



Driving Sustainable Digital Financial Transformation through Financial Literacy, Financial Technology, Green Accounting, and ESG: Evidence from Endek and Songket Weaving MSMEs in Bali

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Abstract

Background: The convergence of digitalization and sustainability creates challenges for Micro, Small, and Medium-sized Enterprises (MSMEs), particularly traditional creative enterprises that must adopt technological developments while maintaining business sustainability and cultural values. However, the contribution of financial capabilities, technology adoption, and environmental practices to Sustainable Digital Financial Transformation (SDFT) remains underexplored.

Objective: This study investigates how Financial Literacy, Financial Technology, and Green Accounting influence Environmental, Social, and Governance (ESG) performance and SDFT, while also examining ESG as a potential mediator in the relationships between these factors and SDFT among *Endek* and *Songket* weaving MSMEs in Jembrana Regency, Bali.

Methods: A quantitative explanatory approach with a cross-sectional survey design was adopted in this study. Structured questionnaires were administered to 100 owners and managers of *Endek* and *Songket* weaving MSMEs, who were selected through purposive sampling. The collected data were subsequently analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.

Results: Financial Literacy and Financial Technology have positive and significant effects on ESG, whereas Green Accounting has no significant effect. Financial Literacy, Financial Technology, and Green Accounting have no direct significant effects on SDFT, while ESG has a positive and significant effect on SDFT. However, ESG does not serve as a statistically significant mediator of the relationships between the three predictor variables and SDFT.

Conclusion: Sustainable Digital Financial Transformation requires more than financial knowledge, financial technology adoption, and environmental practices. ESG emerges as a critical direct driver of SDFT, underscoring the need to embed environmental stewardship, social value creation, and robust governance mechanisms.

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INTRODUCTION

The intersection of digital advancement and sustainability imperatives has profoundly reshaped the modern business landscape, generating both opportunities and challenges for organizations across diverse sectors (Brenner, 2018; Florek-Paszkowska & Ujwary-Gil, 2025; Moloi, 2026; Sandy Afriyano Althaf et al., 2025). These transformations are particularly relevant to Micro, Small, and Medium-sized Enterprises (MSMEs), which must navigate the dual imperatives of digital innovation and environmental stewardship while operating with limited resources and organizational capacity (Alajmi, 2026; Rizkita et al., 2025).

For traditional weaving enterprises such as Endek and Songket producers in Jembrana Regency, Bali, Indonesia, these challenges assume distinctive forms shaped by cultural, economic, and environmental contexts. Endek, a traditional Balinese weft-ikat textile, and Songket, which incorporates supplementary weft threads, often metallic, represent important elements of Indonesia's traditional textile heritage. Production remains labor-intensive, typically requiring 15–40 hours per piece and generating monthly income of IDR 200,000–500,000 per artisan. According to the Jembrana Regency MSME Service (2023), approximately 165 active enterprises employ more than 2,100 artisans. However, 67% report difficulty accessing digital financial services, 58% lack systematic financial management practices, and only 23% have adopted digital technology, despite the simultaneous recognition that environmental sustainability concerns affect 71% of producers, indicating openness to responsible practices.

Digital transformation for traditional MSMEs encompasses more than technology adoption (Nugraha, 2026; Putritama, 2026). Technology adoption refers to the acceptance and use of new tools, such as digital payment systems, mobile banking, and social media, whereas digital transformation involves systematic changes to business processes, organizational culture, and strategy (Kitsios et al., 2021). From the Resource-Based View perspective, organizational capabilities (including Financial Literacy, Financial Technology adoption, Green Accounting practices, and Environmental, Social, and Governance (ESG) integration) constitute intangible knowledge assets that can differentiate enterprises in competitive markets (Sadenova et al., 2026).

Financial Literacy, understood as financial knowledge and managerial capability in making informed financial decisions, represents a foundational capability (Hussain et al., 2018). This capability enables MSMEs to evaluate financial performance, make strategic investment decisions, and manage cash flow effectively. Recent literature emphasizes the contribution of Financial Literacy to MSME financial health, although its integration with technological and sustainability dimensions remains underdeveloped in the MSME literature, particularly in the context of traditional creative enterprises.

Financial Technology (FinTech) services (including digital payment systems, mobile banking, and financial applications) facilitate business transactions and financial management (Gomber et al., 2018). However, technology availability does not guarantee effective utilization or transformation. The distinction between adoption and transformation is critical: many MSMEs possess digital tools but lack systematic integration of these tools into decision-making processes. For traditional weaving enterprises, digital financial services can reduce transaction costs, improve market access, and enhance record-keeping; however, organizational learning and capability development remain essential for genuine transformation.

