Digital Innovation Capability and Operational Performance in Nanostores: The Mediating Role of Organizational Capabilities in Honduras

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Abstract*— Digital innovation has emerged as a key driver of entrepreneurship in emerging economies, yet evidence remains limited on how technology adoption translates into operational improvements in small businesses. This study examines the association between digital innovation capability and nanostore operational performance, focusing on organizational capability development as the proposed mediating mechanism. Digital innovation capability is conceptualized as the organizational ability to integrate digital technologies into operational routines, managerial practices, and decision-making processes, rather than as technology adoption alone . Data were collected from 204 nanostore owners and managers in Honduras between 2024 and 2025 and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate a significant positive association between digital innovation capability and organizational capability development ($\beta = 0.56$, $p < 0.001$), while organizational capability development is positively associated with operational performance ($\beta = 0.41$, $p < 0.001$). The indirect effect is statistically significant ($\beta = 0.23$, $p = 0.002$), supporting the proposed mediation mechanism. The direct effect of digital innovation capability on operational performance is reported separately to characterize the extent of mediation was not statistically significant ($\beta = 0.07$, $p = 0.275$), consistent with indirect-only mediation. The findings are consistent with the proposition that technology resources may contribute to operational outcomes when they are translated into organizational capabilities. The study contributes to the emerging nanostore research stream by providing empirical evidence on the digital innovation–capability–performance mechanism using field data from Honduras. The findings complement previous LACCEI and LEIRD research on technology adoption, adaptability, digital transformation, and supply chain performance in Honduran nanostores by examining organizational capabilities as an intervening mechanism. These results provide practical guidance for digitalization strategies and entrepreneurship development programs in emerging economies.

Keywords: Digital Innovation; Organizational Capabilities; Operational Performance; Nanostores; PLS-SEM; Emerging Economies, Micro-Retail.

I. Introduction

Nanostores, small family-run neighborhood retail stores, are a major retail channel in emerging economies and typically operate with limited formal processes and resources [1]. In this context, digital innovation and the use of emerging technologies have gained interest for their potential to improve operational efficiency and support decision-making in nanostores. However, the literature often assumes that technology adoption directly improves performance, without considering the organizational processes required to generate value [2]. This distinction is particularly relevant in nanostores, where technology availability does not necessarily imply effective utilization. Unlike larger firms, these micro-enterprises frequently operate with limited formal processes, restricted resources, and reduced access to specialized knowledge. Therefore, the transformation of digital resources into performance improvements depends strongly on the development of organizational capabilities that enable entrepreneurs to interpret information, coordinate activities, and implement operational improvements. This study proposes that digital innovation capability is associated with organizational capability development and that organizational capabilities provide a theoretically relevant mechanism linking digital resources with operational performance. Specifically, supply chain management and innovation capability [3]. Recent research within the nanostore literature has increasingly examined technology adoption, digital transformation, supply chain capabilities, and operational performance in resource-constrained micro-retail settings. Prior empirical studies in Honduras have examined technology adoption and operational performance, as well as adaptability, digital transformation, and supply chain resilience [4], [5], [3]. These studies provide an emerging empirical foundation for understanding how technology and organizational capabilities interact in Honduran nanostores, but they address different mechanisms and outcome relationships from those examined here. However, these studies have not directly tested the mediating role of organizational capabilities as the mechanism linking digital innovation capability to operational performance. A targeted Scopus search using the terms "nanostore" AND "digital innovation" AND "emerging economies," conducted in July 2026, identified fewer than 15 records. Based on the screening conducted by the authors, few studies were identified that simultaneously examined digital innovation capability, organizational capabilities, and operational performance through a mediation model in a single emerging-economy nanostore context. Accordingly, the contribution of this study is to empirically examine the organizational mechanism through which digital resources are associated with operational performance in resource-constrained entrepreneurial environments. The persistence of this gap is also relevant for development interventions targeting digitalization among micro-retailers. Technology provision alone does not necessarily ensure effective integration into daily operational routines, particularly in resource-constrained businesses.

Consequently, understanding the organizational capabilities through which digital resources are translated into operational improvements is relevant for both entrepreneurship development and digital inclusion initiatives [6].

Given these gaps, this study poses the following research questions: RQ1: How do digital innovation and the use of emerging technologies influence organizational capability development in nanostores? RQ2: How does organizational capability development, represented by supply chain management capability and innovation capability, relate to operational performance in nanostores? To answer these questions, the specific objectives are: (O1) to examine the association between digital innovation capability and organizational capability development; (O2) to examine the association between organizational capability development and operational performance; (O3) to assess the indirect effect of digital innovation capability on operational performance through organizational capability development; and (O4) to assess the reliability and validity of the proposed measurement model for field research in resource-constrained settings. The remainder of this paper is organized as follows: Section II presents the theoretical framework and hypotheses; Section III details the methodology; Section IV reports the results; and Section V discusses the findings, implications, and limitations [7].

