

Supply Chain Collaboration, Digital Readiness, and SME Performance: Evidence from Batik SMEs in Indonesia

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ABSTRACT

Supply Chain Collaboration (SCC) and Digital Readiness (DR) are important capabilities for SME performance, particularly in traditional industries facing digital and market transformation. However, their relative contributions to SME performance remain insufficiently understood. This study examines the relationships between SCC, DR, and the performance of batik SMEs in Kulon Progo Regency, Indonesia, using the Resource-Based View (RBV). A quantitative cross-sectional survey was conducted among 40 batik SMEs selected through census sampling. Data were collected using a five-point Likert-scale questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). SCC showed a positive and statistically significant relationship with SME performance, whereas DR showed a positive but statistically non-significant relationship. The model yielded an R^2 of 0.923, indicating substantial explanatory power within the observed sample, without implying causal determination. The findings indicate that SCC has a more prominent direct association with batik SME performance than DR in the studied context. The study extends the RBV by demonstrating that organizational capabilities may differ in their performance relevance. Practically, SMEs should strengthen supply chain relationships while developing digital capabilities. Future research should examine actual digital utilization, capability deployment, and complementary mechanisms.

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1. INTRODUCTION

Supply chain collaboration, digital readiness, and small and medium enterprise (SME) performance have become important issues in management and supply chain

research, particularly in developing-country contexts where SMEs face resource and capability constraints [1]. Supply chain collaboration refers to a form of cooperation between actors in the supply chain through information sharing, decision alignment, and long-term relationship commitments to improve organizational performance [2]. SME performance is understood as a multidimensional outcome reflecting operational, market, and sustainability aspects of the business, influenced by internal and external factors [3]. Meanwhile, digital readiness is a contextual capability that enables SMEs to effectively utilize digital technology to support collaboration and improve business performance [4]. From a Resource-Based View (RBV), these dimensions can be understood as organizational resources and capabilities that may contribute to the creation and maintenance of competitive performance.

The importance of these capabilities becomes more evident because SMEs globally and in Indonesia face structural challenges, including limited resources, low technology adoption, and weak supply chain integration, which can constrain business performance [5]. Low levels of digitalization hinder SMEs in coordination, information exchange, and responsiveness to market changes [6]. Previous research has shown that limited collaboration and digital readiness hinder SMEs' ability to improve operational efficiency and competitive advantage [7]. This situation emphasizes the importance of strengthening supply chain collaboration supported by digital readiness to sustainably improve SME performance [7]. These challenges indicate that SME performance cannot be viewed solely as an outcome of internal operational factors but also as a result of how firms develop and utilize relational and organizational capabilities.

The issue is particularly relevant to batik SMEs in Kulon Progo Regency, where many businesses still operate with traditional production systems and local supply chain networks, potentially limiting flexibility and business performance [8]. Limited information sharing and low digital technology utilization result in suboptimal coordination between batik SMEs and suppliers and distributors [9]. Reliance on conventional business practices also places batik SMEs under increasing competitive pressure from businesses that have adopted digital technology [10]. These conditions suggest that the selection of supply chain collaboration and digital readiness variables is relevant to assessing the performance issues of batik SMEs in Kulon Progo Regency [11]. However, the existing condition also raises a more specific question: whether the relational capability represented by supply chain collaboration and the organizational capability represented by digital readiness independently contribute to SME performance in this context.

SME performance reflects a business's ability to achieve operational efficiency, market growth, and business sustainability in a competitive environment [12]. In batik SMEs, business performance is closely related to production process efficiency, product quality consistency, and the ability to meet market demand in a timely manner [13]. Previous research has shown that supply chain collaboration and organizational capability development contribute positively to improving SME performance through improvements in information quality and operational processes [14]. Therefore, SME performance is an appropriate dependent variable to assess the effectiveness of supply chain collaboration and digital readiness in batik SMEs in Kulon Progo Regency [15]. These findings suggest that

both interorganizational relationships and internal organizational capabilities are relevant explanatory factors for SME performance, although their roles need to be examined within a coherent theoretical framework.