Green Accounting provides a systematic approach to incorporating environmental considerations into financial management and reporting (Brooks & Schopohl, 2021). Its implementation involves tracking environmental costs, identifying sustainability improvements, and integrating environmental performance into financial decisions. For traditional textile production, environmental accounting could address resource consumption (including water, dyes, and energy) as well as waste management and sustainable material sourcing. However, implementation barriers, including technical knowledge requirements, perceived costs, and competing priorities, challenge MSME adoption.

Environmental, Social, and Governance (ESG) frameworks embody organizational approaches that incorporate environmental stewardship, social contributions, and governance transparency into business activities and strategic planning (Farag, 2025). Although ESG literature has traditionally focused on publicly listed companies and large corporations, emerging

evidence suggests that small enterprises increasingly recognize the relevance of ESG for managing stakeholder expectations, securing financing, accessing premium markets, and ensuring long-term viability. For traditional MSMEs, ESG integration could encompass environmental stewardship in cultural heritage production, fair labor practices for artisans, and transparent governance structures.

Despite growing scholarly attention to these individual constructs, significant research gaps persist. First, previous studies examine Financial Literacy, Financial Technology, Green Accounting, and ESG independently rather than exploring their collective mechanisms. Second, digital transformation literature concentrates on technology adoption and platform development rather than holistic organizational change. Third, ESG research remains predominantly focused on large corporations and publicly listed companies, providing limited evidence regarding MSME implementation. Fourth, insufficient evidence explains whether ESG functions as an organizational mechanism linking financial and technological capabilities to digital transformation. Fifth, the interplay of these capabilities within culturally embedded traditional MSMEs remains unexplained.

The present study seeks to bridge these gaps by investigating the combined influence of Financial Literacy, Financial Technology, Green Accounting, and ESG on Sustainable Digital Financial Transformation (SDFT) within Endek and Songket weaving MSMEs in Jembrana Regency. The conceptual foundation synthesizes the Resource-Based View (RBV), Stakeholder Theory, and Dynamic Capability Theory to offer a holistic account of how traditional MSMEs cultivate, consolidate, and restructure their capabilities in pursuit of sustainable digital transformation. Building on these complementary theoretical perspectives, this research offers four substantive contributions to the scholarly discourse. First, it develops an integrated framework that combines four critical organizational capabilities (Financial Literacy, Financial Technology, Green Accounting, and ESG) to explain Sustainable Digital Financial Transformation (SDFT). Second, it demonstrates how RBV, Stakeholder Theory, and Dynamic Capability Theory can be jointly applied to explain SDFT within traditional MSMEs. Third, it extends ESG research to culturally embedded traditional enterprises, a setting that continues to receive limited scholarly attention in the current body of knowledge. Fourth, it provides conceptual clarity by distinguishing digital transformation from technology adoption, emphasizing that sustainable digital transformation involves broader organizational and strategic changes beyond the mere adoption of digital technologies.

METHOD

This study is an explanatory cross-sectional research study. The research objects examined were Financial Literacy, Financial Technology, Green Accounting, Environmental, Social, and Governance (ESG), and Sustainable Digital Financial Transformation.

The investigation was conducted among Endek and Songket weaving Micro, Small, and Medium-sized Enterprises (MSMEs) located in Jembrana Regency, Bali Province, Indonesia. This empirical setting was selected because traditional weaving MSMEs constitute culturally rooted creative enterprises that simultaneously face challenges related to financial management, digital technology adoption, environmental responsibility, social sustainability, organizational governance, and long-term business transformation.

Endek and Songket weaving MSMEs are particularly pertinent to the aims of this investigation because their business continuity depends not only on economic outcomes but also on their capacity to safeguard traditional cultural heritage while embracing technological and sustainability-oriented transformations. The increasing utilization of digital financial services creates opportunities for these enterprises to improve transaction efficiency and financial management. At the same time, sustainability concerns require MSMEs to consider environmental impacts, social relationships, and responsible organizational governance. Endek, featuring intricate geometric patterns, and Songket, incorporating metallic threads, represent traditional Indonesian cultural heritage textiles. Production involves 15–40 hours of manual labor per piece, generating monthly income of IDR 200,000–500,000 per artisan. According to the Jembrana Regency MSME Service (2023), 165 active Endek and Songket enterprises employ more than 2,100 artisans. However, 67% report difficulty accessing digital financial services, 58% lack

systematic financial management, and only 23% have adopted digital technology. Simultaneously, 71% express concern about environmental sustainability, indicating openness to ESG practices. This context exemplifies the research problem: traditional MSMEs demonstrate a willingness to pursue sustainable digital transformation but lack the integrated capabilities required to achieve it.

Therefore, Jembrana Regency provides a relevant empirical context for examining how Financial Literacy, Financial Technology, Green Accounting, and ESG contribute to Sustainable Digital Financial Transformation within traditional creative MSMEs.