II. Theoretical Framework And Hypotheses

A. Digital Innovation and Organizational Capabilities

Digital innovation capability is defined here as the organizational ability to integrate digital technologies into operational processes, routines, and managerial decision-making to support new or improved ways of performing business activities [5]. This construct is conceptually distinct from technology adoption. Technology adoption refers primarily to whether a digital technology is acquired or used, whereas digital innovation capability emphasizes the organizational integration and application of digital technologies within business processes. Thus, the empirical measurement does not treat the mere presence of a smartphone application, platform, or AI-enabled functionality as evidence of innovation capability; rather, the relevant dimension is its integration into operational and managerial activities [5]. In nanostores, digital technologies such as mobile applications, digital platforms, and AI-enabled functionalities may be integrated primarily into operational activities such as communication, information access, transaction support, and decision-making [7]. AI is therefore treated in this study as one possible category of digital technology embedded within the broader digital innovation capability construct. The study does not estimate AI adoption as an independent construct and does not permit conclusions specifically about the effects of AI adoption or AI-enabled processes. From a capability-based perspective, organizational development in nanostores concentrates mainly on supply chain management, including inventory control, supplier coordination, and demand response, which are key aspects for operational stability [8],[9]. Organizational innovation in these contexts manifests mostly through incremental improvements in products, services, and processes, requiring absorptive and interpretive capacity at the owner level [10].

Innovation in nanostores manifests mostly through incremental improvements in products, services, and processes. Although digital technologies facilitate access to relevant information on sales and operational performance, their impact depends on the entrepreneur's ability to interpret such information and translate it into decisions that optimize operations, rather than on the level of technological sophistication employed [11][12].

The capability-based view further distinguishes between ordinary capabilities—those that maintain operational stability—and dynamic capabilities, which enable the firm to sense, seize, and reconfigure resources in response to environmental change [6]. For nanostores, supply chain coordination and inventory responsiveness represent ordinary capabilities that ensure day-to-day survival, while the capacity to interpret digital data and incrementally innovate offerings constitutes a dynamic capability that drives competitive differentiation. Digital tools lower the information costs associated with both capability types: mobile applications reduce search and coordination costs with suppliers, and AI-assisted analytics enhance the owner's ability to sense demand shifts. However, these tools remain inert assets unless the entrepreneur possesses the absorptive capacity to translate raw data into actionable operational changes. Thus, digital technologies should be considered enabling resources rather than direct sources of competitive advantage. Their value emerges through capability development, which represents the mechanism connecting technological resources with operational outcomes. This mechanism is particularly relevant to the emerging nanostore research stream, where previous studies have documented relationships involving technology adoption, adaptability, digital transformation, and supply chain performance but have generally examined these relationships as direct effects or through alternative mediating and moderating mechanisms [6], [3]. The present study extends this stream by explicitly positioning organizational capabilities as the mechanism through which digital innovation capability is translated into operational performance.

In the empirical model, Organizational Capabilities is specified as a higher-order construct represented by two lower-order dimensions: Supply Chain Capabilities (SCC) and Innovation Capability (IC). SCC captures the operational dimension of organizational capability, including coordination, inventory management, supplier-related activities, and product availability, whereas IC captures the adaptive dimension associated with incremental improvements in products, services, and processes. The lower-order dimensions are assessed separately in the measurement model and subsequently combined to estimate the higher-order Organizational Capabilities construct. Accordingly, the structural path from Digital Innovation Capability to Organizational Capabilities and the subsequent path from Organizational Capabilities to Operational Performance represent relationships involving the higher-order construct.

The higher-order construct should therefore be interpreted as a composite representation of the two capability dimensions rather than as an additional reflective construct measured by a separate set of indicators. Organizational Capabilities is specified as a reflective–formative (Type II) higher-order construct: SCC and IC are reflective lower-order constructs that form the higher-order construct, which has no indicators of its own. Its quality is therefore assessed through the outer weights, significance, and collinearity of the lower-order dimensions (Section III-D) rather than through reflective reliability and AVE.

The distinction from prior nanostore studies is therefore substantive rather than merely contextual. Whereas previous studies have examined technology adoption, digital transformation, adaptability, resilience, or direct performance relationships, the present model focuses on whether organizational capabilities statistically mediate the relationship between digital innovation capability and operational performance. This positioning allows the study to extend the existing nanostore evidence without claiming that the underlying digitalization–performance relationship is entirely unexplored.