The Resource-Based View (RBV) provides a theoretical foundation for explaining these relationships. Within RBV, firms achieve sustained performance advantages by developing and effectively utilizing valuable organizational resources and capabilities. In this study, supply chain collaboration can be conceptualized as a strategic relational resource and capability because it enables SMEs to establish trust-based relationships, exchange information, coordinate decisions, and access resources beyond the firm's internal boundaries. Digital readiness, in contrast, can be conceptualized as an organizational capability that reflects the firm's preparedness to adopt, integrate, and utilize digital technologies in business activities and decision-making [16]. Among batik SMEs in Kulon Progo Regency, digital readiness varies due to differences in digital infrastructure, technological literacy [17], and managerial commitment to digital transformation [18]. Previous studies have shown that SMEs with higher levels of digital readiness are able to utilize technology to strengthen supply chain integration and improve business performance [19]. From an RBV perspective, these differences in digital capability may explain why SMEs differ in their ability to utilize technological resources to support business activities and achieve better performance [20].

Supply chain collaboration can likewise be interpreted through RBV as a strategic relational capability that enables SMEs to access complementary resources and knowledge through relationships with supply chain partners. Supply chain collaboration enables SMEs to improve performance through trust-based relationships, effective information exchange, and decision-making alignment among business partners [21]. For batik SMEs, collaboration with raw material suppliers and distribution partners is a crucial factor in maintaining production continuity and expanding market access [22]. Empirical evidence shows that supply chain collaboration practices contribute to increased operational efficiency and competitive advantage for SMEs, especially when supported by adequate organizational capabilities [23]. Therefore, supply chain collaboration is a relevant independent variable to explain the performance dynamics of batik SMEs in Kulon Progo Regency [24]. In combination with digital readiness, SCC represents an important relational capability through which SMEs can coordinate resources and activities, whereas DR represents an internal organizational capability that enables firms to effectively utilize digital resources. Both capabilities are therefore expected to contribute directly to SME performance rather than DR being treated as a moderating variable.

Despite the growing literature on supply chain collaboration, digital readiness, and SME performance, several gaps remain. First, a contextual gap exists because empirical evidence concerning the simultaneous role of supply chain collaboration and digital readiness in batik SMEs in Kulon Progo Regency remains limited. Second, an empirical gap concerns the need to examine whether these two capabilities independently contribute to SME performance within a specific creative-industry SME context. Third, a theoretical gap remains because previous discussions tend to emphasize relationships among the variables without explicitly integrating them into an RBV-based explanation of how relational and

organizational capabilities contribute to SME performance. Finally, a methodological gap concerns the need for empirical testing of the direct relationships among SCC, DR, and SME performance rather than assuming an interaction effect of digital readiness without testing an interaction term.

Accordingly, the novelty of this study does not rest solely on the geographical setting of Kulon Progo Regency. Rather, the study integrates supply chain collaboration as a relational capability and digital readiness as an organizational capability within an RBV framework and empirically examines their direct contributions to batik SME performance. This approach provides a theoretically grounded explanation of how interorganizational collaboration and digital capability can function as complementary resources for improving SME performance in a developing-country creative-industry context.

Based on these theoretical and empirical considerations, this study aims to examine the effects of supply chain collaboration and digital readiness on the performance of batik SMEs in Kulon Progo Regency [25]. By positioning supply chain collaboration and digital readiness as distinct organizational and relational capabilities, this study is expected to contribute to the application of RBV in the context of creative-industry SMEs and provide empirical evidence regarding the factors associated with SME performance. The findings are also expected to provide practical contributions for batik SME owners, supply chain partners, and other stakeholders in developing collaboration practices and digital capabilities that can support operational efficiency, market competitiveness, and sustainable business performance [26].

