add to the literature on process management in emerging economies through their implications for both agility and competitive advantage, and as an imperative to transform internal capabilities into stable, responsive, and sustainable business processes.

References

[1] H. Dasaraju and T. T. H. Tambunan, "Introduction: Role of MSMEs in achieving SDGs—Perspectives from emerging economies BT - Role of Micro, small and medium enterprises in achieving sdgs: perspectives from emerging economies," H. Dasaraju and T. T. H. Tambunan, Eds., ." Singapore: Springer Nature Singapore, 2023, pp. 1–16.

[2] S. Candra, I. N. A. D. Wiratama, M. A. Rahmadi, and V. Cahyadi, "Innovation process of micro, small and medium enterprises (MSMEs) in greater Jakarta area (perspective from foodpreneurs)," *Journal of Science and Technology Policy Management*, vol. 13, no. 3, pp. 542-560, 2022. https://doi.org/10.1108/JSTPM-10-2020-0153

[3] G. Dutta, R. Kumar, R. Sindhwani, and R. K. Singh, "Digitalization priorities of quality control processes for SMEs: A conceptual study in perspective of Industry 4.0 adoption," *Journal of Intelligent Manufacturing*, vol. 32, no. 6, pp. 1679-1698, 2021. https://doi.org/10.1007/s10845-021-01783-2

[4] G. Dutta, R. Kumar, R. Sindhwani, and R. K. Singh, "Overcoming the barriers of effective implementation of manufacturing execution system in pursuit of smart manufacturing in SMEs," *Procedia Computer Science*, vol. 200, pp. 820-832, 2022. https://doi.org/10.1016/j.procs.2022.01.279

[5] F. Wijnhoven, P. Hoffmann, R. Bemthuis, and J. Boksebeld, "Using process mining for workarounds analysis in context: Learning from a small and medium-sized company case," *International Journal of Information Management Data Insights*, vol. 3, no. 1, p. 100163, 2023. https://doi.org/10.1016/j.jjimei.2023.100163.

[6] N. Gupta, D. Sardana, and R. Lee, "Dynamic capabilities that matter for business failure versus survival," *Industrial Marketing Management*, vol. 116, pp. 40-50, 2024. https://doi.org/10.1016/j.indmarman.2023.11.004

[7] T. M. Sohns, B. Aysolmaz, L. Figge, and A. Joshi, "Green business process management for business sustainability: A case study of manufacturing small and medium-sized enterprises (SMEs) from Germany," *Journal of Cleaner Production*, vol. 401, p. 136667, 2023. https://doi.org/10.1016/j.jclepro.2023.136667

[8] Q. Wu, D. Yan, and M. Umair, "Assessing the role of competitive intelligence and practices of dynamic capabilities in business accommodation of SMEs," *Economic Analysis and Policy*, vol. 77, pp. 1103-1114, 2023. https://doi.org/10.1016/j.eap.2022.11.024

[9] H.-C. Liu, R. Liu, X. Gu, and M. Yang, "From total quality management to Quality 4.0: A systematic literature review and future research agenda," *Frontiers of Engineering Management*, vol. 10, no. 2, pp. 191-205, 2023. https://doi.org/10.1007/s42524-022-0243-z

[10] S. Bhardwaj, A. Behl, and V. Pereira, "Proposing an integrative data-analytics framework for micro, small and medium enterprises: a systematic review substantiated by evidence from two case studies," *Annals of Operations Research*, pp. 1-36, 2023. https://doi.org/10.1007/s10479-023-05186-9

[11] D. McKendry, R. I. Whitfield, and A. H. Duffy, "Product Lifecycle Management implementation for high value Engineering to Order programmes: An informational perspective," *Journal of Industrial Information Integration*, vol. 26, p. 100264, 2022. https://doi.org/10.1016/j.jii.2021.100264.