B. Operational Performance

Operational performance is reflected in the efficiency of daily activities such as inventory turnover, product availability, and customer service quality. Given the limited scale and resource availability of these businesses, operational performance is a critical factor for their sustainability. The theoretical framework proposes that organizational capabilities provide an important mechanism through which digital innovation capability may be associated with operational performance [10],[6]. The empirical model therefore evaluates both the proposed indirect pathway and the direct Digital Innovation Capability → Operational Performance relationship required to characterize the type of mediation.

C. Hypotheses

In synthesis, the proposed conceptual model posits that organizational capability development constitutes the main link between digital innovation and operational performance in nanostores. Based on the preceding framework, the following hypotheses are proposed [9], [13]:

H1: Digital innovation capability is positively associated with organizational capability development in nanostores [9], [13].

H2: Organizational capability development is positively associated with operational performance in nanostores [9], [10].

H3: Organizational capability development mediates the association between digital innovation capability and operational performance in nanostores. Consistent with the capability-based perspective, digital innovation capability is expected to be associated with operational performance indirectly through organizational capabilities that facilitate the effective utilization of technological resources [6], [13]. The proposed mediation model therefore addresses a specific gap within the emerging empirical literature on nanostores: whether digital innovation capability contributes to operational performance primarily through the organizational capabilities developed around technology use. Accordingly, H3 is evaluated through the bootstrapped indirect effect rather than through the significance of the constituent paths alone. The conceptual research framework is illustrated in Fig. 1. The model maps the direct effect of digital innovation on organizational capabilities (H1), the direct effect of organizational capabilities on operational performance (H2), and the direct Digital Innovation Capability → Operational Performance path required to characterize the proposed mediation.

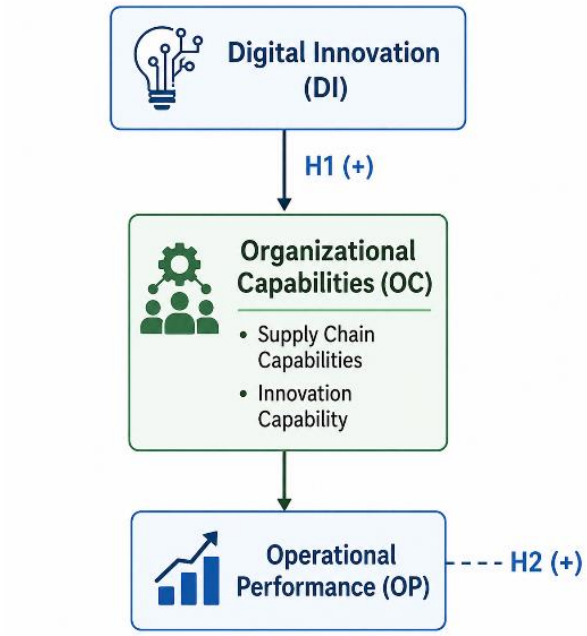


Fig. 1. Conceptual research framework.

III. METHODOLOGY

A. Research Design

This study adopts a quantitative, cross-sectional, non-experimental approach consistent with established empirical research methods in operations management [14]. The methodological objective is to examine the associations among digital innovation capability, organizational capability development, and nanostore operational performance, considering the proposed mediating role of organizational capabilities. The analysis strategy is tailored to each hypothesis: H1 is tested through the path coefficient from digital innovation capability to organizational capabilities, H2 through the path coefficient from organizational capabilities to operational performance, and H3 is evaluated through the indirect effect of digital innovation capability on operational performance through organizational capability development, using bootstrapping with 5,000 resamples. Although the model evaluates theoretically grounded relationships, the cross-sectional design does not allow definitive causal inference. Therefore, the findings should be interpreted as empirical associations consistent with the proposed theoretical mechanism.

B. Population, Sample, and Data Collection

The study population comprised nanostores operating in Honduras, with respondents consisting of owners and employees with direct experience in daily business operations. The sample was selected using a stratified random sampling approach. Nanostores were selected through purposive, non-probability sampling, stratified by urban and rural location, because no comprehensive sampling frame of Honduran nanostores is available. The sampling strategy was designed to capture heterogeneity across relevant geographic and nanostore characteristics, including urban and rural settings. Participants were required to have direct experience with daily business management and familiarity with digital tools used in operations, including mobile payments, digital communication with suppliers, or social media-based commercial activities.

Data were collected between August 2024 and November 2025 through a structured questionnaire administered both in person and digitally. The extended data-collection period reflects the geographic dispersion of the target population. To minimize potential temporal bias, identical measurement procedures and survey instruments were maintained throughout the study period, and no statistically significant differences were observed between early and late respondents ($p > 0.10$).