2. METHOD

2.1. Research Design

This study employed a quantitative research approach using a cross-sectional survey design to examine the direct relationships between supply chain collaboration, digital readiness, and Small and Medium Enterprise (SME) performance. The unit of analysis was batik SMEs in Kulon Progo Regency, with respondents consisting of business owners or managers [27]. A quantitative survey design was selected because the study aimed to empirically examine the relationships among the research variables using primary data obtained directly from batik SMEs.

2.2. Research Location

The research was conducted among batik SMEs in Kulon Progo Regency, Indonesia. The selection of this research setting was based on the relevance of the batik SME sector to the study of supply chain collaboration, digital readiness, and SME performance.

2.3. Population, Sample, and Sampling Technique

The study population consisted of 40 batik SMEs in Kulon Progo Regency, and the entire population was included as the research sample using a census sampling technique due to its relatively limited size [28]. The respondents were business owners or managers who were considered knowledgeable about the operational activities, supply chain relationships, digital practices, and business performance of their respective SMEs.

2.4. Data Sources and Data Collection

The study used primary data collected directly from the selected batik SMEs through a structured questionnaire. The questionnaire was administered to business owners or managers as the respondents. Respondents were informed about the purpose of the study and the voluntary nature of their participation before completing the questionnaire.

The research instrument was developed by adapting indicators from previous research and adjusting them to the context of batik SMEs to ensure conceptual relevance [29]. The questionnaire used a five-point Likert scale to measure respondents' perceptions of the research variables.

2.5. Variables and Measurement

The study included two independent variables, namely supply chain collaboration (SCC) and digital readiness (DR), and one dependent variable, namely SME performance (SMEP).

The supply chain collaboration variable was measured using five questionnaire items reflecting information sharing practices, dedicated investments with partners, and synchronized decision-making within the supply chain [30]. These indicators represent the extent to which batik SMEs coordinate activities and exchange information with their supply chain partners.

The digital readiness variable was measured using four questionnaire items describing the readiness of infrastructure, human resources, systems, and digital technology integration in business processes [31]. These indicators reflect the organizational capability of batik SMEs to adopt and utilize digital technologies in their business activities.

The SME performance variable was measured using three questionnaire items representing production schedule accuracy, order processing speed, and product delivery timeliness. These indicators were used to assess the operational performance of batik SMEs in managing production and fulfilling customer orders.

2.6. Validity and Reliability

The validity and reliability of the measurement model were assessed using the PLS-SEM measurement model evaluation. Convergent validity was assessed based on outer loadings and Average Variance Extracted (AVE), while internal consistency reliability was evaluated using Composite Reliability (CR) and Cronbach's alpha. Discriminant validity was also assessed to ensure that each construct was empirically distinct from the other constructs.

2.7. Data Analysis

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM was selected because it is suitable for relatively small sample sizes and enables the simultaneous assessment of relationships between latent variables without requiring normally distributed data [32].

The analysis consisted of two stages. First, the measurement model was evaluated to assess the validity and reliability of the constructs. Second, the structural model was

evaluated to examine the hypothesized relationships among the variables. The structural model assessment included path coefficients, coefficient of determination (R^2), effect size (f^2), and significance testing through bootstrapping.

Consistent with the conceptual model presented in the Introduction, digital readiness was treated as an independent variable with a direct effect on SME performance rather than as a moderating variable. Therefore, the structural model examined the relationships $SCC \rightarrow SMEP$ and $DR \rightarrow SMEP$ without including an $SCC \times DR$ interaction term.

2.8. Ethical Considerations

Ethical considerations were addressed during the data collection process. Respondents were informed about the purpose of the study and the voluntary nature of their participation. Informed consent was obtained from respondents before they completed the questionnaire. The confidentiality and anonymity of respondents and their businesses were maintained, and the collected data were used solely for research purposes.