[12] J. Mohan, M. S. Kaswan, and R. Rathi, "Identification and investigation into the barriers to Green Lean Six Sigma implementation: a micro small and medium enterprises perspective," *International Journal on Interactive Design and Manufacturing*, vol. 18, no. 8, pp. 6161-6175, 2024. https://doi.org/10.1007/s12008-023-01551-x

[13] R. K. Sari, M. Alfarizi, and M. S. Ab Talib, "Sustainable strategic planning and management influence on sustainable performance: findings from halal culinary MSMEs in Southeast Asia," *Journal of Modelling in Management*, vol. 19, no. 6, pp. 2034-2060, 2024. https://doi.org/10.1108/JM2-12-2023-0324

[14] Y. Benrqya, Y. Chetioui, and C. Jerboui, "Investigating the relationship between supply chain maturity and performance: an emerging market study," *International Journal of Productivity and Performance Management*, vol. 73, no. 6, pp. 1772-1796, 2024. https://doi.org/10.1108/IJPPM-09-2022-0477

[15] S. Garrido, E. Correia, M. F. Aguiar, D. Jugend, and H. Carvalho, "Maturity tools in the supply chain context: A framework proposal," Springer. https://doi.org/10.1007/978-3-031-19884-7_7, 2024, pp. 33-52.

[16] W. Zhang, W. Zhang, and T. U. Daim, "The voluntary green behavior in green technology innovation: The dual effects of green human resource management system and leader green traits," *Journal of Business Research*, vol. 165, p. 114049, 2023. https://doi.org/10.1016/j.jbusres.2023.114049

[17] B. H. Leso, M. N. Cortimiglia, A. Ghezzi, and V. Minatogawa, "Exploring digital transformation capability via a blended perspective of dynamic capabilities and digital maturity: a pattern matching approach," *Review of Managerial Science*, vol. 18, no. 4, pp. 1149-1187, 2024. https://doi.org/10.1007/s11846-023-00692-3

[18] E. Overby, A. Bharadwaj, and V. Sambamurthy, "Enterprise agility and the enabling role of information technology," *European journal of information systems*, vol. 15, no. 2, pp. 120-131, 2006. https://doi.org/10.1057/palgrave.ejis.3000600

[19] K. McCormack *et al.*, "A global investigation of key turning points in business process maturity," *Business Process Management Journal*, vol. 15, no. 5, pp. 792-815, 2009. https://doi.org/10.1108/14637150910987946

[20] A. Stachowiak and J. Oleśków-Szłapka, "Agility capability maturity framework," *Procedia Manufacturing*, vol. 17, pp. 603-610, 2018. https://doi.org/10.1016/j.promfg.2018.10.102

[21] E. Kollenscher, D. Eden, B. Ronen, and M. Farjoun, "Architectural leadership: The neglected core of organizational leadership," *European Management Review*, vol. 14, no. 3, pp. 247-264, 2017. https://doi.org/10.1111/emre.12108

[22] G. Broman *et al.*, "Science in support of systematic leadership towards sustainability," *Journal of Cleaner Production*, vol. 140, pp. 1-9, 2017. https://doi.org/10.1016/j.jclepro.2016.09.085

[23] C. E. Helfat and R. S. Raubitschek, "Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems," *Research policy*, vol. 47, no. 8, pp. 1391-1399, 2018. https://doi.org/10.1016/j.respol.2018.01.019