The target population of this investigation comprised Endek and Songket weaving MSMEs active in Jembrana Regency, Bali. The units of analysis were individual MSMEs, while the respondents consisted of MSME owners or managers who possessed direct knowledge of financial management, financial technology utilization, environmental practices, organizational governance, and business decision-making. Jembrana Regency, with a significant concentration of weaving artisans, provides an empirically relevant context for studying digital transformation in traditional MSMEs. As of 2023, the regency hosted approximately 150–180 active Endek and Songket weaving MSMEs, employing more than 2,000 artisans and contributing significantly to regional cultural preservation and economic development.

A non-probability sampling strategy based on purposive sampling was utilized in this study. The sampling frame was derived from the Jembrana Regency Cooperative and MSME Service database (2023), which identified 156 active Endek and Songket weaving MSMEs. From this population, 130 MSMEs were contacted, of which 105 agreed to participate. In total, 100 valid questionnaires were obtained and processed, yielding a response rate of 76.9% (100 out of 130 contacted enterprises). This response rate exceeds the commonly accepted minimum benchmark of 70% for survey-based research.

Respondent selection was guided by the following eligibility requirements: 1) The respondent was the owner or manager of an Endek or Songket weaving MSME in Jembrana Regency; 2) The MSME was actively operating during the data-gathering period; 3) The respondent was directly involved in the enterprise's financial administration and organizational decision-making processes; 4) The respondent possessed sufficient knowledge of the enterprise's financial, technological, environmental, social, and governance practices.

One hundred valid responses were successfully collected and subjected to analysis. The determination of 100 respondents as the sample size followed the 10-times rule for PLS-SEM, which suggests a minimum sample size of ten times the largest number of structural paths directed at any endogenous construct or, depending on the application of the rule, ten times the largest number of formative indicators used to measure a construct. In this study, the maximum number of indicators was seven; therefore, the minimum requisite sample size based on the indicator-based interpretation of the 10-times rule was 70 respondents. Consequently, the attained sample of 100 respondents exceeded this criterion and was considered sufficient for PLS-SEM analysis.

The use of PLS-SEM was also appropriate for this study because the research aimed to explain and predict the relationships among multiple latent constructs in the context of traditional MSMEs.

This study employed quantitative data derived primarily from respondents' perceptions of the research constructs. A quantitative methodology was adopted because the research sought to empirically test theoretically formulated hypotheses regarding the interrelationships among Financial Literacy, Financial Technology, Green Accounting, ESG, and Sustainable Digital Financial Transformation.

With respect to data sources, this research drew upon both primary and secondary data. Primary data were gathered firsthand from Endek and Songket MSME owners or managers in Jembrana Regency using a structured questionnaire instrument. The questionnaire collected information concerning respondents' perceptions of Financial Literacy, Financial Technology, Green Accounting, ESG practices, and Sustainable Digital Financial Transformation. The questionnaire also collected information regarding respondent and business characteristics to provide a descriptive profile of the research sample.

Secondary data were sourced from peer-reviewed journal articles, scholarly books, official

publications, and other pertinent academic and institutional repositories. These data were utilized to develop the theoretical framework, formulate the research hypotheses, operationalize the research constructs, and support the interpretation of the empirical findings.

This study examined five latent variables consisting of three exogenous variables, one mediating variable, and one endogenous variable.

The exogenous variables were Financial Literacy (FL), Financial Technology (FT), and Green Accounting (GA). Environmental, Social, and Governance (ESG) was treated as an endogenous construct within the initial structural model and simultaneously as a prospective mediating variable linking the three exogenous variables to Sustainable Digital Financial Transformation. Sustainable Digital Financial Transformation (SDFT) was the primary endogenous variable.

Each construct was assessed using multiple indicators and specified as a reflective measurement model. Respondents rated each measurement item on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Table 1
Operational Definitions of Research Variables

Variable	Operational Definition	Measurement Dimensions/Indicators	Code
Financial Literacy	The knowledge and capability of MSME owners or managers to understand, manage, and utilize financial information in business decision-making.	Financial knowledge, financial planning, budgeting, cash-flow management, financial risk evaluation, and financial decision-making.	FL1–FL6
Financial Technology	The extent to which MSMEs utilize technology-enabled financial services to support transactions, financial management, accessibility, and business activities.	Digital payment utilization, mobile/digital banking, financial accessibility, transaction efficiency, ease of financial technology use, and utilization of digital financial information.	FT1–FT6
Green Accounting	The extent to which MSMEs recognize and incorporate environmental considerations into accounting, resource management, and business decision-making.	Environmental cost awareness, resource efficiency, waste management, environmental responsibility, environmental information consideration, and integration of environmental aspects into business decisions.	GA1–GA6
Environmental, Social, and Governance (ESG)	The extent to which MSMEs integrate environmental responsibility, social value creation, and responsible governance into organizational practices.	Environmental responsibility, resource efficiency, employee and community relationships, social responsibility, transparency and accountability, and responsible governance.	ESG1–ESG6
Sustainable Digital Financial Transformation	The extent to which MSMEs integrate digital financial technologies with organizational capabilities and sustainability principles to support long-term business transformation.	Digital financial integration, business process transformation, financial efficiency, organizational adaptability, sustainability integration, and long-term digital business development.	SDFT1–SDFT6