3. RESULTS AND DISCUSSION

3.1. RESULTS

3.1.1 Overview of the Results

This section presents the empirical findings of the study, including the evaluation of the measurement model, the explanatory power of the structural model, and the hypothesis testing results. The analysis focuses on the relationships between Supply Chain Collaboration (SCC), Digital Readiness (DR), and SME Performance (SMEP) among batik SMEs in Kulon Progo Regency.

3.1.2 Measurement Model (Outer Model)

The measurement model was evaluated to determine whether the indicators adequately represented their respective latent constructs. Convergent validity was assessed based on the outer loading values of the retained indicators [9]. The analysis results showed that all indicators retained in the model had outer loading values exceeding 0.70. Indicators with loading values below 0.70 were excluded from the model, resulting in indicators that met the recommended convergent validity criterion [8].

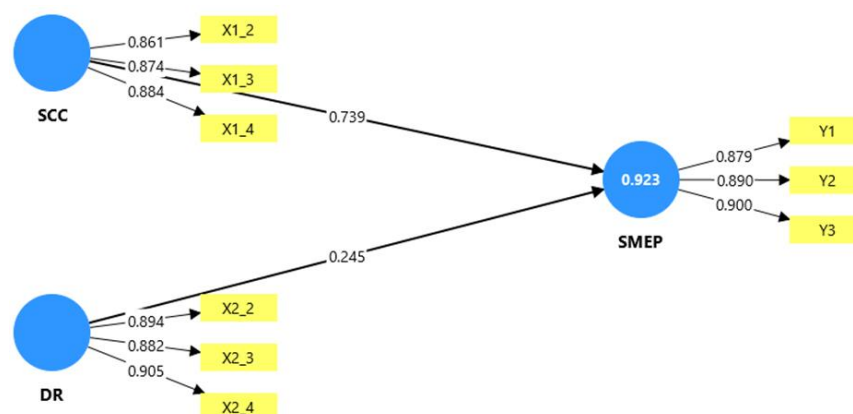


Figure 1. Measurement Model

Table 1. Outer Loading Values

Variable	Indicator	Outer Loading	Decision
Supply Chain Collaboration (SCC)	SCC1	0.861	Valid
	SCC2	0.874	Valid
	SCC3	0.884	Valid
Digital Readiness (DR)	DR1	0.894	Valid
	DR2	0.882	Valid
	DR3	0.905	Valid
SME Performance (SMEP)	SMEP1	0.879	Valid
	SMEP2	0.890	Valid
	SMEP3	0.900	Valid

Source: Processed Primary Data, 2026

Based on the outer loading test results in Table 1, all retained indicators had outer loading values above 0.70, indicating that the indicators achieved the required convergent validity criterion. High outer loading values indicate that each indicator consistently and accurately represents the measured latent construct [33].

For the Supply Chain Collaboration (SCC) variable, the indicators recorded outer loading values ranging from 0.861 to 0.884. These results indicate that decision-making coordination, planning synchronization, and activity alignment with supply chain partners are strongly associated with the SCC construct among batik SMEs. This finding aligns with research indicating that effective collaboration in the supply chain is characterized by a high level of coordination and planning integration between business partners [34].

Furthermore, the Digital Readiness (DR) variable showed outer loading values ranging from 0.882 to 0.905 [35]. Indicators of human resource readiness, operational capabilities in the use of digital technology, and the utilization of digital systems in business processes showed strong relationships with the digital readiness construct [36]. This indicates that SME digital readiness is determined not only by technology availability but also by human resource capabilities and system integration in daily business activities, as confirmed in the research of Pratama et al. [37].

In the SME Performance (SMEP) variable, the retained indicators showed outer loading values ranging from 0.879 to 0.900. These results indicate that the indicators used to represent SME performance have strong relationships with the underlying performance construct [38]. This finding demonstrates that operational accuracy and the ability to manage business activities efficiently are important aspects in assessing SME performance, particularly in the context of increasingly dynamic market competition and demands [39].