[24] M. Ghobakhloo, "Determinants of information and digital technology implementation for smart manufacturing," *International Journal of Production Research*, vol. 58, no. 8, pp. 2384-2405, 2020. https://doi.org/10.1080/00207543.2019.1630775
[25] N. Sutcliffe, "Leadership behavior and business process reengineering (BPR) outcomes: An empirical analysis of 30 BPR projects," *Information & Management*, vol. 36, no. 5, pp. 273-286, 1999. https://doi.org/10.1016/S0378-7206(99)00027-0
[26] U. Witt, "Imagination and leadership–the neglected dimension of an evolutionary theory of the firm," *Journal of Economic Behavior & Organization*, vol. 35, no. 2, pp. 161-177, 1998. https://doi.org/10.1016/S0167-2681(98)00058-4
[27] J. vom Brocke, S. Zelt, and T. Schmiedel, "On the role of context in business process management," *International Journal of Information Management*, vol. 36, no. 3, pp. 486-495, 2016. https://doi.org/10.1016/j.ijinfomgt.2015.10.002
[28] I. Khanfar and N. Khanfar, "An investigation on the legal protection of cryptocurrency investors, comparative legal analysis." Cham: Springer, 2023, pp. 753-765.
[29] K. A. Pettersen and P. R. Schulman, "Drift, adaptation, resilience and reliability: Toward an empirical clarification," *Safety science*, vol. 117, pp. 460-468, 2019. https://doi.org/10.1016/j.ssci.2016.03.004
[30] J. R. Santos, L. C. Herrera, K. D. S. Yu, S. A. T. Pagsuyoin, and R. R. Tan, "State of the art in risk analysis of workforce criticality influencing disaster preparedness for interdependent systems," *Risk Analysis*, vol. 34, no. 6, pp. 1056-1068, 2014. https://doi.org/10.1111/risa.12183
[31] M. Rosemann, T. de Bruin, and B. Power, "BPM maturity," in business process management," Routledge, 2007, pp. 322–338.
[32] M. Szelągowski and J. Berniak-Woźny, "How to improve the assessment of BPM maturity in the era of digital transformation," *Information Systems and e-Business Management*, vol. 20, no. 1, pp. 171-198, 2022. https://doi.org/10.1007/s10257-021-00549-w
[33] M.-L. Chiu and C.-N. Lin, "Developing supply chain open innovation capability: The mediating role of the knowledge creation process, governance mechanism and technology as a driver," *Journal of Innovation & Knowledge*, vol. 7, no. 4, p. 100264, 2022. https://doi.org/10.1016/j.jik.2022.100264
[34] B. Wang *et al.*, "Human digital twin in the context of industry 5.0," *Robotics and Computer-Integrated Manufacturing*, vol. 85, p. 102626, 2024. https://doi.org/10.1016/j.rcim.2023.102626
[35] M. Farzaneh, R. Wilden, L. Afshari, and G. Mehralian, "Dynamic capabilities and innovation ambidexterity: The roles of intellectual capital and innovation orientation," *Journal of Business Research*, vol. 148, pp. 47-59, 2022. https://doi.org/10.1016/j.jbusres.2022.04.030
[36] A. Iovanella, "Exploiting network science in business process management: A conceptual framework," *Chaos, Solitons & Fractals*, vol. 178, p. 114344, 2024. https://doi.org/10.1016/j.chaos.2023.114344
[37] E. Bougoulia and M. Glykas, "Knowledge management maturity assessment frameworks: A proposed holistic approach," *Knowledge and Process Management*, vol. 30, no. 4, pp. 355-386, 2023. https://doi.org/10.1002/kpm.1731
[38] Y. Liu, C. Zhou, Y. Wu, S. Deng, Y. Chen, and J. Zhou, "Tracheostomy tube changes in patients with tracheostomy: A quality improvement project," *Nursing in Critical Care*, vol. 29, no. 6, pp. 1470-1478, 2024. https://doi.org/10.1111/nicc.13008