Of the targeted nanostore population, 204 valid responses were retained for analysis after the data-screening process. The final sample comprised 204 valid observations from Honduran nanostores. The present study uses these observations to examine a different theoretical configuration from previous analyses of the dataset, focusing specifically on the mediating role of organizational capabilities. Questionnaires with excessive missing data (>15% unanswered items) or inconsistent responses were excluded prior to analysis. Missing values were minimal across the consolidated dataset (2.94%) and remained below 3% for all reflective indicators. Given the low proportion and the missing-completely-at-random (MCAR) pattern confirmed by Little's MCAR test, mean imputation was applied for individual missing values at the construct level [15]. To assess potential non-response bias, early respondents (first quartile) were compared against late respondents (last quartile) following established procedures [15]; no significant differences were found ($p > 0.10$). Therefore, the dataset was considered suitable for subsequent measurement and structural model estimation. The final sample size exceeds the traditional "10-times" heuristic for the specified structural model [2]. Because this heuristic is only a preliminary rule of thumb, the adequacy of the sample should be interpreted together with the observed path coefficients, bootstrapped confidence intervals, and model-specific statistical power considerations.

All responses were treated anonymously, ensuring confidentiality of information and reducing potential social desirability biases.

C. Measurement Instrument

The questionnaire employed five-point Likert scales, where 1 corresponds to "strongly disagree" and 5 to "strongly agree." The measurement structure was designed to remain parsimonious while preserving the conceptual distinction between digital innovation capability, supply chain capabilities, innovation capability, and operational performance. This distinction is important because previous nanostore research has examined technology adoption, adaptability, and operational performance through different conceptual configurations [5], [6], [3].

The constructs included in the study were:

1) Digital Innovation: operationalized through indicators assessing the integration and use of digital technologies in operational and managerial activities, including mobile applications, digital platforms, and AI-enabled functionalities. The construct therefore captures digital innovation capability rather than technology availability alone. The inclusion of artificial intelligence-based solutions refers to accessible digital functionalities embedded in commercial applications, such as automated recommendations, predictive assistance, or intelligent decision-support features, rather than advanced AI development performed by nanostores themselves.

2) Organizational Capabilities: modeled as a higher-order construct represented by two lower-order dimensions: Supply Chain Capabilities (SCC) and Innovation Capability (IC) (reflective–formative, Type II; see Section III-D) . The lower-order constructs were evaluated individually in the measurement model and jointly represented the higher-order organizational capability construct used in the structural model.

3) Operational Performance: measured in terms of efficiency in daily activities, product availability, service speed, and demand response capacity.

Items were adapted from previous studies and adjusted to the specific context of nanostores, ensuring their conceptual relevance and clarity for participants [5], [10]. Additionally, predictive relevance indicators such as Q^2, standardized root mean square residual (SRMR), and multicollinearity diagnostics were considered to evaluate the predictive quality and robustness of the structural model. The final instrument consisted of 22 reflective indicators: five for Digital Innovation Capability, six for Supply Chain Capabilities, six for Innovation Capability, and five for Operational Performance.

The five DI items (DI1–DI5) capture the integration of digital tools into [e.g., supplier ordering, inventory and sales records, pricing and purchasing decisions]; item wording and standardized loadings are reported in Table A1 (Appendix).

D. Data Analysis and Structural Model

Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The model was estimated in two stages: first, the measurement model was evaluated considering the reliability and convergent and discriminant validity of the constructs; subsequently, the proposed structural relationships were analyzed, estimating the hypothesis coefficients and R^2 values [15], [16]. The use of PLS-SEM has been widely applied in studies analyzing the relationship between technology, organizational capabilities, and operational performance [17], [18].

For the higher-order Organizational Capabilities construct, the lower-order dimensions of Supply Chain Capabilities and Innovation Capability were first assessed for reliability and validity. The higher-order construct was subsequently

estimated using a two-stage procedure. The structural model was then evaluated using standardized path coefficients, bootstrapped confidence intervals, coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), standardized root mean square residual (SRMR), and collinearity diagnostics.

The mediation analysis was specified as an indirect-effect model in which Digital Innovation Capability predicts the higher-order Organizational Capabilities construct, which in turn predicts Operational Performance. A direct path from Digital Innovation Capability to Operational Performance was also estimated to determine whether the observed mediation pattern was indirect-only or accompanied by a remaining direct association.

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The maximum inner VIF was 1.15, with all VIF values remaining below the 3.3 threshold. The reconstructed Q^2 values were 0.31 for Organizational Capabilities and 0.14 for Operational Performance, indicating positive predictive relevance for both endogenous constructs. The approximate SRMR was 0.078. These diagnostics are reported to provide greater transparency regarding the predictive and structural quality of the model. The step-by-step analytical procedure is summarized in Fig. 2.