Overall, the outer loading results demonstrate that the retained indicators satisfy the convergent validity criterion and can therefore be used in the subsequent structural model analysis. The results also indicate that SCC, DR, and SMEP were represented by indicators with strong individual contributions to their respective constructs.

3.1.3 Construct Reliability and Convergent Validity

Based on the construct reliability test results in Table 2, all constructs demonstrated satisfactory internal consistency and convergent validity. This can be seen from the Cronbach's alpha, Composite Reliability (rho_a and rho_c), and Average Variance

Extracted (AVE) values, which met the recommended criteria for PLS-SEM measurement assessment.

Table 2. Construct Reliability and Convergent Validity

Variable	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Supply Chain Collaboration (SCC)	0.844	0.844	0.906	0.762
Digital Readiness (DR)	0.874	0.877	0.923	0.799
SME Performance (SMEP)	0.868	0.869	0.919	0.791

Source: Processed Primary Data

For the Supply Chain Collaboration (SCC) variable, a Cronbach's alpha value of 0.844 and a composite reliability (rho_c) of 0.906 indicate that the indicators used have strong internal consistency. An AVE value of 0.762 also indicates that the SCC construct explains 76.2% of the variance in its indicators on average, thus meeting the convergent validity criterion. These findings align with research on SMEs in Indonesia that emphasizes the importance of reliable supply chain collaboration indicators in explaining sustainable business performance [40].

The Digital Readiness (DR) variable also demonstrated a high level of reliability, with a Cronbach's alpha value of 0.874 and a composite reliability (rho_c) of 0.923. The AVE value of 0.799 confirms that the digital readiness construct explains 79.9% of the variance in its indicators on average. These results are consistent with research by Pratono et al. [41], which states that the digital readiness of SMEs in Indonesia can be reliably measured through indicators of infrastructure, human resources, and digital system integration.

Furthermore, the SME Performance (SMEP) variable has a Cronbach's alpha value of 0.868 and a composite reliability (rho_c) of 0.919, indicating high measurement stability and consistency. An AVE value of 0.791 indicates that the SME performance construct explains 79.1% of the variance in its indicators on average, thus meeting convergent validity [42]. This finding supports previous research that PLS-SEM-based SME performance measurement in Indonesia generally demonstrates strong reliability when the indicators are adjusted to the business operational context [43].

Overall, the construct reliability results confirm that SCC, DR, and SMEP demonstrate satisfactory internal consistency and convergent validity. Therefore, the measurement model provides an adequate basis for evaluating the structural relationships among the constructs.

3.1.4 Structural Model and Explanatory Power

Based on the results of the coefficient of determination (R-square) test in Table 3, the R-square value for the SME Performance (SMEP) variable is 0.923. This indicates that 92.3% of the variance in SME performance is explained jointly by Supply Chain Collaboration (SCC) and Digital Readiness (DR), while the remaining 7.7% is attributable to other factors outside the model.

Table 3. R-Square

Endogenous Variable	R ²
SME Performance (SMEP)	0.923

Source: Processed Primary Data, 2026

The R-square value of 0.923 indicates substantial explanatory power of the structural model. In the context of PLS-SEM-based research, an R-square value above 0.75 is generally classified as a model with substantial predictive power, particularly in social and management research involving organizational behavior and business performance [44].

The high R-square value in this study indicates that supply chain collaboration and digital readiness jointly provide substantial explanatory power for batik SME performance. This aligns with the view that integration between supply chain actors and the utilization of digital capabilities can improve operational efficiency [31], production coordination, and responsiveness to market demand [45].

Furthermore, the high R-square value suggests that the two independent variables capture a substantial proportion of the variation in SME performance within the observed sample. This finding strengthens the argument that the PLS-SEM model is relevant for SME research involving relationships among organizational capabilities and business performance [46].

Overall, the R-square results indicate that SCC and DR jointly explain a substantial proportion of SME performance in the studied batik SMEs [47]. However, the R-square value should be interpreted as explanatory power rather than as evidence that SCC and DR are the only determinants of SME performance.