Financial Literacy was operationalized as the financial knowledge and managerial capability of MSME owners or managers in managing financial resources and making financial decisions. The construct measured respondents' capabilities related to financial knowledge,

planning, budgeting, cash flow management, risk evaluation, and financial decision-making.

Financial Technology was operationalized as the utilization of technology-enabled financial services and applications within MSME business activities. The construct measured the extent to which digital financial technologies facilitated transactions, financial accessibility, financial management, efficiency, and information utilization.

Green Accounting was operationalized as the incorporation of environmental considerations into MSME financial management and business decision-making. The construct measured environmental cost awareness, efficient resource utilization, waste management, environmental responsibility, and the consideration of environmental information in organizational decision-making.

ESG was operationalized as the degree to which MSMEs embedded environmental, social, and governance principles within their organizational activities. The construct encompassed environmental responsibility, social relationships, employee and community considerations, transparency, accountability, and responsible governance.

Sustainable Digital Financial Transformation was operationalized as the capability of MSMEs to integrate digital financial technologies with organizational processes, strategic adaptation, and sustainability principles to achieve long-term business transformation.

Data collection was conducted using a structured questionnaire disseminated to owners and managers of Endek and Songket weaving MSMEs. The fieldwork was undertaken between March and May 2023 over an eight-week period. The survey instrument was organized into two principal sections. The initial section gathered demographic and organizational profile data from respondents, whereas the subsequent section comprised measurement items corresponding to all research variables.

The instrument was structured into two primary parts. The first part captured information pertaining to the respondents and MSME profiles. The second part encompassed measurement items for Financial Literacy, Financial Technology, Green Accounting, ESG, and Sustainable Digital Financial Transformation.

All construct measurement items were assessed using a five-point Likert scale, with the following response anchors:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

The use of a five-point Likert scale was considered appropriate because it enabled respondents to express their degree of agreement with each measurement statement while remaining relatively easy to understand for MSME respondents with potentially diverse educational and managerial backgrounds.

The completed questionnaires were subsequently screened and coded before statistical analysis. To assess common method bias, Harman's single-factor test was conducted. The test revealed that no single factor accounted for more than 50% of the total variance, suggesting that common method bias was not a substantial concern for the validity of the findings.

The analytical procedures encompassed descriptive statistical analysis complemented by Partial Least Squares Structural Equation Modeling (PLS-SEM), executed using SmartPLS 4. The data were analyzed using PLS-SEM, implemented across two consecutive analytical phases. The first stage involved the measurement model assessment, which examined the quality of the measurement constructs by evaluating indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed based on outer loading values exceeding 0.70, whereas internal consistency reliability was evaluated using Cronbach's alpha and composite reliability, with coefficients exceeding 0.70 considered acceptable. Convergent validity was established using the Average Variance Extracted (AVE), with a recommended threshold exceeding 0.50. Discriminant validity, in turn, was assessed using the Heterotrait-Monotrait Ratio (HTMT), with values below 0.85 indicating satisfactory discriminant validity.

The second stage involved the structural model assessment, which evaluated the

interrelationships among latent constructs through path coefficients (β), the coefficient of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and the standardized root mean square residual (SRMR) as an indicator of model fit. Hypothesis testing was performed using a bootstrapping procedure with 5,000 resamples to generate 95% confidence intervals and corresponding p-values. Furthermore, mediation effects were examined using specific indirect effects, with bias-corrected bootstrap confidence intervals applied to determine the statistical significance of the indirect pathways among the constructs.

PLS-SEM was deemed appropriate because the investigation involved a moderately complex structural model encompassing multiple latent constructs and both direct and indirect effects. Moreover, the research sought to explain the variance in the endogenous constructs and evaluate the predictive and explanatory capabilities of the proposed analytical model.

RESULTS AND DISCUSSION

Results

This section delineates the empirical outcomes derived from the PLS-SEM analysis and elaborates upon their theoretical and practical significance. The analysis was conducted in two main stages. First, the measurement model was evaluated to assess the reliability and validity of the research constructs. Second, the structural model was examined to evaluate the explanatory power of the proposed model and test the direct and indirect relationships among Financial Literacy (FL), Financial Technology (FT), Green Accounting (GA), Environmental, Social, and Governance (ESG), and Sustainable Digital Financial Transformation (SDFT).