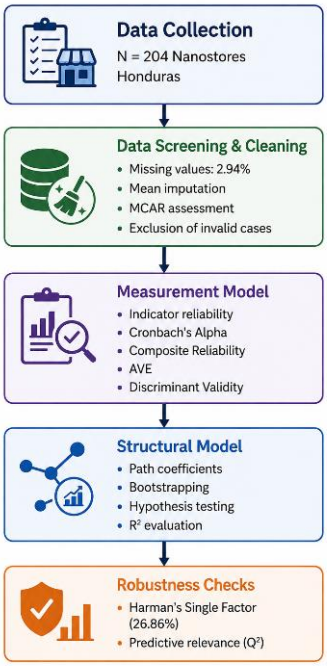


Fig. 2. Methodological design and analysis strategy.

E. Common Method Bias

Given the self-reported nature of both independent and dependent variables, the potential influence of common method bias (CMB) was assessed using Harman's single-factor test. All reflective indicators were entered into an unrotated exploratory factor analysis. The first factor accounted for 26.86% of the total variance, below the 50% threshold, indicating that common method bias is unlikely to be a serious concern [19]. As an additional robustness check, a single-factor CFA model was estimated exhibiting poor fit compared to the proposed multi-factor measurement model. These results provide evidence that common method bias is unlikely to be a dominant explanation for the observed relationships, although statistical tests cannot completely exclude all sources of common method variance. Additionally, full collinearity variance inflation factors (VIFs) were examined following Kock [19]. All construct-level VIF values remained below the recommended threshold of 3.3, providing additional evidence that common method bias is unlikely to represent a major concern for the interpretation of the structural relationships.

IV. Results

A. Descriptive Statistics

Table I presents the descriptive statistics of the analyzed constructs. The results show moderate to relatively high values in digital innovation, organizational capabilities, and operational performance, indicating moderate-to-relatively-high reported levels across the measured constructs in the sample. These descriptive statistics are presented to characterize the observed data and should not be interpreted as evidence of population-level technology adoption indicating moderate levels of digital innovation, supply chain capabilities, innovation capability, and operational performance within the observed sample [15]. The results therefore describe the distribution of responses in the analyzed sample rather than population-level estimates.

TABLE I
DESCRIPTIVE STATISTICS OF CONSTRUCTS

Construct	Indicator Range	Mean	Std. Dev.
Digital Innovation (DI)	DI1–DI5	3.42	0.91
Supply Chain Capabilities (SCC)	SCC1–SCC6	3.87	0.78
Innovation Capability (IC)	IC1–IC6	3.65	0.83
Operational Performance (OP)	OP1–OP5	3.74	0.76

[a]Own elaboration.

B. Measurement Model Evaluation

Prior to the structural model analysis, the quality of the measurement model was evaluated. As shown in Table II, all constructs present adequate levels of internal reliability, with Cronbach's alpha and composite reliability values above the recommended thresholds. Likewise, AVE values exceed the minimum criterion, confirming convergent validity.

Discriminant validity was verified using the Fornell–Larcker criterion, evidencing that each construct shares more variance with its indicators than with other constructs in the model. Collectively, these results provide evidence of adequate reliability, convergent validity, and discriminant validity for the lower-order constructs. The higher-order Organizational

Capabilities construct was subsequently assessed according to the higher-order modeling procedure described in Section III-D before evaluating the structural relationships [20], [21]. As an additional and more rigorous assessment, discriminant validity was also evaluated using the Heterotrait–Monotrait ratio (HTMT), which is widely recommended in contemporary PLS-SEM research [20]. The HTMT results are presented in Table III.

TABLE II
RELIABILITY AND CONVERGENT VALIDITY

Construct	Cronbach's α	Composite Reliability (CR)	AVE
Digital Innovation (DI)	0.86	0.90	0.65
Supply Chain Capabilities (SCC)	0.88	0.92	0.66
Innovation Capability (IC)	0.87	0.91	0.64
Operational Performance (OP)	0.85	0.89	0.62

[a]Own elaboration.

TABLE III
HETEROTRAIT–MONOTRAIT RATIO (HTMT) ASSESSMENT

Construct Pair	HTMT
Digital Innovation – Supply Chain Capabilities	0.68
Digital Innovation – Innovation Capability	0.72
Digital Innovation – Operational Performance	0.59
Supply Chain Capabilities – Innovation Capability	0.74
Supply Chain Capabilities – Operational Performance	0.79
Innovation Capability – Operational Performance	0.76

[a]Own elaboration.

The HTMT results for the lower-order constructs remain below the specified threshold, supporting discriminant validity among the dimensions of the measurement model. Because Supply Chain Capabilities and Innovation Capability jointly represent the higher-order Organizational Capabilities construct, their conceptual distinctiveness is retained at the lower-order level while their shared contribution is represented in the higher-order structural model.