[39] Z.-S. Chen, M.-D. Zhou, K.-S. Chin, A. Darko, X.-J. Wang, and W. Pedrycz, "Optimized decision support for BIM maturity assessment," *Automation in Construction*, vol. 149, p. 104808, 2023. https://doi.org/10.1016/j.autcon.2023.104808
[40] S. Arora, P. Chaudhary, and R. K. Singh, "Adoption of HR analytics for future-proof decision making: role of attitude toward artificial intelligence as a moderator," *International Journal of Organizational Analysis*, 2024. https://doi.org/10.1108/IJOA-03-2024-4392
[41] J. Hair and A. Alamer, "Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example," *Research Methods in Applied Linguistics*, vol. 1, no. 3, p. 100027, 2022. https://doi.org/10.1016/j.rmal.2022.100027
[42] D. M. Wiechmann, C. Reichstein, R.-C. Härting, J. Bueechl, and M. Pressl, "Agile management to secure competitiveness in times of digital transformation in medium-sized businesses," *Procedia Computer Science*, vol. 207, pp. 2353-2363, 2022. https://doi.org/10.1016/j.procs.2022.09.294
[43] L. Salandri, G. L. C. Rizzo, A. Cozzolino, and P. De Giovanni, "Green practices and operational performance: The moderating role of agility," *Journal of Cleaner Production*, vol. 375, p. 134091, 2022. https://doi.org/10.1016/j.jclepro.2022.134091
[44] A. N. Khan, "Artificial intelligence and sustainable performance: role of organisational agility and environmental dynamism," *Technology Analysis & Strategic Management*, vol. 37, no. 5, pp. 568-583, 2025. https://doi.org/10.1080/09537325.2023.2290171
[45] A. D. Pizzo, T. Kunkel, G. J. Jones, B. J. Baker, and D. C. Funk, "The strategic advantage of mature-stage firms: Digitalization and the diversification of professional sport into esports," *Journal of Business Research*, vol. 139, pp. 257-266, 2022. https://doi.org/10.1016/j.jbusres.2021.09.057
[46] K. Rajaram and P. N. Tinguely, "Generative artificial intelligence in small and medium enterprises: Navigating its promises and challenges," *Business Horizons*, vol. 67, no. 5, pp. 629-648, 2024. https://doi.org/10.1016/j.bushor.2024.05.008
[47] K. M. Eisenhardt and J. A. Martin, "Dynamic capabilities: what are they?," *Strategic management journal*, vol. 21, no. 10-11, pp. 1105-1121, 2000.
[48] B. T. Hazen, R. V. Bradley, J. E. Bell, J. In, and T. A. Byrd, "Enterprise architecture: A competence-based approach to achieving agility and firm performance," *International Journal of Production Economics*, vol. 193, pp. 566-577, 2017. https://doi.org/10.1016/j.ijpe.2017.08.022
[49] U. S. Roger Bougie, "Research methods for business: A skill building approach," Retrieved: https://books.google.co.id/books?hl=en&lr=&id=ikI6EAAAQBAJ&oi=fnd&pg=PA21&dq=Sekaran+and+Bougie+(2019)&ots=tgJWv6wEBm&sig=jenYow0B8aq4h6tfycOSqdrKK6M&redir_esc=y#v=onepage&q=Sekaran, 2024.
[50] J. D. Creswell, L. E. Pacilio, E. K. Lindsay, and K. W. Brown, "Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress," *Psychoneuroendocrinology*, vol. 44, pp. 1-12, 2014. https://doi.org/10.1016/j.psyneuen.2014.02.007
[51] P. Lara Machado, M. van de Ven, B. Aysolmaz, A. Athanasopoulou, B. Ozkan, and O. Turetken, "Methods that bridge business models and business processes: a synthesis of the literature," *Business Process Management Journal*, vol. 29, no. 8, pp. 48-74, 2023. https://doi.org/10.1108/BPMJ-08-2022-0396
[52] J. I. C. Goni and A. Van Looy, "Process innovation capability in less-structured business processes: a systematic literature review," *Business Process Management Journal*, vol. 28, no. 3, pp. 557-584, 2022.