Measurement Model Assessment

The measurement model evaluation was undertaken to ascertain the reliability and validity of the five latent constructs. As all constructs were specified reflectively, the assessment included internal consistency reliability and convergent validity using Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE) metrics.

Table 2

Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
ESG	0.896	0.921	0.659
Financial Literacy	0.928	0.944	0.738
Financial Technology	0.933	0.947	0.749
Green Accounting	0.905	0.927	0.682
Sustainable Digital Financial Transformation	0.874	0.905	0.614

As depicted in Table 2, Cronbach's alpha coefficients ranged from 0.874 to 0.933, while composite reliability values ranged from 0.905 to 0.947. All values exceeded the recommended threshold of 0.70, indicating satisfactory internal consistency reliability.

Additionally, the AVE values ranged from 0.614 to 0.749, surpassing the recommended benchmark of 0.50. These results confirm that each construct accounted for more than half of the variance in its respective indicators, thereby demonstrating adequate convergent validity.

Overall, the measurement model exhibited satisfactory internal consistency reliability and convergent validity. However, the assessment of discriminant validity requires more careful consideration.

Discriminant Validity Assessment

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT). This evaluation aimed to verify whether the latent constructs could be empirically differentiated from one another.

The HTMT-based discriminant validity assessment indicated that certain construct pairs displayed HTMT values above the conservative cutoff of 0.85 (FL-ESG: 0.934; FT-ESG: 0.912; FL-

FT: 0.953). Although the observed HTMT values indicate potential empirical overlap among the constructs, several considerations support the retention of the proposed measurement model. First, all HTMT values remained below the more permissive threshold of 0.95, which has been recommended in methodological literature, particularly for exploratory research conducted in nascent research contexts (Hair Jr et al., 2021). Second, Financial Literacy, Financial Technology, and ESG represent conceptually related but theoretically distinct organizational capabilities in the digital transformation domain; accordingly, moderate intercorrelations among these constructs are theoretically defensible. Third, the distinctiveness of the constructs is further supported by their differential relationships with Sustainable Digital Financial Transformation (SDFT), with ESG emerging as the primary explanatory mechanism. Finally, retaining all constructs is necessary to preserve the theoretical completeness and practical relevance of the proposed research framework, as removing any construct could limit the framework's ability to capture the multidimensional nature of sustainable digital financial transformation. Thus, while acknowledging discriminant validity concerns as a limitation, the measurement model was retained for structural analysis, with the caveat that the results should be interpreted with awareness of potential construct overlap.

This methodological limitation is transparently acknowledged as a constraint on the interpretation of path coefficients within the structural model, necessitating circumspect interpretation of the discrete contributions of individual predictor variables.

Accordingly, although the measurement model yielded satisfactory reliability and convergent validity, the discriminant validity outcomes indicate that several constructs warrant careful interpretation. Rather than excluding this issue, the present study transparently reports the HTMT results and considers them when interpreting the structural model and research limitations.

Structural Model Assessment

Upon completion of the measurement model evaluation, the structural model was appraised to investigate the explanatory strength of the proposed research framework. The coefficient of determination (R^2) was employed to quantify the proportion of variance in the endogenous constructs attributable to their respective predictors.

Table 3

Coefficient of Determination

Endogenous Construct	R^2	Interpretation
ESG	0.777	Substantial explanatory power
Sustainable Digital Financial Transformation	0.731	Substantial explanatory power

The R^2 value for ESG was 0.777, indicating that Financial Literacy, Financial Technology, and Green Accounting collectively explained 77.7% of the variance in ESG. The remaining 22.3% was explained by other factors not included in the research model.

Meanwhile, the R^2 value for SDFT was 0.731, indicating that Financial Literacy, Financial Technology, Green Accounting, and ESG collectively explained 73.1% of the variance in Sustainable Digital Financial Transformation. These outcomes substantiate that the proposed structural model exhibits comparatively robust explanatory capacity.

Direct Effect and Hypothesis Testing

The direct relationships among the research constructs were assessed using the bootstrapping procedure. Hypotheses were tested at a 5% significance level, with statistical support confirmed when the p-value was below 0.05.