3.1.5 Hypothesis Testing

The structural model was subsequently assessed to examine the direct relationships between the independent variables and SME performance. The results of the hypothesis testing are presented in Table 4.

Table 4. Results of Total Effects

Relationship	Original Sample (O)	P-value	Decision
Digital Readiness (DR) → SME Performance (SMEP)	0.245	0.109	Not Supported
Supply Chain Collaboration (SCC) → SME Performance (SMEP)	0.739	0.000	Supported

Source: Processed Primary Data, 2026

Based on the total effect test results in Table 4, the Digital Readiness (DR) variable shows an original sample value of 0.245 with a p-value of 0.109, which is above the significance limit of 0.05 [49]. Therefore, the effect of Digital Readiness on SME Performance is positive but statistically insignificant, and the corresponding hypothesis is not supported. This finding indicates that digital readiness alone may not be sufficient to generate measurable improvements in SME performance when digital capabilities are not effectively translated into integrated technology utilization and business strategy [50].

In contrast, Supply Chain Collaboration (SCC) shows a stronger positive relationship with SME Performance, with an original sample coefficient of 0.739 and a p-value of 0.000.

This result indicates that SCC has a positive and statistically significant effect on SME performance, and the corresponding hypothesis is supported. The finding suggests that stronger coordination, information exchange, synchronized planning, and decision alignment with supply chain partners are associated with better performance among batik SMEs.

The contrast between the two relationships provides an important empirical finding. Although Digital Readiness has a positive coefficient, its effect is not statistically significant, whereas Supply Chain Collaboration demonstrates a strong and significant relationship with SME Performance. This suggests that relational capabilities embedded in supply chain collaboration may play a more immediate role in supporting batik SME performance than digital readiness alone.

3.1.6 Summary of Key Findings

Overall, the measurement model demonstrates satisfactory indicator reliability, construct reliability, and convergent validity. The structural model explains 92.3% of the variance in SME performance. Hypothesis testing shows that Supply Chain Collaboration has a positive and statistically significant effect on SME Performance ($\beta = 0.739$; $p = 0.000$), whereas Digital Readiness has a positive but statistically insignificant effect ($\beta = 0.245$; $p = 0.109$). These findings indicate that supply chain collaboration is a more prominent direct explanatory factor for batik SME performance in the studied sample, while digital readiness alone does not demonstrate a statistically significant direct contribution.

3.2. DISCUSSION

This study found that Supply Chain Collaboration (SCC) had a positive and statistically significant effect on SME Performance (SMEP), whereas Digital Readiness (DR) had a positive but statistically insignificant direct effect. From the perspective of the Resource-Based View (RBV), these findings suggest that different organizational capabilities may contribute differently to SME performance. In particular, the stronger effect of SCC highlights the importance of relational capabilities in enabling batik SMEs to coordinate resources, information, and activities with supply chain partners.

The significant effect of SCC is consistent with the RBV perspective, which emphasizes that valuable and difficult-to-substitute organizational resources and capabilities can support superior performance. In the context of batik SMEs, supply chain collaboration can be understood as a relational capability because it enables firms to access complementary resources, exchange information, coordinate operational activities, and align decisions with suppliers and business partners. The positive relationship between SCC and SME performance therefore suggests that the ability to effectively manage interorganizational relationships represents an important capability for improving operational and business outcomes.

In contrast, the Supply Chain Collaboration (SCC) variable showed an original sample value of 0.739 with a p-value of 0.000, indicating a positive and significant effect on SME Performance (SMEP) [52]. Therefore, the hypothesis stating that supply chain collaboration influences SME performance is accepted [53]. This finding indicates that

stronger collaboration with supply chain partners is associated with better SME performance, particularly through information sharing, operational coordination, synchronized planning, and joint decision-making. SMEs' ability to build collaboration with supply chain partners, such as information sharing, operational activity coordination, and decision-making synchronization, can therefore be understood as a mechanism through which relational resources are converted into operational benefits [54].