As shown in Table III, all HTMT values remain below the recommended threshold of 0.85, indicating satisfactory discriminant validity among the constructs. These findings provide additional evidence that each construct captures a distinct conceptual domain and that multicollinearity between latent variables is unlikely to affect the interpretation of the structural relationships. Consequently, the measurement model demonstrates adequate psychometric quality for subsequent hypothesis testing.

C. Structural Model Results

The structural model results provide empirical support for the proposed associations among digital innovation capability, organizational capability development, and operational performance [15].

In support of H1, digital innovation presents a positive and statistically significant effect on organizational capabilities ($\beta = 0.56$, $p < 0.001$), indicating a positive association between digital innovation capability and organizational capability development in the sample [9], [13].

Likewise, in line with H2, organizational capabilities positively and significantly influence operational performance ($\beta = 0.41$, $p < 0.001$), indicating a positive association between organizational capability development and operational performance [9], [10].

Collectively, the results indicate a statistically significant indirect association between digital innovation capability and operational performance through organizational capabilities [5], [6]. The extent to which this mediation is full or partial depends on the estimated direct effect of digital innovation capability on operational performance, which is reported below. The coefficients of determination (R^2), reported in Table IV, indicate a moderate explanatory capacity of the model.

TABLE IV
STRUCTURAL MODEL RESULTS

Relationship	Hypothesis	β (p)	R^2	Result
Digital Innovation → Organizational Capabilities	H1	0.56 (<0.001)	0.31	Supported
Organizational Capabilities → Operational Performance	H2	0.41 (<0.001)	0.49	Supported
Digital Innovation Capability → Operational Performance	Direct effect	0.07 (0.275)	—	Not significant

[a]Own elaboration.

The direct effect of Digital Innovation Capability on Operational Performance was not statistically significant ($\beta = 0.07$, $p = 0.275$), whereas the indirect effect through Organizational Capabilities was positive and significant ($\beta = 0.23$, $p = 0.002$, 95% CI [0.09, 0.37]). Taken together, the nonsignificant direct effect and significant indirect effect are consistent with an indirect-only mediation pattern in the observed sample. This interpretation refers to the estimated statistical model and should not be interpreted as evidence of causal mediation given the cross-sectional research design.. .

The estimated coefficients indicate a positive association between digital innovation capability and organizational capabilities, while organizational capabilities show a positive association with operational performance. The corresponding f^2 values provide information about the local contribution of each predictor to the explained variance. This pattern is consistent with the theoretical argument that the organizational integration of digital resources may be important for translating digital technologies into operational value in informal micro-retail contexts.

The R^2 value of 0.31 for organizational capabilities indicates that digital innovation explains approximately one-third of the variance in capability development, suggesting that other factors—such as owner education, prior business experience, and access to technical assistance—may also play relevant roles. The R^2 of 0.49 for operational performance indicates that the predictors included in the structural model explain approximately 49% of its variance. The result indicates that the model explains a meaningful proportion of the observed variance in operational performance within the study sample. The f^2 effect sizes were also examined to assess the contribution of each exogenous construct to the explained variance of its endogenous construct. Digital Innovation Capability showed a large effect on Organizational Capabilities ($f^2 = 0.47$), whereas Organizational Capabilities showed a medium effect on Operational Performance ($f^2 = 0.17$), according to conventional effect-size guidelines.

To further evaluate the theoretical mechanism proposed in the conceptual framework, a mediation analysis was conducted. Following contemporary PLS-SEM recommendations, the significance of the indirect effect was assessed using a bootstrapping procedure with 5,000 resamples. The mediation results are presented in Table V.

TABLE V
MEDIATION ANALYSIS RESULTS

Relationship	Hypothesis	Indirect Effect (β)	t-value	p-value	95% CI	Result
Digital Innovation → Organizational Capabilities → Operational Performance	H3	0.23	3.12	0.002	[0.09, 0.37]	Supported

[a]Own elaboration.

The mediation analysis provides support for H3. The result is consistent with the central contribution of the study: digital innovation capability is associated with operational performance through the organizational capabilities developed around the use and integration of digital resources. The indirect effect of digital innovation capability on operational performance through organizational capabilities was statistically significant (β = 0.23, t = 3.12, p = 0.002, 95% CI [0.09, 0.37]). This result indicates that the proposed capability pathway is statistically supported in the observed sample. Moreover, the direct effect of digital innovation capability on operational performance was not statistically significant (β = 0.07, p = 0.275), while the indirect effect remained significant. This pattern is consistent with indirect-only mediation, suggesting that the association between digital innovation capability and operational performance operates primarily through organizational capabilities. These findings are consistent with the capability-based perspective in which organizational capabilities provide an important pathway through which digital resources may be associated with operational outcomes. The estimated structural model with standardized path coefficients and coefficients of determination is presented in Fig. 3.