[53] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *European Business Review*, vol. 31, no. 1, pp. 2-24, 2019. https://doi.org/10.1108/EBR-11-2018-0203

[54] K. P. McCormack and W. C. Johnson, *Business process orientation: Gaining the e-business competitive advantage*. Crc Press, 2001.

[55] P. Trkman, K. McCormack, M. P. V. De Oliveira, and M. B. Ladeira, "The impact of business analytics on supply chain performance," *Decision Support Systems*, vol. 49, no. 3, pp. 318-327, 2010. https://doi.org/10.1016/j.dss.2010.03.007

[56] J. Jeston, *Business process management: Practical guidelines to successful implementations*. Routledge, 2014.

[57] M. Fernando and R. Bandara, "Towards virtuous and ethical organisational performance in the context of corruption: A case study in the public sector," *Public Administration and Development*, vol. 40, no. 3, pp. 196-204, 2020. https://doi.org/10.1002/pad.1882

[58] G. A. Tobin and C. M. Begley, "Methodological rigour within a qualitative framework," *Journal of Advanced Nursing*, vol. 48, no. 4, pp. 388-396, 2004. https://doi.org/10.1111/j.1365-2648.2004.03207.x

[59] R. Rahmawati, D. Setiawan, Y. A. Aryani, and K. Kiswanto, "Role environmental performance on effect financial performance to carbon emission disclosure," *International Journal of Energy Economics and Policy*, vol. 14, no. 1, pp. 196-204, 2024. https://doi.org/10.32479/ijeep.15031

[60] M. Leyer and J. Moormann, "How lean are financial service companies really? Empirical evidence from a large scale study in Germany," *International Journal of Operations & Production Management*, vol. 34, no. 11, pp. 1366-1388, 2014. https://doi.org/10.1108/IJOPM-06-2013-0296

[61] A. K. Widagdo, S. Murni, and S. Nurlaela, "Corporate social responsibility, earnings management, and firm performance: Are the companies really ethical?," presented at the In IOP Conference Series: Earth and Environmental Science (Vol. 824, No. 1, p. 012118). IOP Publishing, 2021.

[62] A. Junaidi, E. D. Amperawati, A. Dwianto, and S. N. Putri, "Towards a new paradigm in quranic exegesis: Exploring the evolution and practice of munasabah in the context of Posthumanism," *Journal of Posthumanism*, vol. 5, no. 1, pp. 24-40, 2025.

[63] R. Setiawati, M. Firsada, M. Bahrudin, G. Saif, and A. Dwianto, "'Islamic community development : Synergy between Indonesia and Yemen in building civilization through da ' wah and Sharia economics," vol. 8, pp. 3686–3702, 2025. https://doi.org/10.53894/ijirss.v8i2.6099

[64] A. Anshori, R. Setiawati, A. Pimay, S. Syukur, and A. Dwianto, "The ethos of religious harmony of Javanese Muslims according to King Mangkunegara IV," *Journal of Ecohumanism*, vol. 3, no. 3, pp. 230-247, 2024. https://doi.org/10.62754/joe.v3i3.3332

[65] E. Dwi Amperawati, S. Hartoko, and A. Dwianto, "Exploring the landscape of digital entrepreneurship among disabled people: A bibliometric analysis," *Qubahan Academic Journal*, vol. 4, no. 3, pp. 469-484, 2024.

[66] M. Al-Mashari, Z. Irani, and M. Zairi, "Business process reengineering: A survey of international experience," *Business Process Management Journal*, vol. 7, no. 5, pp. 437-455, 2001. https://doi.org/10.1108/14637150110406812

[67] L. F. Scavarda, P. Ceryno, T. Azevedo, and R. Goyannes Gusmão Caiado, "A business process management lifecycle framework for continuous improvement towards operational excellence: lessons learned from a longitudinal study in a Brazilian organisation," *International Journal of Lean Six Sigma*, vol. 16, no. 2, pp. 296-327, 2025. https://doi.org/10.1108/IJLSS-12-2023-0218

[68] S. Eskandarzadeh, B. Fahimnia, and K. Hoberg, "Adherence to standard operating procedures for improving data quality: An empirical analysis in the postal service industry," *Transportation Research Part E: Logistics and Transportation Review*, vol. 176, p. 103178, 2023. https://doi.org/10.1016/j.tre.2023.103178

[69] S. D. Becker, M. Messner, and U. Schäffer, "The interplay of core and peripheral actors in the trajectory of an accounting innovation: Insights from beyond budgeting," *Contemporary Accounting Research*, vol. 37, no. 4, pp. 2224-2256, 2020. https://doi.org/10.1111/1911-3846.12593

[70] J. Robins and M. F. Wiersema, "A resource-based approach to the multibusiness firm: Empirical analysis of portfolio interrelationships and corporate financial performance," *Strategic Management Journal*, vol. 16, no. 4, pp. 277-299, 1995. https://doi.org/10.1002/smj.4250160403

[71] D. Prihadyanti, "Sustainable business model innovation within a complex environment," *International Journal of Innovation and Technology Management*, vol. 20, no. 06, p. 2350039, 2023. https://doi.org/10.1142/S0219877023500396

[72] H. Waruhiu, "Rebalancing the Balanced Scorecard: a sequel to Kaplan and Norton," *European Journal of Business and Management*, vol. 6, no. 29, pp. 116-124, 2014.