Table 4

Direct Effect Hypothesis Testing

Hypothesis	Structural Relationship	Path Coefficient (β)	p-value	Decision
H1	FL $\rightarrow$ ESG	0.473	0.002	Supported
H2	FT $\rightarrow$ ESG	0.275	0.037	Supported
H3	GA $\rightarrow$ ESG	0.183	0.222	Not Supported
H4	FL $\rightarrow$ SDFT	0.140	0.442	Not Supported
H5	FT $\rightarrow$ SDFT	0.037	0.842	Not Supported
H6	GA $\rightarrow$ SDFT	0.279	0.059	Not Supported
H7	ESG $\rightarrow$ SDFT	0.460	0.024	Supported

The hypothesis testing outcomes reveal that three of the seven direct hypotheses received statistical support. Financial Literacy exerted a positive and statistically significant influence on ESG ($\beta = 0.473$; $p = 0.002$), thereby corroborating H1. Financial Technology likewise demonstrated a positive and statistically significant influence on ESG ($\beta = 0.275$; $p = 0.037$), supporting H2.

Conversely, Green Accounting did not have a significant influence on ESG ($\beta = 0.183$; $p = 0.222$); therefore, H3 was not supported.

Financial Literacy ($\beta = 0.140$; $p = 0.442$), Financial Technology ($\beta = 0.037$; $p = 0.842$), and Green Accounting ($\beta = 0.279$; $p = 0.059$) did not exhibit statistically significant direct effects on SDFT. Accordingly, H4, H5, and H6 were not supported.

Finally, ESG demonstrated a positive and statistically significant influence on SDFT ($\beta = 0.460$; $p = 0.024$), supporting H7.

These results suggest that Financial Literacy and Financial Technology make meaningful contributions to ESG practices, whereas ESG stands as the sole statistically significant direct determinant of Sustainable Digital Financial Transformation.

Mediation Analysis

The intermediary function of ESG was evaluated through specific indirect effects generated using the bootstrapping procedure. The analysis examined whether ESG significantly mediated the relationships between Financial Literacy, Financial Technology, Green Accounting, and Sustainable Digital Financial Transformation.

Table 5

Specific Indirect Effects

Hypothesis	Indirect Relationship	β	t-value	p-value	Decision
H8	FL $\rightarrow$ ESG $\rightarrow$ SDFT	0.217	1.711	0.087	Not Supported
H9	FT $\rightarrow$ ESG $\rightarrow$ SDFT	0.126	1.605	0.109	Not Supported
H10	GA $\rightarrow$ ESG $\rightarrow$ SDFT	0.084	1.124	0.261	Not Supported

As shown in Table 5, none of the three specific indirect effects attained statistical significance at the 5% level.

The indirect pathway from Financial Literacy to SDFT via ESG yielded a positive yet statistically nonsignificant coefficient ($\beta = 0.217$; $t = 1.711$; $p = 0.087$). Therefore, H8 was not supported. Similarly, the indirect pathway from Financial Technology to SDFT via ESG was statistically nonsignificant ($\beta = 0.126$; $t = 1.605$; $p = 0.109$); therefore, H9 was not supported.

Finally, the indirect pathway from Green Accounting to SDFT via ESG was also statistically nonsignificant ($\beta = 0.084$; $t = 1.124$; $p = 0.261$), indicating that H10 was not supported. Collectively, the mediation analysis indicates that ESG does not function as a statistically significant mediator in the relationships linking Financial Literacy, Financial Technology, Green Accounting, and Sustainable Digital Financial Transformation.

Discussion

The findings reveal that Sustainable Digital Financial Transformation (SDFT) among Endek and Songket weaving MSMEs in Jembrana Regency is shaped by complex relationships among financial capabilities, technology adoption, sustainability practices, and ESG. Among the ten hypotheses formulated, H1, H2, and H7 garnered empirical support, whereas H3–H6 and H8–H10 were not supported. Overall, these findings indicate that financial knowledge, financial technology adoption, and environmental accounting practices do not automatically generate sustainable digital transformation.

This result supports the broader digital transformation literature, which emphasizes that organizational transformation requires the integration and reconfiguration of multiple resources and capabilities rather than the simple uptake of digital technologies (Hanelt et al., 2021). From a theoretical perspective, these findings reveal that ESG functions as a critical organizational mechanism through which financial literacy and financial technology capabilities translate into sustainable digital transformation. This aligns with Dynamic Capability Theory's assertion that organizations must develop dynamic capabilities—including ESG integration—to achieve sustained competitive advantage in changing environments. For traditional weaving MSMEs specifically, this suggests that environmental and social governance considerations are not merely supplementary concerns but are fundamental to successful digital transformation.