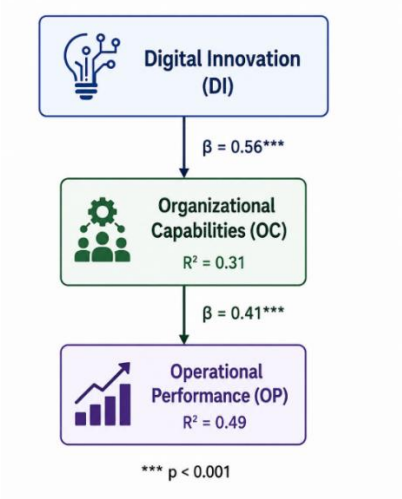


Fig. 3. Estimated structural model.

V. Discussion And Conclusions

Specifically, the findings support H1, H2, and H3, indicating significant associations between digital innovation capability and organizational capabilities, between organizational capabilities and operational performance, and through the proposed indirect pathway. The nonsignificant direct effect together with the significant indirect effect is consistent with an indirect-only mediation pattern in the observed sample. The results suggest that digitalization initiatives may be more effectively aligned with operational objectives when accompanied by initiatives aimed at strengthening organizational capabilities; however, this interpretation should be treated as an implication of the observed associations rather than as evidence of causal effects. The findings highlight the importance of considering organizational capabilities alongside technology adoption when designing digitalization initiatives for micro-retail businesses. Consequently, digitalization policies targeting nanostores should prioritize capability development alongside technology adoption in order to maximize long-term operational benefits.

These findings extend the emerging empirical literature on nanostores by shifting attention from technology adoption as an outcome or direct predictor toward the organizational capability mechanisms that enable technology to generate operational value This distinction complements previous research examining technology adoption, adaptability, digital transformation, and supply chain performance in Honduran nanostores [5], [6], [3]. The contribution is therefore positioned as an extension of this developing research stream rather than as a replacement for or replication of the mechanisms tested in those studies.

A. Practical and Public Policy Implications

Regarding H1, the findings show that digital innovation positively and significantly influences organizational capability development. This result is consistent with the proposition that access to digital technologies alone does not capture the organizational processes through which digital resources may become operationally useful. In the nanostore context, digital innovation is associated with improvements in operational management by facilitating access to relevant information and supporting the introduction of incremental improvements in products, services, and processes, provided that these technologies are translated into concrete organizational practices [8], [17].

Regarding H2, the results evidence that organizational capability development has a positive and significant effect on operational performance. Capabilities linked to efficient inventory management, supplier coordination, and incremental innovation are fundamental for the daily performance of nanostores. Given that these enterprises operate with reduced margins and high vulnerability, the positive association observed between these capabilities and operational performance highlights their relevance for understanding efficiency and sustainability in this context [10], [1].

In aggregate, the results are consistent with the proposition that digital innovation may be associated with operational value

when translated into organizational capability development, rather than operating as an isolated technological factor [17],[6]. For practitioners and policymakers, the results highlight that successful digitalization initiatives require more than providing technological tools. To generate sustainable improvements in operational performance, it is necessary to accompany technology adoption with actions oriented toward strengthening organizational capabilities, such as management training, technical assistance, and operational process improvement, especially in programs promoted in emerging economies [22], [7].For development agencies and entrepreneurship programs, the findings suggest that digitalization initiatives could combine technology access with organizational capability-building activities. Potential interventions may include inventory-management training, supplier-coordination practices, basic data interpretation, and technical assistance adapted to the operational realities of nanostores. The proposed measurement instrument may also provide a basis for future field studies evaluating whether such capability-building interventions improve digitalization outcomes over time. Furthermore, the mediation analysis provides empirical evidence of a statistically significant indirect pathway linking digital innovation capability with operational performance through organizational capabilities. This finding extends prior research by examining the capability pathway in an informal micro-retail context and provides a basis for future longitudinal research to test whether the observed mechanism persists over time.

B. Social, Economic, and Legal Implications

The findings carry broader social and economic implications for informal micro-retail ecosystems in emerging economies. By identifying a significant association between digital innovation capability and organizational capability development, the study highlights the possibility that differences in organizational capabilities may influence how nanostores derive operational value from digital technologies. [1]. Furthermore, as nanostores adopt digital tools that generate transaction data, policymakers must ensure data governance frameworks—protecting owner privacy and preventing asymmetric exploitation by platforms or fintech intermediaries—are in place to safeguard these vulnerable entrepreneurs [22].

C. Limitations and Future Research

The objective of this study was to analyze the role of digital innovation in nanostore operational performance, considering organizational capability development as the main explanatory mechanism. Collectively, the results provide empirical evidence consistent with the proposed model in an emerging-economy context, while the cross-sectional design limits causal interpretation [13].