The results of this study align with previous empirical findings, which suggest that supply chain collaboration is a key strategic resource for improving SME performance, particularly in the creative industry sector, which relies heavily on supplier reliability and production process flexibility [55]. Effective collaboration enables SMEs to respond more quickly to changes in market demand and reduces uncertainty in production and distribution processes [56]. Thus, the present finding not only supports previous empirical evidence but also extends it by demonstrating the relevance of SCC as a relational capability within an RBV framework in the context of batik SMEs.

The non-significant effect of Digital Readiness requires a more cautious interpretation. The positive coefficient of 0.245 indicates a positive direction of the relationship, but the p-value of 0.109 indicates that the direct effect of DR on SME performance is not statistically significant in the present model and sample. Therefore, this result should not be interpreted as evidence that digital readiness is unimportant for SMEs. Rather, the finding indicates that digital readiness, as measured in this study, does not demonstrate a statistically significant direct contribution to SME performance under the conditions examined.

Several studies in Indonesia also confirm that digital infrastructure and technological capabilities alone are insufficient to improve SME performance [27]. Without the support of organizational capabilities, human resource digital literacy, and internal process transformation, digital readiness tends to have a less than optimal impact on business performance [51]. Therefore, digital readiness is more accurately viewed as a supporting capability that requires strengthening in implementation to make a tangible contribution to SME performance [17]. This interpretation is theoretically consistent with the RBV perspective because the possession of a resource or capability does not automatically guarantee superior performance; its value depends on how effectively the resource is developed, combined, and deployed within organizational activities. However, the present study did not directly measure strategic technology alignment, actual digital-use intensity, digital transformation implementation, or a mediating organizational digital capability. Therefore, these factors should be regarded as possible explanations rather than established mechanisms underlying the non-significant DR effect.

Another possible explanation concerns the size of the research sample. The study involved 40 batik SMEs, and the relatively small sample may have limited the statistical power to detect a modest direct effect of digital readiness on SME performance. Consequently, the non-significant relationship should be interpreted with caution and should not be generalized as evidence that digital readiness has no effect on SME performance across SMEs or other contexts. Larger samples and broader SME populations may provide

greater statistical power to examine whether the observed positive relationship becomes statistically significant.

The non-significant DR finding nevertheless provides an important theoretical implication. It suggests that digital readiness may function as an enabling capability whose performance consequences depend on its effective deployment and complementarity with other organizational capabilities. In other words, being ready to adopt digital technology may constitute a necessary organizational condition, but readiness itself may not immediately generate measurable performance improvements. This proposition extends the RBV discussion by highlighting the distinction between possessing a capability and effectively converting that capability into performance outcomes. Nevertheless, this interpretation remains a proposition for future empirical testing rather than a causal mechanism established by the present study.

The contrasting effects of SCC and DR also indicate that relational and technological capabilities may have different performance implications for batik SMEs. The stronger SCC effect suggests that collaboration with suppliers and business partners may provide more immediate operational benefits than digital readiness alone. For batik SMEs, where production continuity, material availability, planning coordination, and order fulfillment depend heavily on relationships with supply chain partners, relational capabilities may be particularly valuable in supporting business performance.

From a theoretical perspective, the findings contribute to the application of RBV by demonstrating that organizational capabilities should not necessarily be assumed to have equivalent effects on firm performance. SCC, as a relational capability, showed a significant contribution to SME performance, whereas DR, as an organizational digital capability, did not show a statistically significant direct effect. This distinction suggests that the performance value of organizational capabilities may depend on their practical deployment and integration with the firm's operational context.

From a practical perspective, batik SME owners and managers should prioritize the development of effective relationships with suppliers, distributors, and other business partners. Strengthening information exchange, coordinated planning, joint decision-making, and operational synchronization may provide more immediate performance benefits. Digital readiness should nevertheless continue to be developed, particularly because digital infrastructure and human resource capabilities may provide an enabling foundation for future digital transformation, even though their direct performance effect was not statistically significant in this study.