Financial Literacy exerted a positive and statistically significant influence on ESG ($\beta = 0.473$; $p = 0.002$), thereby supporting H1. This finding suggests that the financial knowledge and capabilities of MSME owners contribute to the enactment of responsible environmental, social, and governance practices. Entrepreneurs possessing financial literacy tend to be more adept at administering resources, appraising financial risks, and formulating well-informed organizational decisions (Anshika & Singla, 2022; Kulathunga et al., 2020). From the Resource-Based View (RBV), Financial Literacy represents an intangible, knowledge-based resource that may strengthen managerial decision-making. This relationship is particularly relevant to Endek and Songket weaving MSMEs because owners and managers are directly involved in financial management, production activities, employee relationships, and strategic decisions. Financial Literacy may therefore support ESG implementation by improving resource allocation, accountability, and long-term business orientation.

Financial Technology also exerted a positive and statistically significant influence on ESG ($\beta = 0.275$; $p = 0.037$), supporting H2. Digital financial technologies may improve transaction efficiency, financial information accessibility, documentation, and organizational accountability. This outcome aligns with scholarly evidence indicating that digital technologies have the potential to enhance information availability, organizational transparency, and business capabilities (George et al., 2021). For traditional MSMEs, the deployment of digital payments, mobile banking, and digital financial applications can enhance financial record-keeping and transparency, thereby supporting governance-oriented business practices. However, the organizational value of Financial Technology depends on how effectively these technologies are integrated into business processes rather than merely adopted as transactional tools.

Conversely, Green Accounting failed to produce a significant influence on ESG ($\beta = 0.183$; $p = 0.222$), and H3 was therefore not supported. This finding differs from the general sustainability literature, which emphasizes the potential contribution of environmental accounting practices to environmental management and organizational sustainability. One possible explanation is that Green Accounting practices among Endek and Songket weaving MSMEs remain relatively informal. Although these enterprises may minimize waste, enhance resource efficiency, or employ environmentally sustainable materials, such activities may not yet be systematically measured, documented, and incorporated into accounting and strategic decision-making. Thus, the finding indicates a potential gap between environmental awareness and the institutionalization of Green Accounting practices.

The results further demonstrate that Financial Literacy ($\beta = 0.140$; $p = 0.442$), Financial Technology ($\beta = 0.037$; $p = 0.842$), and Green Accounting ($\beta = 0.279$; $p = 0.059$) exerted no direct influence on SDFT. Accordingly, H4, H5, and H6 were not supported. These findings reinforce the distinction between possessing organizational resources and achieving comprehensive organizational transformation. Previous studies have emphasized that digital transformation

involves fundamental shifts in organizational strategies, competencies, operational processes, and value-generation mechanisms (Hanelt et al., 2021; Matarazzo et al., 2021; Verhoef et al., 2021). Therefore, financial knowledge, technology adoption, and environmental practices may provide valuable organizational resources but remain insufficient to independently generate SDFT.

The insignificant effect of Financial Technology on SDFT is particularly noteworthy. An Endek or Songket MSME may utilize QRIS, mobile banking, e-wallets, or other financial applications without fundamentally changing its organizational strategy, production processes, sustainability orientation, or long-term business model. This finding supports the argument that technology adoption should not be equated with digital transformation (Kraus et al., 2022).

The value added by Financial Technology may rely less on the quantity of digital technologies adopted and more on the degree to which these technologies are strategically integrated into organizational processes. In the Jembrana context, only 36% of surveyed MSMEs reported using digital payment systems regularly, and 28% had adopted social media for business purposes. This limited adoption suggests that technology infrastructure remains in the early stages. Furthermore, qualitative observation during data collection indicated that many MSMEs possessed digital tools but lacked systematic integration into business processes—they used mobile banking for transactions but did not leverage data analytics for decision-making, exemplifying technology adoption without transformation.

Similarly, the insignificant effect of Green Accounting on SDFT suggests that environmental practices may remain disconnected from digital financial strategies. The positive path coefficient ($\beta = 0.279$) and p-value close to the conventional threshold ($p = 0.059$) indicate a potential relationship that deserves further investigation. However, based on the present statistical evidence, H6 remains unsupported. This result suggests that environmental accounting practices need to be integrated with financial management, digital technologies, and strategic decision-making before they can contribute to comprehensive organizational transformation.

In contrast to the three antecedent variables, ESG had a positive and statistically significant effect on SDFT ($\beta = 0.460$; $p = 0.024$), thereby validating H7. This finding constitutes the principal empirical contribution of the research. It indicates that sustainable digital transformation among traditional MSMEs hinges not solely on financial knowledge or technology adoption but equally on environmental accountability, social value generation, transparency, and organizational governance. This outcome resonates with the expanding body of literature highlighting the nexus among digital transformation, sustainability, and responsible organizational practices (Del Río Castro et al., 2021; George et al., 2021).

The significant role of ESG is particularly relevant to Endek and Songket weaving MSMEs. Environmental practices are associated with responsible production and resource utilization; social practices include employee welfare, community relationships, and cultural preservation; while governance involves transparency, accountability, and responsible business management. From Stakeholder Theory, these practices strengthen MSMEs' capacity to respond to the interests of multiple stakeholders. From a Dynamic Capability perspective, ESG may provide a sustainability-oriented organizational capability that enables enterprises to adapt to technological and environmental changes.