This study has several limitations that must be considered. First, the cross-sectional design limits the possibility of establishing dynamic causal relationships among the analyzed variables. Second, the use of perceptual measures reported by owners or managers may introduce common method variance, although the statistical diagnostics reported in Section III-E indicate that it is unlikely to represent a dominant threat. Third, AI was not modeled as an independent construct. Although AI-enabled functionalities form part of the broader digital innovation capability construct, the study cannot isolate the specific contribution of AI adoption or AI-enabled processes. Future research should therefore examine AI adoption separately and compare its effects with other forms of digital innovation. Finally, future longitudinal or experimental studies should directly examine whether capability-building interventions produce subsequent changes in digital innovation practices and operational performance [23]. Future research could address these limitations through longitudinal designs, multi-wave data collection procedures that further reduce common method concerns, the use of objective performance indicators—such as sales or inventory turnover—and the incorporation of moderating variables such as the degree of formalization or entrepreneur experience [4][7]. Likewise, cross-country comparisons would allow deepening the role of context in digital innovation processes in nanostores [2], [24].

The stratified random sampling procedure strengthens the basis for sample coverage across the targeted segments; nevertheless, the findings should not be interpreted as universally representative of all Honduran nanostores because the study remains dependent on the defined sampling frame, eligibility criteria, and observed sample. Future studies should replicate the model across larger samples and additional geographic and institutional contexts.

D. Originality and Value

This research contributes to the literature in three complementary ways. Theoretically, it advances the digital innovation literature by empirically examining the mediating role of organizational capabilities in the digital innovation–performance relationship within informal micro-retail, a context that remains comparatively underexplored [8], [4]. Empirically, it extends the emerging nanostore research stream developed through LACCEI and LEIRD by examining a distinct mechanism linking digital innovation capability with operational performance [5], [6], [3]. Unlike prior nanostore studies that primarily examine technology adoption, adaptability, digital transformation, or direct technology–performance relationships, this study develops and empirically tests a mediation model in which organizational capabilities transmit the effects of digital innovation to operational performance. Rather than claiming a fundamentally new theoretical mechanism, the study extends an established capability-based perspective to Honduran nanostores and empirically examines the proposed mediation pathway.

Importantly, the study does not claim that the underlying dataset or the broader relationship between digitalization and nanostore performance is entirely new. Its contribution lies in the distinct theoretical configuration tested: organizational capabilities are modeled as an intervening mechanism between digital innovation capability and operational performance. This differentiates the present analysis from previous LACCEI and LEIRD studies based on the same broader nanostore research program, which examined other relationships involving

technology adoption, adaptability, digital transformation, resilience, quality practices, and performance [3], [6], [7], [12].

The study complements prior nanostore research by examining organizational capabilities as an intervening mechanism between digital innovation capability and operational performance. By positioning organizational capabilities as the explanatory mechanism, the study addresses not only whether digital technologies are used but also how their organizational integration may be associated with operational outcomes.

Using PLS-SEM evidence from Honduras, the study provides empirical support for organizational capability development as a mechanism through which digital innovation capability is associated with operational performance in informal micro-retail settings. Methodologically, it provides evidence regarding the reliability and validity of a parsimonious measurement structure that can be further tested in larger and cross-country samples. . Practically, it provides empirical support for considering organizational capability development alongside digitalization initiatives in entrepreneurship programs [22], [7]. The findings can inform future intervention designs, although the effectiveness of specific capability-staging strategies requires longitudinal or experimental evaluation.

The proposed framework also provides a foundation for future comparative studies within the Nanostores research initiative, allowing examination of whether the digital innovation–capability–performance mechanism remains consistent across different emerging economies and institutional environments. Such comparative research is particularly relevant as the Nanostores initiative expands its empirical coverage beyond Honduras, allowing the proposed relationships to be examined across different institutional, socioeconomic, and technological environments.

APPENDIX A

TABLE A1. DIGITAL INNOVATION ITEMS AND STANDARDIZED LOADINGS

Indicator	Item wording	Standardized loading
DI1	I guide my staff and customers so that they can more easily obtain information through these applications.	0.779
DI2	I use the store's telephone (landline or mobile) to serve my customers.	0.641
DI3	I have some type of technology that alerts me when it is time to restock my store.	0.877
DI4	I have an application on my phone that alerts me when it is time to restock my store.	0.856
DI5	I frequently promote my products through social media or mobile applications.	0.852

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ETHICAL STATEMENT

This study was conducted in accordance with ethical principles for research involving human subjects. Verbal informed consent was obtained from all participants following a standardized consent protocol explaining the study objectives, confidentiality protections, voluntary participation, and the right to decline participation. No identifying personal or business information was retained.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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