[73] H. Balouei Jamkhaneh and A. H. Safaei Ghadikolaei, "Measuring the maturity of service supply chain process: a new framework," *International Journal of Productivity and Performance Management*, vol. 71, no. 1, pp. 245-288, 2022.

[74] L. Chithambo, I. Tingbani, G. A. Agyapong, E. Gyapong, and I. S. Damoah, "Corporate voluntary greenhouse gas reporting: Stakeholder pressure and the mediating role of the chief executive officer," *Business Strategy and the Environment*, vol. 29, no. 4, pp. 1666-1683, 2020.

[75] H. M. Naeem and P. Garengo, "The interplay between industry 4.0 maturity of manufacturing processes and performance measurement and management in SMEs," *International Journal of Productivity and Performance Management*, vol. 71, no. 4, pp. 1034-1058, 2022. https://doi.org/10.1108/IJPPM-09-2021-0552

[76] V. Kantus, R. Rahmawati, A. Nur Probohudono, A. Dwianto, and P. Payamta, "CSR competition indicators: How relative CSR performance affects analyst recommendations in the indonesian market," *Journal of Ecohumanism*, vol. 4, no. 1, p. 62754, 2024. https://doi.org/10.62754/joe.v4i1.4091

[77] M. Alfarizi, T. Widiastuti, and Ngatindriatun, "Exploration of technological challenges and public economic trends phenomenon in the sustainable performance of Indonesian digital MSMEs on industrial era 4.0," *Journal of Industrial Integration and Management*, vol. 9, no. 01, pp. 65-96, 2024. https://doi.org/10.1142/S2424862223500045

[78] I. Sabila, R. Rahmawati, D. Djuminah, E. D. Amperawati, and A. Dwianto, "The interplay between board gender diversity, earnings quality, and return volatility: Considering the reputation of corporate awards," *Qubahan Academic Journal*, vol. 4, no. 3, pp. 638-650, 2024. https://doi.org/10.48161/qaj.v4n3a1006

[79] D. J. Teece, "Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world," *Research Policy*, vol. 47, no. 8, pp. 1367-1387, 2018. https://doi.org/10.1016/j.respol.2017.01.015

[80] M. S. A. Ansari, M. Abouraia, R. El Morsy, and V. R. R. Thumiki, "Influence of transformational and transactional leadership on agile project success," *Project Leadership and Society*, vol. 5, p. 100136, 2024. https://doi.org/10.1016/j.plas.2024.100136

[81] R. Setiawati *et al.*, "Islamic community empowerment in economic growth through sugar cane farming partnerships," *Qubahan Academic Journal*, vol. 4, no. 3, pp. 579-606, 2024. https://doi.org/10.48161/qaj.v4n3a993

[82] Y. Shi, C. Van Toorn, and M. McEwan, "Exploration–Exploitation: How business analytics powers organisational ambidexterity for environmental sustainability," *Information Systems Journal*, vol. 34, no. 3, pp. 894-930, 2024. https://doi.org/10.1111/isj.12456

[83] M. Trzeciak and P. Banasik, "Motivators influencing the efficiency and commitment of employees of agile teams," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 8, no. 4, p. 176, 2022. https://doi.org/10.3390/joitmc8040176

[84] N. Alipour, S. Nazari-Shirkouhi, M. S. Sangari, and H. R. Vandchali, "Lean, agile, resilient, and green human resource management: the impact on organizational innovation and organizational performance," *Environmental Science and Pollution Research*, vol. 29, no. 55, pp. 82812-82826, 2022. https://doi.org/10.1007/s11356-022-21576-1

[85] A. C. Yoshikuni, R. Dwivedi, J. E. R. Favaretto, and D. Zhou, "How enterprise information systems strategies-enabled strategy-making influences organizational agility: mediated role of IT-enabled dynamic capabilities in two BRICS countries study," *Journal of Enterprise Information Management*, vol. 37, no. 1, pp. 230-258, 2024. https://doi.org/10.1108/JEIM-06-2023-0275