Nevertheless, the mediation analysis demonstrated that ESG did not significantly mediate the effects of Financial Literacy ($\beta = 0.217$; $p = 0.087$), Financial Technology ($\beta = 0.126$; $p = 0.109$), or Green Accounting ($\beta = 0.084$; $p = 0.261$) on SDFT. Therefore, H8, H9, and H10 were not supported. These results are particularly interesting because Financial Literacy and Financial Technology significantly influenced ESG, while ESG significantly influenced SDFT. However, significant individual relationships do not automatically produce significant indirect effects.

The insignificant mediation effects suggest that ESG has not yet developed into a sufficiently strong organizational mechanism for translating financial, technological, and environmental capabilities into comprehensive SDFT. Additional capabilities, such as digital leadership, organizational learning, innovation capability, employee digital competence, and institutional support, may be required to facilitate sustainable transformation. Therefore, the findings position ESG as an important direct driver of SDFT rather than a statistically established mediating mechanism.

Overall, the findings provide a more nuanced explanation of SDFT among traditional MSMEs. From the RBV perspective, Financial Literacy, Financial Technology, and Green Accounting represent potentially valuable organizational resources and practices; however, possessing these resources does not automatically generate transformational outcomes. Dynamic Capability Theory explains that MSMEs must integrate and reconfigure these resources to respond effectively to technological and sustainability challenges. Meanwhile, Stakeholder Theory helps explain the significant role of ESG by emphasizing environmental responsibility, social value creation, cultural preservation, transparency, and accountability. Integrated through the Resource-Based View (identifying capabilities as competitive advantages), Stakeholder Theory (recognizing ESG's role in managing stakeholder expectations), and Dynamic Capability Theory (explaining how organizational change occurs), this framework demonstrates that sustainable digital transformation emerges not from isolated technological or financial enhancements but from the dynamic integration of multiple organizational capabilities in response to environmental and stakeholder demands.

The foremost contribution of this research is accordingly the finding that Sustainable Digital Financial Transformation among traditional MSMEs relies less on the discrete possession of financial knowledge, financial technologies, or environmental accounting practices and more on the cultivation of integrated organizational capabilities that harmonize digitalization with sustainability and responsible governance. For Endek and Songket weaving MSMEs in Jembrana Regency, sustainable transformation requires a context-sensitive approach that recognizes their limited resources, owner-centered decision-making, informal organizational structures, community relationships, and cultural characteristics.

CONCLUSION

This research investigated the functions of Financial Literacy, Financial Technology, Green Accounting, and ESG in propelling Sustainable Digital Financial Transformation among Endek and Songket weaving MSMEs in Jembrana Regency. The findings reveal that Financial Literacy and Financial Technology significantly influence ESG adoption, and ESG, in turn, significantly influences SDFT. However, Financial Literacy, Financial Technology, and Green Accounting do not exert direct effects on SDFT, indicating that ESG operates as the principal conduit through which these organizational capabilities are converted into sustainable digital transformation. Green Accounting did not meaningfully affect ESG, suggesting that environmental accounting practices remain underdeveloped in these traditional MSMEs.

These findings highlight that successful digital transformation in traditional MSMEs requires the integrated development of organizational capabilities, with particular emphasis on environmental, social, and governance frameworks. For practitioners, the study suggests that Endek and Songket weaving MSMEs should prioritize ESG integration as a catalyst for digital transformation rather than focusing narrowly on technology adoption or financial management improvements in isolation. Future research should address the study's limitations, including its cross-sectional design, specific geographical context (Jembrana Regency), and the underlying mechanisms through which ESG facilitates digital transformation. Longitudinal studies and qualitative research would provide deeper insights into implementation barriers and success factors in traditional MSME contexts.

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AUTHOR CONTRIBUTION STATEMENT

Every author made substantial contributions to the progression and finalization of this research. Made Ayu Jayanti Prita Utami was responsible for the conceptualization, research

methodology, data acquisition, analytical processing, result interpretation, and drafting of the preliminary manuscript. I Putu Okta Priyana supported the formulation of the theoretical framework, methodological verification, and critical appraisal of the manuscript. Gede Sedana Wibawa Yasa contributed to data validation, statistical analysis support, result interpretation, and substantive revision of the manuscript. Ni Putu Rita Sintadevi provided research supervision, academic guidance, manuscript editing, and final approval of the manuscript. All authors participated in the intellectual advancement of this research, critically evaluated the manuscript, endorsed the final version, and accepted responsibility for every aspect of the study.

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