For policymakers and SME-support institutions, the findings suggest that digitalization programs should not focus solely on providing technological infrastructure. Training, managerial capability development, digital literacy, and assistance in integrating technology into business processes may be necessary to help SMEs convert digital resources into tangible business outcomes. At the same time, programs aimed at strengthening supply chain networks and collaboration among batik SMEs, suppliers, and distributors may be particularly relevant given the significant role of SCC identified in this study.

This study has several limitations. First, the sample consisted of only 40 batik SMEs in Kulon Progo Regency, which limits the statistical power and generalizability of the

findings. Second, the cross-sectional design limits the ability to establish temporal or causal relationships among SCC, DR, and SME performance. Third, the study examined the direct effect of digital readiness but did not measure potential mechanisms such as strategic technology alignment, actual intensity of digital technology use, digital transformation implementation, or organizational capabilities that may mediate the relationship.

Future research should therefore examine larger and more diverse SME samples to improve statistical power and generalizability. Longitudinal research could also investigate whether the performance effects of digital readiness emerge over time as SMEs gain experience in implementing digital technologies. Future studies may further test whether actual digital technology utilization, strategic technology alignment, or organizational digital capabilities mediate or otherwise explain the relationship between digital readiness and SME performance. Examining whether digital readiness strengthens the effectiveness of supply chain collaboration through an interaction model would also be valuable, provided that such a moderating relationship is explicitly incorporated into the theoretical framework and empirically tested.

Overall, the findings demonstrate that Supply Chain Collaboration is a significant direct contributor to batik SME performance, whereas Digital Readiness shows a positive but statistically insignificant direct relationship in the present sample. The results reinforce the importance of relational capabilities within the RBV framework while suggesting that the performance value of digital readiness may depend on how effectively digital capabilities are deployed and integrated with other organizational resources.

4. CONCLUSION

This study examined the contribution of Supply Chain Collaboration (SCC) and Digital Readiness (DR) to the performance of batik SMEs in Kulon Progo Regency, Indonesia, using an RBV-based perspective. The findings show that SCC has a positive and significant contribution to SME performance, while DR has a positive but statistically non-significant direct relationship with performance. Thus, the findings indicate that supply chain collaboration represents a more prominent direct capability for supporting batik SME performance in the observed sample. The non-significant effect of DR does not indicate that digital readiness is unimportant; rather, its direct contribution was not statistically supported within the current sample and model. Theoretically, these findings extend the RBV perspective by showing that different organizational capabilities may generate different performance outcomes and that the value of digital resources may depend on how effectively they are deployed and integrated with organizational processes.

Practically, batik SME owners and managers should strengthen information sharing, coordinated planning, and decision alignment with supply chain partners while continuing to develop digital competencies and integrate technology into core business processes. For policymakers and SME development institutions, digitalization programs should be complemented by managerial training, digital capability development, and supply chain networking rather than focusing solely on technology provision. However, the findings should be interpreted cautiously because the study involved only 40 SMEs from one geographic area, employed a cross-sectional design, relied on self-reported performance

measures, and used same-source measurements that may introduce common method bias. The removal of some measurement indicators during model assessment may also have affected construct representation and, together with the limited sample and single-region context, restricts the generalizability of the findings.

Future research should employ larger multi-region samples and longitudinal designs to improve generalizability and examine changes in SCC, DR, and SME performance over time. Studies should incorporate objective performance measures and assess actual digital technology utilization, organizational digital capability, and supply chain integration to provide a more comprehensive understanding of how these capabilities generate performance outcomes. Future research may also examine mediation or moderation mechanisms to determine whether digital capability, technology utilization, supply chain integration, or other organizational factors explain or condition the relationships between SCC, DR, and SME performance.

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